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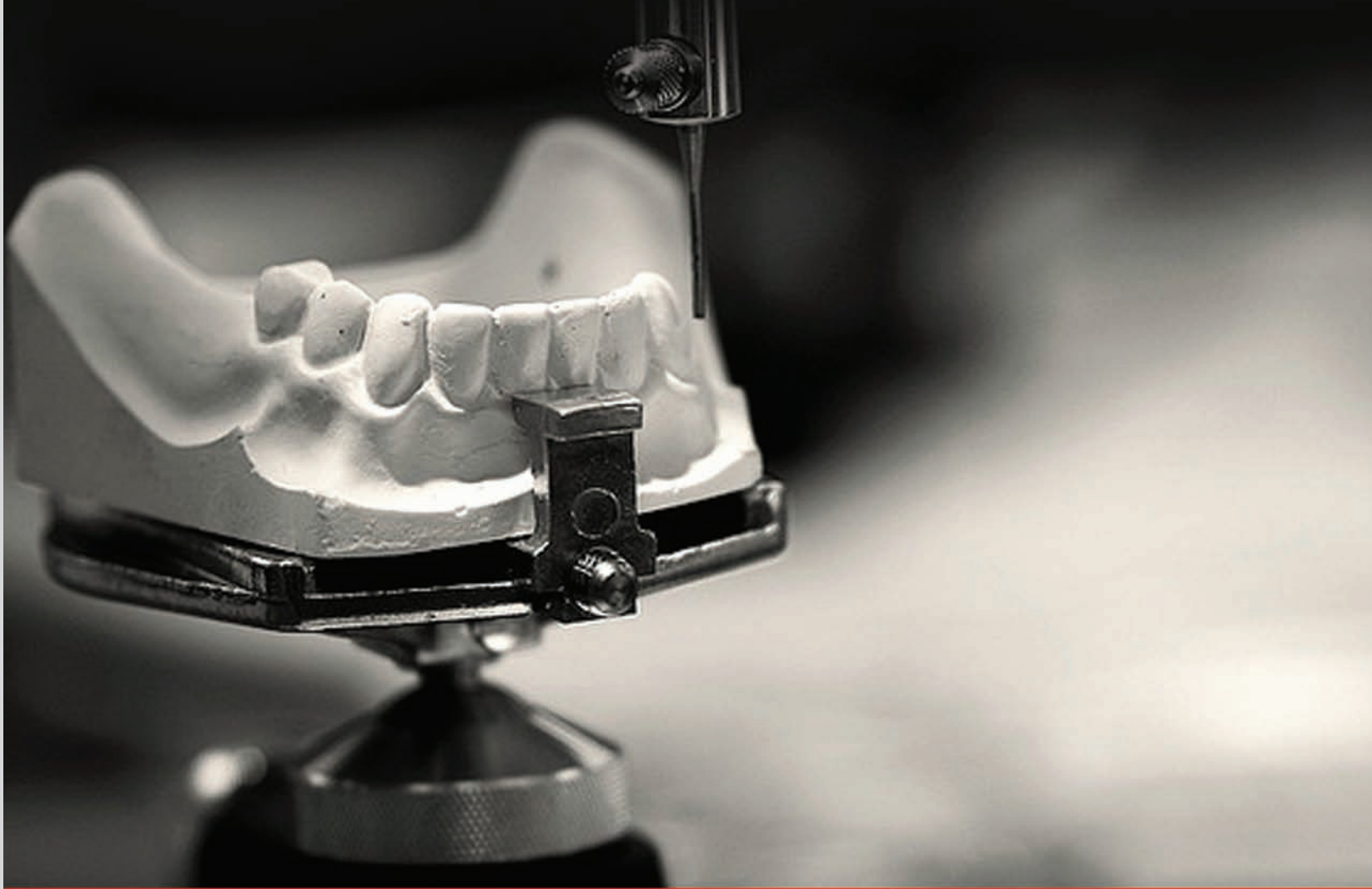

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Contents

Editorial

Relevance of Institutional Journals

The response for the first issue of Journal of clinical dentistry was very much encouraging.

We received positive reviews and constructive criticism from fellow professionals, academicians, clinicians, students and well wishers. We are striving to improve the quality in content. We hope that the readers after going through this issue, will as well come up with valuable observations and useful suggestions.

We recognise the relevance of institutional journals. In the present scenario with the involvement of a proactive regulatory body and a dedicated health University, the dental education and practice in the state are showing signs of change. A research angle is slowly developing to the teaching and learning model. It is happening in individual learning institutes across the country. Institutional Scientific journals can foster such a welcome change. It's a huge local platform within an institute for the budding researcher. It offers a medium for the aspiring scientific writer to showcase his potential. It encourages scientific reading from 'out of the text books' among students, since the author of the article and the setting are familiar to them. Above all, it will initiate a change in academic culture in the campus by instilling the right attitude among the undergraduate students.

This issue of Journal of Clinical Dentistry offers some interesting case reports and literature reviews.

I take this opportunity to thank the editorial board and the advisors for their efforts and also the Academic forum for continuing the good work.

Dentistry is exciting.

Baiju R.M.
Editor, JCD

KERALA UNIVERSITY OF HEALTH SCIENCES

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To

The Editor
Journal of Clinical Dentistry

Dear Dr. Baiju,

Please accept my heartiest congratulations on launching a journal on clinical dentistry. I am sure that it will develop into a vibrant forum for academic discourse in the art and science of dental sciences.

With best wishes and warm regards

Yours sincerely,

Mohandas

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Past Chairperson, Association of Commonwealth Universities, London,
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From,

Dr. V. Ipe Varghese
The Registrar

Dear Dr. George Varghese

I am happy and proud that the college has come out with a Scientific Journal. Let this be an inspiration to other colleges.

My Best wishes

The Registrar

Primary mucosal melanoma of the oral cavity: A case report and review of literature

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Abstract

Melanoma is a malignant neoplasm of melanocytic origin. Exposure to sunlight plays an important role in its aetiology. Oral involvement is rare which accounts for about 0.2-8% of all melanomas. Prognosis for oral mucosal melanoma is poor. Most mucosal melanotic lesions are asymptomatic in their early stages and as a result the diagnosis is often delayed. Current treatment modes include surgical excision, radiation and immunotherapy. Surgical resection, the most effective treatment modality is complicated by anatomic restraints. Here we present a case of primary oral melanoma involving the maxillary gingiva of an adult male along with a review of literature.

Key words: Gingiva, maxilla, melanoma, oral

Introduction

Melanoma is a malignant neoplasm of epidermal melanocytes or its precursors, the biologic behaviour of which is unpredictable.[1,2] Melanocytes originate from the embryologic neural crest cells and migrate into the basal layer of epidermis. Each melanocyte establishes contact with adjacent epithelial cells through their dendritic processes.[3] The ratio of melanocytes to keratinocytes in gingival mucosae is about 1:15.[4] The pigment melanin produced by melanocytes is stored within the epithelial cells in the form of melanosomes. When this pigment gets dispersed in the connective tissue, it is phagocytosed by the macrophages and they are termed melanophages.[3] Melanocytes undergo malignant transformation to form melanoma cells which are round or spindle cells with hyperchromatic nuclei. These malignant cells are devoid of dendritic processes and possess the ability of invasion to the superficial layers of epithelium and the underlying connective tissue.[4]

Melanoma is the third most common neoplasm of skin where exposure to sunlight plays an important role in its aetiology.[5,6] Oral involvement is rare and is often discovered in an advanced stage. Oral mucosal melanomas are highly malignant, with a tendency to metastasize and locally invade tissues more readily than other malignancies involving the oral cavity.[7] Data on its epidemiology, biologic behaviour, treatment; follow up and survival rate are inadequate as these lesions are rare.[1]

Case report

A sixty five year old male reported to the department of oral medicine and radiology with a slowly enlarging painless swelling in the oral cavity of three weeks duration. Clinical examination revealed a nodular lesion involving the free and attached gingiva in relation to the maxillary left premolars. The lesion was soft pedunculated and purple red in colour with greyish black borders; measuring approximately 1.5 x 2 cm. (fig. 1) Bleeding was elicited on probing. On examination palpable lymph nodes were absent.

A clinical diagnosis of pyogenic granuloma / peripheral giant cell granuloma was made. Radiographic examination did not show alveolar bone involvement. The lesion was excised and sent for histopathologic analysis. Histopathologic section showed a downward streaming of dysplastic tumour cells into the underlying connective tissue in sheets and strands. The atypical melanocytes were predominantly oval to polygonal in shape. Spindle shaped cells were also found. (fig. 2)

Fig. 1 A soft pedunculated mass on the buccal aspect of maxillary canine and premolars.

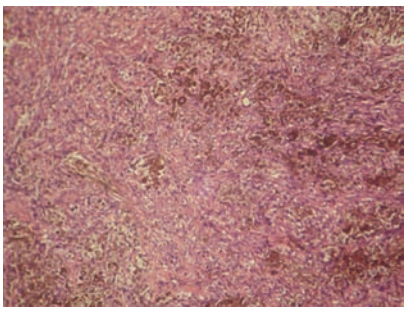


Fig. 2 H & E section showing polygonal, oval and spindle melanocytes interspersed among the connective tissue stroma with a large amount of melanin pigment. [10x]

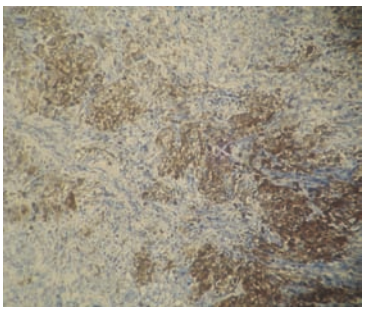


Fig. 3 Haematoxylene section clearly showing the melanin pigment

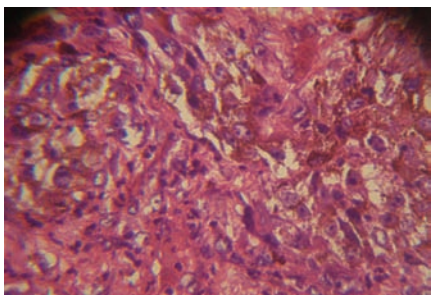
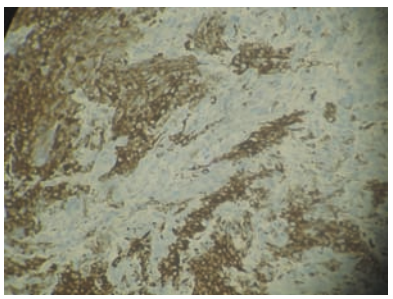


Fig. 4 H & E section showing nuclear pleomorphism, hyperchromatism & prominent nucleoli



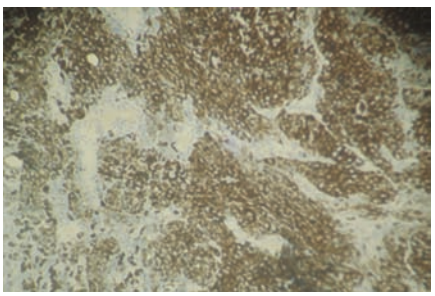


Fig. 5 & 6 The tumour cells strongly expressed S100 & HP 100 antibodies

Abundant melanin pigment was evident both intra & extra cellularly. (fig. 3) Mitotic figures & prominent nucleoli were also evident in higher magnification. (fig4)

Immuno-histochemistry was performed for confirmation of diagnosis. The tumour cells were strongly positive for S 100 & HMB 45(GP 100) antibodies. (fig 5 & 6) The patient underwent complete check up and was found to be free of any skin lesions, lymph node involvement or distant metastasis. The patient was referred to the regional cancer centre for further evaluation and management.

Discussion

Primary melanoma of the head and neck constitute approximately 1-2% of all melanomas, of which the commonest site of occurrence is the oral cavity followed by nasal cavity and sinuses.[7] Mucosal melanoma of the oral cavity is extremely rare constituting approximately 0.05% of all primary oral malignancies.[7, 4, 8] The ethnic groups commonly affected by oral melanomas are Japanese, black Africans, Native Americans, and Hispanics.[9, 10, 11,12]

Oral melanoma is largely a disease of older adults of 40 years and above. The average age at diagnosis is about 55 years.[13, 14,15] There is a slight male predilection.[6, 16] Most frequent sites of occurrence are the hard palate, maxillary gingiva and alveolar mucosa.[6, 16, 17] Oral melanomas present with a variety of morphologic characteristics. They largely appear as pigmented macules, but nodular and ulcerated forms also occur.

