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Special Issue

Oral Surgery

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Foci of squmous odontogenic tumor within the tissue wall of odontogenic cyst

Attachment retained removable partial denture prosthesis for severe ridge defect

A study to evaluate the microbiological flora in orofacial Abscesses

The neutral zone in prosthodontic rehabilitation

PALM-S: A dental materials teaching aid

Pregnancy tumor

Evaluation of transverse bond strength of heat cured acrylic denture base resin repaired using heat polymerizing, autopolymerizing and fiber reinforced composite resin

Quiz

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President's message

Dr. Raveendranath M.

Friends,

At the outset let me express my heartfelt gratitude to all esteemed members of IDA Kerala state for the overwhelming support that you were extending to state office in all its activities, like- the IDA - RCC programmes, cultural fest-chilamboli, state level CDE programmes and the latest in this series is the state wide call for dental strike.

The preparation of the strike was complete and is historic in many ways. It is an eye opener to many- The Government and related departments, private management, new entrepreneurs eyeing in new dental collages, students, parents, medical fraternity, IDA and non IDA Members and last but not least National IDA and IDA members of other State . We proved our strength and now it is the beginning of a new era in the dental administration in Kerala state. Many overlooks might have happened in the past in planning and administration of dentistry in Kerala and it might be from the political fronts, bureaucrats or our own seniors who have occupied big posts in government service. We might have failed in our vision and proper representation in government and concerned departments, but happened is happened or situations may not be demanding at that time So far we were not confident in our strength or we underestimated it.

Now we proved it otherwise and this resurrection should define our future vision, objectives and action and here after a small lapse or mistake on our part would be detrimental to the future prospects of dentistry in Kerala state. Our timing of strike coincided well with the renewed thinking of quality of education from all quarters like media, judiciary and political fronts. We are the right people to say publicly about dental education scenario in the state and we should not fail in our duties in acting as a catalyst to rejuvenate dental education in this state.

I like to remind you about the forth coming unique and again going to be a historic activity-dental health survey of Kerala state-which is already endorsed by Kerala dental council. The discussions going on for more government participation, media participation and sponsors will be finalized soon. Our aim is to screen ten percent of the population as per the WHO norms for an authentic report. We are trying our best to include all Dental clinics (Only of IDA Members), Dental Colleges and Governemnt dental setups as survey centers. We all in single mindedly should try to bring IDA in talks by covering maximum people including VIP's and Celebrities in survey.

I appeal you all to make use of this excellent opportunity to Brand IDA Kerala State and bring a new hope in new generation Dentists.

Thanking You,

Dr. M. Raveendranath
President -IDA Kerala State

A wake up call

Dr. K. Nandakumar

The other day an SMS has reached me presumably by accident. *'Dear Doctor, Just pay 1000/- for any…….. (procedures mentioned) irrespective of how much you gonna charge the patient. I (specialist) am available full time from 9 am to 9 pm. Send an SMS for appointment. Call not necessary.'* This is not an exaggeration; neither is it fiction. There is no point in lamenting on the ethical implication. On enquiry I found that this specialist got qualified in the recent past but could not get a teaching job in a dental college. He could not get a consultancy practice either in a running clinic. He belonged to a big city and hence could not venture into establishing his own clinic. His competitors were corporate groups. Spending a sizeable amount on education, he has become desperate to find a source of income. The SMS was the natural attempt of a young professional to make both ends meet. The policy makers and professional organizations should seriously think of a possible solution to meet this sad state that is prevailing in our country. Fifteen years ago a postgraduate in dentistry had a cake walk into any educational institute. Many final year PG students were prebooked well in advance. Situations have drastically changed; to be precise it has become diametrically opposite. Postgraduates are at present jobless. This year the number of postgraduate seats has increased to a great height. Many reputed colleges found it very difficult to fill up their PG courses. Our specialised profession is facing the stark reality of unemployment. Very soon the major problem that is going to face our colleges would be to take a decision on whether to continue in the business or not. Our society needs dentists and specialists. But presently there is an over supply. When the petrol price increased, the business acumen of automobile industry dictated a reduction in production of cars. That common sense should prevail on our policy makers. New colleges should not be started; similarly new courses also. The quality of education should be streamlined and upgraded to international standards. So that, at least a few people could get international placements. Another avenue to explore is to open up our colleges to international students. The standard of the colleges and its business can be improved through this. The complacency on the part of the advisory bodies and the government will definitely invite an avalanche of destruction to our dental colleges and our profession at large. Please note that the design of dental colleges will not permit them to be converted to hotels. Hence wake up gentlemen wake up - that is my humble plea. Mind you future is never sluggish in its approach.

Dr. K. Nandakumar
Editor, KDJ

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Science and Dentistry

In today's world there is a tremendous focus on one's personal appearance. It is no surprise that this trend has spread to the dental world as well. With the many advancements available at their fingertips, dentists are able to preserve more of their patients' teeth than ever before, thus giving patients a more beautiful yet still natural smile.

Advances in all aspects of science and discovery continue to occur at an exponential rate, leading to a wealth of new knowledge and technologies that have the potential to transform dental practice. This "new science" within the areas of cell/molecular biology, genetics, tissue engineering, nanotechnology, and informatics has been available for several years; however, the assimilation of this information into the dental curriculum has been slow. For the profession and the patients it serves to benefit fully from modern science, new knowledge and technologies must be incorporated into the mainstream of dental education. The continued evolution of the dental curriculum presents a major challenge to faculty, administrators, and external constituencies because of the high cost, overcrowded schedule, unique demands of clinical training, changing nature of teaching/assessment methods, and large scope of new material impacting all areas of the educational program. Additionally, there is a lack of personnel with adequate training/ experience in both foundational and clinical sciences to support the effective application and/or integration of new science information into curriculum planning, implementation, and assessment processes. Nonetheless, the speed of this evolution must be increased if dentistry is to maintain its standing as a respected health care profession.

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Neurolemmoma of buccal region -review of literature

* C.R. Sobhana, ** Kailas Gawai, ** Vincia Paul

Abstract

Neurilemmoma is the relatively rare tumor arising from the Schwann cells of the neurilemmal sheath of nerve anywhere in the body. It generally appears as a single encapsulated nodule or swelling. In oral cavity tongue is involved most commonly. The palate and buccal mucosa are the next common sites, lip being rare site. The case presented in this article is of an exceptionally large size Neurilemmoma of buccal/cheek region in a male patient.

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Case report

A 32 years old male patient reported to Dept of Oral and Maxillofacial Surgery with a swelling which was of 9 months duration in relation to left cheek. Examination revealed a well circumscribed, oval in shape, firm swelling measuring approximately 7 cm × 7 cm in size. (Fig1) The swelling was freely movable anteroposterior but restricted in vertical direction. Overlying skin was normal in texture and pinch-able. Intraorally the swelling presented as a bulge in buccal mucosa which was normal in color and not fixed. (Fig 2) No palpable pulsation/or bruit over the swelling intraorally or extraorally. Patient had given history of trauma in the same region nine month back, after which the swelling appeared and gradually enlarged. Patient was asymptomatic except for the swelling. Systemic history showed newly diagnosed diabetes mellitus. FNAC was carried out but failed to yield any material. Patient was undergone USG and CT examination (Fig 3) followed by incision biopsy under local anesthesia. The histopathology report came as Neurilemmoma, mainly Antoni A type. (Fig 4) The case was planned for excision under G.A. The lesion was excised in toto using lower lip split incision. (Fig 5). Specimen send for Histopathological examination and again report came as Neurilemmoma of Antoni A type with ancient changes in the center of lesion. Post-operative period was uneventful. The patient was followed up to for 1 year and no signs of recurrence of the tumor.

Discussion

Neurilemmoma is the most commonly encountered nerve sheath tumor of the oral cavity, it generally appear as a single encapsulated nodule.[1-14] It rarely exhibits a multinodular growth pattern.[15] Tumor perdominantly affects young adults and occurs most commonly as a slowly growing asymptomatic solitary nodule in head and neck region, trunk or upper extremities.[1-15] The approximate growth rate is 1mm per year.[11] About 25% and 45 % all reported neurilemmoma found in the head and neck regions.[9] In the oral cavity, it is generally agreed that the tongue is involved most commonly. The palate and buccal mucosa are the next common sites, with lip being rare site of occurrence. Intraosseous are rare, most common site is mandible which includes less than 1% of benign primary bone tumor.[5] Neurilemmoma commonly seen between 3rd to 6th decade of life with no gender predilection[6] but according some author slight female predilection 1.5:1 ratio particularly for those lesion which occur intracranially.[5,7] Approximately 5% in childhood and adolescence.

The neurilemmoma also termed schwannoma, neurinoma, nerve sheath tumor, perineural fibroblsatoma. Schwann cells- were named for German anatomists, physiologists and cofounder of cell theory, Theodor Schwann (1810-1882).[5] In 1908 – Jose Verocay provided the first description of this tumor and offered the designation Neurinoma. In 1935- Arthur Purdy Stout proposed the term Neurilemmoma, further elaborating on the histopathology of this entity.

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Fig. 1 Swelling of left cheek region measuring approx 7 cm × 7 cm.

Fig. 2 Intraoral bulge in Buccal Mucosa on left side.

In 1940- light microscopic studies, Isadore Max Tarlov proposed fibroblastic origin and coined the term perineural fobroblsatoma.[5]

A neurilemmoma is a benign, usually encapsulated neoplasm derived from Schwann cells and along with neurofibroma, constitutes one of the most common benign peripheral nerve sheath tumors. Sensory nerve particularly auditary nerve most frequently involved. Acoustic neurilemmomas also known as vestibular schwannoma, acoustic neuroma or acoustic neurinoma. Vagus nerve is most commonly involved in cervial region although less commonly from cranial nerve VII,IX,XI,XII, cervial nerve roots, brachial plexus and sinonasal tract.[9,11] It occurs in four forms conventional (common, solitary), cellular, plexiform and ancient form. Of these plexiform and giant sacral neurilemmoma , have been associated with increased risk of local recurrence following incomplete excision. It may occurs or associated with genetic syndrome like Carney's complex (psammomatous melanotic schwannoma, cardiac myxom and endocrine overactivity), NF2 characterized by multiple neurilemmoma. Patient with NF2 and acostic neurilemmomatosis or schwannomatosis a variant of NF2, is an autosomal dominant disorder with full penetrance, 90% having multiple encapsulated and located in the subcutaneous tissue, while 10% have been plexiform, involving the neck, trunk and extremities.[7] Malignant schwannoma also know as malignant Neurilemmoma, neurofibrosarcoma or neurogenic sarcoma, is a malignant peripheral nerve sheath tumor also arises from Schwann cells. Benign intranodal neurilemmoma is an extremely rare arising from a nerve sheath within a lymph node. A case presented as a parotid gland tumor has been described.[7]

Courses of schwannoma is uncertain. Most shown genetic aberration with ring chromosome 22. NF2 gene localized to band 22q12. Alteration or loss of NF2 gene product (also designated as Merlin) a presumed tumor suppressor gene is postulated to be involved in neurilemmoma formation. That can be demonstrated be negative staining of neurilemmoma cells by immunohistochemical stain for NF2 suggestive of loss of NF2 protein function. Radiation induced intracranial and peripheral neurilemmoma was have been reported , mean latency period 20 years and most of these are solitary tumors.[2] Clonal t(2;13) for intraosseous schwannomas of the mandible have been identified, significance of this chromosomal abnormality related to diagnosis or prognosis of this neoplasm is not yet clear.[7]

Neurilemmoma is very difficult to diagnose on clinical examination alone, pose a diagnostic dilemma in the workup[2] so mostly it is supported by other investigation. CT scan show circumscribed, low attenuation with uniform or heterogenous contrast enhancement. MRI- high T2 signal and heterogenous contrast enhancement. Large tumors often shows areas of cystic changes. Both MRI and USG were found to be useful in making a preoperative diagnosis.[8,9] In general, USG images of schwannomas are characterized by a round or elliptical cross section with a clear border. FNAC has a important role in making preoperative diagnosis of any lesion of the head and neck.[9] Neurilemmoma should be differentiated from lipoma, traumatic fibroma, leiomyoma, granular cell tumor, neuroma, astrocytoma, ependymoma, fibrous meningioma, sarcoidosis, lymphoma and adenoma.[7,9,10]

Histologic finding :

Macroscopically most are firm, smooth surfaced tumors smaller than 10cm in diameter. Most affect small nerves and only 50% have direct relation with a nerve[6] Smaller tumors are rounded, elastic in consistency and milky white or semi tranlucent. Larger

Fig.3 Well defined moderately enhancing heterogeneous lesion in left buccal region anterior to Sternocleidomastoid muscle suggestive of schwannoma.

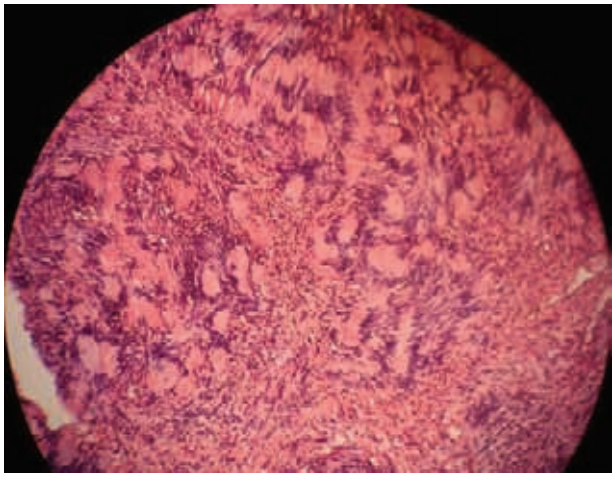
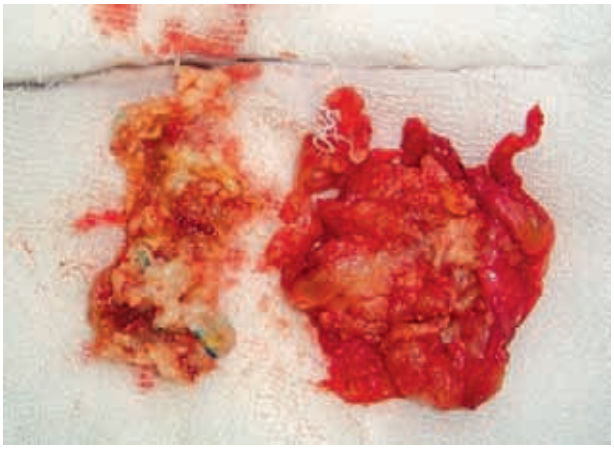


Fig 4 section of tumor stained with hematoxylin and eosin, showing Antoni A tissue with palisading nuclei and interposed hyaline areas.



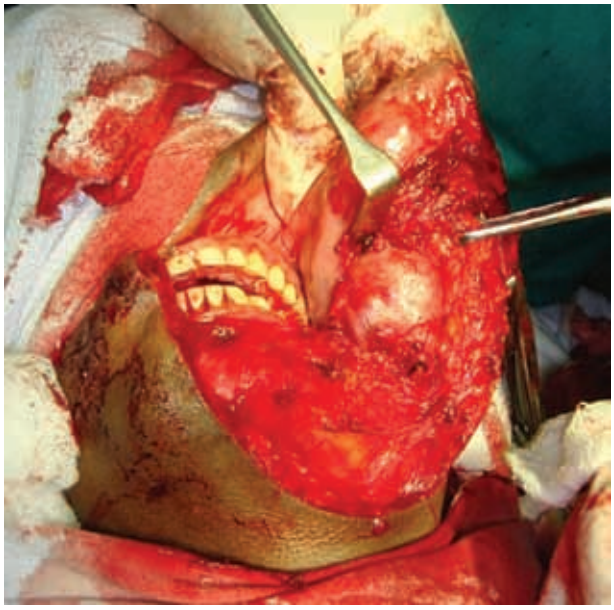


Fig 5 A) Lesion exposed through lower lip split incision with submandibular extension
B) Macroscopic veiw of lesion as well defined yellowish mass with brownish areas.

tumors are lobulated irregularly, become partly of cystic with calcification (ancient changes). Some are firm rubbery nodule with a whorled appearance of the cut surface, resembling smooth muscle tumors of the uterus.

Microscopically most tumors are unilocular masses surrounded by a fibrous capsule composed of epineurium and residual nerve fibers. Those arising in mucosa (nose, nasopharynx), CNS and viscera often lack a capsule. It shows alternating Antoni A and Antoni B areas.[1,3-11,13-15] Antoni A pattern composed of compact arrangement of elongated spindle cells with wavy nuclei and poorly defined borders in loosely arranged fascicles, having palisading arrangement of nuclei and stromal hyalinization. The type B pattern is characterized by a less orderly arrangement of fewer spindle tumor cells in a loose myxoid stroma. Verocay bodies are more distictive od schwannomas than the Antoni A and Antoni B patterns but they are not seen in all schwannomas.[7] S-100 protein is demonstrated in neurilemmoma particularly Antoni type A areas. Schwannomas have been variety observed to be glial

fibrillary acid protein (GFAP) and occasionally keratin positive, with antibodies reaching with multiple keratins (pan keratins, keratin cocktail(ck)(AE1/AE3).

Surgical care

Given the benign nature of neurilemmoma therapy is conservative and directed toward sparing the parent nerve when one is identified. The treatment of choice is gross total resection of the tumor. Although neurilemmoma are benign, incomplete excision may result in slow local recurrence. Patients with symptomatic neurilemmomas occuring in association with NF2 frequently present with more neurologic deficits. These patient have a high rate of recurrence and less postoperative improvement. Malignant transformation of neurilemmomas is exceedingly rare. Although primary malignant schwannoma are rare neoplasm of nerve sheath origin, especially in head and neck region. Role of post operative radiotherapy and chemotherapy is not clear, although some authors recommend its use to prevent local recurrence, for unresectable recurrent tumors in case of distant metastasis and primary malignant variety.[2,11]

Follow up – higher recurrence rates noted with intraspinal, sacral, intracranial and plexiform variants of neurilemmomas. Complete removal of the tumors with maximum preservation of parent nerves can prevent local recurrence.

Prognosis – 100% cure rate. Does not recur and does not undergo malignant transformation.[10]

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Foci of squmous odontogenic tumor within the tissue wall of odontogenic cyst

* Shivali Vaid, ** Manjunath Badni, * Parul Khare

Abstract

Squamous odontogenic tumors were considered as an apparent entity for number of years, but not named until 1975 by Pullon et al. Few cases of Squamous odontogenic tumor have been reported in the literature, due to paucity of documented case the relative frequency of Squamous odontogenic tumors among odontogenic tumors cannot be stated. The most important aspect is its mistaken histologic identification and varied histogensis because of which it is sometimes misdiagnosed as ameloblastoma or squamous cell carcinoma. Sometimes Squamous odontogenic tumor-like proliferations is seen in odontogenic cysts. A careful evaluation of the entire clinicopathologic picture is necessary to differentiate between Squamous odontogenic tumors and squamous odontogenic tumorlike proliferations in an odontogenic cyst. Although, one or two cases of Squamous odontogenic tumors in odontogenic cyst have been reported so far in the literature. This paper presents a case report where foci of squamous odontogenic tumor were found within the tissue wall of odontogenic cyst.

Key words- SOT-Squamous odontogenic tumors, Squamous Odontogenic tumor-like proliferation, Odontogenic cyst, rests of Malassez

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Introduction

Squamous odontogenic tumor is a rare, benign epithelial odontogenic neoplasm first described by Pullon et al in 1975[1,2]. It is thought to arise from a neoplastic change of epithelial rest of Malassez[2,3,4]. Squamous odontogenic tumors generally occur in adults, but have a wide age range with cases reported from childhood to the eighth decade.[5] Men and women are affected with approximately equal frequency.[11] Patients with multiple Squamous odontogenic tumors, involving multiple jaw quadrants, have been reported. The Squamous odontogenic tumors have tendency to arise in the premolar-canine region of the maxilla and the molar region of the mandible, but can occur throughout the jaws.[1,6,7] Radiographically, the most characteristic picture is that of a well-circumscribed semicircular radiolucency bounded by a sclerotic border and emanating from the area of the alveolus adjacent to the roots of teeth.[8]

The typical microscopic appearance justifies the name "squamous odontogenic tumor": a stroma of mature connective tissue with islands of odontogenic epithelium. These islands have a purely squamous pattern, and the peripheral cells do not show the typical pre-ameloblast polarization seen in ameloblastomas. Cystic degeneration in the center of the islands is a frequent finding. Pre-keratin is found in some epithelial cells, and laminated calcifications may be seen inside keratin pearls.[9,10,11]

The most important aspect of SOT is its mistaken histological identification as an acanthomatous ameloblastoma or as well-differentiated squamous cell carcinoma or squamous odontogenic tumorlike proliferations in an odontogenic cyst. The histologic features are sufficiently characteristic to

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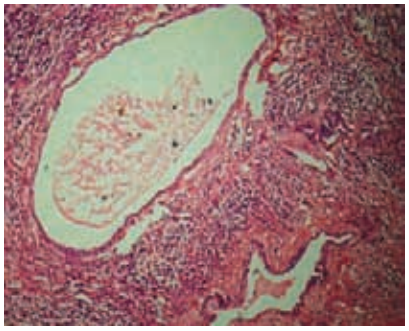

Fig. 1 Cystic lumen lined by 3-4 cells thick non-keratinized stratified squamous epithelium

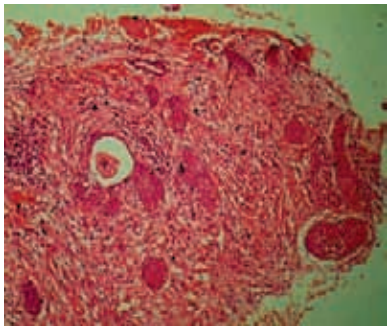

Fig. 2 Bland squamous epithelial islands in connective tissue capsule at places showing cystic degeneration

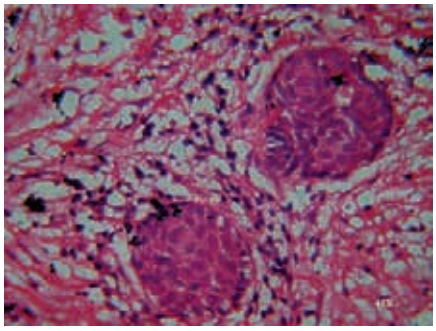

Fig. 3 Epithelial islands

differentiate it from ameloblastoma and epidermoid carcinoma; however, evaluation of the entire clinicopathologic picture is necessary to exclude the diagnosis of squamous odontogenic tumorlike proliferations in an odontogenic cysts.[12]

Case report

A female of 45 year of age reported to the department of oral medicine diagnosis and radiology with chief complain of swelling in the chin region since last 4-5 months. The swelling was tender, with apparent normal mouth opening. Intra-orally swelling was present in buccal and lingual vestibular region with respect to 31,32,33,41,42,43 with obliteration of buccal vestibule. Overlying mucosa appeared to be normal. On palpation swelling was firm and tender with Grade I mobility in lower anterior teeth. Her oral hygiene was poor. Radiograph reveals multilocular radiolucency, anterior to symphysis region & on the right mandibular body region. A biopsy was performed.