The colour of the lesion varies from dark brown to bluish black.[1] Variants with no pigmentation have also been reported.[16] Malignant melanoma exhibits two types of growth pattern-radial and vertical. The ABCDE criteria used in the clinical diagnosis of cutaneous melanoma may also be used for oral mucosal melanoma.[5,8,19]

Differential diagnosis for oral mucosal melanoma includes oral melanotic macule, melanoacanthoma, physiologic or racial pigmentation, smoking associated melanosis, post inflammatory pigmentation, Kaposi sarcoma and oral nevi. Intraoral pigmentation associated with systemic diseases like Peutz- Jeghers syndrome, Cushing syndrome and Addison's disease should also be considered in the diffential diagnosis.[10, 21]

Tissue biopsy remains as the only effective mode of diagnosis for melanoma.[22]

Computed tomography and magnetic resonance imaging are used to assess the status of metastasis. Histologically, the tumour cells appear as either spindle shaped or epithelioid and infiltrate the underlying connective tissue in cords, nests or sheets. Sometimes

individual tumour cells are scattered throughout the lesional tissue. The tumour cells are pleomorphic with large nuclei and eosinophilic cytoplasm. Melanin pigment may be abundant, sparse or even absent.[5,19] Melanin bleaching and special stains such as Masson-Fontana may also aid in the diagnosis of melanoma. Other rare histological variants that exist include desmoplastic, neurotrophic, spindle cell and balloon cell melanomas.[14]

Final diagnosis is established by Immuno-histochemistry. The tumour cells strongly expressed S-100 protein and homatropine methylbromide (HMB-45) which is characteristic but not specific for melanoma.S-100 protein is frequently used to highlight the spindled neural appearing melanocytes and HMB-45 for the round cells.[16]

Vimentin, a mesenchymal marker is also expressed by the tumour cells. Other melanocyte specific markers are microphthalmia transcription factor (mitf), tyrosinase and melanoma antigen recognized by T cells (MART1).[16]

The staging systems used for cutaneous melanoma are not applicable to mucosal melanomas. Most practitioners use general clinical stages in the assessment of oral mucosal melanoma.[17] A simple clinical staging system (TNM) for oral mucosal melanoma is given below.[20, 23]

Stage I	Localized primary disease
Stage II	Regional lymph node metastasis
Stage III	Distant metastasis

The treatment modalities for oral mucosal melanoma are highly variable ranging from a conservative approach (radiation therapy) to radical resection with extensive lymph node dissection. Most recommended mode of therapy is complete surgical excision of primary site with adequate margins followed by radiation.[20, 24] Complete excision is difficult to achieve in oral melanomas due to anatomical limitation. In such cases radiotherapy and chemotherapy play an important role. Tumour thickness & lymph node metastasis are considered as reliable prognostic indicators.[25, 26]

Oral melanomas are highly aggressive than their cutaneous counterpart. This aggressiveness is attributed to angio-invasion, anatomical limitation to surgical excision and delay in diagnosis. Repeated trauma leads to early ulceration which in turn establishes access for metastasis. Hence the prognosis for patients with oral melanoma is relatively dismal.[1, 2, 16] Early recognition and treatment greatly improves the prognosis. After surgical removal, recurrence and metastasis are frequent events, and most patients die of the disease in two years. A review of the literature indicates the five year survival rate within a broad range of 5-20%.[2, 4, 17, 27] Once the surgical treatment is over, lifelong follow up is required to detect the presence of recurrence or metastasis.

Conclusion

Mucosal melanoma is a rare neoplasm of the oral cavity which has the capacity to metastasize rapidly. Risk factors involved in the development of oral mucosal melanoma are unknown. It is not related to physical, thermal or chemical factors; but now it is thought that most of them arise de novo. Early diagnosis is an important determining factor in the prognosis of melanoma. The purpose of this article is to give emphasize on early detection. As the location of the lesion does not warrant early diagnosis, awareness amongst populations has to be achieved with proper patient education. Dental practitioners should be more vigilant during oral examination and any pigmented oral lesion has to be biopsied and histopathologically examined. Case reports with treatment plan and prognosis (five year survival rates) from different racial groups provide a better understanding of the lesion in the future.

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Denture stomatitis – Etiological factors and management

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Abstract

Denture trauma due to unstable dentures is considered to be one of etiological factors of denture stomatitis. Denture stomatitis is an inflammatory reaction and the intensity of inflammation varies depending on the tissues involved as well as on the intensity of forces acting on the tissue. Bacterial and fungal infections added to the trauma will increase inflammation. Various other factors too are involved in the Denture Stomatitis. This article highlights the various etiological factors and management of denture stomatitis.

Keywords: Denture, Trauma, Stomatitis, inflammation.

Introduction

Denture stomatitis is increasingly becoming a worldwide problem in elders wearing removable dentures. Basically it is an inflammation of denture bearing mucosa. The causes of denture stomatitis are many, like poor oral hygiene, nocturnal wearing of the prostheses, trauma, smoking, compromised systemic conditions, allergic reaction to the denture base material, bacterial and fungal infection particularly of Candida albicans. The erythematous reaction can be focal or diffused.

Classification

According to Newton's classification, three types of denture stomatitis are distinguished.

Type I - A localized simple inflammation or pin point hyperemia

Type II - An erythematous or generalized simple type presenting a more diffuse erythema involving some part or the entire denture covered mucosa

Type III - A granular type inflammatory papillary hyperplasia commonly involving the central part of the hard palate and the alveolar ridges.

Type I is usually due to trauma whereas Type II and III are caused by the microbial plaque accumulation. Strains of Candida are very often involved as a causative factor in denture stomatitis. There are many studies in support of this Candida infection associated denture stomatitis, and it is often associated with Angular Cheilitis or glossitis.

Predisposing factors

- Local factors - Trauma from dentures, use of denture during night, poor denture and oral hygiene, allergy to the denture base materials, migration of plasticizer from soft liners and free monomer from denture base, Xerostomia and Radio Therapy can cause denture stomatitis.
- Poor systemic factors - Old age, diabetes mellitus, nutritional deficiencies, malignancies, immune deficiency and use of broad spectrum antibiotics etc can aggravate the situation.

Management and preventive measures

Since the etiology of denture stomatitis is multi-factorial, proper case history evaluation and oral examination should be done for a proper diagnosis and treatment planning.

- Plaque control - Proper cleanliness of denture is important. The denture should be scrubbed with soap

and water after every meal. The mucosa in contact with the denture also should be kept clean.

- Denture should be properly finished and polished, ill fitting dentures should be relined or newly made.
- If the denture stomatitis is due to allergy to denture base material, a patch test should be done. Also newly fabricated dentures should be kept in water to remove the free monomer.
- Usually the denture stomatitis is associated with Candida infection. So it should be treated by local application of Nystatin, Amphoteracin B, Miconozole or Clotrimazol. Systemic therapy with Ketocanozole or Fluconazole.
- To prevent the risk of relapse, the treatment should be continued for 4 weeks.
- When lozenges are used, the patient should be instructed to take out the dentures when the medicine is consumed.
- Meticulous oral and denture hygiene should be maintained. The denture should be kept in disinfectant solution during night.
- Old dentures fitting surface should be removed to 1-2 mms and relined for use during the treatment period.

Discussion

The etiology of denture stomatitis is controversial. Candida albicans infection is usually found to be associated with denture stomatitis.[2,4] Studies by Mori et al recognized that mechanical force falling on the denture bearing area has an important role in tissue changes. The histopathological changes in denture supporting tissue seem to be dependent on the strength and distribution of the occlusal load.[8] Properly fabricated dentures does not cause trauma to the tissue. Nocturnal wearing of denture increased the frequency of denture stomatitis.[9] Studies by Shulnan et al in their study explains the fact that nocturnal wearing of the prostheses can reduce the protective effect of saliva, cleaning action of the tongue and good oxygenation of the mucosa. These key factors reduce the resistance of the mucosal tissue to mechanical and microbial action. Trauma or inflammation is a precursor to bacterial and fungal colonization. Poor oral hygiene was related to denture stomatitis but frequent brushing was not related to denture stomatitis. So it is important to provide appropriate treatment regime.

Conclusion

The causes of denture stomatitis are multifactorial. A proper history and oral examination will help to treat the patient successfully. A proper oral & denture hygiene will definitely help to prevent or avoid denture stomatitis.

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Treatment of Chronic Recurrent Tempero mandibular joint Dislocation by Down-Fracturing of Zygomatic Arch: A case report

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Abstract

Dislocation of the TMJ represents 3% of all reported dislocated joints in the body. It reflects the upper limit of the normal range of motion. It occurs from a variety of situations such as prolonged mouth opening, yawning, vomiting, seizures, or as a result of trauma. Surgery is often appropriate when dislocation is prolonged or recurrent. Zygomatic arch downfracture, appears to offer a high degree of resolution of dislocation. We report a case of chronic recurrent TMJ dislocation treated surgically by down fracturing of zygomatic arch.

Key words: TMJ dislocation, dautery procedure, zygomatic arch downfracturing.

Hypermobility of TMJ does not imply a discrete pathologic condition. Rather it reflects the upper limit of the normal range of motion.[1] It occurs from a variety of situations such as prolonged mouth opening, yawning, vomiting, seizures, or as a result of trauma.[1,2] In 1832, Sir Astley Cooper proposed principles for diagnosis and treatment of dislocation of the lower jaw. He introduced the terms complete dislocation (luxation) and imperfect dislocation (subluxation).[2]

Subluxation and dislocation are two distinct forms of hyperextension of TMJ. Subluxation is a pathologic condition where the condyle becomes momentarily trapped anterior to the articular eminence. The condyle spontaneously reduces or the patient can self reduce the mandible.[1,2,3] Clinical and radiographic analyses have indicated that approximately 70% of the population can subluxate the TMJ.[4] In contrast, dislocation is a similar displacement of the condyle, which cannot be self-reduced.[1,4] Whatever the underlying cause, with each successive dislocation, further episodes tend to occur more easily.[2] When dislocation in a patient becomes more frequent and progressively worse, the condition is referred to as habitual or recurrent dislocation.

Dislocation of the TMJ represents 3% of all reported dislocated joints in the body.[5] However, most authors regard recurrent dislocation as a rare entity.[4] As with other temporomandibular disorders, the highest incidence of recurrent dislocation is reported among female subjects, although the reasons for this are not well understood. Signs and symptoms of acute and chronic dislocation are the same and include (1) inability to close the mouth, (2) preauricular depression of the skin, (3) excessive salivation, (4) tense, spasmatic muscles of mastication and (5) severe pain of the TMJ.

The treatments of recurrent dislocation may be grouped into (1) alteration of the ligaments, (2) alteration of the associated musculature and (3) alteration of the bony anatomy. We report a case of recurrent TMJ dislocation of both TMJs, corrected by alteration of bony anatomy via down-fracturing of zygomatic arch.

Case report

A 19 year old girl presented with recurrent episodes of bilateral dislocation of TMJ of two years duration. Dislocation occurred 5-6 times daily during yawning and eating, more frequently on right side. She could self reduce the mandible after dislocation. There was no history of any trauma or any drug intake that can decrease the muscle tone. Panoramic view of mandible revealed that the articular eminences on both sides were almost flattened. TMJ view (open mouth) showed the condyles displaced anterior to the articular eminence bilaterally. Conservative approaches had no role in this patient as the underlying cause is the deficient articular eminences. After all routine work up, the patient was taken up for surgical correction under general anesthesia.

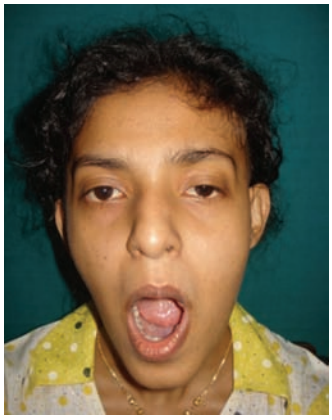


Fig. A

Fig. B

Fig. A and B: Pre op mouth opening. Patient straining to reduce the dislocated condyle.

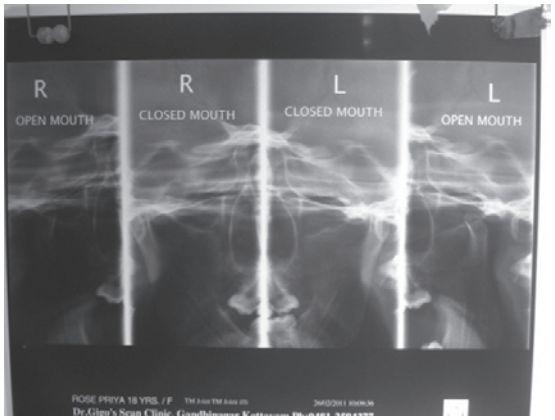


Fig. C: Pre op TMJ views (open and closed). Flattened article eminence can be appreciated

Fig. D Intra op. Oblique osteotomy of the Zygomatic arch.

Fig. F Zygomatic arch in downfratured position

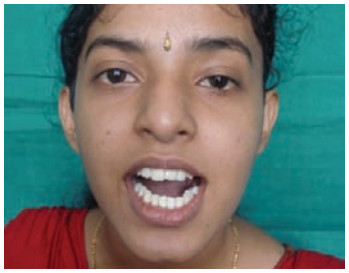


Fig. G Post op mouth opening.

Alteration of bony anatomy via down-fracturing of zygomatic arch on the right side was planned.

A preauricular incision was placed on the right side to expose the zygomatic arch and capsular ligament. The periosteum was reflected from the arch, and an oblique osteotomy was performed on the zygomatic arch 5mm anterior to the articular eminence. A greenstick fracture was made at the zygomaticotemporal suture, thus giving the segment some rebound elasticity to provide stability in its altered position. The osteotomized segment was repositioned inferiorly and slightly medially to create an obstruction for the movement of condyle beyond the articular eminence. The same procedure was done on the left side. The patient was then kept on intermaxillary elastics for one week to restrict the mouth opening. Post operative period was uneventful. Maximum mouth opening after two weeks post op was 30 mm. TMJ views (open and closed) showed no dislocation of the condyles.