Microscopic examination showed small cystic lumen with 3-4 cell thick non-keratinized epithelial lining along with dense fibrocellular connective tissue capsule (fig.1). Connective tissue capsule showed scattered proliferative epithelial islands (fig. 2). The epithelial islands showed flat to low cuboidal peripheral cells without a peripheral palisading (fig. 3). These cells were uniform and did not exhibit pleomorphism, nuclear hyperchromatism or mitotic activity. Few epithelial islands showed uni-cystic or multi-cystic degeneration of centrally placed cells (fig. 2&3). No keratinization or epithelial pearls were seen. On the basis of histopathological evolution the final diagnosis of Squamous Odontogenic Tumor within the connective tissue wall of odontogenic cyst was given.

Discussion

Squamous odontogenic tumor is a rare lesion with 44 cases reported in the literature till date.[1] Before 1975 this lesion was considered as atypical acanthomatous ameloblastoma or even as squamous cell carcinoma. In 1975 pullon and his co-workers published a series of six cases.[2,3] SOT has been defined as a benign but locally infiltrative neoplasm. The clinical and radiographic features of SOT are neither unique nor sufficient for diagnosis, as this tumor may be confused with a number of other pathologies. Squamous odontogenic tumors have been found in patients whose ages ranged from 8 to 74 years (average age 38). They are randomly distributed throughout the alveolar process of the maxillae and mandible with equal frequency. Maxillary lesions seem to grow more aggressively than do mandibular ones.[15] Patients may present with an increase in the volume of the maxilla or mandible, tooth mobility, ulceration of the oral soft tissue, painful symptoms, and tooth displacement.[9,13,14] Histogenesis of squamous odontogenic tumor may be varied. Rests of Malassez are the epithelial proliferation for lesion that are associated with alveolar process adjacent to lateral root surface or the teeth, and dental lamina may be the source of the lesions that developed in association with the crown of unerupted or impacted tooth. Surface stratified squamous epithelium and rests of Serres have been the sources of extraosseous variants.[15]

Microscopically, the SOT consists of cytologically bland squamous epithelium embedded in a moderately cellular fibro-collagenous stroma. The epithelium is arranged in rounded or irregular islands that can vary significantly in size and shape. Thin epithelial cords may anastomose between tumor islands. The squamous islands are smoothly contoured and well demarcated from the stroma. A limited

degree of central cystic degeneration is common and there may be scattered calcifications. Significantly, ameloblastic differentiation in the form of peripheral columnar cells with nuclear palisading is noticeably absent in SOTs.[16] Squamous odontogenic tumor-like proliferations are sometimes seen in odontogenic cysts. Squamous odontogenic tumor-like islands are comparatively smaller in size and inactive as compared to SOT. Although they may appear histologically nearly identical with those of the squamous odontogenic tumor, but they do not appear to cause any alteration in the usual biologic behavior of the cyst and do not appear to develop into the tumor.[9] As stated by Shefer et al the foci of squamous odontogenic tumor within the connective tissue wall of odontogenic cyst do not seem to alter the prognosis of the primary cystic process.[17]

Our case is unique because firstly patient presented with swelling in the anterior region of the mandible, a very rare site as mostly it occurs in maxillary canine-first premolar area mandibular posterior region. Secondly, histopathologic feature showed cystic lumen with 3-4 cell thick lining epithelium, surrounded by fibrocellular connective tissue capsule. The connective tissue capsule showed proliferative epithelial islands of considerable size. The islands consist of bland squamous epithelium, the peripheral cells didn't show polarization and at places microcystic vacuolization was seen, thus confirming the diagnosis of SOT. It is the first case reported in Indian literature and only few cases have been reported in international literature.

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Pregnancy tumor

* Manjeet Singh, ** D.K. Gautam, *** Ajay Mahajan, **** Suneet Karol

Abstract

Oral pyogenic granuloma is a hyperplastic inflammatory lesion commonly associated with local irritation or trauma. Females are more commonly affected than males probably due to the vascular effects of hormones that occur during puberty, pregnancy and menopause. In pregnancy, the lesion is known as "pregnancy tumor" and tends to occur more frequently during the second and third trimester. Histopathological examination is required for diagnosis of lesion, since it is clinically indistinguishable from other reactive lesions. The aim of this article is to present a case of pyogenic granuloma in a 27 year old pregnant female patient and its management.

Key words: Pyogenic granuloma, pregnancy tumor, preventive measures.

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Introduction:

Pyogenic granuloma is primarily an overgrowth of gingival tissue which occurs due to irritation, physical trauma or hormonal factors. It often involves skin and nasal septum, and may be seen far from the head region such as in the thigh. Pyogenic granuloma was first described in 1897 by two French surgeons, Poncet and Dor, who named this lesion *botryomycosis hominis*. The term "pyogenic granuloma" was proposed by Hartzell in 1904. The term pyogenic granuloma is misnomer because it is not a true granuloma. In reality, it is a capillary hemangioma of lobular subtype which is why it is quite prone to bleeding. The lesion is also not truly "pyogenic," as the origin is traumatic and not infectious.[1-3] Generally there are two types of pyogenic granuloma namely lobular capillary hemangioma (LCH type) and non-lobular capillary hemangioma (non-LCH type), differentiated on the basis of their histological features.[2]

In oral cavity, repeated gingival inflammation secondary to plaque, calculus and foreign body is sufficient to initiate development of lesion. Females are more prone probably due to the vascular effects of hormones that occur during puberty, pregnancy and menopause. In pregnancy, the lesion is known as "pregnancy tumor" which tends to occur more frequently during the second and third trimester**.** Pitcarin in1818 was first to describe gingival hyperplasia in pregnancy. Pregnancy tumor was first recorded by Pinard and Pinard in 1877. Clinically, pyogenic granuloma is characterized as a smooth or lobulated exophytic lesion with color ranging from red/pink to purple. Generally, the lesion is asymptomatic and tends to bleed after minor trauma. Radiographically, there is generally no evidence of bone involvement but in some cases slight superficial bone erosion may be seen. [3,4,5]

Case Report:

A 27 year old, 4 months pregnant female patient reported to the outpatient Department of Periodontology, H.P Government Dental College and Hospital, Shimla, (H.P), complaining of bleeding from gums and swelling of gums in the upper right back region of mouth since 2 months. The swelling started as a small nodule, gradually increasing in size, began to interfere during chewing since 15 days, bleeds on slight provocation but there was no pain. On clinical examination, there was a gingival growth that appeared pinkish to reddish in color, non-tender on palpation, soft and edematous in consistency, pedunculated and measured 2×2 cm in size. The lesion bled readily on slight exploration. It involved the marginal and interdental gingiva on facial surface of maxillary first and second premolar. In addition to this, generalized gingival inflammation was present, but there was no attachment loss. Local irritating factors including plaque and calculus were present. (Fig.1.)

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Investigations:

A) Routine blood investigations: Table.1.

B) Radiographs- IOPA

Radiographic examination did not show any alveolar bone destruction. (Fig.2)

Treatment plan included oral hygeine instructions, and ultra sonic scaling and polishing at the first visit. The patient was recalled for reevaluation after 2 weeks. At that time the gingival inflammation had subsided markedly and there was slight shrinkage in the gingival over growth. (Fig 3a.) Oral hygiene instructions were reemphasized. Routine blood investigations were within normal limits. (Table.1.) Excisional biopsy of the lesion and gingivoplasty was performed under local anesthesia (Lignocaine hydrochloride 2% with Adrenaline1:100000). (Fig.3b.) Thorough scaling and root planning were performed in the operated area and non-eugenol dressing was given for 2 weeks (changed at 1 week interval). (Fig 4.) Patient was motivated to maintain oral hygiene and asked to rinse with 0.2% chlorehexidiene gluconate mouth wash twice daily for 2 weeks. Tablet Paracetamol 500mg was prescribed as and when required. Patient was kept under observation through recall checkups.

Histopathological analysis:

The histopathological examination showed polypoidal soft tissue mass lined by keratinized stratified squamous epithelium revealing focal ulceration covered by fibropurulent exudates. At the edges of the ulceration there was hyperkeratosis and acanthosis. Subepithelial tissue showed proliferation of capillaries separated by stroma showing focal edema and intense chronic inflammatory cell infiltration. The microscopic examination conformed the diagnosis of pyogenic granuloma. (Fig. 5.)

Discussion:

Oral Pyogenic granuloma/pregnancy tumor is not a true neoplasm, but an inflammatory response to bacterial plaque which is modified by the patient's condition (Maier AW, Orban B.1949)[6,8] According to Cross, it could be a result of combination of factors such as vitamin C deficiency, hormonal alterations and local trauma. According to Blum, it is due to endocrine disturbance with local factors[5,8]. In 1986 Vilman showed that the tumor occurs due to microtrauma from tooth brushing and local irritants such as plaque and calculus.[6] Gingival changes in pregnancy were described as early as 1818, even before any knowledge about hormonal changes in pregnancy was available. Pinard and Pinard, in 1877 were the first to notice gingivitis in pregnancy. The term pregnancy tumor was coined by Blum in 1912. In 1946 Ziskin and Ness[5] compiled a clinical classification of pregnancy gingivitis as follows:

- Class I – Characterized by bleeding gingiva with more or less, no other manifestations.
- Class II – Characterized by changes in the interdental papilla-edema and swelling with subsequent blunting of interdental papilla.
- Class III – Characterized by involvement of the free gum margin, which takes on the color and general appearance of a raspberry.
- Class IV – Generalized hypertrophic gingivitis of pregnancy.
- Class V – The pregnancy tumor.

Gingivitis in pregnancy is caused by bacterial plaque possibly aggrevated by bacterial–hormonal interactions that may change the composition of plaque, thereby leading to gingival inflammation. Kornman and Loesche in 1980 reported that the sub gingival flora becomes more anaerobic as the pregnancy progresses. Prevotella Intermedia is the predominant microorganism isolated. This increase appears to be associated with elevations in systemic levels of estradiol and progesterone, which can substitute for Menadion (vitamin k) an essential growth factor for Prevotella Intermedia. The increased level of estradiol and progesterone further coincide with increased gingival bleeding. Increased levels of progesterone, produce dilation and tortuosity of gingival microvasculature, circulatory stasis and increased susceptibility to mechanical irritation that favor leakage of fluid into perivascular tissues and results in increase in pocket depth which is associated with transient tooth mobility. Destruction of gingival mast cells by the increased sex hormones and the resultant release of histamine and proteolytic enzymes may also contribute to the exaggerated inflammatory response to local factors. O'Neil TCA 1979, suggested that during pregnancy, a depression of the maternal T- lymphocyte response may be a factor in the altered tissue response to microbial plaque.[6,8]

Oral pyogenic granuloma / pregnancy tumor usually appears after 3rd month of pregnancy but may occur earlier. The reported incidence according to Maier A W, Orban B in 1949 was 0.2%-9.6%. The incidence of occurrence is more common in maxilla than mandible and anterior region than posterior; this is in accordance with the present case report. Clinically lesion appears as a discrete, mushroom like, flattened spherical mass that protrudes from the gingival margin or more often from the interproximal space and is attached by a sessile or pedunculated base. It is purplish or dark red in color, with a bright red border. It is usually semifirm and is a superficial lesion and usually does not invade the underlying bone.[6,8]

Fig.1 Clinical view of gingival growth.

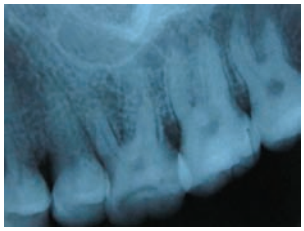

Fig.2. Radiographic view of 14&15 region.

Fig.4 Postoperative view after 2 weeks.

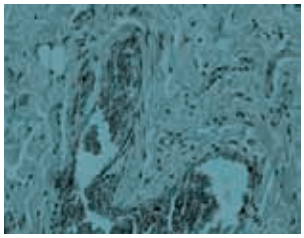

Fig.5 Photomicrograph of pyogenic granuloma.

3a. 3b.

Fig. 2 Clinical view after scaling (3a.) and excised Tissue (3b.)

Table.1.

Hemoglobin-11.8 gm.	WBCs- 8400/mm^3
DLC:	Neutrophils- 54%
Lymphocytes- 45%	Monocytes- 01%
Basophils- 00%	Eosinophils- 00%
CT- 7 min.40 sec.	BT- 4 min. 16 sec.
RBS- 85mg/dl	

Histologically oral pyogenic granuloma / pregnancy tumor exhibits ulceration of the surface epithelium and characterized by a fibro endothelial proliferation of the stroma amidst acute and chronic inflammatory cells (Anneroth 1983).[5] Similar clinical and histological findings were observed in our patient. Surgical excision is the preferred treatment of choice, with removal of local irritants to prevent recurrence. For pregnancy tumor, a conservative approach is recommended. But in the present case the lesion was extremely large (2×2 cm), was interfering with occlusion and causing esthetic disfigurement, therefore it was excised. In absence of significant esthetic or functional problems the lesion need not be excised because it may resolve after parturition, hence only local irritants should be removed. Those lesions failing to resolve should be surgically excised. Follow up of the patient is needed because pyogenic granuloma exhibits a tendency to recur.

How to Prevent Pregnancy Gingivitis and Pregnancy Tumors[7]

- Eat balanced diet.
- Brush twice daily for at least 5 minutes with tooth paste.
- Use a soft bristled brush because it will prevent the irritation to gums.
- Use floss once a day.
- Avoid eating junk food between the meals.
- If a pregnant women has morning sickness, rinse mouth with plain water to get rid of the acids in mouth caused by vomiting.
- Visit dentist regularly.

Conclusion:

It is very important for every pregnant woman to maintain fastidious oral hygiene. Pregnancy itself cannot cause gingivitis; gingivitis in pregnancy is caused by bacterial plaque, hormonal alteration and local trauma. Hence if the patient maintain oral hygiene properly and visit her dentist regularly during the gestational period, it is possible to avoid the oral pyogenic granuloma/ pregnancy tumor during pregnancy.

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A study to evaluate the microbiological flora in orofacial Abscesses

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Abstract

Introduction: The frequent study of microflora causing orofacial abscess is necessary to monitor the changes of such flora. Unrecognised pathogens can lead to therapeutic failures. It was considered to be of interest to investigate the different pathogens which are causative factors for the various orofacial abscesses.

Objectives: To obtain information regarding the type of aerobic and anearobic microoragnisms causing orofacial abscesses.

Materials and methods: The pus samples were collected from 18 male patients aged between 23 to 60 years by aspiration. The samples were analysed for aereobic and anaerobic microbial species

Results : A total of 24 microbes were isolated. Obligate aerobic organisms were identified in 23%, obligate anerobes 33%, mixed anaerobes and aerobes in 17%, mixed aerobes in 11% and mixed anaerobes in 17% of the specimens.

Conclusion: In the present study, a complex mixture of aerobic and anerobic bacteria causing orofacial abscess was identified.

Key words: Orofacial abscess, aerobic, anaerobic.

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Introduction

Humans are subject to various infections; some are mild, others severe. Although infections often are self-limiting, many require the attention of the clinician, who must first make a diagnosis and then prescribe treatment.

Knowledge regarding the pathogenesis of infections in the oral and facial region continues to increase. Diagnosis of infections from this region may be complicated by the presence of the flora present. However, the accurate diagnosis of infections from these sites is crucial for the administration of appropriate therapy.

Although oral health in India is improving, patients with orofacial abscesses still present relatively frequently in our hospitals.

The various aerobic bacteria that so commonly coexist with anaerobic and facultative bacteria in orofacial infections in Indian population is not seen in literature in a periodical manner.

Knowledge of the potential spectrum of pathogens causing orofacial abscess is important for rational chemotherapy. The microbiology of orofacial infections have been studied and periodically reported in medical literature. The frequent study of microbial flora of abscess is necessary to monitor the changes in microbiological flora causing orofacial abscesses. Unrecognised pathogens causing such infections can lead to therapeutic failures. There are several reports of fatalities secondary to the loss of the airway from uncontrolled spread of orofacial infections. It was considered to be of interest to investigate the different pathogens which are causative factors for the various orofacial abscesses.

Aim :

The aim of the study is to evaluate the microbiological flora in orofacial abscesses

Objectives:

1. To obtain information regarding the type of microoragnisms causing orofacial abscesses.
2. To determine the anaerobic and aerobic bacterial species causing orofacial abscesses.

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Table I

Distribution of bacteria according to aerobic or anaerobic type

Sl.no	Type of bacteria	No. of Specimens identified	Percentage
1	Obligate aerobes	4	22.2
2	Obligate anaerobes	6	33.3
3	Mixed anaerobes and aerobes	2	11.1
4	Mixed aerobes	3	16.7
5	Mixed anaerobes	3	16.7

Table II

Types of bacterial strains isolated

Microorganisms isolated from 18 cases			
Sl.no	Bacteria isolated	No. of times identified	Percentage
1	Streptococcus pyogenes	3	12.5
2	Bacteroides species	2	8.3
3	Anaerobic streptococci	6	25
4	Pseudomonas aerugenosa	3	12.5
5	Klebsiella	3	12.5
6	Staphylococcus aureus	5	21
7	Enterococci	2	8.3

Materials and methods

The pus samples were collected from 18 male patients who presented with orofacial abscesses in Oral Medicine and Radiology Department, Yenepoya Dental College. The specimen of pus collected by aspirating abscess using sterile 18 or 22 gauge needles and 5 ml syringe intraorally or extraorally maintaining the abscess. Before performing the aspiration, the skin around the abscess area was cleaned with 5% Povidone iodine solution and the area was wiped with sterile swabs. After aspirating, a drop of the specimen was inoculated in to Robertsons cooked meat broth. The remaining specimen in the syringe along with the Robertsons cooked meat broth were transported to the Research Laboratory of Yenepoya University for bacterial and microbiological analysis..

Analysis with culture medium

The specimens were inoculated in to blood agar, heated blood agar (chocolate agar) and MacConkeys agar culture medium and incubated aerobically for at 37^0 C for 18 to 24 hours. The colonies developed were observed and smears were made. Those culture media where no growth observed where further incubated at 37^0 for the development of bacteria with slow growth rates if any and identified. The smears are stained by Grams method for identifying the morphology of the isolated bacteria.

For anaerobic culturing aspirated material were inoculated to blood agar and heated blood agar and streaked. The specimen were also inoculated into Robertson Cooked Meat Broth. A filter paper disc containing metronidazole was incorporated on the blood agar after streaking for anaerobic culture. These plates along with Robertson Cooked Meat Broth were kept inside McIntosh field jar with anaerobic Hi gas pack (Hi-media) and incubated at 37^0 C for 48 hours. After 48 hours, the development of colonies on blood agar and heated blood agar were observed. The morphological identification of the colonies were done by Grams method after the smears were made.

The specimen in the Robertson Cooked Meat broth were subcultured into two blood agar plates. One of them is incubated at 37^0 C aerobically and the other one aerobically. The colonies were then identified morphologically with the help of Grams staining pattern.

Results

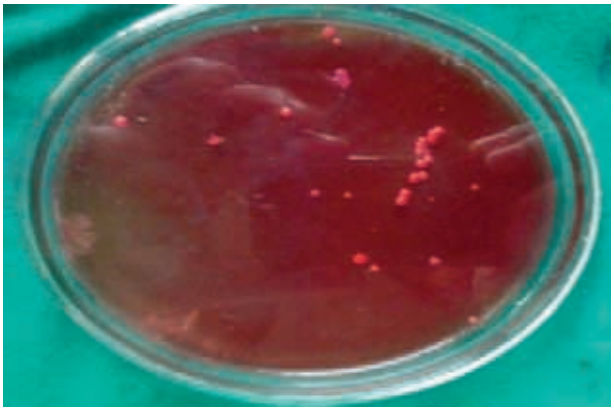
Total of 18 pus samples were studied. Out of them 12 were intraoral abscesses and 6 were extraoral. 12 were of odontogenic origin, 3 were postoperative infections and 3 were parotid abscess.

A total of 24 microbes were isolated. The strains of microbes isolated were Streptococcus pyogenes 3(12.5%), Bacteriodes species 2(8.3%) (Prevotella melanogenicus 2, unidentified bacteria 2), anaerobic streptocooci 6 (25%), Pseudomonas aerogenosa 3(12.5%), Klebsiella 3(12.5%), Staphylococcus aureus 5(21%), enterococcus 2(8.3%).

Obligate aerobic organisms were identified in 4(22.2%), obligate anerobes 6 (33.3%), mixed anaerobes and aerobes in 3 (16.7%), mixed aerobes in 2(11.1%) and mixed anaerobes in 3 (16.7%) of the specimens.

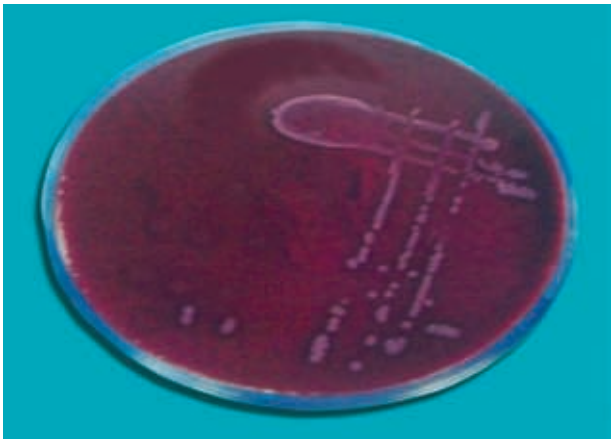
Discussion:

Although, there have been dramatic reduction in rates of mortality and morbidity associated with infectious diseases in the past few decades, microorganisms have proved to be adaptable and have displayed alarming ability to re-emerge in



Enterococci on blood agar plate

Anaerobic jar



S. Aureus on heated blood agar plate

continuing cycles of disease in some what different forms. In the Journal *Science*, Harold Neu suggested that "bacteria are more clever than men". They have adapted to every environment niche on the planet and are assimilating to surroundings saturated with antibiotics. This ability has been demonstrated over the past decade in an array of infections not previously recognized in humans. The re-emergence of diseases in different forms caused by common microorganisms, such as Staphylococci further substantiates this observation[8].

The re-emergence of infections in new patterns is caused partly by acquisition of antibiotic resistant mechanisms, either through mutation or by transfer of genetic information from other bacteria; thus there has been a rise in the antibiotic resistance of pathogenic bacteria[5].

Until the mid 1970s, researchers believed that orofacial infections were caused by a single species of aerobic or facultative bacteria. Subsequently, it has been well established that orofacial infections are polymicrobial. Researchers have observed that the bacteria identified from such infections have changed over the decades[8.] Moenning et al[9] has reported that the bacterial flora of orofacial infections is no longer predominantly facultative or microaerophilic but is more often a mixed flora with anaerobes outnumbering aerobes.

Most odontogenic infections arise as a sequel to pulp necrosis caused by caries or trauma. Periodontal infections, pericoronitis, trauma and surgery are other sources responsible for orofacial infections. Most of the odontogenic infections resolve with little consequences although, occasionally complications may lead to more severe infection of the head and neck.[7]

Due to the difficulty of isolation, anaerobic bacteria were not taken into consideration in the past. Anaerobic bacteria in dentogenous abscesses were first isolated by Head and Roos in 1919. In the past, results of bacteriologic tests showed a large number of sterile cultures.

The findings of this study were similar to those of results by Aderhold et al[4] in which the pure aerobic specimens were 28% and pure anaerobic specimens were 40%. However, in that study, no Staphyococci were isolated. Staphylococci derived from orofacial abscess were commensals on the skin or were introduced by collection technique used. This might be the reason for finding 21% of the microorganisms isolated in the present study as Staphylococci because 3 of the samples were obtained from parotid abscess cases which are likely to contain Staphylococcus.[4]

The percentage of anaerobes i isolated during orofacial infections was more in the study by Moenning et al[9].

However, in the study by Sabinston et al[2] obligate anaerobes constituted 65.9% of the total species isolated which was very high when compared to the present study.

In terms of presence of aerobic bacteria, the present study had fewer aerobic bacterial isolates when compared with that of study by Kannangara et al, in which 68% of the specimens had aerobic bacterial isolates.

The isolation of obligate gram-negative anaerobic rods such as Bacteroides and Pseudomonas was consistent with those that in the review done by Gill Y and Scully C (1990)[7].

Conclusion

The findings of the present study, a complex mixture of aerobic and anaerobic bacteria causing orofacial infections was identified. Obligate anaerobes were found to be the highest bacterial type isolated from specimens. The microorganisms isolated showed a variety of bacteria ranging from anaerobic streptococci, gram-negative bacilli, Staphalycoccus aureus, Streptococcus pyogenes and Enterococci.

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Neurilemmoma of tongue

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Abstract

Neurilemmoma or schwannoma is a benign tumour arising from and consisting solely of Schwann cells. Approximately 25-45% of all schwannomas occur in the head and neck region of which 1-12% occur intraorally and tongue is the most common site.[1] Majority of cases are treated with transoral excision and recurrence after surgical removal is rare. Here a case report of neurilemmoma of the right lateral border of tongue extending from middle of tongue to posterior 1/3rd ,of size 6cmsx3cmsx2.5cms is described. The patient also had a history of frequent ulceration over the swelling caused mainly during chewing. The non tender mass showed areas of healed ulceration and hence mimicked a malignant lesion. Incisional biopsy was planned after routine blood and urine investigations. Since the mass was well encapsulated, dissection was relatively easy and excision biopsy was carried out. HPR was that of neurilemmoma.

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Introduction

Neurilemmoma (schwannoma) is a slow growing benign tumour derived from Schwann cells usually of long duration at time of presentation. They may arise at any age but are common between 30-50 years. There is no sex prediction. Even though the tumour originates from nerve tissue, they are painless unless they cause pressure on adjacent nerves. The presenting symptom is usually the presence of tumour mass.

Neurilemmomas are commonly seen in head and neck region and occur in tongue, palate, floor of mouth buccal mucosa, gingiva, lips, vestibule, retropharyngeal, nasopharyngeal and retrotonsillar areas. Neurilemmoma within the mandible arises from mandibular nerve whereas soft tissue lesions present as circumscribed lesions of varying size with no associated paresthesia while central lesions of bone are destructive with expansion of cortical plates and associated with pain and paresthesia[2].

Case Report

A 52 year old male patient reported with a swelling of the right side of tongue of 6 months duration with recurrent episodes of ulcerations caused while chewing. On examination the swelling was firm, non tender, extending from right lateral border of mid portion of tongue to posterior 1/3rd of tongue of size 6cmsx3cmsx2.5cms. Healed ulcerated area was noted at the point of maximum elevation of the swelling. There was no associated paresthesia, alteration of taste sensation or dysphagia. Incisional biopsy under local anesthesia was planned. The mass was found to be well encapsulated and was easily separated from adjacent tissues by fluent dissection. Hence excision of the lesion was carried out in toto. After achieving hemostasis, the wound was closed with 3-0 silk interrupted sutures. The post operative period was uneventful with normal healing. There was no associated paresthesia or altered taste sensation.

The histopathology report showed encapsulated densely collagenous hyalinized connective tissue stroma with spindle shaped cells arranged in streaming pattern with palisading of cells and interspersed eosnophilic Verocay bodies. Less organized cells also were seen with some areas showing streaming pattern. Vascularity was moderate and inflammatory component was minimal and hence suggestive of neurilemmoma. The patient is under regular follow up with no evidence of recurrence.

Discussion

Neurilemmoma is a benign tumour of nerve sheath which originates from Schwann cells of peripheral, autonomic and cranial

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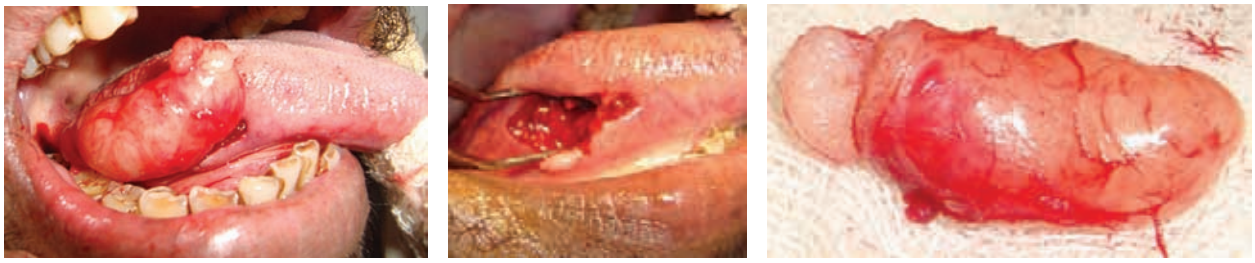

Fig. 1: Excision of the lesion

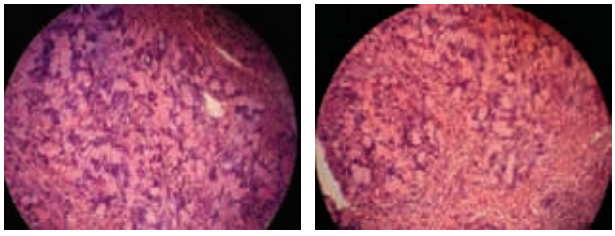

Fig. 2 Histopathology of neurilemmoma

nerves. Etiology is unknown but approximately 25-45% occur in the head and neck region, parapharyngeal space being the common site. Less commonly schwannomas are present in oral cavity and tongue being most frequently involved. They usually present as painless solitary lesion. When multiple, they are associated with neurofibromatosis type I. Histologically all of these are encapsulated. Beneath the capsule 2 main patterns are seen intermingled but sharply defined from each other. The first pattern referred to as Antony type A which consists of closely packed Schwann cells that form bundles arranged in rows, with palisading elongated nuclei. Free bands of amorphous substance between rows of nuclei constitute Verocay bodies. The second pattern is known as Antoni type B and is composed of very loosely arranged Schwann cells, set a meshwork of reticulum fibres and microcysts.[3] The term 'ancient' schwannoma introduced by Ackerman and Taylor refers to neurilemmomas with extensive degeneration.[4] This is attributed to changes caused by aging of schwannoma and includes nuclear atypia, cyst formation, stromal edema, xanthomatous change and fibrosis. The mechanism is that increasing tumor size results in vascular insufficiency.

MRI is the imaging modality of choice for diagnosis of neurilemmomas. It allows accurate measurement of tumour size and exact localization in relation to other structures. The lesion appeared to be isointense to muscle on T1 weighted imaged and homogenously hyperintense on T2 weighted images.[5]

The choice of treatment is surgical excision via transoral route. The other approaches used are submandibular, suprahyoid pharyngotomy and transhyoid approaches. These are used for excision of base of tongue neurilemmomas which are difficult to approach by transoral route. The carbondoixide laser has been used recently for excision of base of tongue schwannomas[6]. Recurrence is rare following complete resection.

Malignant transformation of head and neck schwannomas have been reported, including one in tongue. The differential diagnosis of schawannomas include neurofibromas, granular cell tumours, irritation fibromas, leiomyomas, rhabdomyomas, hemangiomas, lipomas, benign salivary gland tumors etc.[7] Neurofibromas are not discreate, unencapsulated, integrates into surrounding tissues and have lobulated irregular surface. Chances of malignant transformation is more with this.

Conclusion

Schwannoma of tongue is a rare tumour of head and neck. Transoral resection is usually sufficient for total removal. Recurrence is rare and malignant transformation is unlikely.

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Histological evaluation of toluidine blue positive and negative sites in oral leukoplakia

* Parul Khare, ** Shaleen Chandra, *** Vineet Raj, **** Manjunath Badini, ***** Shivali Vaid

Abstract

Screening of suspicious oral lesions can help in the early detection of oral cancer and can help in reducing the morbidity associated with this condition. Incisional biopsy of the suspicious lesion remains a gold standard for diagnosis of oral premalignancy though the question of when to perform the biopsy and which site to choose remains debatable. Toluidine blue (TB) offers a potentially simple, inexpensive, and sensitive chair-side solution for screening of early oral SCC and high-grade dysplasias.

Aims & Objective : To assess the reliability of toluidine blue as clinical screening test, for detection of epithelial dysplasia & its role in identifying the appropriate site for incisional biopsy.

Study Design: Study Group consisted of 18 patients with leukoplakia. Biopsy specimens were taken, one from the most intensely stained area with TB (A) & second from surrounding unstained/ weakly stained area (B) of the lesion. The histological sections were assessed and graded for epithelial dysplasia by three observers, and the findings of the two biopsy sites analyzed statistically.

Result: It is seen that there was 100% agreement between the three observers for clinically toluidine blue positive site being dysplastic histologically. Inter observe variability group A = 1; $p<0.001$ and for group B = 0.42; $p=0.002$.

Key words: Toludine Blue, oral premalignant lesions, epithelial dysplasia.

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Introduction

How can dentists and doctors tell by sight which abnormalities to biopsy? There is a pressing need for the development of visual aids that will facilitate the detection of oral premalignant lesions (OPLs) with a high-risk of progression. Early detection of OPLs is central to the improvement of this prognosis. However, this detection relies heavily on the clinician's ability to differentiate such lesions from reactive and inflammatory conditions. Even when OPLs are identified, our ability to predict outcome is a challenge because the majority of OPLs will not progress. The presence of dysplasia, the current gold standard, is a good predictor of high-grade lesions but has only a limited capacity to predict outcome for lesions with minimal or no dysplasia, which constitute the majority of OPLs.[1]

Vital tissue staining has been identified as an adjunct to the early recognition of malignant lesions. Toluidine blue {TB} (tolonium chloride) is a member of thiazine group of metachromatic dyes, and is partially soluble both in water and in alcohol. TB staining may appear as a Dark Royal Blue or a Pale Royal Blue color.[2]

Purpose of the study was to assess the reliability of toluidine blue as clinical screening test, for detection of epithelial dysplasia & its role in identifying the appropriate site for incisional biopsy.

Materials and Method

The following prospective study was conducted in Saraswati Dental

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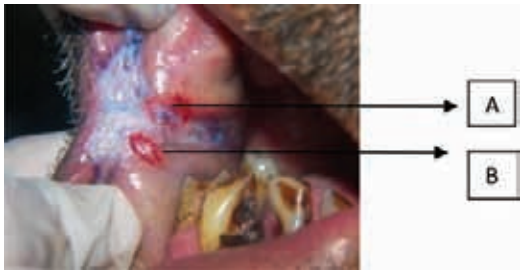


Fig. 1 Biopsy taken from the most intensely stained area (A) & second from unstained/ weakly stained area (B) within the boundary of the lesion

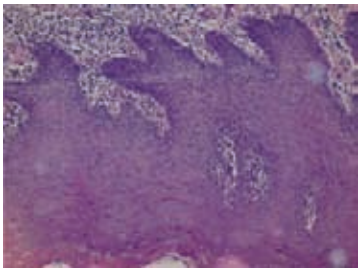


Fig. 2 H& E stained section showing dysplastic features.

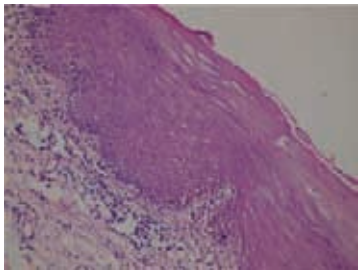


Fig. 3 H& E stained section showing non dysplastic features.

College & Hospital, Lucknow. The study group consisted of 18 patients with homogenous and non-homogenous leukoplakia. The exclusion criteria included patients with systemic disorders, patients not willing for biopsy, patients with lesions at sites where application of toloudine blue or biopsy was not possible, oral submucous fibrosis patients with severe fibrosis or trismus. Subjects were selected from both sexes and all age groups. Informed consent was taken from patients before application of the vital stain and biopsy.

Composition of Toluidine Blue stain

100 c.c of the 1% TB solution: this solution as described by Mashberg, consists of 1 gm of TB powder, 10 ml of 1% acetic acid, 4ml of absolute alcohol and 86ml of distilled water to make up 100 ml of a 1% solution of TB. The ph of the solution is adjusted to 4.5.[3]

Technique of staining:

Mucosal surfaces were stained preoperatively. Initially the patient is asked to rinse his mouth twice with water for 20 seconds to remove the debris. Next 1% acetic acid was applied for 20 seconds to remove any ropey saliva and remaining organic debris using cotton swab. 1% TB solution is then applied for 20 seconds with cotton Swab. Followed by application of 1% acetic acid again on mucosa attained by toluidine blue by cotton swab to remove nonspecific mechanically retained stain from the lesion. Finally patient was asked to rinse mouth with water and then toluidine blue staining was assessed. [3]

Biopsy specimens were taken, one from the most intensely stained area (Group A) & second from unstained/weakly stained area (Group B) within the boundary of the lesion. (Fig:1). All specimens were subjected to formalin fixation & hemotoxylin & eosin processing.

The histological sections was assessed and graded for epithelial dysplasia as dysplastic & non dysplastic (fig 2 & 3). The findings of the two biopsy sites were compared & analyzed statistically.

Another group consisting of 18 successive patients of leukoplakia, in whom incisional biopsy had been done without any adjunct for biopsy site, was taken from our records and graded histopathologically in a manner as above. The findings of this group were than compared with our study group.

Interpretation:

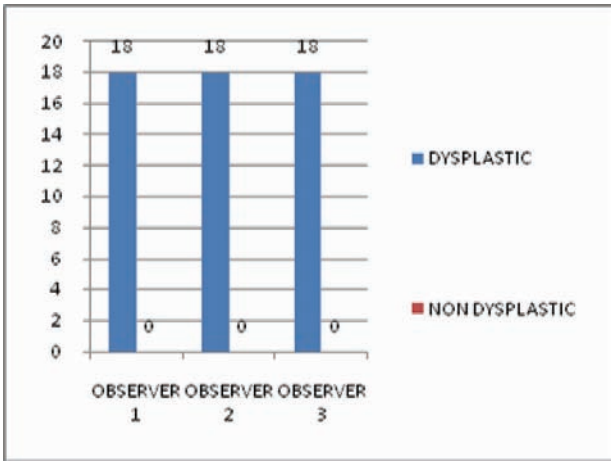
The clinical uptake of stain was always evaluated by the same examiner and the cases were divided into two groups dysplastic and non dysplastic. They were than observed by 3 observers and were scored on basis of architectural and cytological changes.

Architectural criteria included, irregular stratification, loss of polarity, basal cell hyperplasia, drop shaped rete ridges, dyskeratosis, keratin pearls and mitosis.[4] All except mitosis were scored as 0, 1, 2 and 3 on basis of -no dysplastic change, dysplastic changes at focal areas, Intermediate dysplastic changes and generalized dysplastic changes respectively. Mitosis were scored as 0, 1, 2 and 3 where 0-1 (mitosis per high power field), 1-2 (mitosis per high power field), 2-3 (mitosis per high power field) and above 3 (above 3 mitosis per high power field atypical mitosis).

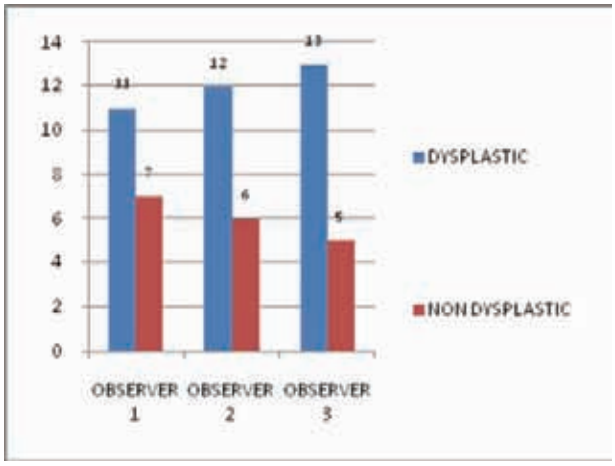
Cytological criteria included cellular and nuclear pleomorphism, increase nuclear cytoplasmic ratio, increased number and size of nucleoli and hyperchromatism. [4] They were scored as 0, 1, 2 and 3 same criteria as above.

Result

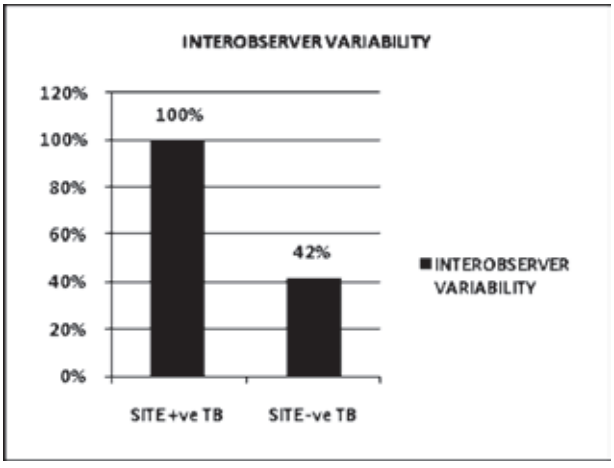
Most of the patients were in the age group of 30 - 60 years with a mean age of 45 years. In our study a male preponderance was seen and majority of our



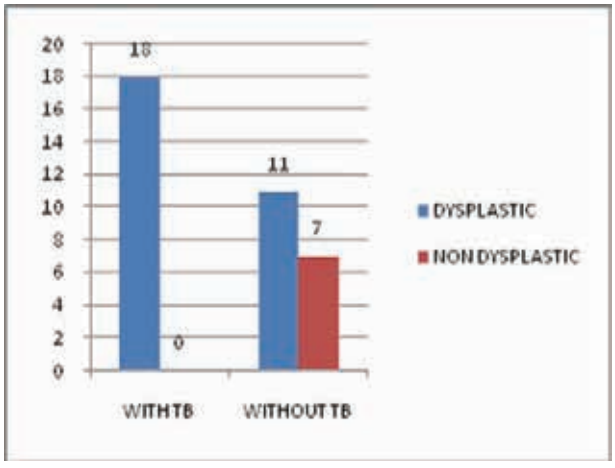
Graph 1 Graph showing all 18 cases of toluidine blue positive sites, were dysplastic giving 100% result.



Graph 2 Graph showing toluidine blue negative sites of the same lesions (Group B) histologically nondysplastic cases varied.



Graph 3 Graph 3 shows inter observe variability group A = 1; p<0.001 and for group B = 0.42; p=0.002.



Graph 4 Graph 4 shows increase sensitivity in detecting epithelial dysplasia using toluidine blue as adjunct.

patients gave history of smoking, quid/ tobacco chewing and alcohol consumption. Buccal mucosa was the most common site of lesion followed by vestibule and commissure of lip.

We found that all 18 cases of toluidine blue positive sites of homogenous and non leukoplakia clinically (Group A) were dysplastic when analyzed histologically by the three observers. Hence giving 100% result, as shown in graph1. Next we analyzed toluidine blue negative sites of the same lesions (Group B) histologically. We found that all the three observers gave variable diagnosis related to dysplasia. Observer 1 found 7 out of 18 cases to be nondysplastic whereas observer 2 and 3 found 6 and 5 cases nondysplastic respectively. Graph 3 shows inter observer variability. It is seen that there was 100% agreement between the three observers for clinically toluidine blue positive site being dysplastic histologically. Whereas only 42% agreement was there between observers regarding toluidine blue negative site clinically, as non dysplastic histologically. Inter observe variability group A = 1; p<0.001 and for group B = 0.42; p=0.002. Graph 4 shows increase sensitivity in detecting epithelial dysplasia using toluidine blue as adjunct. (df = 1, p =0.003). Toluidine blue stained 18 lesions when compared to our previous records (biopsy done without application of toluidine blue) we found that all 18 sites of the lesion positive clinically for toluidine blue were dysplastic histologically. Whereas when we analyzed our records we observed that out of 18 only 11 cases were diagnosed dysplastic and 7 as nondysplastic.

Discussion

Toluidine blue is an acidophilic dye that selectively

stains acidic tissue components (carboxylates, sulfates and phosphate radicals) such as DNA and RNA. Its use in vivo is based on the fact that dysplastic and anaplastic cells contain quantitatively more nucleic acids than normal tissues. In addition, malignant epithelium may contain intracellular canals that are wider than normal epithelium; this is a factor that would enhance penetration of the dye.[5]

As shown in our results of graph 2, even though the site of lesion did not take up stain or was weekly stained they were diagnosed non dysplastic histologically giving false results. This indicated that if on general assumption biopsy is done than there are chances that surgeon may take up biopsy form nondysplastic area of the lesion though the lesion may be dysplastic and may miss the correct dysplastic area hence giving wrong results. Our results also show high chances of interobserver variability for biopsy taken from toluidine blue positive area as seen in graph 3. We can conclude from graph 4 that 7 out of 18 cases from our record without toluidine blue stain would have been dysplastic, but biopsy site chosen may not be appropriate and hence may be giving false results.

As explained by Epstein et al. when a biopsy is performed, site selection is critical, as the histologic features may vary in non-uniform lesions. If only areas of less severe cellular change are sampled, the less severe cellular pattern observed may be interpreted as representative of the lesion as a whole (even if there are other areas of more severe cellular change), and appropriate treatment may not be given. Similarly, histologic interpretation is itself a subjective science and interpretation varies among pathologists; this variability can also lead to inappropriate diagnoses and treatment. However, widespread application of toluidine blue should be undertaken with caution, as there are no studies assessing its use in nonspecialty centers or assessing the practices of individuals with less experience in interpreting results. If this dye is felt to be appropriate as an adjunct to visual examination, especially for patients with suspicious lesions, referral to a centre or individual with extensive experience in head and neck cancer is recommended. Toluidine blue has also been reported as an aid in selecting biopsy sites and in delineating the margins of lesions.[6]

Draw backs in our study included confusion over inclusion of equivocal (pale) staining as positive or negative. Sample size was small. No cases of non dysplastic white lesion in study as it was prospective study done in 18 successive patients. Toluidine blue staining in inflammatory mucosal conditions have not been studied.

Conclusion

Toluidine blue is a good for screening test as it is simple, safe and acceptable to the patient. Detect disease early in its natural history. Preferentially detect those lesions which are likely to progress and is helpful technique for determining the site of incisional biopsy.

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Gingival depigmentation

* Subair K., ** Anil M.

Abstract

A smile expresses a feeling of joy, success and reveals self confidence and kindness. The harmony of the smile is determined not only by the shape, position and colour of the teeth also by the gingival tissues. Gingival health and appearance are essential components of an attractive smile. Pigmentation is a physiological process which brings about discoloration of gingiva and or /oral mucosa. The color of gingiva is determined by several factors including the number and size of blood vessels, epithelial thickness quantity of keratinization and pigment within the epithelium. Gingival pigmentation results from melanin granules which are produced by melanoblast. Although melanin hyper pigmentation in the gingiva is completely benign and doesn't produce a medical problem, complaints of "black gum" are common in patients having very high smile line. This case brings about the cosmetic correction of pigmented gingival tissue, commonly known as depigmentation to enhance esthetics.