Discussion

Surgery is often appropriate when dislocation is prolonged or recurrent.[12] Numerous surgical procedures for habitual dislocation have been described in the literature based on creating a mechanical obstacle in the condylar path, such as positioning the disk anterior to the condyle, downfracturing the zygomatic arch and fixation medial to the eminence or by the insertion of implants into the eminence.[12,13] Other modes of treatment aim to restrict movement of the condyle, for example by injecting sclerosing substances or inducing fibrosis in the tissues adjacent to the joint.[12,14] Another approach is to remove the mechanical obstacles in the condylar path; an example is eminectomy, which was introduced by Myrhaug in 1951, and has been used with satisfactory results and efficacy.[1,2,12,13]

In 1933, Mayer[6] was the first to describe the displacement of the zygomatic arch to augment the articular eminence and obstruct the path of the translating condyle. Leclerc and Girard modified the procedure, and Dautrey further altered the technique.[1,2,3] The Dautrey procedure was designed to avoid interference with normal movements, but to prevent abnormal forward excursive movements.[7] A preauricular incision exposes the zygomatic arch and capsular ligament, the periosteum is reflected from the arch, and an oblique osteotomy is performed on the zygomatic arch. A greenstick fracture should occur at the zygomaticotemporal suture, thus giving the segment some rebound elasticity to provide stability in its altered position. MMF is not necessary for postoperative stability. This procedure may be advantageous in that it does not violate the joint space and allows immediate, normal anterior movement with little limitation in

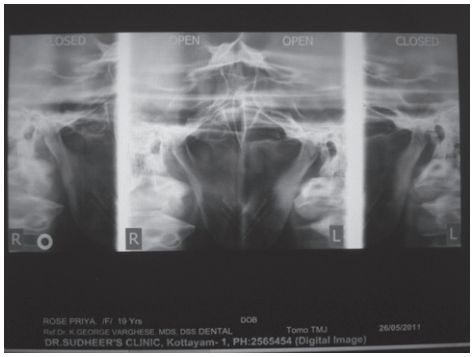
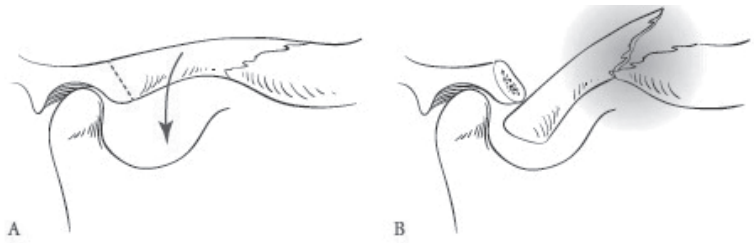


Fig. H Post op TMJ views (open and closed). Condyle is obstructed by the downfractured zygomatic arch and prevented from dislocating



Dautery procedure: A, An oblique cut using a fissure bur is created anterior to the articular eminence to decrease the frequency of condylar dislocation by obstructing the path of condylar movement. B, The osteotomized segments of the articular eminence are made to overlap one another

maximal opening. The main disadvantage is the risk of fracture of the distal segment, which might require bone plate or wire fixation. Iizuka et al[7] recommended that care be taken to avoid reflection of periosteum from the zygomatico-temporal suture, lest a true fracture result when repositioning the arch. In order to prevent or reduce the likelihood of sutural fracture, this procedure should only be attempted in younger individuals (under age 40, approximately) because of increasing brittleness of the skeletal system with age.[8] One study, however, reported that even with complete fracture of the distal segment, the use of wire or bone plate fixation did not present any complications and held the distal segment in place.[9]

Another potential problem associated with the Dautrey procedure is the resorption of the distal segment.[8] Bone resorption (and remodeling) was noted radiographically on follow-up studies in all the patients from one study.[10] Another reported disadvantage is that the arch tends to engage only the lateral third of the condylar head with mandibular movement.[11] An attempt to place the down-fractured arch as far medially as possible is necessary to fully engage the translating condyle, and fixation of the segment may be necessary to stabilize this medial position. The mediolateral relationship of the condylar head to the glenoid fossa and zygomatic arch should be assessed before surgery to assure that the arch will actually engage the condyle. Overall, a cure rate of 91% was reported among a total of 58 cases, with a recurrence of only 9%. Approximately 5% of patients incurred a zygomatic arch fracture, 8% reported to have temporary facial nerve paresis, and 7% complained of postoperative pain and clicking of the TMJ. Follow-up periods ranged from 6 months to 5 years.[2]

Conclusion

Zygomatic arch downfracture, appears to offer a high degree of resolution of dislocation, although the number of reported cases is less than half that of eminectomy. Although additional studies may yield improved therapeutic techniques, it appears that surgical intervention currently remains the mainstay in management of this uncommon clinical entity.

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Cranial implant - a case report

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Abstract

Cranial prosthesis is a biocompatible, permanently implanted artificial replacement for missing portion of the skull bones. It is also known as cranial implant, cranioplasty plate or skull plate. Cranial prosthesis is given for the protection of brain as well as to mask the disfigurement. Osteoplastic as well as alloplastic materials can be used for the rehabilitation. Metals, autopolymerising acrylic resin, combination of metal and autopolymerising acrylic resin, heat polymerizing acrylic resin, polyethylene, silicone etc; are the alloplastic materials used for this purpose. Use of heat cured acrylic resin is widely accepted because of its inertness, biocompatibility as well as the economic consideration. This article discusses few case reports of cranial prosthesis using heat cured acrylic resin.

Key words: Cranial implant, Skull bone, Heat cured PMMA.

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Introduction

Repairing of cranial defects is carried out to protect underlying brain tissue, to provide pain relief at the site, to improve esthetic appearance and to minimize patient's anxiety.[2,3] Cranioplasty can be delayed for 6-12 months to allow appropriate vascularisation of scalp flaps. This delay also helps to ensure absence of infection and provides a mature tissue bed to help injury to brain during the procedure.

This article discusses the procedures involved in the fabrication and placement of prefabricated heat cured PMMA implants in two cases for the repair of a large calvarial defects.

Case reports

A 24 year old male patient was referred to The Dept of Prosthodontics for the fabrication of cranial implant. He had underwent craniotomy followed by severe headache.(Fig. 1) The most crucial step was finding out the exact margins of the defect. The hair was removed and then careful palpation was performed to locate the margins. After locating the exact extent, boxing of the defect and 2-3mm surrounding areas with modeling wax was done. Irreversible hydrocolloid was used as an impression material which was reinforced with plaster of paris. Impression was removed and poured with dental stone. (Fig. 2, Fig. 3)

Then modeling wax was softened and adapted to fill the defect.[4,5] On hardening, wax try-in performed to compare with the contralateral dome shape. The uniform thickness of the wax pattern was maintained. The extra care was given to the marginal areas. By considering various factors including financial condition of the patient, we decided to fabricate the implant with heat cured PMMA. The pattern invested in a specially designed metal flask. After bench curing, it was processed overnight. The prosthesis was deflasked and polished. Holes were drilled throughout the implant. Again the try-in performed with this implant. This was sterilized.

Neurosurgeons placed the implant in the exact position. On postoperative recovery, the esthetic improvement was amazing. (Fig. 4)

Second case: A 35 year old patient: (Fig. 5 & Fig. 6)

Discussion

Autogenous bone grafts are the materials of choice for cranial implants, but their acquisition requires another incision and discomfort. Bone implant received from bone bank has got the risk of being resorbed, transmitting diseases etc.[4] Of the various cranial implant

Fig. 1

Fig. 2

Fig. 3

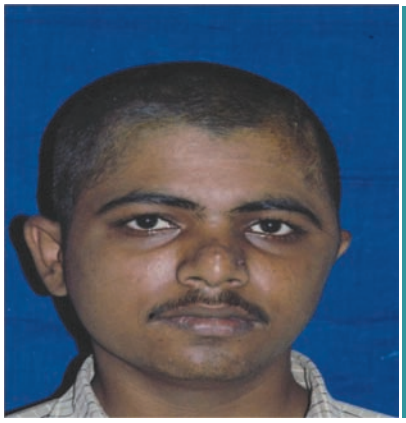

Fig. 4

Fig. 5

Fig. 6

materials, Poly methyl methacrylate and titanium are the most viable materials. Titanium is expensive, difficult to fabricate, and hardly affordable by many patients in our society. Cold cure acrylic can be used directly to fabricate a plastic implant at the time of surgery. This material can cause exothermic reaction which can create damage to the surrounding tissues and may lead to infection and inflammation. This can be eliminated by fabricating a custom acrylic implant, using lost wax technique preoperatively.

Conclusion

Prefabricated heat cured acrylic cranial implant has several advantages like; complete polymerization results in non-permeability to body fluids, it has got improved compressive, impact and shear strength, results in good esthetic appearance.

Acknowledgment

1) Dr.Anilkumar S., Prof. and HOD, Dept. of Prosthodontics, Govt. Dental College, Kottayam.

2) Mr. Ajayghosh V., Dental mechanic, grade II, Dept. of Prosthodontics, Govt. Dental College, Kottayam.

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Recurrence of Ameloblastoma in Autogenous Rib Graft: A case report

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Abstract

Ameloblastomas are benign, locally aggressive, polymorphic neoplasms of proliferating odontogenic epithelial origin with a high recurrence rate. Recurrence is attributable to inadequate surgical treatment and to the aggressiveness of the tumor, which is considered locally invasive. Cases of recurrence of ameloblastomas involving autogenous bone grafts are rare. We report a case of mandibular ameloblastoma recurring 19 years following resection and reconstruction with autogenous rib graft.

Key words: ameloblastoma, recurrence, autogenous rib graft.

Introduction

Ameloblastoma is a benign tumor that is usually unicentric, nonfunctional, intermittent in growth, anatomically benign and clinically persistent (Robinson, 1937).[1] They cause expansion of bone and have a strong tendency to recur. Recurrence is attributable to inadequate surgical treatment and to the aggressiveness of the tumor, which is considered locally invasive. Cases of recurrence of ameloblastomas involving autogenous bone grafts are rare. To our knowledge only 11 unequivocal cases were previously published, of which only one is over rib graft and rest are iliac crest graft. A case of mandibular ameloblastoma recurring 19 years following resection and reconstruction is reported here.

Case report

A 29-year-old woman with a mandibular ameloblastoma was treated in 1990 by right hemimandibulectomy via submandibular approach. An immediate reconstruction with autogenous rib graft fixed by trans-osseous wiring was done. Histological examinations showed the tumor epithelium arranged as a network lined by a layer of cuboidal to columnar cells, many resembling stellate reticulum. The diagnosis was follicular ameloblastoma, confirming the results of a previous biopsy. The borders were free of the tumor. Her postoperative course was uneventful. Her facial balance was good and the panoramic radiograph showed a newly formed right mandible with an irregular shape but no signs of tumor recurrence. She was not wearing a dental prosthesis and her occlusion was normal, with a slight deflection to the right side when opening.

The patient returned 19 years after surgery with a firm, non tender swelling of size 4x3 cm over the right body of mandible extending to the cheek. (Fig. 1a, 1b) A multilocular radiolucent area was seen on a radiograph at the posterior edge of the graft. (Fig. 2b) CT showed multilocular radiolucency over the graft with significant soft tissue involvement. (Fig. 2a) Histopathological evaluation revealed follicular ameloblastoma. Resection of the graft along with surrounding soft tissues is done. (Fig. 3a, 3b, 3c, 3d) Three months after surgery, the patient is asymptomatic with good occlusion and facial balance. Her mouth opening is 40 mm, with a slight deviation to the right side.

Discussion

Ameloblastomas are benign, locally aggressive, polymorphic neoplasms of proliferating odontogenic epithelial origin with a high recurrence rate.[1,2] Unfortunately, although most agree that aggressive treatment is essential for cure of this tumor, the fact remains that a consensus has not been reached on the biologic behavior of this neoplasm and how best to treat it.[5] Ameloblastoma tends to infiltrate between intact cancellous bone trabeculae at the periphery of the tumor before bone resorption becomes radiographically evident. Therefore, the actual margin of the tumor often extends beyond its apparent radiographic or clinical margin.[6]

Recurrence of ameloblastoma is thought to be related predominantly to inadequate surgical removal of the primary tumor[2] and to the aggressiveness of the tumor.[3,4] Recurrence of ameloblastomas involving autogenous bone grafts is rare. Dolan et al (1981)[4] reported a case of recurrence of ameloblastoma in rib graft after 13 years.

Recurrence in grafts may come from the proximal stump, from the adjacent soft tissues, or from intraoperative contamination.[3] Because in the present

Fig.1a Pre-operative picture showing swelling over right cheek

Fig. 1b Intra oral view of the swelling over the cheek

Fig. 2a CT showing soft tissue involvement of the tumor

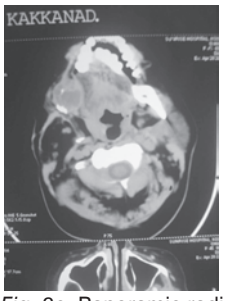

Fig. 2c Panoramic radiograph showing radiolucent lesion over the posterior edge of the graft. The smooth fusion of the graft with the mandible can be noted

Fig. 3a, b, c Intra operative picture. Healthy bone ath the junction of graft – mandible may noted in fig. 3c

Fig. 3c Resected specimen with surrounding soft tissue

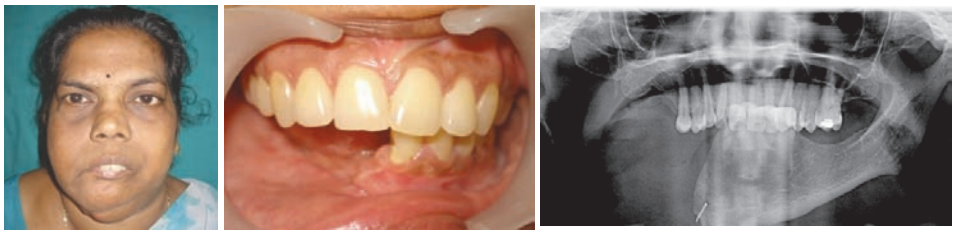

Fig. 4a, b, c Post operative appearance.

case the condyle, ramus, and part of the mandibular body were removed in the first operation, recurrence from the proximal stump is unlikely. Histologic examination showed a distal border free of tumor.