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Introduction

Oral melanin pigmentation (physiologic/pathologic) is considered to be multifactorial and can be caused by genetic, local or systemic factors. Prolonged administration of certain antimalarial dugs, tricyclic antidepressant drugs have shown an increase in the melanin present in the tissues.[1] Melanin is a non hemoglobin derived brown pigment, is the most common endogenous pigment produced by melanocyte present in the basal layer of epithelium.[2,3] Gingiva is most commonly affected intra oral tissue[2,3], responsible for an unpleasant appearance. The pigmentation is seen in all races at any age.[2,4] and it is without gender predilection.[4] Melanin hyper pigmentation of gingiva doesn't present medical problem but patient may complain of "black gums " are common particularly in individual having a very high smile line.

Gingival depigmentation techniques

In recent years the need for the esthetic in dentistry has increased with growing demand for pleasing smile. This has made individual more aware of the gingival pigmentation that may be apparent during smiling.Depigmentation technique include nonsurgical and surgical procedure. Surgical technique includes use of diamond bur, scalpel[5,6] and electrocautery[7] and nonsurgical includes chemicals cryotherapy[8] and lasers[9,10] Out of which the first and still popular technique is surgical removal of the pigmented layer using scalpel. Depigmentation is usually made for aesthetic reason, particularly in patients having very high smile line.

Scrapping and electrocautery have been reported by many authors (Dummet and bolden 1963, Ginwalla *et al* 1966, Manchandia 1979, Tal *et al* 1987 and Atsawasuwan and coworkers 2000). Hirschfeld and Hirschfeld (1951) used phenol (90%) and alcohol (95%) to remove areas of oral pigmentation by destroying tissue down to and slightly below the basal layer of the mucous membranes. Repigmentation soon developed in three patients; the rest of the subjects met with the same results a short while later. Dummet and bolden (1963) operated pigmented gingiva by gingivectomy procedure in 9 cases. Repigmentation occurred in 67% of the areas, as early as 33 days after surgical removal. Tal *et al* (1987) described depigmentation of the gingiva by cryosurgery, using gas expansion cryosurgical system based on the Joule-Thomson effect. Trelles et *al* (1993) were the first to treat patients with pigmented gingiva by argon laser. Chin-jyh yeh (1998) described cryosurgical treatment of melanin-pigmented gingiva using direct application of liquid nitrogen (-196°c) with a cotton swab to the pigmented gingiva.

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Fig.1 Pre operative

Fig. 2 Crown lengthening

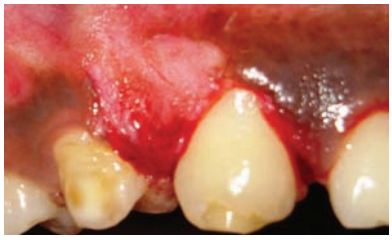

Fig. 3 Trial depigmentation

Fig. 4 Post operative

Fig. 5 Immediately after depigmentation

Fig. 6 After one week

Fig. 7 Three months post op

Case report

A 22 year old male patient reported in the outpatient department, Department of Periodontics, Mahe Institute of Dental Sciences and Hospital, complaining of fractured restoration and black gums. A thorough medical and dental history recorded, on examination the patient had fractured restoration in relation to 11, 21, generalized hypoplasia of teeth, high smile line revealing the deeply pigmented gingiva and generalized spacing in the upper and lower anterior teeth (fig 1). Pulp vitality test were negative in relation to 11,21 and radiograph showed periapical radiolucency in relation to 11,21. Treatment plan included root canal therapy in relation to 11,12crown lengthening depigmentation procedure and restoration.

After root canal therapy, crown lengthening by external bevel gingivectomy and trial depigmentation procedure was carried out in the area of 13, 14 and periodontal pack was placed (fig 2 and 3). Patient was recalled after two weeks (fig 4) and test depigmented site was examined and positive concern from the patient made us to decide to go ahead with depigmentation of whole sextant using surgical scalpel (considering smile). Depigmentation procedures were planned in upper right pre molar to opposite left premolar. Number 15 scalpel blade was used and procedure was carried out on the pigmented layer of gingiva including interdental papilla, (fig 5and 6) periodontal dressing was placed and oral hygiene instruction was given. Dressing was removed after one week, area irrigated with chlorhexidine. After 3 weeks patient was posted to Department of Conservative and Endodntics for restorative procedures. Patient is being followed up at regular intervals till date to evaluate the recurrence of pigmented layer.

Conclusion

Excessive gingival display and gingival hyper pigmentation are the major concern for a large number of patients. The literature shows various non surgical and surgical techniques out of which proved scalpel technique still widely used. Cryosurgery and lasers may offer less post operative pain, soft tissue grafts may ensure less chance for recurrence, these are added benefit when compared to conventional surgical technique using scalpel. So here an attempt is made for the conventional technique to achieve the ultimate goal of patient satisfaction and comfort.

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Obesity and Periodontal Disease

* Arunima P.R., ** Rajeev A., * Prabhakar C.S.

Abstract

Obesity is a multifaceted subject. It has increased at an alarming rate in recent years. A review of the literature on obesity and periodontal disease suggested that they both confound each other and obesity itself has been recognized as a major risk factor for periodontal disease. The adipose tissue actively secretes a variety of cytokines and hormones that are involved in inflammatory processes, pointing toward similar pathways involved in the pathophysiology of obesity, periodontitis and related inflammatory diseases. So the aim of this article is to get an overview of the biological plausible association between obesity and the periodontal disease.

Keywords: Obesity, Periodontal disease, Adipokines, Risk factor, Inflammation

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Introduction:

The Global obesity epidemic has been described by the world Health Organization as the most neglected public health problem that threatens to overwhelm both more and less developed countries. There is a concern for public health as excess bodyweight is now the sixth most important risk factor contributing to disease worldwide[1]. Obesity is a multisystem condition and a major contributor to the development hypertension, Diabetes mellitus, Atherosclerosis dyslipidemia and cerebrovascular disease[2]. Besides these risk factors, obesity has also been suggested to be a risk factor for periodontitis which is a disease of the supporting structure of teeth resulting mainly from the interaction between pathogenic bacteria and the host immune response[3]. Epidemiological studies reveal that more than two-third of the world population suffers from one of the chronic forms of periodontal disease. Recent recognition of the importance of periodontal disease and its impact on the perpetuation and management of systemic disease calls for a global effort to control periodontal disease. In fact, the adipose tissue secretes several cytokines and hormones that are involved in inflammatory processes, suggesting that similar pathways are involved in the pathophysiology of obesity and periodontitis[4].

Obesity- Definition and Assessment:

The definition of obesity is based on body mass index (BMI also called Quetelet Index), which is the ratio of bodyweight (in Kg) to body height (in M) squared[5]. BMI is highly correlated with fat mass and morbidity and mortality and therefore sufficiently reflects obesity- related disease risk in a wide range of populations, however, there are some limitations. For example, for the same BMI, older persons tend to have a higher body fat composition and therefore, risk assessment by BMI is less accurate in older people (over 65 years of age) [5].

Body fat distribution is assessed by the measurement of waist circumference, with 102 cm in men and 88 cm in women, respectively, being the cut-off point for abdominal obesity associated with an increased risk of morbidity. Waist circumference shows a close correlation with the amount of visceral adipose tissue[6], and visceral adipose tissue has been shown to be metabolically more active and to secrete far greater amount of cytokines and hormones compared with subcutaneous adipose tissue. Recent large studies have indicated that measurement of waist circumference or waist-hip ratio may be a better disease risk predictor than BMI, and there is still intensive research ongoing as to whether BMI, waist circumference or both should be used to assess disease risk[7]. Several other

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diagnostic tools are available to assess body fat composition, such as measurement of (subcutaneous) skin fold by means of caliper or ultrasound, bioelectrical impedance analysis (BIA), densitometry or imaging procedures (Computed tomography, Nuclear Magnetic Resonance); however, most of these procedures are not readily available in clinical practice and do not add substantial information for risk assessment in an individual, beyond BMI and waist circumference[5].

Prevalence of obesity and periodontitis:

Between 1960-80, the prevalence of overweight and obesity among adult and of overweight among children was relatively constant. About 13% of adults were obese and 5% of children were overweight[1]. However, according to the third National health and National examination survey (NHANES) between 1988-91, the prevalence of obesity among adult had doubled, and the prevalence of overweight among children and adolescents has tripled[2,3]. In the year 2004, approximately 34% of the US Population was overweight and about 32.2% obese[6] . According to the World Health Organization (WHO), 200 million adults worldwide were obese (defined as body mass index [BMI] >30 kg/m^2) in 1995, whereas in 2005 approximately 1.6 billion people were overweight (BMI 25-29.9 kg/ m^2) and at least 400 million obese. Projected estimates for 2015 indicate that 2.3 billion individuals will be overweight and more than 700 million obese. The prevalence of overweight in an Urban Population of India, as found in the national family health survey during 2005-2006 W&S 2.24% [6]. The prevalence of periodontal disease is 76% higher among young obese individuals aged 18-34 years than in normal weight an increased risk of periodontitis among those aged 17-21 years [8]

Evidences for association between obesity and periodontal disease

Association between obesity and periodontal disease

It has been suggested that obesity is second only to smoking as the strongest risk factor for inflammatory periodontal tissue destruction[9]. The first report on the relationship between obesity and periodontal disease appeared in 1977, when Perlstein et al. observed histopathologic changes in the periodontium in hereditary obese Zucker rats. Using ligature-induced periodontitis, they found alveolar bone resorption to be greater in obese animals compared with non-obese rats. Also, it seemed that under healthy oral conditions, obesity per se does not promote pathologic periodontal alterations; however, in response to bacterial plaque accumulation, periodontal inflammation and destruction were more severe in obese animals[10]. In 1998, Saito et al. analyzed 241 healthy Japanese individuals and showed, for the first time, an association between obesity and periodontal disease in humans. In addition, studies have indicated that the fat distribution pattern plays a crucial role in the association with periodontitis. Another recent study by Saito et al. concluded that obesity is associated with deep periodontal pockets, independent of glucose tolerance status[12]. Genco et al. analyzed National Health and Nutrition Examination Survey (NHANES III) data and demonstrated that BMI was positively correlated with the severity of periodontal attachment loss; they found that this relationship is modulated by insulin resistance[13].

Biological mechanism linking obesity and periodontal dis eases

The underlying biological mechanisms for the association of obesity with periodontitis well known; however, adipose-tissue–derived cytokines and hormones may play a key role. Fat tissue is not merely a passive triglyceride reservoir of the body, but also produces a vast amount of cytokines and hormones, collectively called adipokines or adipocytokines, which in turn may modulate periodontitis.

The adverse effect of obesity on the periodontium may be mediated through pro-inflammatory cytokines like interleukins (IL-1, IL-6 and TNF-á), adipokines (leptin, adiponectin, resistin and plasminogen activator inhibitors-1) and several other bioactive substances like reactive oxygen species (ROS), which may affect the periodontal tissues directly[14].

Role of adipose tissue-derived cytokines and hormones

Obesity is accompanied by an increased expression of adhesion receptors on adipocytes, followed by an enhanced infiltration of the adipose tissue with inflammatory cells, primarily macrophages. Adipose tissue macrophages, which may constitute up to 40% of all cells within the adipose tissue, are an important source of proinflammatory cytokines, such as tumor necrosis factor (TNF)α, interleukin (IL)1, IL6 or monocyte chemoattractant protein 1/CCchemokine ligand 2 (MCP1/CCL2); these not only contribute to the systemic proinflammatory condition frequently associated with obesity, but may also act locally and adversely affect adipocyte function, thereby promotes the development of insulin resistance, activate potent angiogenic growth factors, and an enhanced vascularization of the adipose tissue could further promote obesity and its metabolic complications by facilitating inflammatory cell recruitment[15].

Interleukin-6: Interleukin-6 is secreted by the human adipose tissue and is produced in greater amounts by deep abdominal fat than by subcutaneous fat. Elevated levels of interleukin-6 have been found to be associated with increased risk of cardiovascular events, lipolysis and weight gain[4].

TNF-α: Obesity-associated tumor necrosis factor-α (TNF-α) is primarily secreted from macrophages accumulated in the abdominal adipose tissue. Increased circulating TNF-α from the adipose tissue contributes to poor health outcomes by increasing insulin resistance, C-reactive peptide production and general systemic inflammation. TNF-α is a potent inhibitor of adiponectin, an important anti-inflammatory adipokine[4].

Adiponectin: Adiponectin is a circulating hormone secreted by the adipose tissue. It is involved in glucose and lipid metabolism and accounts for about 0.05% of the total serum proteins. Contrary to other adipose-derived hormones, adiponectin levels are reduced in persons with obesity, insulin resistance or Type 2 diabetes[15].

Leptin: Leptin is the best known substance secreted from the adipose tissue. It plays an important role in regulating energy intake and energy expenditure, including appetite and metabolism[15].

It is similar in some action to insulin. It has been reported that leptin is present within healthy and marginally inflamed gingiva and decreases in concentration as the adjacent probing depth increases. Thus, leptin may play an important role in the development of periodontitis.

Resistin: Resistin belongs to a family of resistin-like molecules (RELM) and has been reported to be secreted by adipocytes and to cause insulin resistance in animal models. Current evidence suggests that in humans, resistin is more closely related to inflammatory processes than to insulin resistance. Whether or not resistin plays a role in inflammatory periodontal disease remains to be defined[3].

Plasminogen activator inhibitors-1 (PAI-1): PAI-1 is an adipokine which generates agglutination of blood and raises the risk of ischemic vascular disease and gingival inflammation. PAI-1 may decrease blood flow in the periodontium of obese patients and promotes development of periodontitis.[16]

As more and more adipose-tissue–derived cytokines and hormones are being discovered, the complexity of the endocrine network of which these mediators are a part becomes more and more apparent. Recent additions to this list of adipokines include visfatin, which elicits insulin-like effects and serum-retinol–binding protein 4 (RBP4). Regarded initially as markers mainly related to weight regulation and insulin resistance, it has become clear that hormones like leptin, resistin or adiponectin are involved in a variety of functions and diseases, including cardiovascular disease, diabetes and inflammatory diseases[17]

Host immunity

Obesity increases hosts susceptibility by modulating the host immune and inflammatory system, leaving the patient with a greater risk of periodontitis. Obesity affects host immunity. It impairs the cell-mediated immune response and decreases lymphocyte immune function and natural killer T-cell activity as seen in the rat model[9].

Role of reactive oxygen species

It is also believed that there is a close association of obesity and periodontitis with chronic inflammation. Reactive oxygen species are products of normal cellular metabolism but over-production of reactive oxygen species induces damage by oxidizing DNA, lipids and proteins[18]. Obesity increases the circulation of reactive oxygen species which in turn causes gingival oxidative damage and progression of periodontitis[19].

Periodontal pathogens contribution to obesity

Goodson et al., suggested three mechanisms by which oral bacteria may contribute to development of obesity. First, the oral bacteria may contribute to increased metabolic efficiency, as suggested by the infectobesity proponent. The second hypothesis is that oral bacteria could increase weight gain by increasing appetite. The third hypothesis is that oral bacteria redirect energy metabolism by facilitating insulin resistance through increasing levels of TNF-α or reducing levels of adiponectin. By any of these mechanisms, even a small excess in calorie consumption with no change in diet or exercise could result in unacceptable weight gain[20].

Effect of periodontal treatment on obesity

Obesity is associated with a chronic inflammatory response, characterized by abnormal adipokine production, and the activation of pro–inflammatory signaling pathways, resulting in the induction of several biological markers of inflammation. Conversely, a reduction in body weight is accompanied by a decrease or even a normalization of these biological parameters.[21] Lundin et al. evaluated the influence of

obesity on the local inflammatory concentrations of TNF-α in crevicular gingival fluid and verified that BMI is positively correlated with higher levels of cytokines in young subjects with a BMI³ 40kg/m²; this finding suggests that TNF-α in the gingival crevicular fluid can be affected by obesity through a systemic effect.[22] Some studies have indicated that maintaining a normal weight by regular physical activity is associated with lower periodontitis prevalence.[23,24] Individuals who pursued regular exercise have lower plasma levels of inflammatory markers, such as IL-6 and C-reactive protein (CRP), and show an increased insulin sensitivity that may beneficially affect periodontal health[15]. A study that analyzed the NHANES-III study population demonstrated that individuals who maintained a normal weight, pursued regular exercise, and consumed a diet in conformity with the Dietary Guidelines for Americans and the Food Guide Pyramid recommendations were 40% less likely to have periodontitis[25].

Conclusion

Obesity is a complex multifactorial disease, its relationship with periodontal disease and other chronic diseases is well documented but the underlying mechanism is under investigation. It is quite difficult to say whether obesity predisposes an individual to periodontal disease or periodontal disease affects lipid metabolism, or both. Further prospective studies are needed to address the question of causality and to determine if obesity is a true risk factor for periodontal disease. The adipokines produced by adipocytes or by adipose tissue infiltrating macrophages, are able to induce a low-grade inflammation state that could play a central role in obesity and obesity related diseases. New adipokines will be certainly discovered in the next few years, which will lead us to greater appreciation of the complexity of the cross talk between obesity and periodontal disease.

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Natural tooth pontic as an immediate aesthetic solution for a missing tooth

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Abstract

Sudden loss of teeth in the esthetic zone presents a challenging task to the dentist and requires immediate attention. This article describes a chair side procedure for replacement of periodontally compromised tooth by using a natural tooth crown as a pontic. The procedure offers immediate aesthetic solution for a missing teeth with additional benefits of avoiding problems associated with mastication, phonetics and space closure for an interim period till the tissue have healed and a definitive prosthesis is placed. This technique is also a good provisional substitute in patients where implant cannot be placed for various reasons. Immediate replacement of missing teeth by using a natural tooth pontic provides perfect color match, shape, and size, thereby relieving the apprehensiveness of patient caused by sudden loss of teeth.

Key words: Natural tooth pontic, periodontally compromised tooth, ligature wire splint.

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Introduction:

Tooth loss, especially in aesthetic zone because of trauma, periodontal disease, failed endodontic therapy and/or root resorption is for most patients a deeply traumatic experience. Following loss of the anterior tooth, it is important that an immediate replacement is provided in order to avoid aesthetic, masticatory and phonetic difficulties, and to prevent space closure.[1] Most of the patients demand immediate treatment to overcome psychological trauma and to resume their social life as early as possible. Dental implant, although the ideal treatment option, may not be possible in all the cases for various reasons. Fixed partial denture requires abutment tooth preparation resulting in loss of tooth structure predisposing it to further attack by caries and periodontal disease. Removable partial dentures on the other hand have poor patient compliance.[2]

A natural tooth pontic offers the benefits of being the appropriate size, shape, and color. When natural tooth crown is intact, it can be temporarily bonded to the adjacent teeth with light cured restorative material.[3] This case report describes clinical steps in the fabrication and placement of natural tooth pontic as a provisional prosthesis for replacement of periodontally compromised mandibular right central incisor(41).

Case report:

A 40 year old woman came to the department of periodontics, KVG dental college, Sullia with the chief complain of mobile mandibular anterior teeth and difficulty in mastication. On clinical examination, grade II mobility was seen in relation to mandibular left central incisor (31), lateral incisor (32) and right lateral incisor (42). 41 showed grade III mobility and 10 mm deep periodontal pocket (fig. 1). Radiographic examination revealed advanced bone loss in relation to mandibular incisors that extended till the apex of 41 (fig 2). A predictable hopeless outcome of the 41, prompted to extract this tooth and retain the remaining incisors. Extraction and immediate implant placement, although the desired option, was ruled out because of severe bone loss and high cost of treatment. Considering the patients high esthetic expectations, natural tooth pontic for replacement of missing teeth was recommended as an immediate cosmetic solution to which the

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Fig. 1 Preoperative image of mandibular anterior teeth

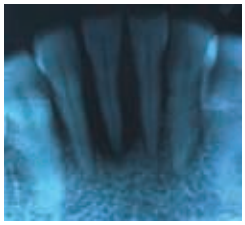

Fig. 2 Preoperative radiographic image of mandibular anterior teeth

Fig. 3 Flap sutured following extraction .

Fig. 4 Pontic checked for accuracy on the cast.

Fig. 5 Tooth pontic bonded to the ligature wire

Fig. 6 Esthetically pleasing appearance after placement of pontic in patient's mouth

patient readily agreed. Following full mouth scaling, root-planing was done with respect to mandibular anterior teeth. On second visit, flap surgery was performed from right mandibular canine to left mandibular canine. Extraction of grade III mobile 41 was done atraumatically. Labial and lingual flaps were approximated and sutured (fig. 3). Following extraction, the root of the tooth was resected with high speed air rotor using a straight fissure bur, 2mm below the cemento enamel junction. To prevent discoloration of crown, pulp chamber was cleaned of any pulp tissue and filled with light cured composite resin. Gingival aspect of the crown was shaped and smoothened. Alginate impression of mandibular arch was made and master cast prepared. The tooth pontic was adapted on the cast to check for accuracy (fig. 4), recess slot was prepared on the lingual surface of the pontic, ligature wire was positioned and bonded along the lingual curvature of the tooth, extending 12-15mm on either side to provide additional strength (fig. 5). Following acid etching, prepared natural tooth pontic along with ligature was bonded to the remaining anterior teeth (fig. 6) to provide additional strength and to immobilize the remaining incisors. Oral hygiene instructions were given and patient was advised to maintain meticulous oral hygiene.

Discussion:

Replacement of missing anterior tooth using a natural crown as a pontic is a good alternative to conventional long term prosthetic restoration but may not be the ideal choice for definitive prosthetic rehabilitation. Acrylic removable partial dentures placed immediately after the tooth is extracted are bulky, and may impede healing[4]. Moreover, partial dentures are subject to fracture.[5] Fixed acid etched bridge offers advantages of ease of use and avoidance of becoming accustomed to a removable prosthesis.[6] One of the advantages of retaining the patient's natural crown is that, the patient can better tolerate the effect of tooth loss.[7]

Kermanshah H[8] described a clinical technique and six-year follow-up case report. The patient presented with a missing maxillary central incisor due to localized juvenile periodontitis. The abutment teeth were clinically stable. The advantage of supragingival margins and minimal tooth structure removal made the bonded bridge with a natural tooth pontic a viable procedure for this compromised restorative situation. Parolia A[5] described a paper on immediate replacement of a maxillary right central incisor using a fibre-composite resin with the natural tooth crown as a pontic and stated that abutment teeth can be conserved with minimal or no preparation, thus keeping the technique reversible and chair side completion avoiding laboratory cost. Dimaczek B[9] reported a case where incisal splint was used to simplify and ensure a precise repositioning of the extracted tooth after removal of its root. The essential steps included (1) fabrication of an incisal splint (2) tooth extraction (3) root removal and pontic contouring (4) direct bonding of the natural pontic. Using this technique, a long-term provisional fixed tooth replacement with an acceptable functional and esthetic outcome was obtained. Ulusoy AT et al[1] presented a case report with an alternative treatment option for the premature loss of a traumatized maxillary central incisor because of extensive root resorption and mobility, where a fixed appliance type provisional prosthesis was fabricated by using the patient's natural crown from the extracted tooth. This measure proved to be a very adequate, aesthetic

treatment solution before a permanent restorative plan could be developed.

The technique described here offers several advantages such as good aesthetic results, preservation of natural crown structure,[10] no laboratory cost, less psychological implications on the patient, reversible nature of the technique allows other restorative options to be evaluated, micro-resiliency of pontic allows stimulation of underlying tissue and avoids excessive post-extraction ridge resorption.[5] Despite several advantages, the technique has certain limitations. Important factors to be considered before performing such restoration, includes, patient's bite, interfering para functional habits, primary dentition, inadequate occlusal clearance space for reinforced fiber or ligature splint, composite resin bonding and ability to isolate the area during bonding procedure.[11]

Conclusion

Natural tooth pontic can be used as long term interim restoration for replacement of missing anterior teeth. This technique is simple, time saving, cost effective and provides good esthetic and function. However, proper patient education and instruction to maintain good oral hygiene and avoidance of heavy occlusal forces is very critical for the success of this procedure.

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Overdenture: The simple solution to a case of ectodermal dysplasia

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Abstract

Overdenture derives its support from one or more abutment teeth/ implants by covering them in toto. The important thing about overdenture prosthesis is the fact that abutment teeth need to be peridontally sound and capable of withstanding the loads of function via prosthesis.

The case presented here is a case of ectodermal dysplasia, the patient was treated for the replacement of missing teeth with upper partial denture and lower overdenture which offered him good esthetics and function.

Keywords: Ectodermal dysplasia, Overdenture, Metal copings

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Introduction

Ectodermal Dysplasia syndrome is a large, heterogenous group of inherited disorders, the manifestations of which could be seen in more than one ectodermal derivatives, these tissues primarily are the skin, hair, nails, eccrine glands and teeth. Manifestations of the dental, hair and nail anomalies are evident during infancy or childhood. The number of hair follicles, sweat glands, and sebaceous glands varies. Symptoms of a reduction in hair follicles vary from sparse scalp hair (usually short, fine and dry) to a complete absence of hair. Hair bulbs may be distorted, bifid, and small.

The oral findings are of particular interest, since patients with this abnormality invariably manifest anodontia or oligodontia, complete or partial absence of teeth, with frequent malformation of any teeth present, both deciduous and permanent dentitions. Whenever some teeth are present, they are commonly truncated or cone shaped[1,2].

This clinical report describes the prosthodontic rehabilitation of given patient with the overdenture.

Case report

A 24 years male was reported to the department of Prosthodontics. On examination it was observed that it was a case of Ectodermal Dysplasia. On intraoral examination it was observed that teeth present were 11, 12, 13, 21, 22, 33, 43, and over-retained 74 (Fig.1). An OPG was done, it revealed that 74 was cariously exposed while the other teeth were sound(Fig. 2). After clinical and radiological examination, removable partial denture was planned for maxillary arch and overdenture with coping for lower arch was planned. The study models were made. The patient was referred to the department of oral and maxillofacial surgery for the extraction of 74 and waited for eight weeks for healing to be complete.

Procedure

Maxillary Central incisor, Lateral incisor and Canine were built up to normal morphology with composite (ceram-x duo) (Fig.3).

In lower arch minimum tooth preparation of 33,43 was done to receive cast copings. A rubber base impression was made of lower arch for fabrication of coping. Die stone model was obtained and wax pattern for coping was fabricated. Spruing, investing and casting was done followed by finishing and polishing. Metal copings were cemented with glass ionomer cement (Fig.3). Upper and lower alginate impressions were made and special tray with spacer of 2mm thickness was prepared.

Border molding was done and final impressions were made with addition silicon impression material (Fig.4). On master casts record base

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Fig.1 Intraoral View

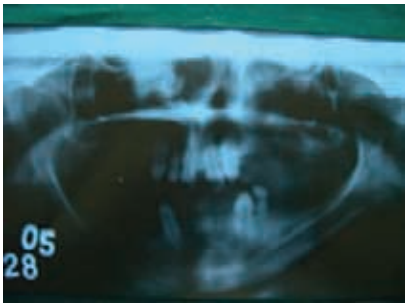

Fig. 2 OPG

Fig. 3 Composite buildup and metal copings

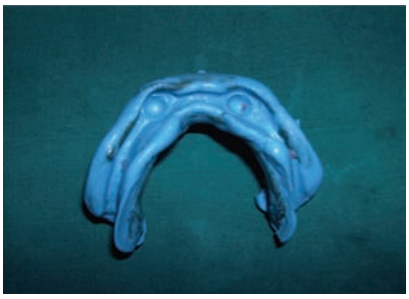

Fig. 4 Final impression of the lower arch

Fig. 5 Lower overdenture

Fig. 6 Post OP

with occlusal rims were fabricated. A jaw relation records were taken and trasfered onto the articulator. After teeth arrangement and tryin, flasking and curing was done, followed by finishing and polishing. Upper treatment partial and lower complete overdenture were inserted after correction of occlusal discrepancies (Fig5). Post insertion check –up was done after 24 hours and a slight inflammation was observed in the mylohyoid region,the region was relieved. Subsquently after 1 month, 6months and 1 year check up was carried out for evaluation of periodontal health of abutments[3] (Fig6).

Discussion

Overdentures are dentures, which derive their support from one and more abutment teeth by completely enveloping them beneath the fitting surface. Studies indicate that the use of mandibular overdenture helps to preserve alveolar bone. The reduction in the height in the anterior part of the mandible is eight times less in overdenture wearers as compared to complete denture wearers. The other advantages are

1) Proprioception is maintained.
2) Centric relation is easily recorded and preserved.
3) Psychological state of the patient is uplifted.
4) Mastication is enhanced[4,5,6].

The abutment selection plays an important role in the success of an overdenture. Canines are considered as excellent abutments for maxillary and the mandibular overdentures. Ideally optimal abutment distribution throughout the arch provides for maximal stability and support. Two canines and two premolars are the most common pattern for four abutment[7,8].

Clinically applicable classification of overdentures, based on the method of abutment preparation is as follows

1) Non –coping abutments
2) Abutments with copings
   a) Short coping abutments
   b) Long coping abutments
3) Abutments with Attachments

Overdenture abutment preparation involves the exposure of dentin surfaces to the oral environment. The dentin surfaces are susceptible to contour alterations through tooth brushing and occusal wear. So, the metal copings were used to establish and maintain specific abutment contours. In addition, copings can reinforce previously restored abutment teeth and perhaps afford some caries protection when cemented with glass ionomer cement.

In ectodermal dysplasia case, change in facial appearance, chewing ability improves greatly with preservation of teeth, modification of malformed teeth. Annual evaluation status of oral health as well as prosthesis maintains the function, satisfaction and psychological wellness.

Conclusion

Although advances in methods and improved materials have contributed to better treatment results, caries and periodontal problems still remain significant threats to overdenture service life. The prevention of caries and recurrent periodontal disease thus becomes a most important aspect of post insertion care[3]. Undoubtedly, there are a number of successful overdenture methods. Common to most overdenture techniques is that permits retention using the patient's last few retainable teeth. A conservative approach to root preservation still is a valid and practical measure in preventive dentistry.

Acknowledgement

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PALM-S: A dental materials teaching aid

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Abstract

The need for an aid to help an novice dental student in understanding dental materials was always felt. PALM-S, a portable and user friendly device helps the student to familiarise with the material in the class room under the supervision of the instructor.

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Introduction

The study of the subject 'materials used in Dentistry' is often felt by the novice Dental student to be a daunting task because of evident disconnect experienced between concept and reality. During the initial learning period in the class room students do not get an opportunity to familiarise with the dental material. During the self study sessions also students have to depend solely on the imagination to get the experience of the properties or techniques of the material. Till date no attempt to the best of our knowledge has been made to provide dental materials in a user friendly and portable manner suitable for use in a lecture session or self study. Providing the student with a familiarization teaching – learning aid (T-L aid) is expected to make the subject more interesting. The T-L aid developed by the name PALM-S (Palette of materials - Sankara) fig 1 is a portable and user friendly device. At present the T-L aid is designed to hold only prosthodontics materials.

Designs of the PALM-S

The T-L aid was designed with the designed with the following optimisation of principles.

- It must have an ergonomic configuration.
- It must have slots/ receptacles for holding the material.
- The materials in the slot must be held without spillage.
- Ease of accessibility.
- The volume of each material must be sufficient to manipulate.
- The T-L aid must be made out of light weight but strong and durable material.
- It must be economical.

Keeping these criteria in mind we decided on using used round orthodontic bracket case. The T-L aid consisted of a circular base with 28 slots for each material. The material in each slot was identified by a name slip posted at the centre space. (fig 1). The materials chosen were dental plaster , dental stone, phosphate bonded investment material, putty consistency additional silicon impression material, zinc oxide impression paste, polymer of self cured acrylic resin, base plate wax, shellac base plate, inlay wax, alginate, impression compound. The slots that held powdery material were additionally secured with adhesive tape (fig 2). After loading the slots the transparent lid was placed over the T-L aid. Used orthodontic bracket T-L aids can be adapted for this purpose.

Suggested method of use

We have prepared and distributed 50 teaching aid for the 2nd BDS students of our college and based on our experience we suggest that the T-L kit be used in the following manner. However it is left to the teacher / student to modify these suggestions and tailor it to the needs of the class room. We shall illustrate over suggested method with an example

Suppose the teacher wishes to take a class on Zinc oxide eugenol impression material. He/ She can instruct the students on the previous day to bring a small glass plate and a cement spatula. During the lecture

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Fig 1 PALM-S

Fig 2 Materials in powdered form restrained using adhesive tape

class the teacher asks the student to scoop out the necessary material separately on a glass plate. Then the students can be instructed to mix them under the teacher's guidance. Thus the lecture becomes not a lecture but a lec – dem session. Revision sessions can be easily conducted this way and it will arouse interest in the subject of the dental material science. We will shortly be publishing our findings of the classroom experiments to evaluate the outcome of using PALM-S in the classroom.

Conclusion:

The PALMS utilizes discarded orthodontic bracket holder to provide Dental materials in a portable, easily accessible configuration to the student. Despite its inherent limitations in strength, durability we believe that this T-L aid would help the students to interact more with the material both during the lecture session and self study sessions at leisure so that the teaching – learning process becomes both rewarding and enjoyable experience.

Questioner used for evaluating the response of the students

1. Is there a need for interactive type of learning. If yes, how is it beneficial_____
   _____
2. Did the introduction of the device bring any change in the method of teaching
   _____
   _____
3. Did it improve your skill in identifying the material
   _____
   _____
4. Is the device easy to carry
   _____
5. Is the material supplied in the device sufficient for one use
   _____
6. Your suggestions for improving the device
   _____
   _____

The neutral zone in prosthodontic rehabilitation

* Mini V.S., ** Alex Mathew Muruppel, *** Sudeep S., **** Dinesh N.

Abstract

Neutral Zone plays a pivotal role in recording stability and there by comfort to complete denture patients. It requires a combination of a thorough knowledge of the anatomical structures involved in and around the denture bearing area in tandem with a clinical acumen and perseverance to deliver this extra ounce of perfection to our prostheses. This overlooked parameter is further elucidated and discussed in this paper.

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Introduction

Complete denture prostheses function primarily on biomechanical principles and must be in harmony with normal neuromuscular activity or performance. In addition to simply replacing missing oral tissues, complete dentures serve to structurally redefine true spaces and potential spaces within the oral cavity[1]. All oral functions such as speech, mastication, swallowing, smiling, and laughing, involve synergistic actions of the tongue, lips, cheeks, and floor of the mouth which are very complex and highly individual. Failure to recognize the cardinal importance of tooth position and flange form and contour often results in dentures which are unstable and unsatisfactory, even though they were skilfully designed and expertly constructed. The coordination of complete dentures with neuromuscular function is the foundation of successful stable dentures[2].

Neutral zone

When all the natural teeth have been lost, there exists within the oral cavity a void which is the potential denture space. The neutral zone is that region where forces imposed by the tongue directed outward are neutralized by inwardly directed forces originating from the cheeks and lips during normal neuromuscular function[2]. The soft tissues that form the internal and external boundaries of the denture space exert forces which greatly influence the stability of the dentures. The central thesis of the neutral-zone approach to complete dentures is to locate that area in the edentulous mouth where the teeth should be positioned so that the forces exerted by muscles will tend to stabilize the denture rather than unseat it. (Fig 1).

History

The two men who have contributed the most to these concepts are Sir Wilford Fish and Russell Tench[2]. Many others including Perry and the Detroit Dental Clinic Club have helped to advance and develop both the theoretical basis and practical procedures[1] Beresin and Schiesser described the neutral zone and detailed the impression procedures. Later, Cagna et al[2] reviewed the neutral zone concept and explained how newer impression materials could be used to take neutral zone impressions.

Terminology and synonyms

Historically, different terminology has been associated with this concept, including dead zone[2], stable zone[3], zone of minimal conflict[2], zone of equilibrium[1], zone of least interference[4], biometric denture space[1], denture space[5], and potential denture space[6].

Importance and significance

This physiologically based complete denture design concept has been shown to be especially effective for mandibular removable prostheses. It is particularly remarkable to observe neutral

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zones recorded for patients with severely reduced residual alveolar ridges and those affected by neuromuscular decline or gross dysfunction; example, patients of advancing age and/or long-term edentulism with decreasing facial muscle tonicity[7] and even anatomic deformity or insufficiency, such as in post cancer oral surgical resections[8,9] or those suffering from facial neuromuscular deficit secondary to cerebral vascular accidents or Parkinson's disease[10]. The tongue, lips, cheeks and floor of the mouth are involved in speech, mastication, swallowing, smiling and laughing. The placement of teeth must be in harmony with these functions. Recording the tongue positions and movement receives close attention in the neutral zone approach. The problem of narrow neutral zone may be a consequence of a poorly planned transition to the edentulous state. This problem can be avoided if proper consideration is given to this transition .Extraction of posterior teeth should be accompanied with provision of a removable partial denture were suitable to prevent lateral spreading of the tongue in the posterior part of the mouth. The neutral zone serves to play a stabilizing role by preventing lateral dislodging forces and employing patients own musculature to maintain harmonious and smooth function of the denture. This would serve in the long term to promote longevity of dentures in service and preservation of supporting tissues by preventing unfavourable forces.

Buccolingual arrangement of posterior teeth

Directives provided for optimal facial-lingual arrangement of posterior denture teeth have varied dramatically over the profession's long history of complete denture rehabilitation. The concept that posterior denture teeth should be arranged to occupy the position of their natural tooth predecessors has been in prominence.[11] Others have suggested that posterior denture teeth should be arranged directly over the crest of the edentulous ridge.[12] Weinberg[12] suggested that buccal cusps and central fossae of mandibular posterior denture teeth should be arranged directly over the crest of the edentulous residual ridge. Pound[11] recommended that the lingual surfaces of mandibular posterior denture teeth should occupy an area bounded by 2 lines originating from the mesial surface of the mandibular canine and extending posteriorly to the lingual and buccal aspects of the retromolar pad. This area has been called Pound's Triangle[11]. A subtle modification of Pound's concept was discussed by Halperin et al [1]. The authors suggested that the lingual surfaces of mandibular posterior denture teeth should occupy an area bounded by 2 lines originating at the mesial surface of the mandibular canine, one line extending posteriorly to the lingual border of the retromolar pad and the other extending posteriorly, passing through the central aspect of the retromolar pad.

The neutrocentric concept requires that posterior mandibular denture teeth be arranged to occupy as central a location as possible, relative to the denture foundation, without disturbing adequate tongue function.[14] This tooth arrangement is said to facilitate mandibular denture stability during occlusal loading. El-Gheriani[2] recommended that posterior maxillary denture teeth be arranged to satisfy specific mathematical formulae based on natural tooth intercanine width. Lammie[1] argued that in aging patients, mandibular posterior denture teeth should be arranged over the buccal shelf to provide increased tongue space and to facilitate the development of vertical facial denture polished surfaces, against which an effective facial seal could be achieved and maintained.

Wright et al[2] believed that posterior mandibular denture teeth should be arranged directly over the center of the denture stress-bearing area. This location may not correlate with the crest of the edentulous ridge, particularly in the presence of severe ridge atrophy. However Martone[1] recommended that facial cusps of mandibular first molar denture teeth should be arranged directly over the crest of the edentulous ridge. He advised that lingual cusps of the other mandibular posterior denture teeth should correspond to a line extending from the mesial aspect of the canine denture teeth to the facial side of the retromolar pads and this line should curve in the vertical plane to correspond to the curvature of the mandibular edentulous ridge.

Campbell [2] stated that posterior denture teeth should be so placed that a line drawn through the long axis of the tooth will pass through the crests of the maxillary and mandibular ridges. He postulated that in coronal cross-section, mandibular posterior denture teeth should be arranged slightly lingual to the crest of the edentulous ridge, while the maxillary posterior denture teeth should be arranged slightly buccal to the edentulous ridge.

Muscle forces and denture stability

Muscles involved in the neutral zone can be classified as Dislocating muscles and Fixing Muscles. Dislocating muscles are further divided into vestibular (masseter, mentalis, incisive labii inferioris) and lingual (medial pterygoid, palatoglossus, styloglossus, mylohyoid). Fixing muscles include vestibular (buccinator and orbicularis oris) and lingual (Genioglossus, Lingual Longitudinal, Lingual vertical, Lingual transverse)

During childhood, teeth erupt under the influence of forces exerted by tongue, cheek and lips, in addition to the genetic factors. These forces have a definite influence upon the position of the erupted teeth, the resultant arch form, and the occlusion (Fig 2). After the teeth have been lost, muscle function and activity remain highly individual and greatly influence any complete dentures that are placed in the mouth.

Denture surfaces

Prosthodontists were always been concerned with equalizing the vertical forces that are delivered by the occlusal surfaces of the teeth and counteracted by the vault and the ridges. The trajectory of force applications to prosthetic surfaces will either serve to stabilize or dislodge the complete dentures[2]. When the polished surface contours of the complete dentures conform to the anatomical shape and function of the tongue, lips, and cheeks, prosthesis stability and retention may be facilitated, rather than disrupted. In the passive state, the weight and natural posture of the tongue, lips, and cheeks bearing on optimally contoured polished denture surfaces may facilitate prosthesis retention and stability.

Sir Wilford Fish[2] of England has described a denture as having three surfaces, with each surface playing an independent and important role in the over-all fit, stability, and comfort of the denture. The third surface other than impression (intaglio) and the occlusal surfaces (articulating) —as termed by Fish, "the polished surface" (cameo) —is the rest of the denture that is not part of the other two surfaces. It is mostly denture base material, but it also consists of those surfaces of the teeth that are not contacting or articulating surfaces. The external or polished surface of the denture is in contact with the cheeks, lips, and tongue.

Techniques

Beresin and Schiesser[1] used a modeling plastic impression compound for clinical registration on a specially designed record bases to define the neutral zone. Thereafter, laboratory procedures incorporating impression-generated matrices[15] were accomplished to facilitate denture tooth arrangement within the registered neutral zone. Upon completion, wax trial dentures were placed and an additional impression procedure was performed using either zinc oxide and eugenol paste or tissue-conditioning material. This impression, an external impression, was made on the facial, lingual, and palatal surfaces of the trial dentures between the cervical aspects of the denture teeth and peripheral denture borders to record functional tissue interactions with this denture.

Cagna etal[2] used polyvinyl siloxane to register lingual neutral zone index and facial index. For external impression he used VPS (vinyl polysiloxane) adhesive.

Chandrasekar[15] used low fusing compound on a special tray made of acrylic plate adapted to lower ridge without a handle and with spines or fins projecting upward toward upper arch for management of mandibular resorbed ridge with neutral zone.

Makzoume[16] compared the outline form of the phonetic and swallowing neutral zone impression techniques for the same subjects. His method used phonetics and tissue conditioner to shape the neutral zone; the second method used swallowing and modelling plastic impression compound. He observed that, the phonetic neutral zone appears to be narrower posterior compared to the swallowing neutral zone, thus limiting premolar and molar positioning.

Discussion

Arranging artificial teeth within the neutral zone achieves two important objectives: (1) prosthetic teeth do not interfere with normal muscle function; and (2) normal oral and perioral muscle activity imparts force against the complete dentures that serves to stabilize and retain the prostheses rather than cause denture displacement.[1] The neutral zone method typically locates posterior denture teeth slightly facially, when compared to teeth arranged over the crest of the residual ridge.[17] Using the neutral zone to arrange posterior teeth takes advantage of the stabilizing potential of existing muscle conditions. This physiologically based complete denture design concept has been shown to be especially effective for mandibular removable prostheses. Conventional methods used for these patients result in denture contours that may not facilitate prosthesis stability against expected oral and perioral muscle function. Conversely, the fabrication of denture contours to harmonize with aberrant neutral zone dimensions, characteristic of these compromised patients, results in increased denture stability and improved oral function.

Hand waxed denture base contours typically incorporate concavities along facial prosthetic surfaces. More frequently, however, contours resulting from physiologically molded external impressions yield generalized convexities along the facial surfaces of both maxillary and mandibular dentures. This is particularly true in molar regions and for patients of advancing age with decreasing facial muscle tonicity. Considering potential stabilizing effects associated with the neutral zone technique, it has been suggested that concave

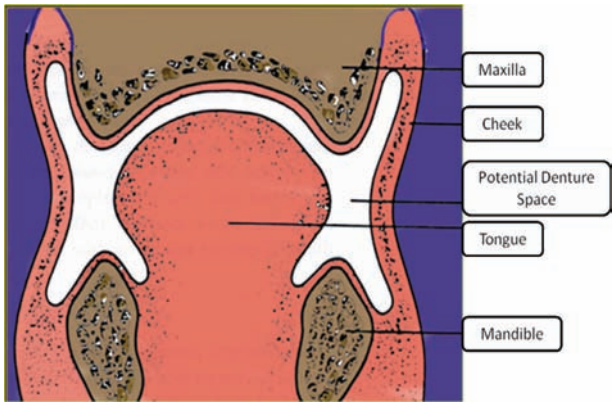

Fig. 1 Potential denture space

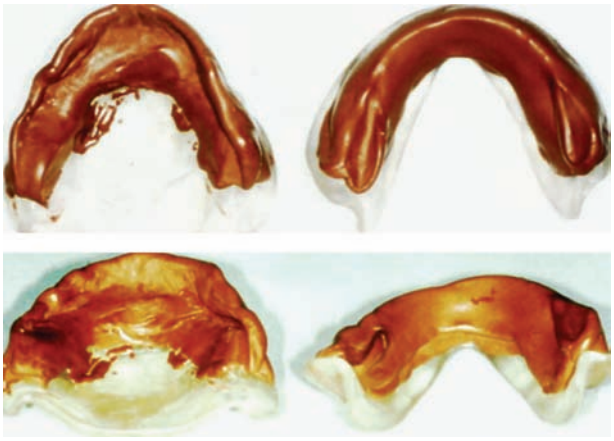

Fig. 2 Molded material according to muscle function intraorally

facial denture flange contours are physiologically inappropriate and contraindicated with respect to optimal prosthesis stability[19]. Fahmy et al[18] in his observation found that the conventional complete dentures were found to be better for mastication, where as comfort and speech performances was better with the neutral zone dentures.