However, destruction of the cortical plate and periosteum invasion is clearly seen in the specimen. Origin from remaining tumor cells in the soft tissues is the most likely possibility in this case, probably due to remains of the periosteum left adherent to the mucosa. Although the pathogenesis of recurrence of ameloblastomas in bone grafts are not well understood[3,4], the features of this case report seem to confirm the hypothesis of a soft tissue origin.

This case emphasizes on the importance of aggressive resection of the tumor with good margins. More aggressive resection along with surrounding soft tissues is recommended where ever a periosteal breach is suspected.

Conclusion

Ameloblastomas are benign, locally aggressive, polymorphic neoplasms of proliferating odontogenic epithelial origin with a high recurrence rate. More than 50% of recurrences occur within 5 years after surgery. Recurrence of ameloblastoma in autogenous iliac bone graft after a long period of more than 5 years is very rare. Recurrence is thought to be related predominantly to inadequate surgical removal of the primary tumor. The pathogenesis of recurrent ameloblastoma involving bone graft is not easy to explain. Extensive and thorough resection of the surrounding soft tissue should be performed in cases of suspicion of invasion.

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Disinfecting prosthodontic office

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Abstract

Dental professionals are at a high risk of cross infection while treating patients especially when it is evident that most of the human microbial pathogens have been isolated from oral secretions. Associated with the prosthodontic treatment of a patient, there are a number of persons who are at a higher risk of contact with viable organisms like the patient, the dentist, the chair-side assistant, and the technical and ancillary or reception staff. Because of the potential cross-contamination associated with prosthetic practice in a communal-type clinic, infection control becomes mandatory. Hence, this article is an attempt to emphasize the need of disinfection and to review the measures of infection control in the field of prosthodontics.

Key words: Disinfection, Impression materials, prosthesis, prosthodontic office

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Introduction

Dental professionals are exposed to a wide variety of micro-organisms in the blood and saliva of patients. These micro-organisms may cause infectious diseases such as the common cold, pneumonia, tuberculosis, herpes, hepatitis B and acquired immuno deficiency syndrome. The use of effective infection control procedures in the dental office and the dental laboratory will prevent cross-contamination that could extend to dentists, dental office staff, dental technicians and patients.

Prosthodontic patients are high-risk patients relative to their potential to transmit infectious disease, as well as to acquire it. An equal concern has been expressed for cross-contamination and disease transmission. Addressing these problems, then, two identifiable concerns are (1) how the dentist and his staff can be protected from disease acquisition and disease transmission to patients and (2) what steps should be taken to help minimize cross-contamination with prosthodontic instrumentation.[1]

Universal precautions in dental office

Staff protection measures

1 Gloves must be worn especially for intraoral examination, or when touching items or surfaces that may be contaminated with body fluids like saliva or blood.

2 Dentists should be aware that allergic reactions to latex gloves or the cornstarch powder in gloves have been reported in health care workers and patients. To reduce the possibility of such reactions, nylon glove liners for use under latex, rubber or plastic gloves are available.

3 Use of disinfectant scrub like chlorhexidine after hand washing will have a prolonged antibacterial effect against microbial ingression through the gloves.

4 Occupational Safety & Health Administration (OSHA) requires that the protective clothing not be worn outside the work area and that protective attire be removed and placed in laundry bags or containers that are properly marked after use.

5 Surgical masks or chin-length plastic face shields must be worn to protect the face, the oral mucosa and the nasal mucosa when spatter of body fluids is anticipated. It is recommended that facemasks should be changed once every hour or between each patient contact, whichever occurs first.

6 Protective eyewear in combination with a mask must be worn to protect the eyes when spatter and splash of body fluids are anticipated and a face shield is not chosen, especially while using air rotor handpieces.[2-4]

Disinfection of operatory and production area

Operatory areas

- Countertops and dental equipment surfaces such as light handles, X-ray unit heads, amalgamators, cabinet and drawer pulls, tray tables and chair switches are likely to become contaminated with potentially infectious materials during treatment procedures. A solution of sodium hypochlorite (house-hold bleach) ranging from 1:10 to 1:100 prepared fresh daily is an effective germicide.[3]

Reducing aerosols in the clinic

- Preoperative mouth rinses with chlorhexidine gluconate or other suitable disinfectant mouth wash should help reduce infectious particles in aerosols. Rubber dam isolation is another method to reduce potentially infective aerosols. High volume secretion during procedures using copious irrigation and even the routine use of high volume saliva ejectors can restrict aerosolization.[5]

Production area

- Persons working in the production area should wear a clean uniform or laboratory coat, a face mask, protective eyewear and disposable gloves. Work surfaces and equipment should be kept free of debris and disinfected daily. Ragwheels should be washed and autoclaved after each case. Brushes and other equipment should be disinfected at least daily. Pumice, used for the purpose of polishing, should be dispensed in small disposable containers for individual use on each case. A liquid disinfectant (1:20 sodium hypochlorite solution) can serve as a mixing medium for pumice. Adding three parts green soap to the disinfectant solution will keep the pumice suspended.[6]

Specific precautions in prosthodontic office

Management of instruments

- Instruments and equipment intended for sterilization or disinfection procedures must first be carefully prepared by cleaning by an initial presoaking with a disinfectant solution before loading into the autoclave. After sterilization, the instruments should be stored in the sealed packages until they are used.

- Although no documented cases of disease transmission have been associated with high-speed dental handpieces, low-speed handpiece components used intraorally or prophy angles, sterilization between patients with acceptable methods that ensure internal as well as external sterility is recommended.[3]

- Acceptable sterilization methods include steam under pressure (autoclave), dry heat or chemical vapor. Ethylene oxide sterilization is not recommended for high-speed dental handpieces, low-speed handpiece components used intraorally or prophy angles.

The following table describes the sterilization recommendations of some commonly used Dental instruments & materials in Prosthodontic clinic.[3]

Instrument / Material	Steam autoclave	Dry heat oven	Chemical vapor	Ethylene oxide
Burs				
• Carbon steel	**	#	#	#
• Steel	$	#	#	#
• Tungsten carbide	$	#	$	#
Stones				
• Diamond	$	#	#	#
• Polishing	#	$	#	#
• Sharpening	#	#	#	**
Glass slabs	#	#	#	#
Impression trays				
• Aluminum metal	#	$	#	#
• Chrome plated	#	#	#	#
• Custom acrylic resin	%	%	%	#
• Plastic	%	%	%	#
Hand instruments • Carbon steel (Steam autoclave with chemical protection- 2% Sodium Nitrile	$	#	#	#
• Stainless steel	#	#	#	#
High speed handpieces	(#)*	**	($)*	%
Contra-angles	#	**	#	%
Water-air syringe tips	#	#	#	#
Surgical instruments (Stainless steel)	#	#	#	#

* Confirmation with the equipment manufacturers is recommended ** Effective method but risk of damage to materials # Effective & preferred method $ Effective & acceptable method % Ineffective method

Impression material	Method of Disinfection	Remarks
Irreversible Hydrocolloid impression material (Alginate)	Immersion in chlorine compounds or iodophors	Given the hydrophilic nature of the material, a minimal disinfection time should be used
Reversible Hydrocolloid impression material(Agar)	Immersion in chlorine compounds or iodophors	Limited data available. Immersion in 2% alkaline glutaraldehyde has significant adverse effects on the impressions and resultant dies
Rubber based Impression material	Polysulphides and silicones are can be disinfected with all EPA (Environmental protection Agency) registered disinfectants A satisfactory solution for most elastomers is 2% glutaraldehyde	Polyether impressions, being hydrophilic should be kept immersed in disinfectant for minimum time (10 minutes)
Zinc Oxide Eugenol Impression material	Immersion in 2% alkaline glutaraldehyde solution	Adverse effect have been reported on ZOE immersed in diluted hypochlorite
Impression compound	Immersion in 2% alkaline glutaraldehyde solution	Phenolic spray can be used

Disinfection of Impression

It has been suggested in the literature that dental impressions which become contaminated with patients' saliva and/or blood can cross-contaminate stone casts poured against them.[7] The subsequent handling of the impressions, following removal from the oral cavity also has potential for microbial transmission.[8] Until 1991, rinsing under running tap water was the recommended procedure for "disinfection" of dental impressions.[9] However, it has been shown inadequate as washing the impression materials with water alone removes as little as 40% of bacteria, viruses and fungi.[10] Best practice advocates the rinsing of impression under running water followed by immersion in a recommended chemical disinfectant. The following table describes the disinfection recommendations of some commonly used impression materials in Prosthodontics.[11]

Disinfection of Dental prosthesis, appliances, wax bites, occlusion rims, stone casts, and custom impression trays

Prostheses or appliances that have to be worn by patients should be cleaned thoroughly before disinfection by scrubbing with a brush and an antiseptic

Prosthesis	Method of Disinfection	Remarks
Heat cured Denture base acrylic resin	Immersion in Iodophor or chlorine compounds	Damage of heat cured denture base resin has been shown to occur after only 10 minutes of immersion in a glutaraldehyde with phenol buffer
Chrome Cobalt Alloy	Immersion in Iodophor or 1:10 hypochlorite	Disinfectants are corrosive in nature so short time exposure is recommended
Fixed metal/porcelain prosthesis	Immersion in glutaraldehyde	Unglazed porcelain should not be exposed to any disinfectant and (porcelain firing/ glazing will suffice)
Wax rims and bites	Spray wipe spray method with iodophors	After the second spray, they can be enclosed in a sealed plaster bag for the recommended time
Stone casts	Spray or immersion in Hypochlorite or Iodophor	Casts to be disinfected should be fully set (i.e. stored for at least 24 hours)
Custom acrylic resin impression trays	Spray or immersion in Hypochlorite or Iodophor	The trays should be rinsed thoroughly to remove any residual disinfectant and allowed to dry fully before use

hand wash or by cleaning in an ultrasonic unit. The following table describes the disinfection recommendations of dental prosthesis, appliances, wax bites, occlusion rims, stone casts, and custom impression trays.[3]

Disinfection of some other commonly used Prosthodontic items

Articulators, face bows, rubber bowls, shade guides & wooden handled spatulas should be cleaned and disinfected to avoid cross contamination. If iodophor is used on shade guides, they should be wiped with water or alcohol after the exposure time to remove any residual disinfectant.[3] Robert J. Boylan et al (1987)[12] did a study on the efficacy of UV light with a wavelength of 254nm as a mode of sterilizing complete dentures, partial dentures and a rubber base impression contaminated with fine known species of microorganisms. The results showed that killing of microorganisms with greater than 98% within 15 seconds and 99% either 30 seconds and 100% in 2 minutes. They also concluded that UV light cannot be used as a sole means of disinfecting the impressions because of shadowing effect that allows the survival of microorganisms unexposed to UV light.

Unit-dose concept

The dispensing of an amount of a material device which is sufficient to accomplish the procedure and where excess may be discarded at completion, is commonly referred to as a "unit-dose." Materials such as denture adhesives for record trays, petroleum jelly, impression materials, waxes and indelible pencils are amenable to unit-dosage with little or change in the established routine.[1]

Conclusion

The increased awareness of infectious diseases and the recognition of the potential for transmission of infectious microorganisms during dental procedures has led to an increased concern for, and attention to, infection control and prevention in dental practice. Although dentists have a legal requirement to comply with the OSHA Standard, they should also be aware of and practice proper infection control procedures designed for the safety of everyone. The role of disinfection is often neglected in a prosthodontic clinic owing to various factors of negligence. Using the adequate methods and procedures, standards of asepsis practiced during prosthodontic procedures can be improved by simple organizational efforts. The need of hour is to upgrade our current prosthodontic setups and adopt minor changes in infection control procedures to effectively reduce the risk for disease transmission.

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Light sources for Orthodontic Bonding

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Abstract

Light curing method of bonding attachments to teeth offers a better alternative to self curing in terms of higher bond strength, command set and less moisture contamination. This article analysis various curing lights used for orthodontic bonding with special emphasis to visible light and LED light. It also focuses on the hazards of these blue lights on operators eye and enables every practitioner to take adequate steps to prevent such retinal damage.

Introduction

After introduction of the acid etch technique there has been a shift in the mode of attachment of orthodontic brackets on the tooth surface. Direct bonding technique has become the main stay for orthodontic bonding since then because of the advantage of enhanced esthetics and less chance of gingival inflammation. Various types of adhesives have been tried for the successful placement of Orthodontic attachments like Glass Ionomer, Self cure composite, Light cure composite etc. The introduction of light cure adhesives allowed the practitioners the luxury of working time and they can choose when to initiate the curing cycle after placing the bracket on tooth surface. This allows them to check and recheck the perfectness of the position which is most essential in a preadjusted appliance.