Summary and conclusion

A thorough understanding of the anatomy and physiology of structures that impact sound complete denture fabrication and function is important for successful treatment of edentulous patients. Use of the neutral zone method to identify and register the anatomy and physiology that impact prosthesis stability will result in improved prosthodontic rehabilitation for patients.

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Attachment retained removable partial denture prosthesis for severe ridge defect

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Abstract

It has been well documented that ridge defects present in a patient are very difficult to treat properly. These defects have been treated with great amount of planning and complexities while using the conventional treatment approaches like removable or fixed prosthesis and options of implant. The main aim and purpose of this article is thus, to describe the process of fabrication of an extracoronal attachment retained removable partial denture to treat a ClassIII ridge defect using natural teeth as abutments for its fixed component followed a removable component.

The procedure was undertaken when a 40 year old patient came to the clinic with missing mandibular right lateral incisor, canine and first premolar with a severe ridge defect due to enucleation of a cyst which had developed around the impacted canine. It was decided to rehabilitate the case with an attachment retained removable partial denture prosthesis. After the patient was treated it was concluded that the patient had a good adaptability, comfort , pleasing esthetics and phonetics with this prosthesis. In addition this article also describes a strategy that can be used to eliminate the unsightly display of the clasp assembly and provide an esthetic and functional removable prosthesis.

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Introduction

The reduction in partial edentulism that has occurred due to successful preventive procedures and the predictable use of fixed partial dentures and osseointegrated implants has reduced the need for removable partial dentures. However for a variety of reasons many patients can continue to benefit from partial denture therapy and these patients deserve the best esthetic and functional result possible. It has been well documented that anterior ridge defects present in a patient are very difficult to treat properly (especially aesthetically). However, to treat such defects when edentulous anterior portion of the ridge has both inadequate height and width; the conventional options of fixed partial dentures(like bridges) or implant supported fixed partial dentures are not enough. For such cases where replacement of teeth along with the supporting structures are necessary for aesthetics, can be achieved by placing attachment retained fixed removable partial dentures. Conventional cast partial denture with clasp retention have been the cynosure of the last few decades. But they seems to be incompatible to today's world of modern dentistry where esthetics is of paramount concern to the patient, especially where visible labial or buccal clasp arms of the conventional cast partial denture can ruin an esthetic dental result while the retentive components seems to be a trap for food accumulation leading to increased chance of dental caries. The advent of resilient attachment seems to solve the puzzle with less components, effective and almost completely invisible retainers, long-lasting retention and stability. Attachment is defined as a retainer consisting of a metal receptacle and a closely fitting part; the former (the female {matrix} component) is usually contained within the normal or expanded contours of the crown of the abutment tooth and the latter (the male {patrix} component), is attached to a pontic

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Fig 1. Preoperative intra oral labial view in occlusion

Fig 2. Preoperative intra oral right lateral view in occlusion.

Fig 3. Extra oral view of tooth preparation.

Fig 4. Extra oral view of the wax pattern of the reduced teeth and the Ceka Sagix kit.

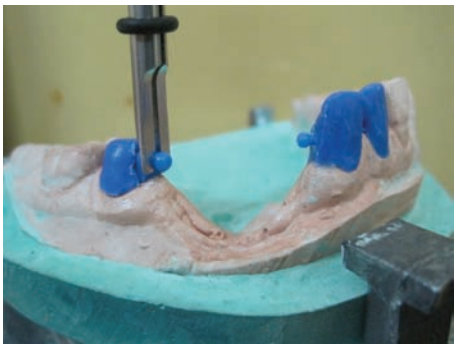

Fig 5. Surveying done to check the parallellism of the male component.

Fig 6. Intra oral view of the metal try in of the male component.

or the denture framework. They are divided into Precision and semiprecision attachment. Precision attachments are all prefabricated machined to very fine tolerance and have a very precise smooth action. Usually they are adjustable , some have replaceable parts , others have a variety of uses such as convertion from friction retention to snap retention. Semiprecision attachments, due to the nature of their fabrication, are less precise in their tolerances and are manufactured from patterns made from either wax, nylon, or plastic, or they may be hand waxed by a dental laboratory technician. In addition, attachments are classified in two other ways. If a semiprecision or precision attachment is located within the contours of the abutment tooth it is classified as intracoronal , and if it is located outside the contours of the abutment tooth it is categorized as extracoronal. This article represent the correction of a Class III ridge defect by use of a semiprecision extracoronal attachment retained removable partial denture in a Kennedy Class III situation.

Case report

A 40 yr old female patient reported to the Dept of Prosthetic Dentistry with esthetic problems. On intraoral examination mandibular right lateral incisor, canine and first premolar was found missing with a class III ridge defect.(Fig 1,2) Past dental history revealed that patient previously underwent a surgical enucleation of a cyst that developed around the impacted canine. The periapical radiolucency also involved the roots of lateral incisor and the first premolar thus leading to the removal of the involved teeth. Treatment option sorted out where

1) Ridge Augmentation using bone grafts followed by Implant supported prosthesis.
2) Conventional Cast partial denture with clasp retention.
3) Conventional acrylic temporary removable denture.
4) Attachment retained Cast partial denture

After clinical and radiological examination and explaining the pros and cons of the treatment options it was decided to rehabilitate the case with attachment retained cast partial denture.

Procedure

1) A primary impression was taken with irreversible hydrocolloid impression material and poured in dental stone to obtain the diagnostic cast.

Fig 7. Intra oral labial view in occlusion post ceramisation.

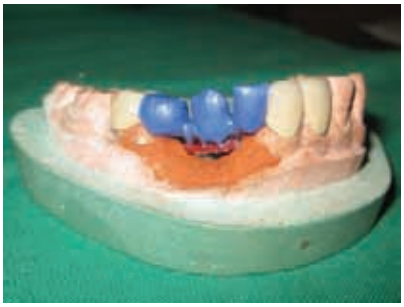

Fig 8. Extra oral view of the denture framework

Fig 9. Intra oral view of the try in of the cast metal framework

Fig 10. Extra oral view of the intaglio surface of the acrylised denture with the female component.

Fig 11. Post operative intra oral labial view of the finished prosthesis in occlusion

Fig 12. Post operative intra oral right lateral view in occlusion.

Fig 13. Pre operative frontal view in smile

Fig 14. Post operative frontal view in smile.

2) Placement of two Ceka Sagix attachment was planned on the distal surface of mandibular right central incisor and mesial surface of mandibular right second premolar. A 1.7 mm spherical male was planned to be placed in #41 while 2.2 mm spherical male was planned to be placed in #45.

3) Space Requirements for 1.7mm were : 3.1mm vertical, 3.1mm diameter for 2.2mm: 4.1mm vertical, 4.2mm diameter.

4) Tooth preparation steps were undertaken in tooth no #31, 41, and 45 and impression was taken with additional silicone impression material and was poured in die stone to get the master cast. (Fig 3)

5) The prepared tooth were waxed up in a conventional manner and the plastic male part of the attachment was attached to the wax patterns. (Fig 4)

6) To insert the cast plastic male the path of insertion was determined correctly. A paralleling mandrel was attached to the surveyor and then the plastic males with the paralleling mandrel were incorporated into the wax-up of the prepared tooth.(Fig 5) The path of the two males were made parallel to each other. Casting was done in a hard dental alloy. (Fig 6,7)

7) Processing the female :- Pink duplicating dummies were placed over the males and were aligned parallel. The undercuts were blocked. Wax up for the partial denture framework was done.(Fig 8) Casting was carried out with finishing the cast frame without damaging the retentive ledge in the cavity for the female. The access opening was polished to a high shine. A try in of the framework was done. (Fig 9) The framework consisted of three pontics supported by a metal mesh base.

8) Jaw relationship record was made and ceramisation of the pontics were done. After denture try in , acrylisation of the denture base was done with pink coloured heat cure acrylic.

9) Replacing the processing female - To replace a female, pointed instrument were used to dislodge and remove. Insertion tool was used to insert a new female. 3 retention levels are available: **yellow:** normal retention **white:** reduced retention **red:** increased retention. (Fig 10) The postoperative view of smile showed marked improvement.(Fig 11,12)

Later, patient was trained to properly place and remove the RPD fabricated over the fixed component of the sagix attachment and proper oral hygiene (including interdental brush) instructions were given to the patient. (Fig 13,14)

10) Recall visits were made at 1 week interval and regular oral hygiene instructions were explained to the patient.

Discussion

Preci sagix (Ceka) is sagittal ball attachment with segmented female for partial dentures and implant applications. Advantages includes patented snap mechanism, inexpensive, wide range of applications, easy replacement of parts, choice of working procedures, long-lasting retention. It has an audible snap for patient security and increased retention and a unique female contacts a greater surface area of the sphere for increased retention and stability.

Owall states that this type of denture has a long-life span and does not incur significant problems or repairs. He also has found that treatment failure occurs as a result of loss of abutment teeth or the fixed partial denture due to recurrent caries and periodontal disease.

Indications for use of semi precision attachments in RPD

1. Presence of effective and almost completely invisible retainers.

2. Availability of RPD retainer where esthetics is of paramount concern.

3. Ability to provide adequate to excellent retention, irrespective of crown contour

4. Ability to reduce bulk of the RPD in direct retainer areas

5. Presence of increased stability to the RPD, as the attachment provides good resistance to horizontal or rotational displacing forces

6. Ability of attachments to minimize food stasis and impaction, gingival irritation around the complexly designed direct retainers

7. Ability to minimize stress on the abutments caused as the attachment-retained RPD is inserted and withdrawn, because, in a clasp-retained RPD, there is the potential for rocking and stressing of the abutment tooth as the direct retainer goes over the height of contour to reach its intended undercut area in its terminal position.

Contraindications are: Presence of insufficient vertical space (less than 4 mm) for attachment use, presence of teeth with insufficient coronal bulk and inadequate root surface area unsupported by alveolar bone to be used as supporting abutments, Inability to repair or service an attachment-retained RPD, some attachments are costly.

Conclusion

Some diagnostic and treatment planning steps, laboratory procedures used in the rehabilitation of a patients with a semiprecision attachment-retained RPD are discussed. Long-term success with this type of restoration is multifactorial and reasonably predictable when the patient is adequately diagnosed, the treatment carefully planned, and follow-ups are made on a regular recall schedule.

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Evaluation of transverse bond strength of heat cured acrylic denture base resin repaired using heat polymerizing, autopolymerizing and fiber reinforced composite resin

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Abstract

Aims: Fracture of dentures is a common clinical finding in daily prosthodontic practice, resulting in great inconvenience to both patient and dentist. A satisfactory repair should be cost-effective, simple to perform, and quick; it should also match the original color and not cause distortion to the existing denture. This study evaluated and compared the transverse bond strength of heat cure denture base resins being repaired with heat polymerizing, auto polymerizing resin, composite resin with single long glass fiber and composite resin with short multiple glass fibers after 48 hrs and 4 weeks of water immersion.

Materials and Methods: A total of 80 heat cure acrylic resin specimens (65mm x 10mm x 2.5mm) were prepared. Repair gap of 2mm was prepared in the center of the specimen. Each fractured segment was beveled at 45 degrees at the repair site. Thereafter, repair was carried out using different repair materials .The repaired specimens were stored in distilled water for 48 hrs and 4weeks.

Statistical analysis used: The transverse bond strength of the repaired specimens was tested by a 3 point bending test and compared with intact specimens. All data was statistically analyzed with one-way ANOVA, differences within the groups were analyzed by independent sample t -test.

Results: The mean transverse strength for the control group was 82.56 Mpa The mean transverse strength of auto polymerizing resin repair (45.6 Mpa) and composite resin with single long glass fiber repair (47.8 Mpa) showed statistically insignificant relationship ($p>0.05$). Least transverse strength values were obtained for composite resin with short multiple fiber group repair (12 Mpa).

Conclusion: Reinforcement of composite resin with glass fibers can be used as an efficient and effective method for adequate long-term clinical repair.

Key words: In-vitro; repair; heat polymerizing resin; auto polymerizing resin; fiber reinforced composite, transverse strength; water immersion.

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Introduction:

Heat polymerizing acrylic resin has been the most common denture base material for more than 60 years. Midline fractures of the maxillary and mandibular dentures are the most common and are in a ratio of 2:1[1,2]. Smith described the phenomenon of flexural fatigue as the main cause of denture fracture[3]. In theory a complete denture cannot be fractured by an edentulous patient because of relatively high static strength of denture construction and low biting forces with removable dentures[4].

Causes of fractures are related to poor fit of denture base, poorly balanced occlusion, faulty design and fabrication, insufficient strength of repair material, and stress on the denture after years of clinical use. Fractured acrylic resin dentures can be repaired with auto polymerizing resin, heat-polymerizing resin and now recently visible light cured resin[5-7]. Various methods for enhancing the strength of the repaired parts have been reported including repair surface designing, repair surface treatments and combined use of auto polymerizing acrylic resin with reinforcing materials such as metal wire and glass fiber[8-12].

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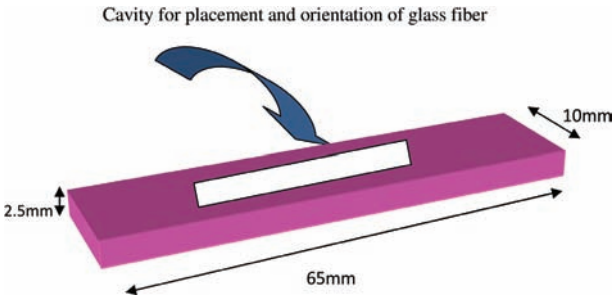

Fig 1. Modified specimen with cavity (30mm x 5mm x 0.9 mm)

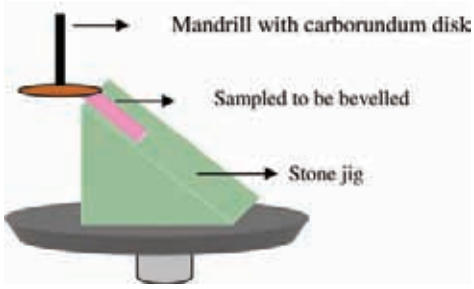

Fig 2. Beveled specimen using stone index and milling machine

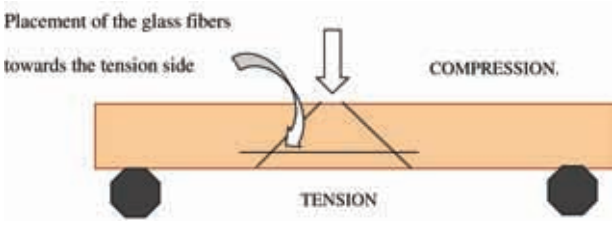

Fig. 3 Correct placement of glass fibers.

Table I – *Materials used in the study*

Sl. no.	Material	Material type.
1.	Dpi heat cure*	Heat cure denture base polymer & monomer
2.	Dpi-RR cold cure**	Repair acrylic polymer and monomer
3.	Revolution***	Light cured flowable composite resin
4.	Interlig****	Preimpregnated glass fibers.
5.	Optibond Solo*****	Bonding agent.

* DPI, Wallace Street, Mumbai, India. (Lot no 764 and 262), ** DPI, Wallace Street, Mumbai, India (lot no 372 and 275)
*** Kerr, Orange. (Lot no 2731497), **** Angelus, Brazil, (lot no 6099), ***** Kerr, Orange (lot no29692)

Recently, Fiber reinforced composite (FRC) have been used in dentistry in reinforcement and repair of fixed as well as removable prostheses[13]. Unidirectional fibers give an isotropic mechanical properties to the composite and are suitable for application in which the direction of the highest stress is known.[14,15] There have been no studies reported in literature, evaluating the use of FRC along with composite resin as a denture repair material.

With the above-mentioned details, the present study is directed towards evaluating the transverse strength of denture base resin, repaired using different materials and reinforced with glass fibres after 48 hrs and 4 weeks of immersion in water.

Materials and method:

The materials used in the in-vitro study are listed in table I.

The study was carried out in the following manner:

- Preparation of intact specimens
- Fracture of the specimens
- Repair of specimens using different repair materials.

1. Preparation of intact specimens:

Metal mold and fabrication of wax patterns: The mold consisted of three plates, of which the middle plate had windows measuring 65mm x 10mm x 2.5mm according to ADA specifications for transverse deflection tests. 4 notches were incorporated into the sides of the metal mold, which were used for the reorientation of the acrylic specimen into the plaster indices at the time of repair. Wax patterns were fabricated using the metal mold. The final specimens were uniform in all dimensions. Distorted, damaged or broken patterns were discarded. A total of 80 wax patterns were prepared

Modification of mould for fabrication of wax patterns for the single long fiber composite resin repair group: To introduce the long fiber a uniform cavity was needed; hence to standardize the specimens an acrylic positive replica (30 mm X 5 mm X 0.9mm) of the cavity space without undercuts was prepared. The replica was fixed on the lower plate such that it was in the center of the mold cavity of the middle plate. Molten wax was poured into the modified mold and a total of 20 wax patterns were prepared. [fig.1]

Processing and numbering of acrylic resin specimens: The processing of the resin specimens was done using the conventional compression molding technique.

Tab II. *Classification of test group*

GROUP	*SUBGROUP*	*COMPONENT*
GROUP A 48 hours water immersion	Subgroup IA	Intact specimens
	Subgroup HA	heat polymerizing resin repair
	Subgroup CA	auto polymerizing resin repair
	Subgroup SA	Composite resin with single long glass fiber repair
	Subgroup MA	composite resin with multiple short glass fiber repair
GROUP B4 weeks water immersion.	Subgroup IB	Intact specimens
	Subgroup HB	heat polymerizing resin repair
	Subgroup CB	auto polymerizing resin repair
	Subgroup SB	Autopolymerizing resin with single long glass fiber repair
	Subgroup MB	composite resin with multiple short glass fiber repair

The specimens were numbered in a three digit code: (Tab. II)

- First digit denoted repair material.
- Second digit denoted duration of water immersion.
- Third digit denoted specimen number.

2. Fracturing of the specimens and preparing the repair site :

Individual plaster indices were made for each of the 80 specimens to be repaired. The samples were cut in the center using two carborundum disks. The cut center section of 2mm width was discarded. A milling machine with a straight hand piece attached to it was used for beveling the fracture site. Keeping the table at 0° tilt, the specimens with the help of a stone index were mounted on the table of the milling machine. The stone index held the specimens at 45°, enabling a standardized 45° bevel of the fracture segment. [fig.2]

Subgroups IA and IB – Intact specimens, acted as control.

3. Repair procedure

Subgroup H A and HB – repair with heat polymerizing resin.

Fractured segments were repositioned into the plaster index with the help of the reorientation projections of the specimens. The space between the segments to be repaired was filled with molten wax. The specimens along with the plaster indices were invested using the conventional flasking procedure. Separating medium was applied on the dewaxed surface of the plaster index. The fracture surface was then conditioned with heat cure monomer. Heat polymerized resin was mixed and packed with acrylic resin and processed using conventional compression molding technique .After the flasks had cooled, the specimens were retrieved, finished and polished.

Subgroup –CA and CB repair using auto polymerizing resin: Fractured segments were repositioned on the stone index with the help of reorientation arrows. A single uniform layer of separating medium was applied on the plaster index in the area where auto-polymerizing resin was to be poured. The prepared site was conditioned with cold cure monomer. The repair space was filled with the free flowing mix, allowing for a slight excess to compensate for polymerization shrinkage and finishing. The repair resin was cured in a pressure pot at room temperature under 30 psi pressures for 15 min to reduce porosities. The specimens were then recovered, excess resin trimmed and flushed with the adjacent segments.

Subgroup SA and SB – Repair of using composite resin and single long glass fiber: Separating medium was applied on the plaster index. Fractured segments were repositioned on the plaster index. The repair site was conditioned with heat cure monomer for 180 seconds and then air-dried. Bonding agent was applied on the fractured surface as well as on the cavity walls prepared earlier and then light cured in increments for 20-40 seconds. Flowable composite resin (shade G_2) was filled in repair gap between the repositioned till the floor of the cavity. The resin was then light cured in increment s for 40-60 seconds. A 20 mm long strip of FRC was cut. FRC strip measuring 20 mm was placed into the depth of the cavity over the previously cured resin and then gently pressed. This was done to embed the glass fiber into the resin for their enhanced bonding. Light curing of both (composite resin + FRC)

Table IIIa. *One way ANOVA- GROUP A*

	Sum of squares	Df	Mean square	F	Sig
Between groups.	26654.285	4	6663.571	331.060	.000
Within groups.	905.760	45	20.128		
Total	27560.045	49			

Table IIIb. *Scheffe*[a]

Subgroups	N	Subset for alpha = .05			
		1	2	3	4
MA	10	12.000			
CA	10		45.624		
SA	10		47.880		
HA	10			61.4400	
IA	10				82.5600
Sig		1.000	.694	1.000	1.000

a. Uses Harmonic Mean Sample Size = 10.00

was carried out simultaneously. The remaining repair space was filled with composite resin. A thin Vaseline coated glass plate was placed over the composite resin and gently pressed. The light curing of the last increment was done through the glass plate. Finished specimens were stored in distilled water.

Subgroup MA and MB – repair with small multiple equal strips of unidirectional Glass Fiber reinforced composite: Separating medium was applied on the plaster index. Fractured segments were repositioned on the plaster index with the help of reorientation projections. The repair site was treated with heat cure monomer for 180 seconds. Bonding agent was applied on the prepared site and light cured for 20-40 seconds. Flowable composite resin was placed in to the repair space. A graduated probe marked at 1.5mm was then placed into the repair space to check that the composite resin was limited only to 1.5 mm of the acrylic resin thickness. This was done to ensure that the glass fibers were placed at a depth of 0.7 mm from the surface. The resin was then light cured for 40- 60 seconds; this was done in two increments to ensure complete polymerization and reduced shrinkage. 4 FRC strips measuring 5mm each were cut. A thin layer of composite resin was placed over the polymerized resin and the glass fibers placed into the repair site perpendicular to the fracture line and gently pressed. Light curing of both (composite resin + FRC) was carried out simultaneously for 40-60 seconds. The remaining repair space was filled with composite resin. Light curing of the last increment was carried out through the glass plate

IMMERSION IN WATER: GROUP A – specimens stored in distilled water and kept in an incubator at 37°C for 48 hours. GROUP B - specimens stored in distilled water and kept in an incubator at 37°C for 4 weeks.

TESTING OF SPECIMENS: The transverse bond strength of the finished specimens was measured using a 3-point bending test in a Universal testing machine (Instron testing machine) at a crosshead speed of 5mm/min. The breaking load was converted to transverse strength using the formula:

$S = 3PL/2bd^2$

Where, S= transverse strength, P= Load at fracture, L= distance between supports. (50mm), b=specimen width. (10mm), d=specimen thickness. (2.5m)

The results were tabulated and statistically analyzed.

Results:

Table IIIa and IVa show the analysis conducted within the group A and group B. One way-ANOVA demonstrated a highly significant difference (p=.000) between the control and the repair groups.

In table III.b and IV.b Scheffé s analysis revealed that within group A and group B the intact group had the highest mean transverse strength value, in comparison to group M, which showed the least

Table IVa .*One-way ANOVA- GROUP B*

	Sum of squares	df	Mean square	F	Sig
Between groups.	11160.816	4	2790.204	242.279	.000
Within groups.	518.242	45	11.516		
Total	11679.058	49			

Table IVb . *Scheffe[a] analysis*

Subgroups	N	Subset for alpha = .05			
		1	2	3	4
MB	10	30.7800			
CB	10		44.8500		
SB	10		48.5520		
HB	10			58.2240	
IB	10				75.9720
Sig		1.000	.455	1.000	1.000

a.Uses Harmonic Mean Sample Size = 10.00

transverse strength. An increase in the transverse strength was seen after immersion in water for 4 weeks in group M (30.78 Mpa) and group S (48.55 Mpa), whereas group C (44.8 Mpa) and group H (58.2 Mpa) showed a slight reduction in transverse strength. The maximum decrease was seen in intact group where the values had reduced from 81Mpa to 78Mpa.

Discussion:

The interface between the heat polymerized acrylic resin and the repair material is usually the weakest point of the repaired denture base. Different opinions about the appropriate shape of the joint surface have been presented. Several studies have indicated different edge design, such as a butt joint, 45° bevels, 30° bevels joint, rounded and rabbet joint[8]. The advantage of the 45° bevel repair is to shift the mode of fracture from a weak, adhesive interfacial fracture for the butt repair to a stronger cohesive fracture of the repair material in the 45 degree bevel repairs. The geometry of 45 degree bevel increases the interfacial bond area and shifts the interfacial stress pattern more towards a shear stress and away from the more damaging tensile stress exerted on the butt repair. Repair width is also a relevant factor contributing to the distribution of stresses in the repaired specimens[4]. As in literature, 2 mm gap has been the most commonly suggested; the same was created for the repair material in the present study.

The choice of material for repair depends on working time, strength to be obtained with the repair material and the degree of dimensional stability maintained during and after the repair. Most fractured denture repairs are made using a resin, which generally allows a simple and quick repair; therefore auto polymerizing resin was used as one of the repair materials. However, denture repaired with auto polymerizing resin alone, often experience a re-fracture at the original site because of insufficient strength.[6,9]

The heat cure repair results showed that conventional heat activated denture resin can be effectively repaired using the same material[9]. Repairs using heat-polymerized resins are seldom performed, because they require a custom split cast gypsum mold, extended polymerization time and laboratory fees. Also, the use of heat polymerizing resin in denture repair often causes dimensional changes due to stress release and warpage of previously polymerized denture bases.

There is substantial literature on the combined use of auto polymerizing acrylic resin with reinforcing materials such as metal and glass[11,12]. The results showed that glass fiber reinforcement increased the tensile strength to 65MPa, in contrast to the auto polymerizing resin repair, which showed a mean transverse strength of 48 Mpa. That could be explained by good adhesion of the glass fibers to the denture base polymer and a low percentage of elongation at the break of glass fibers. Glass fibers apart from being appropriate strengthener are also more aesthetically suitable[12].

Recently, fiber reinforced composites have been used in reinforcement and repair of removable and fixed partial dentures because of their high fatigue resistance. The most common type of glass fiber used is the E type. When continuous unidirectional glass fibers are used, the fibers should be oriented perpendicular to the potential fracture line and be placed as close as possible to the denture margin, which is prone to fracture. The placement of the glass fiber as near as possible to the location of highest tensile stress in dentures may prevent the initiation and propagation of fracture[13]. The same fiber position was followed in the present study. [Fig 3].

Visible light cure composite have become popular for prosthodontic applications because of their wear properties, wider range of shade availability and improved clinical performance. There is no available literature on the use of light polymerizing composite resin along with preimpregnated glass fibers as denture repair material. To achieve optimum bond strength between composite resin and acrylic resin, a combined surface treatment of methyl methacrylate (MMA) monomer together with the application of light cured adhesive resin as suggested by Vergani et al was used[18]. Better bonding is promoted when the surfaces are primed with MMA monomer. This bond is caused by the diffusion and polymerization of MMA monomer across the acrylic interface to form interpenetrating polymer networks.

Bond strength may also be affected by the wetting properties of the composite resin therefore; instead of high viscosity resin a flowable composite was used. However, as the particulate composite resin is brittle and would benefit by the support of a substructure that exhibits good flexural properties, the resin was reinforced using unidirectional resin preimpregnated glass fibers (FRC). The inherent property of the fiber-reinforced composite to increase the flexural strength explains their use with composites. The light polymerized FRC substructure retains a sticky oxygen inhibited layer on its external surface that allows direct chemical bonding with the covering composite.

The length of the glass fiber also affects the transverse strength as was seen in group-S, which showed higher mean transverse strength values than group M[19]. Group M in which 4 multiple short glass fibers 5mm each along with composite resin was used showed the least strength of 12 Mpa. It has been demonstrated that the strength of a denture repair may be time dependent. Water has a plasticizing effect because of its interaction with the polymer structure. Many studies have shown that water sorption decreases the mechanical properties of denture base polymers[20].

The rigidity of specimens repaired with visible light polymerized resin improved with longer water storage. This could be explained by the fact that the light polymerized resin undergoes continuous polymerization in the presence of visible light. The results indicated that fiber reinforced composite resin can be used as an efficient and effective material for adequate long-term clinical repair.

It is important to consider that few studies simulating clinical conditions of repair dentures have been performed. Further investigation should incorporate more closely simulated clinical conditions, such as the construction of denture base shaped specimens, thermo cycling and flexural loading. The development of better bonding methods between denture base resin and visible light polymerized resin should be further investigated.

Conclusion:

Within the limitation of the study, it was found that:

1. A standard heat activated denture base resin can be effectively repaired using the same resin. The mean transverse repair strength was the highest with heat cure repair group after 48 hrs as well as 1-month immersion in water.
2. Specimens repaired with single long glass fiber and composite resin had a higher mean transverse strength values after 48 hrs when compared to self-cure repair, but was lower than heat cure repair. The strength values increased after 1-month of water immersion.
3. The mean transverse strength of self-cure resin and heat cure resin when used for repair of heat cured resin specimens were not influenced by water storage.
4. The use of multiple short glass fibers along with composite for repair of heat cure denture base resin showed the least values both after 48 hrs and 4 weeks of water storage.

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Reconstruction of root apex using matrix with MTA

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Abstract

An immature tooth with pulpal necrosis and periapical pathology imposes a great difficulty to the endodontics. Conventional treatment for such cases will require many appointments with duration ranging from 3-24 months. During this period the root canal is susceptible to reinfection from provisional restoration which may promote apical periodontitis and arrest of apical repair. This article describes a technique for placement of a matrix barrier prior to the use of MTA as an artificial root end barrier.

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Traumatic injuries to permanent teeth occur in 30% children. The majority of these incidents occur before root formation is complete and might result in pulpal inflammation or necrosis. If the injury occurs before the completion of root apex, further development of the involved tooth is arrested resulted in an open apex. Endodontic management of the pulpless permanent tooth with a wide open apex has long presented a challenge to dentistry. The treatment used to be a surgical approach, apical closure technique and apical barrier technique. The main challenge in performing root canal treatment in teeth with necrotic pulp and wide open apices is to obtain an optimal apical seal

The wide foramen requires a large volume of filling material that may extrude from root canal into periapical tissues creating foreign body responses and compromising apical seal. Lemon (1992) developed internal matrix concept in which an intermediate layer of material is placed to form an artificial root end barrier He advocated the use of matrix when the perforation diameter is larger than 1mm. The use of matrix is advisable since its placement in the area of bone destruction provides a base on which the sealing material can be placed and packed. Materials include-calcium hydroxide, Hydroxyapatite (Lemon1992), DFDB (Hartwell & England 1993), Calcium sulfate, Resorbable collagen (Bargholz 2005). Ideal requirements of matrix- Osteogenic, Biocompatible, Bioresorbable, Able to provide structural support, Easy to use clinically. Matrix is used to-

- Avoid extrusion of materials into periodontal tissues
- Reduces leakage in the sealing material
- Encourages bone regeneration
- Favorable response of periodontal tissues

Case report

An 18 years old male patient reported to the department of conservative dentistry and endodontics with a chief complaint of discolored upper right front tooth. History revealed that he had suffered trauma eight years back. On Clinical examination revealed discolored tooth in relation to 11 which is non vital. Pre-operative radiograph showed diffuse periapical radiolucency in relation to 11 and 12 with an open apex in relation to 11.

Treatment line include the placement of rubber dam, access cavity prepared in relation to 11 and 12. After determining the working length, the canal is instrumented

cautiously with K-file with the aim of cleaning root canal wall off the debris followed by copious irrigation. After that calcium hydroxide paste is given as intracanal dressing for three weeks.

A combination of calcium sulfate hemihydrate and demineralized born particles (Type 1 collagen) in powdered form is used as matrix. The powder was mixed with saline, place and packed using a delivery system comprised of two large bore needles. The material was packed beyond apex against bony space.

Followed by the placement of MTA which is compacted against the matrix subsequently backfill was performed using thermoplastisized guttapercha. The patient was recalled after two weeks reveals resolution of periapical lesion and after six months reveals complete healing of lesion followed by the placement of crown.

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Fig. 1 Pre operative photograph

Fig. 2 Pre operative radiograph

Fig. 3 Matrix in place of bony lesion

Fig. 4 MTA compacted against the matrix

Fig. 5 2wks recall radiograph reveals complete resorption f calcium sulfate

Fig. 6 4 months recall radiograph

Fig. 7 Post operative photograph

Discussion

For long time calcium hydroxide had been used in case of non vital tooth with wide open apex. The newly developed MTA has shown to be effective in artificial root end closure. The major problem in a wide open apex tooth is the need to limit the material to the perforation, using matrix avoids extrusion of material into periodontal tissues, reduces leakage in the sealing material and allows favorable response of periodontal tissues

The technique utilizing calcium sulfate or a combination of calcium sulfate and collagen in powdered form is relatively simple as the placement is similar to that done for MTA through the use of carrier device. Calcium sulfate-

- Calcium sulfate was found to induce tissue repair when it was used for filling large surgical cavities because invagination of the epithelium which prevents bone formation is avoided.
- It is resorbed after about 4 wks, thereby assisting in the formation of new bone tissue& more favorable repair.
- Ideally the tip of delivery syringe should reach beyond apical foramen

Calcium sulfate is placed in small increments, and the placement is confirmed radiographically.

MTA

Introduced by Mohmoud Torabinejad in 1993. MTA is a powder consisting of fine hydrophilic particles of tricalcium silicate, tricalcium aluminate, tricalcium oxide and silicate oxide. MTA is prepared by mixing 3 parts of powder with one part aqueous solution by weight to obtain a putty consistency which is achieved after 30 seconds of mixing.

- Advantages of MTA
  - » High biocompatibility
  - » Hydrophilic
  - » Radio-opaque
  - » Highly alkaline pH (Bacteriostatic)
  - » Excellent sealing ability (Low marginal leakage)
  - » Low solubility
- Disadvantages of MTA
  - » Difficult manipulation
  - » Long setting time
  - » High cost

Properties

- Biocompatibility
- Canal sealing ability
- Dental pulp & periradicular tissue regeneration.
- Cementogenic, dentinogenic & osteogenic potential

Conclusion

The combination of calcium sulfate as matrix and MTA has been demonstrated to be a good option for creating artificial root end barrier. The placement of MTA is predictable and easily achieved and the outcomes are very encouraging.

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Proliferative Verrucous Leukoplakia - review of literature

* Marina Sebastian, ** Neethu Raj, *** M. Muralee Krishnan, ****Santhosh Babu, ***** Babu Mathew

Abstract

Proliferative verrucous leukoplakia (PVL) is a rare form of oral leukoplakia with high morbidity and mortality rates. PVL occurrence is not strongly associated with tobacco use.Studies have shown association of HPV infection with PVL.Contrary to epidemiological findings in leukoplakia, PVL is often reported in elderly women with no tobacco, arecanut, or alcohol habits.

Key words: Proliferative verrucous leukoplakia, potentially malignant oral disorders

KDJ 2012; Vol. 35, No.3: 352-354

Introduction

Proliferative verrucous leukoplakia (PVL) is an aggressive form of oral leukoplakia with high morbidity and mortality rates.[1] Hansen et al. first described PVL in 1985, presenting 30 cases of the disease[2]. It is a multifocal progressive lesion of the oral mucosa, seen primarily in older females, and is characterized by a high recurrence rate and high rate of malignant transformation into verrucous carcinoma or oral squamous cell carcinoma[3] (OSCC).

The etiology of PVL is uncertain and some authors have reported that it may be associated with HPV (human papilloma virus) infection. Palefsky et al.[4] suggested that HPV 16 infection played an important role in pathogenesis of PVL associated oral dysplasia and possibly into cancer. Other studies have found no association with HPV. Some attempts have been made to find the association with other viruses such as Epstein –Barr virus (EBV). Previously Bagan et al.[5] found a higher prevalence of EBV in the group of patients with PVL than in controls.

Tobacco use is not strongly linked to presence of PVL. Silverman et al[6] found that only 31% of their 54 patients used tobacco in any form. Half of the patients used tobacco in a study by Fettig et al.[7] In 2003, Bagan et al.[8] found out that only 23.3% of PVL patients were cigarette smokers.

Generally PVL is found more commonly in females.

Gouvea et al.[9] found that the alveolar ridge (66.6%), tongue (50%), and buccal mucosa (41.6%) were the most commonly affected intra oral sites. In a study of 47 patients, Gandolfo et al.[10] observed PVL lesions most frequently on the alveolar crest with gingival involvement. Others have also described the main location on the gingiva[8].

PVL is a persistent, progressive condition that requires very close follow up, along with early and aggressive treatment to avoid malignant transformation. PVL shows malignant transformation into OSCC in the range of 40%-100%.[2,11] PVL has a tendency to develop oral cancers in different locations in the same patient. (Field cancerisation effect).

According to Batsakis et al.,[12] the diagnosis is often made late only after malignant transformation, by which time, it is refractory to treatment. Batsakis et al. reported high expression of Mcm-2 and 5 in mild and moderate dysplasia. Presence of these molecules may be helpful in predicting the malignant transformation of PVL. Flow cytometry may be useful in early recognition of PVL and may enable aggressive therapy at an earlier stage. Both conventional histopathology and DNA ploidy have proved effective in predicting the site of transformation. Histopathological evidence of dysplasia in a clinically leukoplakic lesion is considered an important predictor of its potential to undergo malignant transformation to SCC; however it is recognized that not all dysplastic lesions will progress to carcinoma, and

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Fig. 1

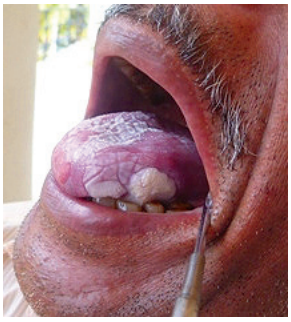
Fig. 2

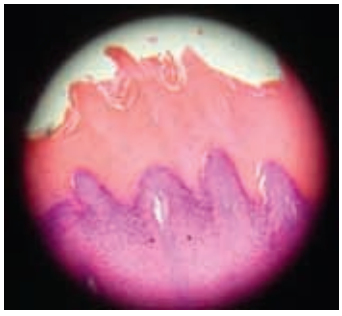
Fig. 3


Fig. 4

spontaneous regression also have been reported, especially after discontinuation of the habits associated with cancer risks (e.g., smoking tobacco), and changes in life style (i.e., habit or dietary prevention), respectively.[13,14]

PVL appears to resist to all attempts at therapy and often recurs. There is a high tendency for PVL to recur and to develop into OSCC. Silverman et al.[6] reported that in a mean time of 7.7 years, 70.3% of their cases developed OSCC.

We are reporting a case of PVL with no evidence of dysplasia or malignant transformation.

Case Report

58 year old male patient was referred to Azeezia College of Dental Sciences And Research, Kollam for a swelling in the lateral border of tongue, of 4 months duration on 20th September 2011. On enquiry he was found to be chewing betel leaf , arecanut, slaked lime and tobacco for last 33 years. During the peak period, he used to chew 8-10 times a day. He also consumed alcohol occasionally . He was a smoker since last 25 years and smoked 10 beedis while at home and 4-5 cigarettes outside home, on average ,everyday. Since last 3 years he is consuming pan masala with gutka (panparag).

General examination revealed the patient to be normal.

Examination of oral cavity revealed blanching of entire oral mucosa and limitation in mouth opening, (35mm). There was a nonscrapable irregular white patch measuring 3.5x2.5 cm in the dorsum of the tongue which extended to the left margin. (Fig 1) The dorsal surface was devoid of any tongue papillae. From the posterior aspect of the white patch on left lateral margin of the tongue, there was a sessile exophytic growth about 1.5 cm in diameter with papillary keratotic surface. On palpation it was firm , non tender and non indurated .There was another small nodule on anterior part of the swelling described above, oval in shape, 3 x 5 mm in size, also firm, non tender and non indurated (Fig. 2). There was palpable fibrosis of both the cheeks, soft palate and uvula.

A provisional diagnosis of leukoplakia turning malignant, in a patient with generalized early oral submucous fibrosis (OSMF) was made. The patient was advised to undergo routine hematological examination and screening for HIV and HBsAg prior the excision of the swelling. He was negative for HIV and HBsAg. The excision was done on 26th of September under LA. Histopathlogical examination reported; epithelial hyperplasia with no dysplasia – diagnosis compatible with PVL (Fig 3). The patient was strictly advised to avoid tobacco and alcohol and was given lycored tablet (contains lycopene 2mg, vit A 2500IU, vit C 50mg, zinc 27.45mcg and selenium 70 mcg) twice daily for three months. He was asked to come for follow up after 2 months.

The patient reported for follow up only on 21st December. The leukoplakia on the dorsum of tongue had reduced considerably and now patch measured 1.5cmx1cm. The excision wound had completely healed. It was surprising to note that the anterior nodule had increased in size and it measured 1.5 cm in diameter. (Fig 4) The surface of the swelling was papillary in nature with evidence of keratotic areas. The anterior border of the swelling showed raised margins. On palpation the lesion was non tender, firm and mildly indurated. Provisional diagnosis of squamous cell carcinoma was made and he was advised to undergo excision of the swelling. A wide excision with 1cm clearance around the swelling was made. (Fig 5) The excised specimen measured 2x1.5 cm in size. (Fig 6). The histopathological examination revealed epithelial hyperplasia with no dysplasia (Fig 7). Histopathological diagnosis was compatible with PVL. The patient was sent home and advised to come after 3 months for follow up.

The patient reported for second follow up on 21st March, 2012. The excision wound had completely healed. Due to surgical excision there was scarring on the left lateral border of the tongue. The leukoplakic patch in the dorsum of tongue again showed reduction


Fig. 5


Fig. 6

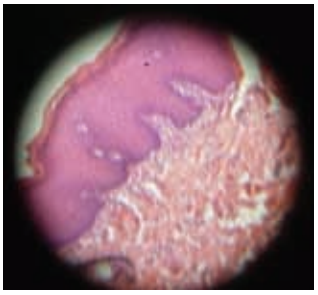
Fig. 7


Fig. 8

in size (Fig 8). Mouth opening was found to be within normal limits (46mm). He was advised to continue lycored tablet once daily and was asked to come for follow up after 3 months.

Discussion

The clinical signs of malignant transformation include appearance of an exophytic growth or a progressive ulceroproliferative lesion with a keratotic surface. These changes are asymptomatic. Only an informed patient will come for prompt treatment when such changes are noticed in the mouth. So our patient took 4 months to report for treatment of the swelling on the left lateral margin of tongue as it was painless without any distressing symptoms.

The sudden growth of the nodule having papillary keratotic surface, prompted us to make the diagnosis of squamous cell carcinoma. To our surprise histologically the diagnosis offered was PVL. The second nodule also was excised widely which showed similar histologic picture. There are a few lesions which clinically and histologically mimics squamous cell carcinoma in oral cavity.[15] The common conditions are granular cell myoblastoma, pseudoepithelomatous hyperplasia, verrucous carcinoma and viral warts. We are reporting this case because of two reasons. The clinical diagnosis was squamous cell carcinoma in a patient with OSMF and leukoplakia.

Contraray to the concept that PVL shows dysplasia or malignant transformation, both the biopsies showed no evidence of dysplasia. Histopathology revealed no koilocytes in epithelium suggesting no evidence of HPV infection. Such patients are to be followed up regularly preferably once in three months.

Our experience shows that patients with asymptomatic lesions often lose interest to report for follow ups. Such patients are to be taught the clinical signs and symptoms of malignant transformation viz. appearance of an exophytic growth or a non healing ulcer within three weeks. They must be warned to report immediately to their dentist or family physician when such changes are noticed in the mouth to rule out malignancy.

We suggest that PVL should be considered as a lesion mimicking OSCC clinically and histologically.

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*Marina Sebastin, **Anjana Ravindran, **Neethu Raj, ****Santhosh Babu, ***Babu Mathew

1) A 65 yr old male patient complained of bluish red swelling on lateral margin of tongue. It appeared following extraction of mandibular posteriors. On examination

port wine coloured multiple cystic swelling about 6- 7 in nos , asymptomatic and ballotable.

a) Haemangioma
b) Lingual varices
c) Hematoma
d) Angioendothelioma

2) 43 yr old male reported with complaint of non healing ulcer on undersurface of tongue since 3 months, not responding to antibiotics. Not a tobacco habitué

a) Traumatic ulcer
b) Tuberculous ulcer
c) Major apthae
d) Squamous cell Carcinoma

3) 21yr old male presented with multiple caries, macroglossia, and mental retardation

a) Down syndrome
b) Cretinism
c) Gargolism
d) Amyloidosis tongue

4) Patient complained of recurrent vesicles of oral mucosa since 5 months. Vesicles rupture leading to ulceration. Frequency of vesicles increased recently. Similar vesicles noticed on the skin.

a) Mucous membrane phemphigoid
b) Erythema multiformae
c) Phemphigus vulgaris
d) Epidermolysis bullosa

5) Child aged 3yrs, mother noticed sudden bleeding from Gums. H/O meseales 2 months back. Low grade fever also present

a) ANUG
b) Streptococcus gingivalis
c) Acute herpetectic gingivostomatitis
d) Acute leukemia

6) A port wine coloured swelling of the right side of upper lip, right side of nose, facial skin over right maxilla. Noticed very early in childhood. Asymptomatic, similar changes in the mucous membrane over right hard palate, palatal & buccal gingiva.

a) Hemangioma
b) Nevus of Otta
c) Sturge webber syndrome
d) Melkerson Rosenthal syndrome

7) 18yr old female complaining of a painless swelling in the middle of posterior part of oral tongue. Noticed at the age of 7 gradually enlarging in past 2 months it has started

enlarging rapidly and in lobular fashion.

a) Lingual thyroid
b) Thyroglossal cyst
c) Goiter in lingual thyroid
d) Minor salivary neoplasm

8) 11yr old complains of slow growing sessile swelling yellowish white in colour, firm in consistency asymptomatic.

a) Lipoma
b) Fibroma
c) Pappiloma
d) Granular cell myoblastoma

Ans. 1-b, 2-d, 3-a, 4-c, 5-a, 6-c, 7-c, 8-d

* Sr Lecturer, ** CRRI, ***Professor, Dept of Pedodontics, **** Prof & HOD, Dept of Oral Medicine & Radiology, Azeezia College of Dental Sciencies & Research, Kollam

Secretary's report and association news

Friends,

I thank the respected members of IDA Kerala state to the tremendous support you have rendered for the historic strike call. The solidarity and strength of dental fraternity implored the Government to call for a conciliation talk. I am very happy that the talk ended in tangible results. The government was magnanimous enough to understand the problems raised and assured to address the grievances. The response to IDA-RCC-NRHM CDE programme is very encouraging and it gives strength to take up more and more such initiatives. The CDE and CDH wings deserves special commendation for their outstanding activities. The CHILAMBOLI 2012 was memorable and majestic. A big thanks to North Malabar Branch and its organizers.