Light curing composites were introduced in 1970's primarily for restorative dentistry. The curing process begins when the photoinitiator champhoroquinone is activated. The light absorption of champhoroquinone is found to be maximum in the blue region of the visible light spectrum at a wave length of 470 nm.[1] Initially the light cured resins were polymerized with ultraviolet light, later visible light of wavelength between 400 to 500 nm were used which offered greater depth of polymerization in short time. Full bonding of upper and lower arches with a conventional Tungsten Quartz halogen light source at 40 seconds per bracket may require 15 to 20 minutes per patient.[2] Long curing times are generally inconvenient for the patients impractical with the children and uncomfortable for orthodontists.

Halogen Lights

Most commonly used method of curing composite today is Halogen lights that usually provide a light intensity of about 500mW /cm^2 and a wave length range of 420 to 500nm. Halogen bulbs produce blue light when electrical energy heats tungsten filament to high temperature.[3] Despite of their common use in dentistry halogen bulbs have several disadvantages. The principle of light conversion by this technique is said to be inefficient because the light power output is less than 1% of the consumed electrical power. The effective life of halogen bulb is approximately 100 hrs because of the degradation of the bulbs components by the high heat generated.[4] It requires about 20 seconds to cure Orthodontic composite resins per bracket. (fig. 1)

Fast Halogens

The disadvantage of increased curing time per bracket lead to the use of high intensity halogen lights with bulbs of increased light intensity and turbo tips to focus the light emitted. Here the light intensity used is about 800 to 900mW/cm^2 and a wave length of 400 to 505nm. It can reduce the curing time to half of that needed for conventional halogen lights.[5]

Plasma Arc Curing units (PAC)

Plasma arc lamps have a tungsten anode and a

Fig. 1 Conventional Halogen Curing system

Fig. 2 Plasma arc curing unit

Fig. 3 LED curing unit

cathode in a quartz tube filled with xenon gas. The gas becomes ionized and forms a plasma that consists of negatively and positively charged particles and that generates an intense white light when an electrical current is passed through the xenon.[6] Plasma lights provide a light intensity of 1200 to 1500mW/cm^2 and a wavelength range of 380 to 495 nm. Because of the high intensity manufacturers claim that 1 to 3 seconds of plasma curing cures resin composite to hardness comparable with that achieved after 40 seconds of conventional curing lights.[7] This rapid curing is really an advantage to clinician but all orthodontic adhesives are not compatible to the plasma curing, hence clinician should perform a basic compatibility test before using these light sources. (fig.2) Another disadvantage with plasma light is high heat generated which can raise the pulpal temperature. The increase in pulpal temperature in a restorative preparation was found to reach 5.16^{0}C with PAC compared to 1.86^{0}C with conventional halogen.[8] Generally in orthodontic bonding the untouched enamel and dentin layer may provide additional heat insulation so the use of PAC for 5-10 seconds in orthodontic bonding should be safe with regard to pulp temperature.[9]

LED Curing

Solid state light emitting diode technology can be used for polymerization of light activated composite resins to overcome the shortcomings of halogen curing systems.[10] LEDs use junctions of doped semiconductors to generate light instead of the hot filaments used in halogen bulbs. (fig. 3) LEDs have a life time of over 10,000 hours and undergo little degradation of output over this time.[11] They do not require filters to produce blue light and are resistant to shock and vibrations. The power consumed is also negligible. Older versions of LEDs were unsatisfactory with metal brackets due to their low power out put. Current LEDs produce a higher out put of approximately 1000 mW/cm^2 with a very narrow wavelength range of about 465 nm. Repeated battery charging / replacement and difficulty to repair if any problem arises are the only drawback of LEDs according to the authors.

Safety of curing lights

The normal spectral output from a visible light curing unit extends into both ultraviolet and infra red ranges. This spectral region is often referred to as retinal hazard region. Inexpensive band pass filters incorporated into the Light curing system eliminate unnecessary light from reaching the operators eyes.

This light energy is dangerous because the cornea lens and vitreous fluid of the eye are transparent to these wavelengths and the light energy is absorbed in the retina. Damage to the retina is possible through thermal or photochemical process. Photochemical damage to photoreceptor cells of the retina can degrade overall light or color sensitivity and the Infra red wave lengths may cause cataract formation in the lens.[12] Research has shown that when blue light strikes the retina they inhibit the formation of the chemical cytochrome-c oxidase. This chemical is an important part of retinal cells because it transports oxygen to the photoreceptor and other retinal cells. Without cytochrome-c oxidase the cells become deprived of oxygen and eventually die resulting in degeneration.[13]

Similar research has shown that retinal damage is due to the peculiar nature of this wavelength and not related to the duration and frequency of exposure. This means that even a short exposure to blue light can cause retinal damage.[14]

Individuals with history of retinal disease should seek the advise from their ophthalmologist before operating light unit. They should take extreme care and comply

Fig. 4 Safety goggles for halogen light

Fig. 5 Safety goggles for LED light

with all safety precautions including the use of suitable light filtering Safety goggles.[15] (fig. 4 and 5)

Conclusion

The introduction of light cured resins offer the clinician with the advantage of extended, although not indefinite working time. It is particularly useful when quickset is required such as rebonding of loose brackets, bonding to impacted tooth etc. It is also useful when extra long working time is required as in case of difficult premolar brackets needs rechecking before the bracket placement is considered to be optimal.[6] The selection of appropriate curing system should be based on the need, very rapid curing is possible with PAC relatively slow curing is possible with LED and Halogen systems. Because of the various advantages LEDs are currently replacing the conventional halogens in all dental fields. Adequate precautions should be taken for the operator, patient and assistants during operation of curing light in clinics.

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Common problems related to complete denture treatment and their management

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Abstract

A major challenge in dental practice continues to be the successful management of the complete denture patient who experiences ongoing difficulty with his or her dentures. Often there is no total agreement between the patient and the dentist as to the adequacy of their dentures, this differing perception of patient needs makes the situation difficult. This article is a review of some common problems associated with complete dentures and their management.

Key words: complete denture, problems, management

Introduction

Successful complete denture therapy aims at providing a functional denture that will satisfy the expectations of the patient. Several authors[1-5] cite that most frequent patient complaints pertain to esthetics, retention and stability, comfort while eating, and the accumulation of food under the prosthesis. The most frequently observed faults in denture fabrication relate to retention and jaw relationships (horizontal and vertical) which may in turn be correlated to the patient complaints of looseness and difficulty in eating respectively.[6]

Hence, once a problem becomes apparent, it is important that it is addressed in a logical and systematic way. Without doubt, listening to the patient is the most important step.

Common complaints

ESTHETICS

The factor that most often appears to have an impact on success of complete dentures is esthetics.[2] Attention should be focused on patient's expectations of their dentures. They may have unrealistic high expectations, often believing that the dentures will be comparable to their natural teeth. These high expectations are found to be more prevalent in older age groups.[7] Incorrect selection or arrangement of teeth and incorrect contouring of the denture bases can also cause dissatisfaction of esthetics.

It is important to get approval by a family member or a close friend of the patient at the try-in stage to assure that the dentures are esthetically pleasing as they are familiar with the patient before the treatment.

PHONETICS

The tongue of the patient wearing complete dentures has a dual function - to take part in speech articulation and to control the dentures. If the dentures are loose, the demands of this latter function may be so great that there is a general deterioration in the quality of speech.

When teeth have encroached upon the neutral zone, dentures can become unstable during mastication and speech. When this is suspected, the clinician should trim the lingual aspect of the posterior teeth to increase tongue space and re-assess after a few weeks.

A dry mouth may also result in looseness of dentures and will affect speech due to the loss of surface lubrication. Most of the speech problems are seen during the initial stages of wearing dentures and will improve as the patient adapts to them. Patients should be encouraged to read and talk aloud at the time of delivery.

PAIN

Complaints of pain may be encountered during insertion/removal of dentures, while at rest or in function.

Causes

1. Pearls or sharp ridges of acrylic on the fitting surface arising from deficiency in laboratory finishing
2. Denture not relieved in region of undercuts
3. Over extension of lingual flange
4. Lack of relief for frena, muscle attachments, incisive papilla, nerves
5. Incorrect, mostly increased vertical dimension

Management

Providing adequate relief for frena, removal of sharp fins/pearls on the fitting surface and reduction of over extended areas can solve the problems in most situations.

FLEETING SORE SPOTS ON MUCOSA

Problems related to denture stability may give rise to erythematous areas that are produced as the dentures move on the ridges. Instability might be due to flat/flabby ridges, incorrect occlusion, faulty centric relation, denture distortion or placement of lower posteriors outside the ridge. Proper identification of the cause and appropriate management is necessary.

LOOSENESS

It is more commonly associated with the lower denture. Retention and stability of complete dentures may be likened to a simple balance having retaining forces on one side and displacing forces on the other. If the latter exceed the former, instability/looseness will arise.[8] To put it simple, looseness can arise either due to decreased retention or increased displacement.

Causes of decreased retention:

1. Under extended borders, in width or depth. This usually is encountered with posterior border of upper denture and the distolingual pouch and the retro molar pad region of the mandibular denture. Under extended areas should be modified with green stick compound and denture extended.
2. Inelasticity of cheek tissues occurring as a consequence of the ageing process or in conditions such as scleroderma and sub mucous fibrosis.
3. Inability to form a suitable seal as in xerostomia
4. Dimensional change in the denture base
5. Altered contour of the tissues in old denture wearers or combined use of old and new dentures

Causes of increased displacement:

1. Over-extension in denture border depth seen as a slow rise of lower denture when mouth is half open.
2. Overextension in denture border width seen as plumped out cheeks.
3. Denture not in optimal space. For example; molars on lower denture positioned lingual to ridge, posterior occlusal table too broad causing tongue trapping, thick lingual flanges encroaching on tongue space.
4. Occlusal errors: locking of cusps during excursive movements
5. Use of excessive amounts of fixative or self-applied reline material.
6. The width around the maxillary tuberosities should also be checked. If bulky, denture can be displaced when the mouth is opened wide due to the coronoid process of the mandible encroaching upon the neutral zone in this region. In such situations, the thickness should be reduced gradually until the patient can open the mouth without displacing of the denture.

A point to be noted is that a gradual loss of retention is mostly related to saliva whereas a sudden loss is mainly related to mechanical reasons.

EXCESSIVE BULK

The patient may experience heaviness or fullness as new dentures are inserted. Causes are mostly related to sudden reduction in tongue space or surface roughness resulting from inadequate polish.

Management

This mostly disappears as patient gets accustomed to new dentures. Some cases might require reduction in thickness of the denture bases.

The tongue space should be accounted for during the try-in and teeth should be arranged accordingly. The plane of orientation should be such that tongue can rest on the occlusal surface of lower teeth.

FOOD ACCUMULATION UNDER DENTURE

This arises due to unfamiliarity and lack of muscle control or as a result of ridge resorption causing ill fitting of dentures.

Most cases are solved without intervention by the clinician. However the clinician must ensure that only minimum pressure is applied to ridges.

EXCESSIVE SALIVATION

Stimulation of salivary glands, inadequate peripheral seal or decreased vertical dimension may cause excessive salivation. Washing the dentures in ice water and rinsing the mouth with cold water may be helpful to reduce salivation.

MUCOSAL REACTIONS (Denture stomatitis)

It is a benign lesion most frequently seen in the palate as areas of erythema of a smooth or granular type. The etiology has been related to trauma from the dentures and Candida albicans infections. Presently, the multifactorial backgrounds including immunological factors are acknowledged.[9]

The treatment is usually simple if the etiologic factor is identified. Good oral hygiene, thorough denture cleaning, and periods of rest for the denture-bearing tissues are essential and, may be combined with antifungal therapy and the correction of traumatizing factors. The use of antifungal drugs as the sole method of treatment is not recommended, because Candida albicans infections often recur if hygiene has not improved and the dentures have not been optimized. Surgical elimination of papillary hyperplasia may sometimes be necessary.

Discussion

Brunello and Mandikos in 1998[6] found that the most common complaints of the complete denture were Pain and Generalized Discomfort (75%), Difficulty in Eating (61%), and Looseness of the dentures (59%). This result supported the findings of previous studies by Kotin,[3] (Pain 45%, Eating 40%, Looseness 80%) and Smith and Hughes (77% Pain, 55% Looseness, 15% Eating) in 1985 and 1988 respectively. However the study conducted by Brunello and Mandikos could not find any complaint regarding the appearance of the dentures, which is in strong contrast to most other reports.[2, 10, 11] Jeganathan and Payne[4] reviewed the literature and noted that under extension of denture bases and vertical and horizontal jaw relationships were the most frequently observed faults.

The study by Brunello and Mandikos[6] showed that 88% of patients had dentures with poor retention. The denture bases in these cases were either under extended or overextended (86% and 2%, respectively), formed poor tissue contact (86%), or displayed an inadequate posterior palatal seal. Incorrect vertical or horizontal jaw relationships were observed in 94% of patients and errors in tooth positions were observed in 63% of denture patients. The study also found that patient complaints of loose dentures could be associated with faults relating to retention and that complaints of difficulty in eating were significantly related to errors in establishing jaw relationships.

McCord and Grant[8] opined that the most critical factors are the patient adaptational factors. Patient satisfaction may not always be based on the technical quality of the dentures. Psychologic and emotional factors may be of great importance in maladaptive patients, even though they seek technical advice. In such situations the ability of the dentist to communicate effectively with the patient is of critical importance. The "iatrosedative interview" proposed by Landesman HM has been suggested to be an effective method of communication.[9] Carlsson GE[9] has opined that the dentist-patient relationship and psychologic factors have a great impact on patient acceptance of new dentures.

Conclusion

There are many problems related to complete denture treatment. Several of them can be easily solved with experience whereas for others, there is a lack of evidence-based knowledge. Inevitable ridge resorption over time may further decrease oral function if dentures do not remain retentive and stable. Complete denture patients experiencing difficulties with their dentures most frequently complain of looseness of their dentures, esthetics, difficulty while eating, and accumulation of food under the appliance. The most frequently observed faults in denture construction are related to retention and vertical and horizontal jaw relationships. There is significant relationship between inadequate retention and improper intermaxillary relationships and patient complaints of looseness and difficult eating. The clinician should carefully evaluate for identifiable causes before concluding that the complaint is related to age, gender, or general medical condition. In addition to clinical and technical skills, insight into patient behavior and psychology and communication techniques are also necessary so as to provide the best possible treatment outcomes.

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Ectodermal Dysplasia- Review of Literature

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Abstract

The ectodermal dysplasias comprise a large, heterogeneous group of inherited disorders that are defined by primary defects in the development of 2 or more tissues derived from embryonic ectoderm. The tissues primarily involved are the skin, hair, nails, eccrine glands and teeth.

Key words: ectodermal dysplasia, embryonic ectoderm, skin, hair, nails, eccrine glands, teeth.

Introduction

Ectodermal dysplasia (ED) is not a single disorder, but a group of syndromes all deriving from abnormalities of the ectodermal structures.[1,2,3] More than 150 different syndromes have been identified. Diagnosis is usually by clinical observation often with the assistance of family medical histories so that it can be determined whether transmission is autosomal dominant or recessive. Some ED conditions are only present in single family units and are derived from very recent mutations. Ectodermal dysplasias can occur in any race but are much more prevalent in caucasians.

Thurnam published the first report of a patient with ectodermal dysplasia in 1848.[4] The term ectodermal dysplasia was coined by Weech in 1929.[5] T he ectodermal dysplasias are congenital, diffuse and nonprogressive. Presently more than 192 distinct disorders have been described. The most common ectodermal dysplasias are X-linked recessive hypohidrotic ectodermal dysplasia (Christ-Siemens-Touraine syndrome) as shown in below (fig. 1) and hidrotic ectodermal dysplasia (Clouston syndrome).[6]

A newborn boy with anhidrotic/hypohidrotic ectodermal dysplasia syndrome showing generalized fine scaling and a history of intermittent fever. Current classification of ectodermal dysplasias is based on clinical features. Pure ectodermal dysplasias are manifested by defects in ectodermal structures alone while ectodermal dysplasia syndromes are defined by the combination of ectodermal defects in association with other anomalies. One well-known person with ectodermal dysplasia is actor Michael Berryman.

Freire-Maia and Pinheiro proposed the first classification system of the ectodermal dysplasias in 1982, with additional updates in 1994 and 2001.[7] Their original classification system in which ectodermal dysplasias into different subgroups according to the presence or absence of

- hair anomalies or trichodysplasias
- dental abnormalities
- nail abnormalities or onychodysplasias
- eccrine gland dysfunction or dyshidrosis

Overall, the ectodermal dysplasias were classified into either group A disorders, which were manifested by defects in at least 2 of the 4 classic ectodermal structures as defined above, with or without other defects, and group B disorders, which were manifested by a defect in one classic ectodermal structure in combination with a defect in one other ectodermal structure like ears, lips.

With the recent identification of the causative genetic defect for a number of the ectodermal dysplasias, newer classification systems have been devised. In 2003, Lamartine reclassified the ectodermal dysplasias into the following functional groups based on the underlying pathophysiologic defect:[8]

- cell-to-cell communication and signaling
- adhesion
- development
- other

Facial Photograph

Intra Oral – Maxillary arch

In 2001, Priolo and Laganà reclassified the ectodermal dysplasias into 2 main functional groups:

- defects in developmental regulation/epithelial-mesenchymal interaction
- defects in cytoskeleton maintenance and cell stability.

Other classification systems categorize the ectodermal dysplasias based on defects in cell-cell communication and signaling, adhesion, transcription regulation or development.

Several ectodermal dysplasia syndromes may manifest in association with midfacial defects, mainly cleft lip, cleft palate or both.

ED can be classified by inheritance (autosomal dominant, autosomal recessive, and X-linked) or by which structures are involved (hair, teeth, nails, and/or sweat glands).[2,10,11]

There are several different types with distinct genetic causes:

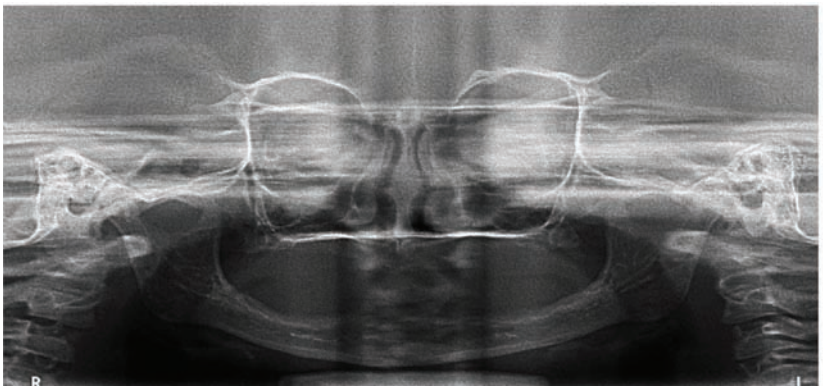
- Hay-Wells syndrome, Rapp-Hodgkin syndrome and EEC syndrome are all associated with TP63
- Hypohidrotic ectodermal dysplasia can be associated with *EDA*, *EDAR* and *EDARADD*
- Margarita Island ectodermal dysplasia is associated with *PVRL1*
- Ectodermal dysplasia with skin fragility is associated with *PKP1*
- Clouston's hidrotic ectodermal dysplasia is associated with *GJB6*
- Naegeli syndrome/Dermatopathia pigmentosa reticulariss is associated with *KRT14*
- Pachyonychia congenita is caused by multiple keratins
- Focal dermal hypoplasia is associated with *PORCN*
- Ellis–van Creveld syndrome is associated with *EVC*
- Palmoplantar ectodermal dysplasia refers to several different conditions selectively affecting the hands and feet

Individuals affected by an ED syndrome frequently have abnormalities of the hair follicles.[1,2,12,13] Scalp and body hair may be thin, sparse and very light in color. (Fig 2) The hair may grow very slowly or sporadically. It may be excessively fragile, curly or even twisted. Fingernails and toenails may be thick, abnormally shaped, discolored, ridged, slow-growing or brittle. The cuticles may be prone to infections. The skin may be lightly pigmented. Skin sustaining injury may grow back permanently hypo-pigmented. In some cases, red or brown pigmentation may be present. Skin can be prone to rashes or infections and can be thick over the palms and soles.

Individuals affected by certain ED syndromes cannot perspire.[1,2,3,4,12,14] Their sweat glands may function abnormally or may not have developed at all because of inactive proteins in the sweat glands. Without normal sweat production, the body cannot regulate temperature properly. Therefore, overheating is a common problem, especially during hot weather.

In the development of tooth buds frequently result in congenitally absent teeth and/or in the growth of teeth that are peg-shaped or pointed.[1,2,4,5,14,15] (fig. 3,4,5) The enamel may also be defective. Cosmetic dental

Intra Oral—Mandibular arch



Panoramic View

treatment is almost always necessary and children may need dentures as early as two years of age. Multiple denture replacements are often needed as the child grows, and dental implants may be an option in adolescence, once the jaw is fully grown. Because dental treatment is complex, a multi-disciplinary approach is best.

People with ED often have certain cranial-facial features which can be distinctive, frontal bossing is common, longer or more pronounced chins are frequent, broader noses are also very common.[14,15] In some types of ED, abnormal development of parts of the eye can result in dryness of the eye, cataracts and vision defects. Similarly, abnormalities in the development of the ear may cause hearing problems. Respiratory infections can be more common because the normal protective secretions of the mouth and nose are not present.

Conclusion

Ectodermal dysplasias are described as heritable conditions in which there are abnormalities of two or more ectodermal structures such as the hair, teeth, nails, sweat glands, cranial-facial structure, digits and other parts of the body. Precautions must be taken to limit infection.

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Prosthetic management of infected post- radiation orocutaneous fistula - A case report

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Abstract

Head and neck malignancies are treated by surgery, chemotherapy, radiation therapy or their combination. A major complication of chemo-radiation therapy following surgery is osteoradionecrosis and associated orocutaneous fistula. The fistula impairs mouth opening, mastication, swallowing and speech. Drooling of saliva, air and food debris through the fistula can initiate irritation and inflammation and impairs patient's normal oral function and psychological status. The treatment of choice for closure of an orocutaneous fistula is hyperbaric oxygen therapy followed by surgical intervention. The systemic health of patients with head and neck cancer or localized inflammation does not always permit surgery. In localized inflammation, an intraoral interim obturator should be planned to eliminate, as much as possible, secretion and drooling through the fistula until surgery is feasible. This case report presents a case of post radiation oro-cutaneous fistula complicated by reduced mouth opening and missing teeth managed by interim obturator.

Keywords: osteoradionecrosis, orocutaneous fistula, mandibular obturator

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Introduction

Malignancies in the head and neck region can be treated by surgery, chemotherapy, radiation therapy or a combination of these modalities.[1-3] Radiotherapy, chemotherapy and surgical intervention may cause irreversible damage to the oral tissues often necessitates and complicates prosthetic rehabilitation therapy. Radiotherapy damage is characterized by decreased blood flow to tissues within and around the oral cavity including bone and cartilage. The impact is a compromise in collagen synthesis and cell production leading to a disruption of normal cell rejuvenation and impaired healing. This leads to osteoradionecrosis (ORN) which is characterized by pathological fractures, exposed bone, biopsy proven necrosis, fistula and/or unrelenting generalized pain in the area.[4-8] In addition to fracture, osteomyelitis and fistula ORN manifests as mucosal dysfunction, salivary gland failure, soft tissue fibrosis, trismus and TMJ ankylosis.[9, 10] ORN can affect up to 22% of patients who undergo radiation therapy, with majority of cases occurring within first 3 years of the completion of treatment.[11] Patients with early stage of osteoradionecrosis commonly undergo a trial of conservative therapy including antibiotics, debridement, hyperbaric oxygen therapy or pharmacotherapy.[12, 13] Patients who develop advanced disease with fracture, osteomyelitis, orocutaneous fistula and intractable pain require surgical intervention with radical debridement and free flap reconstruction.[10-14] But surgical management of the advanced complications of ORN like orocutaneous fistula is not feasible in conditions like compromised systemic health and presence of localized infection or inflammation. Drooling of saliva, air and food debris through the fistula can be the major reason for local irritation followed by inflammation contraindicating surgical management. Along with this

Fig. 1: Two weeks after surgical attempt to close the defect, with reopening of wound, inflammation, trismus and drooling of saliva (arrow) confirming presence of orocutaneous fistula

Fig. 2: Oral opening of the fistula, in left distobuccal vestibule lateral to retromolar pad

Fig. 3: Primary impression with addition silicone putty without tray as trismus and inflammation prevented insertion of stock tray

Fig. 4: Beading of the putty impression to reinforce the tray-less impression and boxing

Fig. 5: Acrylic custom tray with border molding of necessary regions

Fig. 6: Final impression with addition silicone light body material. Arrow shows the recording of the defect

the fistula may impair normal oral functions like mastication, swallowing, speech and psychological status of the patient.[15, 16] To facilitate healing and to restore oral functions of the patient, obturation of the fistula as an interim measure is essential. This helps to eliminate or reduce secretion and drooling of saliva and food debris through the fistula promoting healing until surgical intervention is feasible. Prosthetic closure of the fistula can be either intraoral, extra oral, or a combination of both. Extra oral prosthetic closure requires adherence to the soft tissue with skin adhesive, but the constant drooling and secretion through the fistula does not permit use of an adhesive for the extra oral prosthesis making it an inferior choice.[15] This case report presents a case of post radiation orocutaneous fistula challenged by reduced mouth opening and missing teeth managed with interim acrylic obturator where basic principles of removable partial denture fabrication were followed.

Case report

A 49 year old male patient reported to the Department of Prosthodontics, Government Dental College Kottayam referred from the Department of Oral and Maxillofacial surgery, where he was admitted with complaints of pus discharge through an opening connecting the mouth and skin below and front of left ear. History revealed that the original lesion was noticed as a swelling in the buccal mucosa three years back which was diagnosed as squamous cell carcinoma and was treated by chemo-radiation therapy. Two months prior to reporting to the department, he noticed pus discharge from the buccal sulcus followed by formation of communication through the cheek to the skin, which was diagnosed as osteoradionecrosis with orocutaneous fistula. He underwent a surgical attempt to debride and close the defect which failed to serve the purpose. The lesion reestablished with drooling of saliva and food debris which were accumulating in the fistula, causing irritation, inflammation, pain and trismus. Speech became impaired due to air leakage through the fistula. Eating and drinking became difficult due to constant liquid drainage through the fistula. So the patient was

Fig. 7: Resulting cast after beading and boxing of final impression and blocking out of unfavorable undercuts on which wrought wire clasps are fabricated

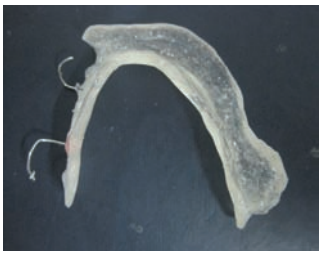

Fig. 8: Fabricated obturator appliance and the satisfactory intraoral fit

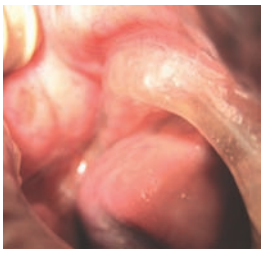

Fig. 9: After 3 weeks of obturator use, with good healing and no inflammation

reported to the department in a non ambulatory condition due to chronic nutritional deficiency. The defect involved a fistula with intraoral and extra oral openings with 15mm x 10mm and 20mm x 10mm respectively in dimensions. (fig. 1 & 2)

An obturator was planned to prevent drooling of irritants through the fistula and to restore normal oral functions as much as possible which can facilitate healing until surgical closure would be possible. The prosthetic management was challenging because of factors like local inflammation, trismus, posterior location of the defect and general condition of the patient. Retention of the prosthesis was also made difficult by the absence of teeth on the lower left quadrant.