Dr. Shibu Rajagopal
Hon. Secretary, IDA Kerala State

CDE Report

Dr Lin Kovoor
CDE Chairman, IDA Kerala State

Dear Friends,

The highlight of the past three month report is the three state level CDE programmes

2nd State Level CDE was conducted in Trivandrum by women Dental Council IDA Trivandrum branch. On

May 6th 2012 at Uday Suites Sanghumugam Dr. Justin Padamadan talked on parenting, around 70 members attended the meeting.

3rd State Level CDE was hosted by Central Kerala Kottayam on July 1st at Government Dental College, Kottayam ; Dr.Chandrasekaran Nair was the faculty who took class on Back to Basics in Complete Denture, more than 130 members have attended.

4th State CDE program was hosted by Coastal Malabar on 1 5th July at K K Residency Payanoor . Dr Sunil Rao, endodontist from Bangalore has conducted lecture on Rotary endodontics and 30 participants attended the hands on.

Thanks

Dr Lin Kovoor

Website Report

Dr. Rajeev Simon K.
Website Chairman, IDA Kerala State.

IDAKerala.com Till Date

IDAKERALA.COM was inaugurated by Dr.Antony Thomas on 22/1 1/2009 at Calicut. In a very short period idakerala.com became The Largest Dental Portal of Kerala & Second Largest Dental website of the country where the IDA National website IDA.ORG.IN stands first. IDAKERALA.COM, conceptualized by Dr .Samuel K Ninan & Designed, Edited, Hosted & Managed by Dr.Rajeev Simon Kurudamannil, has already won lots of appreciation.

Dear Friends,

I am extremely happy being the Website Chairman of IDA Kerala State for the third year continuously with a full fledged website catering all online needs of IDA Kerala S tate. The commitment of real time updating, interactivity content management & presentation have made this website attractive. Real time 24hrs updating is the highlight of the website. Our efforts have been recognized by the head office & we have won the best web site award last 2 years. After 5 months error free testing a mobile version site m.idakerala.com was launched on 10/06/2012 at Cochin. Mobile version site includes 24hr updated CDE, CDH program Listings & news updates.

I thank you all for your support.

Dr. Rajeev Simon K.

Dr. Civy V Pulayath
CDH Chairman, IDA Kerala State

CDH Report

IDA- RCC ORAL CANCER PROGRAMME – A Report

What

Council on Dental Health, Indian Dental Association, Kerala State Branch in collaboration with National Rural Health Mission, Kerala State and Regional Cancer Centre Trivandrum, has organized a workshop series on "Role of Dental Surgeons in Prevention and Control of Oral Cancer" in the state of Kerala. As part of the drive to reduce the mortality and morbidity due to oral cancer, twelve workshop s were conducted to train Dent al Surgeons in prevention and early detection of oral cancer

Why

The objective of this workshop was to keep the clinician abreast of the current concepts of early detection, diagnostic evaluation and management of oral precancer and cancers. The workshop featured interactive sessions with experts in various fields pertaining to oral cancer. This programme was accredited to the Dental Council and there was no registration charges. The hospitality will be complimentary and an incentive of Rs. 300/- was be given to all the participants. The participants were provided with a training manual and a certificate of participation. More than 600 dental surgeons became certified experts in oral cancer diagnostic and preventive specialists through this programme.

How & Who

1. Prevention and control of oral cancer : Challenges and Opportunities for Dental Practitioners. Dr.Babu Mathew MDS, Retd. Professor, Community Oncology Division, RCC Trivandrum
2. Early detection of oral cancer Dr.Anita Balan, Professor & Head, Department of Oral Medicine and Radiology Govt. Dental College, Calicut
3. Treatment options of Head and Neck Cancer Dr Ramadas, Professor, Division of Radiation Oncology & Medical Superintendent, RCC
4. Rehabilitation of Oral cancer patients. Dr.Vivek V, Professor & Head, Department of Oral Medicine and Radiology PMS Dental College, Trivandrum
5. Dental care in Head and Neck Cancer Patients. Dr. Gigi Thomas, Addl. Professor, Dept of Community Oncology RCC Trivandrum. Tobacco Control: Where we stand and what next? Dr. R. Jayakrishnan, Asst..Professor, Dept of Community Oncology, RCC Trivandrum
6. Clinical case discussion.All Faculties

Where & When

Date	*Venue*	*Co ordinator*
April 22/Sun	Ernakulam	Dr. Ajikumar.V
May 6/Sun	Guruvayoor	Dr.Abdul Latheef
May 12/Sat	Kasargode	Dr. Md. Moothedath
May 13/Sun	Kannur	Dr.Sanal.O.V
May 20/Sun	Trivandrum	Dr.Premjith
June 17/Sun	Kollam	Dr.Anil Murali
June 24/Sun	Kottayam	Dr.Sabu Kurien
July 14/Sat	Malappuram	Dr.Fazil V. Hassan
July 15/Sun	Palakkad	Dr.Balasubramaniam
July 22/Sun	Alleppy	Dr.Samuel K Ninan
July 29/Sun	Pathanamthitta	Dr.Nirmal George Saibu
August 5/Sun	Kohikode	Dr.Joseph.C.C

Conclusion

This was a unique CDH-CDE training program conducted in our state for the first time. Oral cancer being the most important among 5 major dental public health problem declared by WHO, needs more attention. Ban of tobacco alone will not solve the

(Contd.)






problem as the other 5 "S" risk factors still prevails (Smoke, Spirit, Syphillis, Sepsis, Sharptooth, Sun). I hope the certified dentist volunteers will take initiative in training others to help us move towards the target of Cancer Free Kerala.

With great gratitude, let me thank the selfless service of all faculties of the program, and all at Trivandrum regional cancer centre. Dr. Gigi Thomas , who coordinated the program with Ida deserves a special mention for her sincere works. Dr . Babu Mathew, Dean of Assisia Dental College has supported us in the best way he can. Regards to Dr Nandakumar, the patron of our oral cancer foundation is the man behind bringing this program under ida umbrerlla. Flowers of thanks to all CDH committee and oral cancer foundation members. The real heros of this event are the 12 co ordinators of the program who left no stone unturned to make the event a grand success.

Dr. Civy V Pulayath

KASARGOD BRANCH

A CDE meeting was held on 27th June 2012 at IMA hall Kasaragod.

Eminent chest physician and pulmonologist Dr .Narayana Pradeep gave an awareness lecture on"POST-EXPOSURE PRO-PHYLAXIS".

He briefed the members on the steps to be taken immediately following accidental exposure to saliva or blood of patients who are HIV, Hepatitis or TB+ve.

The talk was followed by discussion of branch activities and later by dinner.

The meeting was well attended.

THIRUVALLA BRANCH

31st of March 2012

Branch Level CDE on Creating Invisibility in Dentistry by Dr.C P John was conducted on 31st of March 2012 6.30pm at Oyster Convention Centre Thiruvalla. 26 Members attended.

31st of May 2012

Indian dental ass ociation, Thiruvalla branch observed world no tobacco day on 31.5.12. It was conducted in the most grand manner. We started off with a rally comprising of about 200 students from various schools of Thiruvalla. Mr.Sabu. P. Idiculla, DySP of Police Thiruvalla flagged off the march at 9.30 am which went through the town carrying placards of anti tobacco messages. It culminated in a public function held at the Y.M.C.A hall at 11am. The function was inaugurated by Adv: Mathew T. Thomas MLA followed by keynote address by Most Rev: Geevarghese Mar Koorilos, Bishop of Thiruvalla. Anti tobacco pledge was taken by Linda Thomas, Muncipal chairperson,Thiruvalla. Many emminent persons of the society felicitated on the occasion. Dr Philip.T .Mathew,sec IDA-Thiruvalla proposed the vote of thanks. This was followed by a seminar & a short film sh ow on the sam e led by Dr .Joby Peter, Dr Binu T. Abraham from T.I.I. Variuos volentary organizations like Red cross society, ANAMS Thiruvalla, World malayali council, HOPE charitable trust, Thiruvalla, NARAIN SEWA SANSAR etc supported us in the endeavour .



ATTINGAL BRANCH

Tri-monthly report (April-June2012

South zone cricket tournament

The IDA Kerala S tate South zone cricket tour nament was hosted by IDA Attingal Branch. Dr Arshad was the coordinator of this program. The matches were conducted in 2 schedules, according to the convenience of the participating 8 teams. In the 1st schedule on 22ndApril at Attingal Govt College Grounds, teams from IDA Trivandrum, Mavelikkara, Thiruvalla and Attingal participated. In the 2nd schedule on 29th April at LNCP Grounds Karyavattom, teams from IDA Kollam, Alappuzha and Kottarakkara participated. The south zone finals was between IDA Attingal and IDA Kollam.Attingal beat Kollam and reach the state level semifinals. Arrangements like First Aid, Mike announcement, chairs, shamiana, refreshments and food were distributed to all the players as well as spectators.

4th branch executive meeting

The 4th branch executive meeting was held on 8th May 7pm atAttingal Club. President Dr Abhilash presided the meeting. Secret ary Dr Arun Roy presented the previous meeting's minutes and actions taken on the minutes. Meeting decided to conduct a Mega dental camp at Pallipuram CRPF Camp for more than 1000 jawans. Also decided to conduct a CDE on Oral Surgery by Dr Oommen Aju Jacob in june. The first General Body of the year was decided to conduct on 3rd of June. The members of the cricket team were invited in that meeting and congratulated them for their victory in the south zone tournament.

IDA-RCC-NRHM workshop on oral cancer detection

The state level inauguration of the program was held at RCC Thiruvananthapuram on May 20th Sunday The coordinator of that function was our member and S tate Vice President Dr Premjith. Health Minister V .S Sivakumar inaugurated in the presence of our S tate president and S tate Secret ary.

State level IDA cricket tournament

The state level tournament was held at Kollam KCA Grounds on 27th May 8am.In the finals IDA Kollam were the winners and IDA Attingal were the Runners up.

Dental camp at crpf camp pallipuram

A mega dental camp was conducted at the CRPF camp, Pallipuram near Thiruvananthapuram on June 3rd Sunday 8am. State Secret ary Dr S hiburajagopal inaugurated the program.DGP Of CRPF Camp was present.Th e coordinator was our member Dr Hawwa Jasim Fathima who is working asAssistant Commandant of CRPF. Oral screening, or al hygiene instructions, brushing techniques, avoiding habits causing oral diseases, slide projection were done. More than 1000 jaw ans were exam ined.

General body meeting

The general body meeting was conducted at Hotel Padmasree Chirayinkil on June 3rd Sunday 5 pm. President Dr Abhilash presided the meeting. Secretary Dr Arun Roy.S presented an interim report till June 3rd. Treasurer Dr Biju.A.Nair presented the accounts and distributed the report to all the members. All the Conveners presented their reports during the meeting. After the meeting a t alk on Forensic Odontology was taken by Dr VarunB.R. of P.M.S Dental College.

2nd inter branch C DE programme

The 2nd inter branch CDE programme was conducted at Technopark Club, Kazhakootam on June 17th Sunday .The faculty was Dr Oommen Aju Jacob renowned Oral Surgeon in India and the principal of Pushpagiri Dental College.The topic was "Problems in everyday oral surgery".

MALAPPURAM BRANCH

Report MARCH – June,2012

CDE: April 9th 2012,Monday branch level CDE on Lecture & Live demonstration on impression techniques in fpd & implant by Dr.Promad Kumar A.V was held at Soorya Regency Malappuram from 7.30p.m to 10.30pm, 35 members attended the program

May 6th 2012, Sunday Inter-Branch CDE on Minor surgical procedures in dental practice –lecture & liv e Surgery by Dr.Benny,Dr.Ummer, Dr.Abdul Gafoor, Dr.Yahya, Dr,Sachin Aslam & Dr .Roshini Sajid was held MES Dental college, Malaparamba.39 members attended the program

On June 17th June, Intra-branch CDE on Direct V/S In-Direct restoration by Dr.Madhav Moorthy was held at Soorya Regency,Malappuram with live demo from 9 am to 6pm. 22 members participated.

CDH: BSBF NOHP School dental health program was conducted at AMLP School Ambalakadavu on 15th February 2012 , 500 students were screened NOHP packs were distributed

BSBF NOHP School dental health program was conducted at Govt L.P School, Kottakkal on 27th February 2012 , 240 students were screened NOHP packs were distributed

On May 31st, 2012 Thursday IDA Malappuram observed NOTOBACCO DAY at Pain & palliative care clinic Wandoor at 5p.m, Dr .Aneesh CDH convenor & Dr.Biju.J.Nair participated in an interactive session on Tobacco cessation techniques. Anti Tobacco poster was released & distributed.

On June 26th, W orld Anti-Drug Day was observed in association with J.C. International Kott akkal at I.K.T . Higher secondary School Cherukulumb, Anti-tabacco poster were distributed among school children to spread message against use tobacco & tobacco products & drug abuse.

Executive committee meetings:

4th Executive committee meeting held on 21-03-2012 8pm.onwards at Rydges Inn Kottakkal. 31 members attended.

1st Emergency Executive committee meeting held on 03-4-2012 8pm.onwards at, Soorya Regency , Malappuram. 19 members attended

1st Extra Ordinary General Body meeting cmmittee meeting held on 09-4-2012 8pm. onwards at Soorya Regency , Malappuram. 35 members attended

5th Executive committee meeting held on 16-05-2012 8pm.on wards at Soorya Regency, Malappuram..17 members attended.

6th Executive committee meeting held on 06-06-2012 8pm.on wards at Soorya Regency, Malappuram. 13 members attended.

NEDUMBASSERY BRANCH

ACTIVITIES FOR THE MONTH OF APRIL MAY JUNE 2012

4th Executive

The 4th Executive of the branch was held on 10 April 2012 at Periyar club Aluva.

CDH

On 29th April 2012 a treatment camp was done for nearly 25 inmates and local people of Malayatoor at Daivadan Centre. The camp was co-ordinated by Dr Antony and Dr Varghese P John.

3rd CDE

The third CDE on the topic "DENT AL PRACTICE MANAGMENT" was held on Sunday 6th May 2012 at LOTUS 8 Hotel. The speaker was Dr Benoy Ambookan. It was attended by nearly 30 members.

5th Executive

The 5th Executive of the branch was held on 8 May 2012 at Periyar club Aluva.

CDH

On 27th May 2012 a treatment camp was done for 12 local people of Malayatoor at Daivadan Centre. The camp was co-ordinated by Dr Dinesh P and Dr Vinu P R.

2nd Clinical club Meeting

The second clinical club was held at Hotel The Surya on Saturday 2nd June 2012. The topic was "Diode Lasers For General Practitioners". The speaker was Dr Mahesh N.Almost twenty five members attended the clinical club.

6th Executive

The 6th Executive of the branch was held on 12 June 2012 at Periyar club Aluva.

CDH

On 24th Sunday June 2012 a treatment camp was done for 10 local people of Malayatoor at Daivadan Centre. The camp was co-ordinated by Dr Vinu P R and Dr P A Dinesh.

QUILON BRANCH

Annual General Body Meeting and Installation

AGM and installation was held at Meadows Kollam on 18.12.2011. Dr. Joseph Edward and Dr. Anil Murali formally took over as President and Secretary respectively. Family get together was also conducted on the same day. Chief guest of the function was Mr. PG Thomas, District collector. IDA Kerala State President Dr.Santhosh Sreedhar, Hon: State Secretary Dr. Shibu Rajagopal, President Elect Dr. Raveendranath were the luminaries present.

First Executive Meeting

Meeting was held at RVC Kollam on 29.12.2011 Total 22 membeers were present. In the meeting President announced the future projects for the year.

Second Executive Meeting

Meeting was held at Fern's Hall Kollam on 18.02.2012. Total 22 members were present. Members expressed their concern over unethical advertisements.

Third Executive Meeting

Meeting was held at Fern's Hall Kollam on 31.03.2012. Discussed about the HOPE issue also decided to send Resolution to the HOPE working committee.

Fourth Executive Meeting

4th Executive Meeting was held on 21-05-2012 at Fern' s Hall Kollam Total 21 Executive members were present and took the decision to host the finals of IDA Kerala state cricket tournament at Kollam and forwarding-letter to Council about unethical advertisement. Also congratulated IDA Quilon Cricket team for the runner's up trophy received from the IDA Kerala state held at Attingal on April 29th 2012.

Fifth Executive Meeting

Was on 13.07.2012 at Ritz Hotel Kollam. Total 24 executive member attended the meeting. Took the dentist strike on 23rd july at Trivandram and also discussed about the stae conference.

First General Body Meeting

Meeting was held at Fern's Hall Kollam on 21.01.2012. Total 49 members attended the meeting. Also there was a class on medical Emergencies in dent al practice, by Dr . Ashokan, Holycross Hospital, Kollam.

Second General Body Meeting

2nd General Body Meeting of IDA Quilon held on 21-04-2012 at fern's Hall, Kollam, On that meeting programme,decisions were taken about the IDA-RCC - NRHM work shop on June 17th Sunday , also decided the Venue for the same.

Third General Body Meeting

Meeting held at Hotel Fren's Hall Kollam on 16.06.2012. Discussions were made about the Paedodontics CDE on 23rd and 24th June 2012 and Congratulated the IDA Quilon team who won the IDAKerala State cricket Tournament finals trophy .

First CDE programme

First CDE Programme was by DrAshokan M.D from Holycross Hospital Kollam, on 21.01.2012 at Fern's Hall Kollam. He explained about the medical emergencies in dental office.

CDH

Training programme - On 06.03.2012 two training programmes were conducted (a) For the students and (b) For the House surgeons. This programme was conducted in association with IDA and Azeezia Dental college. Training programmes were taken by JCI President Mr.Jc NIJOY.

Dental Camp

CAMP at sub jail - On 12.03.2012 dental camp was conducted at Kollam sub jail at 1.30 pm. Chief Guest was district Judge. 15 Doctors attended the camp, total 258 patient were seen. Free Medicines distributed.

Day Celebration

World Palliative care day

On January 15th Quilon IDA Branch donated a water purifi er to the palliative care Trust Kollam

Dentist Day Celbration

March 6th dentist's day was celeberated in Assisia Dental College Miyannur, Kollam also had a students training programme and lecture by JCI zone president Mr Nijoy Dentist's day was inaugurated by Dr . Joseph Edward IDA Quilon President.

Cricket Match

Kerala State Criket Tournament Finals Venue – Quilon Cricket Association Stadium, Asramom,Kollam
Date May 27 Sunday
The Kerala State Cricket Tournament Finals was held at Kollam on 27th may Sunday Total 4 teams Particip ate in the event (Atttingal, Quilon,North Malabar and Malabar) Two matches were played by each team. IDA Quilon, were the winner and IDA Attingal was Runners up.

NORTH MALABAR BRANCH

CDE ACTIVITIES

4th CDE Programme was held on 13-5-12 at IDA hall, Kannur. The topic of the CDE was "Direct vs Indirect Restorations". Dr. Madhav Murty was the faculty. The Programme started at 10:00 a.m and ended at 6:00 p.m. The attendance was 33. The CDE was inaugurated by Dr. Saji, Principal Pariyaram Dental College.

5th CDE Programme was held on 27-6-12 at IDA hall, Kannur. The topic of the CDE was "Care the Cell". Dr. Ram.K was the faculty. The Programme started at 7:30 p.m and ended at 9:00 p.m. The attendance was 23.

EXECUTIVE COMMITTEE MEETINGS

3rd Executive committee meeting was held on 1-5-12 at IDA hall, Kannur. The attendance was 20.

4th Executive committee meeting was held on 23-6-12 at IDA hall, Kannur. The attendance was 15.

CDH ACTIVITIES

Dental Awareness class and dental check up at Ashrayam Special School on 18-6-12. Dr. Parveen Naveed and Dr. Naveed Sait took part in the programme. Dental Awareness class at Gracious English Medium School at Mayyil on 20-6-12.

Dental Awareness class at Kadachira English Medium School on 22-6-12. Dr. Mahesh Raj and Dr Naveed Sait took part in the programme.

Dental Awareness class at Thalamunda L.P School at Koodali 22-6-12. Dr. Saleem C.K took the Dental Awareness class.

Dental check up at Azhikode Central L.P School on 19-6-12. Dr Anil Kumar P.K took part in programme.

CENTRAL KERALA KOTTAYAM BRANCH

APRIL 2012

Executive Committee: The Third Executive Committee Meeting of the IDA CKK was held on 11th April 2012 at River Valley Club, Pala.

Family Tour: A 2 day Family Tour to Ooty was arranged on the 28th and 29th of April. 2 Luxury Buses filled with a joyous bunch of CKKites started the journey to Ooty on April 28th to spend a weekend with friends at Lake View Hotel, Ooty. Games, Horse Riding, Boating, Cycling and Shopping took up the major part of the 2 days spent there. A Gala Banquet was arranged on Saturday Night at Sherlock Homes Resort. Returned back to Kottayam on 30th Morning.

CDE: The Third CDE of our Branch was held on 29th of April 2012 at Hotel Sherlock Homes, Ooty. The topic Interceptive Orthodontics was taken by the faculty Dr. Aby Jose, MDS. 45 participants benefited from this short lecture.

Family Meeting: The Second family meeting was held on 29th of April at The Sherlock Homes Resort, Ooty. Over 100 members attended the colorful meeting where games, music and an antakshari competition were conducted.

MAY 2012

Executive Committee: The Fourth Executive Committee Meeting of the IDA CKK was held on 14th May at Kottayam Club.

CDE: The Fourth CDE of our Branch was held on May 27th 2012 at Hotel Pearl Regency, Kottayam. It was an Inter branch CDE - Full Day Program. Faculty – Dr.Eapen Thomas M.D.S. Topic was- "Comprehensive Oral Surgery for the Dental Practitioner". 85 participants attended the absorbing lecture.

EOGM: An EOGM was held on May 27th at Hotel Pearl Regency to decide and discuss on the idea of Accreditation of CKK members Dental Clinics. After deliberations it was unanimously decided to implement this project.

Anti-Tobacco Day: Anti Tobacco Day was observed on May 31st when in association with the Rotary Club of Erattupetta Central, awareness classes was conducted and an oath to stay away from Tobacco products were taken by school children.

JUNE 2012

Journal: The 2nd Issue of our Journal "SMILE" was released during the State Executive Meeting held at Kochi. It was released by the State President Dr. Raveendranath. The Online version of the Journal can be viewed at www.smileonline.org.in

IDA CKK Accreditation of Dental Clinics: The IDA Central Kerala Kottayam branch Project- Accreditation of Clinic was officially launched on the same day at Kochi by the State President when he handed out the kits to three Clinics which fulfilled the required norms.

EOGM: An EOGM was held on June 25th at Kottayam Club to discuss and decide on taking of disciplinary action against one of our member for unethical practice. She duly submitted her resignation just before the meeting and it was minuted.