Impression procedure

Making impression of the lower arch and defect was the primary concern in the fabrication of prosthesis since accurate recording of details was critical in retention of the prosthesis. Impression making was challenged by trismus and span of edentulous area. So a two stage impression technique was used. In the first stage a tray-less putty primary impression is made to fabricate a clear acrylic special tray. This was followed by border molding of custom tray and final impression to avoid any overextensions. Stock tray was also eliminated to avoid injury to inflamed tissues of the defect by its borders as the defect was posteriorly located. Putty was adapted with fingers to record necessary details of teeth and related oral structures with minimum irritation of the defect and patient discomfort. (fig. 3)

As the putty impression was not reinforced by a tray, reinforcement of the impression was necessary to avoid any distortions during pouring. Plaster was used to reinforce and to bead the impression as it can adhere to silicone material. (fig. 4) Cast was poured in dental stone after boxing with wax sheet and diagnostic cast was made.

Fabrication of custom acrylic tray: PMMA custom tray was fabricated after proper block out to facilitate accurate recording of anatomic details. Clear acrylic was used to facilitate visibility of underlying lesion and pressure areas to avoid any injury during impression making and patient discomfort. Wax spacer of 2mm thickness was adapted on the remaining teeth with proper tissue stops to provide space for impression material and to avoid interferences during tray insertion. The lingual extension of the tray on right side has been kept short to avoid any difficulty in insertion of the tray because of limited mouth opening.

Border molding: After allowing the tray to cure for 24 hours, extensions were checked in patient's mouth and necessary corrections made. Border molding of the custom tray was done using green stick compound. The reduction in visibility and access due to pain and trismus made the accurate recording of border extensions challenging. Since the final fit, function and patient comfort of the prosthesis largely relies on the accurate recording of border extensions extreme care was taken during this procedure. After completion of border molding, extensions were rechecked for loss of retention by overextensions during functional movements. (fig.5)

Final impression: After border molding was completed, wax spacer was removed and tray adhesive was applied. Tray adhesive was dried and blown into a thin layer using stream of air. Addition silicone light body impression material was used to record the fine details without any discomfort. (fig. 6)

Beading and boxing of the final impression was done and master cast was prepared in dental stone. Deep undercuts were blocked out with plaster to facilitate easy insertion and to reduce chair side corrections. Lingual border extension on the right side was kept short of what was recorded in final impression in order to overcome the difficulty of insertion due to limited mouth

opening. (fig. 7)

Prosthesis design and fabrication: An appliance, which serves as an obturator for the fistula and restores normal oral function was planned and designed according to removable partial denture principles [17]. As the long edentulous area made dislodging torqueing forces unavoidable, retention and stability of the prosthesis was the major consideration during fabrication of the appliance. Two wrought wire clasps on suitable teeth along with undercut on mesial side of canine were used to engage the abutment teeth and prevent dislodgement of the appliance. Stability was also achieved by extension of the appliance into feasible undercuts in the defect with minimum patient discomfort. Widely spaced retainers and careful avoidance of overextensions into functional space provided satisfactory stability to the fabricated appliance. (fig. 8) Clear chemically polymerised PMMA was used for the fabrication of prosthesis to make detection and removal of any pressure points during the treatment period feasible.

Appliance was allowed to cure for one day after which it was polished and delivered. Extensions of the prosthesis was checked and fit and comfort was ensured in functional movements. Post-delivery instructions regarding care of the appliance and oral hygiene maintenance were prescribed. Patient was advised constant wear of the appliance and removal only three times in a day after consuming food for cleaning of mouth, fistula and appliance. Review appointments were scheduled every third day to correct minor tissue irritations and to readjust clasp arms for comfortable fit. The judicious extension of the prosthesis into the defect prevented drooling of saliva, food debris and air leakage through the fistula and restored oral functions to a considerable extent. By the use of appliance with proper oral hygiene maintenance and follow up, the defect healed significantly as evidenced in the second week follow up photograph. (fig. 9)

Discussion

Intraoral interim acrylic obturator was planned as the treatment of choice since any form of surgical intervention could be made possible only after preventing the drooling of saliva and food debris through the fistula. This helped to control the infection and hasten healing. The impression procedures and prosthesis design had to be modified due to trismus, pain and partial edentulousness. The prosthesis was designed in such a way that patient could insert and remove it with ease even under limitations of mouth opening without compromising on retention and stability.

Advantages of this design include good patient adaptation and minimal irritation to the soft tissues. As the size of the fistula changed during healing, relining of the device to adapt to the tissue changes was done.

Intravenous Bisphosphonate therapy is now considered a potential risk factor in the development of osteoradionecrosis of maxillofacial bones arising as a complication due to reduction in blood supply, decreased bone turnover, and sensitization to bacterial toxins from oral microbes. Intravenous Bisphosphonate is primarily used in the chemotherapy of cancer-related conditions including hypercalcemia of malignancy, skeletal-related events associated with bone metastases, and management of lytic lesions such as multiple myeloma. Osteoradionecrosis associated with bisphosphonate therapy is termed as BRONJ (Bisphosphonate related osteoradionecrosis of jaws) which unfortunately is resistant to conventional treatment modalities.[18] Based on case series, case-controlled and cohort studies, estimates of the cumulative incidence of BRONJ range from 0.8%-12%. Patients may be considered to have BRONJ if all of the following three characteristics are present: 1. Current or previous treatment with a bisphosphonate; 2. Exposed bone in the maxillofacial region that has persisted for more than eight weeks; and 3. No history of radiation therapy to the jaws.[19] As the treatment approach for BRONJ associated fistula is different, the possibility of BRONJ should be differentiated before the treatment planning for fistulas of the maxillofacial region.

Conclusion

Oral cancer is the most common malignancy in India mainly due to personal habits. The estimated incidence of oral cancer in India alone was nearly one lakh during the year 2010.[20] Oral cancers require management by combined chemo-radiation therapy and surgery. So the incidence of ORN and associated complications like orocutaneous fistula is expected to increase significantly in the near future. Interim obturator as a measure to prepare the lesion for surgery in cases of infection by effective blocking of irritants and restoring normal functions has a critical role in management of orocutaneous fistula. It may also be considered a permanent solution when surgical correction is contraindicated due to systemic factors or old age. Where all treatment modalities failed due to local irritation and inflammation, the orocutaneous fistula was effectively

managed by well fabricated obturator proving the efficiency of such an appliance.

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Interceptive Orthodontics – Why? When? Where?

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Abstract

One of the major goals of modern orthodontics is to prevent or intercept developing malocclusion caused by aberrations in the developmental process. Thus interceptive orthodontics plays an important role in reducing the development of future complex malocclusions. The article is an overview regarding the need for interceptive orthodontic techniques and the indications for the same.

Introduction - Why interceptive orthodontics?

Well-aligned teeth not only contribute to the health of the oral cavity and the stomatognathic system but also influence the personality of the person. Man's normal period of postnatal craniofacial growth and development is unusually protracted compared to nonhuman primates. The complex interplay between inherited and environmental influences makes it difficult to evaluate the relative importance of each in the etiology of malocclusion. The long developmental period makes it possible for many external influences to affect the dentition.[1] Interceptive and preventive orthodontic procedures are relatively simple and inexpensive treatment approaches that target developing malocclusions during the mixed dentition. Orthodontists perceive these as useful ways to reduce the severity of malocclusions,[2] improve a patient's self-image, eliminate destructive habits, facilitate normal tooth eruption, and improve some growth patterns.[3] Celsus observed way back in 25 B.C that over-retention of primary teeth could cause displacement of developing permanent teeth and that finger pressure seemed to help guide the permanent tooth into place after the primary tooth was removed.[4] Normal primary dentition and normal transition from primary to the permanent dentition are necessary to establish a normal adult occlusion. Hence one of the major goals of modern orthodontics is to understand this transition process well enough to prevent or intercept developing malocclusion caused by aberrations in the developmental process.[1]

When to start?

Available evidence suggests that patients at risk for severe malocclusion can readily be identified in the mixed dentition and the burden of these malocclusions in this age group is substantial (about 25%-30%). In a study, the patients at risk for future orthodontic problems were identified to be 28% of those examined, and most of the developing malocclusions were judged to be suitable for interceptive orthodontic treatment.[5] Another study of children screened in a community dental clinic at ages 9 and 11 years also found that one-third of the children would benefit from interceptive orthodontic treatment.[6] Although interceptive orthodontic procedures often do not produce finished orthodontic results without a second phase of treatment in the permanent dentition, it has been suggested that systematically planned interceptive treatment in the mixed dentition might contribute to a significant reduction in treatment need between the ages of 8 and 12 years, often producing results so that further need of treatment can be categorized as elective.[7]

Conceptually, the terms 'preventive' and 'interceptive' orthodontics refer to the possibility of treating young patients in ways which will obviate the need for later comprehensive treatment while operationally, they concern specific procedures or techniques in treatment of patients. Unlike preventive orthodontic procedures that are aimed at elimination of factors that may lead to malocclusion, interceptive orthodontics is undertaken at a time when the malocclusion has already developed or is developing. There are number of procedures that

can be undertaken to intercept a malocclusion that is developing. Most patients who receive interceptive orthodontic treatment do not have all of their orthodontic problems addressed. However, limited interceptive treatment can reduce the need for comprehensive treatment and eliminate malocclusions considered to be medically compromising.[8]

Where to start?

Anterior crossbite

Whether the malocclusion is skeletal or dentoalveolar, the treatment of developing crossbite is recommended in primary and early mixed dentition.[9] An old saying in orthodontics states "The best time to treat a cross bite is the first time it is seen". There are many treatment options available for correction of crossbites according to the number and site of the teeth/tooth involved, the stage of the dentition and its etiology. Few of the choices available for crossbite corrections are Catalans appliance, tongue blade therapy, expansion appliance, cross elastics etc. Functional crossbites causing the abnormal shift of the mandible can be treated by reducing cuspal interference, particularly in the canine area. The main advantages of early treatment of anterior crossbite are to influence the process of growth in the upper jaw with simple and inexpensive appliance and also to avoid in many cases orthognatic surgery in future.[10]

Proximal Slicing:

Treatment in the early mixed dentition with the eruption guidance appliance is an effective method to restore normal occlusion and eliminate the need for further orthodontic treatment with long term stability.[11] Its use has also been advocated for the improvement in the maxillo-mandibular relationship.[12] Slicing of the first or second deciduous molars is occasionally required to allow the permanent succedaneous teeth to erupt into its normal position. The mesial surfaces of the deciduous first molars can be sliced to prevent the crowding of lower anteriors.[13] When space is required for the eruption of the maxillary canine, the mesial surface of the second deciduous molar can be sliced to allow the first premolar to be pushed distally to provide space for the erupting canine.

Space regainer

Premature loss of primary teeth can be a potential threat towards the disturbance of the occlusion due to the space lost by migration of the adjacent teeth. Space regainer is the ultimate choice in such situation. Open coil space regainer, Gerber's space regainer, lip bumper, free end loop space regainer, split saddle space regainer, jack screw are few of the examples. Lip bumper has been advocated to contribute to resolution of arch perimeter deficiency in mixed dentition.[14, 15] During the transition from mixed to permanent dentition if the arch length is maintained with the use of passive lingual arch, it helps to liberate the leeway space for incisor alignment and provides adequate space to resolve incisor crowding in many instances.[16]

Serial Extraction

Arch length mesial to first permanent molars tend to decrease rather than to increase on the interchange of teeth between the mixed to permanent dentition. Hence the initial objective in considering serial extraction is to intercept a developing arch length deficiency (crowding) problem to reduce or eliminate the need for extensive appliance therapy. However, it is essential to properly weigh the advantages and disadvantages of this treatment philosophy before undertaking the extraction procedure. The ideal patient for serial extraction can be described to be an 8 year old, with normal size, shape and number of teeth, class I canine and molar relationship with minimum overjet and overbite, orthognathic or slightly bimaxillary protrusive profile, relatively severe and symmetric arch length tooth size discrepancy in the middle mixed dentition, normal eruption sequence and dental development present radiographically, normal skeletal growth pattern and normal antero-posterior, vertical and transverse relationship. Several extraction sequences have been advocated with the most common ones being that of Dewel[17] and Tweed. Another treatment philosophy, called "Timely extraction" which is similar to serial extraction is the sequential removal of primary teeth, but differs in that no permanent teeth are removed, has been described by Stemm.[18] It is indicated in cases with gingival recession due to labial positioning of incisors, coupled with an inadequacy of dental arch length.

Growth Modification

Interception of skeletal malocclusion has been widely accepted in order to reduce the severity of malocclusion and normalize the skeletal relationship with the help of functional appliances. Developing skeletal class II and class III malocclusions are one of the most challenging malocclusions to treat. Wide range of the functional appliances and the orthodopedic appliances have been used in treatment of these malocclusions.

Conclusion

In children, though appliance therapy tends to be simpler than in adults because of growth and development and also due to transition from primary to mixed to permanent dentition, the treatment planning

and monitoring are more complex. When ever treatment is done in children the totality of all the changes should be taken into account. The practitioners are also challenged with the responsibility of early diagnosis and treatment of functional disturbances and arch length discrepancies. Thus interceptive orthodontics plays an important role in reducing the development of future complex malocclusions.

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An aesthetic solution for lost gingival tissue using gingival mask - A Case Report

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Abstract

A dramatic improvement in aesthetics have been obtained with acrylic gingival mask which can be used to mask the deformities remaining after periodontal treatment. The gingival mask may also be used as an interim measure to improve the appearance of anterior teeth after initial periodontal therapy to allow time for healing & establishment of periodontal stability. In the following case report a simple two stage impression technique was used to produce comfortable & accurately fitting acrylic masks, which was very stable during use and virtually no problems encountered.

Key Words: Gingival recession, Gingival prostheses, Acrylic gingival mask

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Introduction

Gingival prosthesis have been used historically to replace lost tissue when other methods (e.g.surgery or regenerative procedures) were considered unpredictable or impossible[1]. The large gingival defects can be easily replaced by this method. Gingival prostheses take several forms, and various authors have described their uses and methods of construction.[1-7] Tissue replacement prostheses may be used to replace tissue lost through surgical gingival procedures, recession, trauma, ridge resorption or traumatic tooth extraction. From a prosthodontic point of view, restoration of these areas can be accomplished with either fixed or removable prostheses. Various materials used for gingival prostheses include pink auto cure and heat-cured acrylics, porcelains, composite resins and thermoplastic acrylics, as well as silicone based soft materials.[1] This paper presents a case of aggressive periodontitis in which a heat-cured acrylic gingival prosthesis is used to replace gingival soft tissue.

Case report

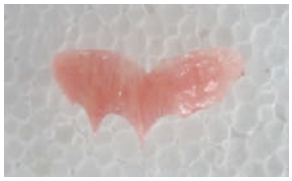
A 18-year-old girl reported to the Department of Prosthodontics, Government dental college Kottayam following periodontal treatment. On examination there was severe gingival recession in the maxillary anterior region with extruded right central incisor. Periodontal status of the patient improved considerably after periodontal treatment with less than grade I mobility in the maxillary anterior teeth. Intra oral periapical radiograph shows horizontal bone defect with one-third of interdental bone remaining in the apical third of the root. The patient was very much upset regarding her appearance due to gingival recession. As further periodontal procedures (bone regenerative and root coverage procedures) to improve the esthetics were not possible and since the patient was economically poor, the decision was made to fabricate a acrylic removable prosthesis to replace the lost gingival tissue and to improve appearance.

Procedure

Enameloplasty was done on the extruded right maxillary incisor to bring back it to the same level of the left central incisor. A labial acrylic custom tray was fabricated on a model cast from a preliminary alginate impression. Final impression was made with custom tray using light body additional silicone impression material and cast was poured in hard dental stone. The extensions of the mask were drawn on the working model after assessing patients lip line. Gingival mask was waxed up on the model and tried in the patient's mouth. After satisfactory try in, wax up was reseated on working model. Gingival characterisation was done and the final prostheses was fabricated like any conventional denture fabrication using heat cured veined acrylic material. On completion of curing the mask was gently removed from the flask, trimmed and polished. It was tried in patient's mouth and checked for proper fit. Patient was shown how to insert & remove the masks and instructions regarding the use and oral hygiene were given. Patient


Pretreatment view


Wax-pattern


Heat cured acrylic gingival mask


Normal view without prostheses


After placing prostheses


Intraoral view - without prosthesis


Intraoral view - with prosthesis

was recalled every 15 days and checked with particular interest in plaque control & cleanliness.

Discussion

Gingival defects may be treated with surgical or prosthetic approaches. With successful surgical procedures like rebuilding of lost gingival papilla and grafting procedures, the result mimics the original tissue contours.[1] Such surgical treatment can be done to create aesthetically pleasing and anatomically correct tissue contours when small gingival defects are present, but this method is unpredictable for large gingival defects. The surgical costs, healing time, discomfort and unpredictability make this choice unpopular. Prosthetic rehabilitation with acrylics, composite resins, porcelains and silicones, is a more predictable approach for replacing lost tissue architecture. It is especially useful when a larger amount of tissue needs replacement.[1-7] Ideal tissue contours can be waxed, processed and then colored to match the surrounding tissue. The patient need not undergo any additional surgical procedures and receives an esthetically pleasing, functional restoration. It is possible to show the patient, the results with wax try-in prosthesis directly in the mouth for evaluation before significant treatment is initiated.[5,6,7]

Conclusion

The cosmetic results of gingival mask has enabled patient to smile again with confidence after the periodontal treatment has been completed. It is easier to create an ideal contour of lost tissue with removable prostheses and missing tissue can be replaced without disturbing other dental units. Eventhough many advanced materials are available, the acrylic mask is an economical prosthesis for such patients who cannot afford expensive procedures.

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Combined growth modification - camouflage treatment of severe skeletal class II malocclusions: A case report

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Abstract

The article describes the growth modification treatment of a 14 year old post-pubertal girl with severe mandibular retrognathia who was past the peak growth spurt period. A combination of skeletal and dental movements using standard Twin Blocks followed by Pre-adjusted Edgewise Appliance resulted in significant improvement of the patient's profile as well as a drastic reduction of the overjet.

A 14-year-old Caucasian female was referred by her General Dental Practitioner regarding prominent upper front teeth. She was a high angle Class II retrognathic case. Medically she was fit and well. Her mother had similar facial pattern and had been informed previously that Orthognathic surgery was the only treatment option. She had declined treatment then and was now keen for her daughter to avoid Orthognathic surgery.

Extra-oral features:

She presented with a severe Skeletal II pattern and a high Maxillary Mandibular plane angle. The lips were incompetent with a high lip-line. There was a pronounced facial convexity, with an acute naso-labial angle and slightly pronounced labio-mental fold. The nose was relatively prominent and had a noticeable hump. She had significant lip-trap

Intra-oral features:

31 was missing and the absence was confirmed by radiographic examination. There was no history of any previous extractions. She was in the permanent dentition with the exception of the third molars. She had an unrestored dentition and was caries free. Deep fissures were present on all first molars. The gingival appeared healthy and the standard of oral hygiene was reasonably good.

Functional examination.

Her centric occlusion and centric relation were coincident, and there were no signs or symptoms of temporo-mandibular joint dysfunction. The path of opening was normal without any deviations. The maximum mouth opening was also normal. The patient showed group function on lateral excursion.

Dental casts

Maxillary arch.:

The maxillary arch was V-shaped and was constricted. The upper labial segment was reasonably aligned albeit significant proclination. The buccal segments were also well-aligned. There was significant palatal tipping of maxillary posterior teeth. The palate was high-vaulted and deep.

Mandibular arch:

The mandibular arch was ovoid in outline. 31 was absent. The lower labial segment was upright and moderately crowded. The buccal segments were mildly crowded with 35 rotated 90 degrees disto-lingually. 45 was buccally placed. The curve of spee was slightly exaggerated.

Occlusion.

The overjet at 16 mm was significantly increased. The sagittal molar and canine relationships were full-unit Class II bilaterally. The overbite was mildly increased to 50 % of lower incisor crown length but was incomplete to the palate. The upper midline was coincident with the facial midline while the lower midline was shifted to the left of facial midline by 2 mm. 45 was buccally placed and in posterior cross-bite. Bolton analysis, by substituting the MD width of 41 for the absent 31,

revealed a mild mandibular excess of 1mm which was deemed insignificant.

Radiographic analysis:

The panoramic radiograph confirmed the absence of 31. All third molars were present and in favourable positions.

Pre-treatment cephalometric radiograph:

Severe Skeletal Class II pattern, with a significant degree of mandibular retrognathism and a moderately increased maxillary - mandibular planes angle. The upper incisors were proclined; the lowers incisors were also proclined, but were 2 mm behind the A-Pog line.

Etiology

The etiology of the Class II discrepancy is an inherited skeletal pattern, which in combination with a high lip-line has resulted in Class II buccal segments and an increased overjet of 12 mm. The high SN- GoGn angle of 34 has contributed to the incomplete overbite. The constriction of maxillary arch is due to a lower/ backward-than-normal position of tongue which in turn is due to the inherited mandibular retrognathism. The crowding in lower arch is due to dento-alveolar disproportion and has resulted in buccal displacement of 45.

Parameter	*Pre-treatment*	*Post-treatment*	*Clinical Norm*	*Change*
Maxillary position SNA	82°	81°	82°	-1°
Mandibular position SNB	70°	73°	80°	+3°
Sagittal jaw relation ANB	12°	8°	2°	-4 mm
Wits' Appraisal	7.5 mm	3 mm	0 mm	-4.5 mm
Mandibular inclination SN – GoGn	34°	33°	33°	-1°
Mx- Md Pl Angle ANS–PNS/Go–Gn	27°	27°	25°	0°
Maxillary 1 to ANS-PNS	120°	105°	110°	-15°
Mandibular 1 to Go–Gn	99°	112°	94°	+13°
Mandibular 1 to A–Pog (mm)	-2 mm	5 mm	1-3 mm	+7 mm
Overjet (mm)	16 mm	2.5 mm	2 mm	-13.5 mm
Overbite (mm)	2.5 mm	0 mm	2 mm	-2.5 mm
Inter-incisal angle	113°	116°	132°	+3°
Lower lip to E-line	+3 mm	0 mm	-2 mm	-3 mm

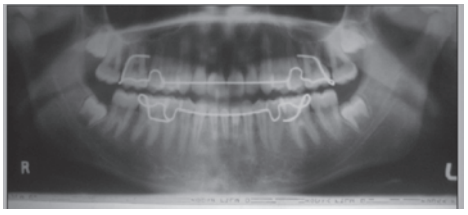
Keerthana Ammu

Final 7/5/2010

15 years. 9 months

female

MDKL



Treatment objectives

- Correction of sagittal skeletal discrepancy.
- Improvement of facial profile by reduction of facial convexity.
- Reduction of increased overjet to achieve a normal Class I incisor relationship.
- Relief of crowding.
- Leveling and alignment of the dentition.
- Reduction of upper labial segment proclination.
- Class I molar and canine relationship.
- Achieve good functional, as well as static occlusion.

Treatment plan

- Oral hygiene instructions.
- Growth modification/ myofunctional treatment with Standard Twin block appliance.
- Expansion of contracted maxillary arch simultaneously with myofunctional treatment.
- Upper and lower pre-adjusted edgewise fixed appliances.
- Retraction of maxillary anteriors utilizing available spaces after expansion.
- Alignment and co-ordination of upper and lower arches.
- Retention.

Rationale

Skeletal maturity assessment using Cervical Vertebra Maturation revealed that the patient had passed the stage of peak growth velocity. Since the parent and patient was keen to avoid surgery, a combination of growth modification (utilizing whatever growth potential was left) and camouflage (by changing incisor inclinations) was adopted. Twin Blocks were used to provide sagittal correction of the skeletal discrepancy. Bite registration for Twin-block appliance was made with excessive vertical opening than normal to maintain adequate vertical control during treatment and to prevent an increase in the lower anterior face height. The expansion screw incorporated with the Standard Twin-block appliance was used for expansion of contracted maxillary arch and gaining space for retraction of maxillary anteriors. Pre-adjusted Edgewise appliances were used for arch alignment and leveling, space closure, achievement of buccal interdigitation and detailing of the occlusion.

Treatment progress

Following oral hygiene instruction modified Twin Blocks were fitted. The Twin Blocks incorporated bite blocks higher than normal for vertical control during treatment. The Twin blocks were worn full-time and patient was instructed to activate the expansion screw by one turn every 3 days. Patient compliance was excellent; and sufficient sagittal skeletal correction and upper expansion was achieved by 9 months of treatment.

Post-functional treatment photographs were taken

after 10 months of treatment, when the buccal segment relationship and overjet had been overcorrected. A lateral cephalogram taken at this stage demonstrated sagittal correction with reduction in the ANB due mainly to an increase in SNB and the maintenance of the maxillary mandibular planes angle. An upper anterior inclined bite plane was fitted to maintain the sagittal correction achieved and for leveling of Curve of spee in the lower arch, prior to the placement of fixed appliances. Pre-adjusted Edgewise brackets (0.022 inch slot, Roth prescription) were bonded to both arches with lacebacks to all four canines.

Alignment was commenced with 0.014-inch Nickel Titanium archwires initially and then proceeded to 0.016-inch Nickel Titanium archwires later. Upper and lower 0.018" Nickel Titanium archwires were used in transition to upper and lower 0.020" stainless steel working archwires (Round wires were used as working archwires to facilitate incisor compensations). It was decided not to derotate 35 as it was occupying more space in the rotated position. This was in turn compensating for the absence of 31 which would have compromised the attainment of a normal overjet. Final spaces were closed using nickel titanium closing springs and some light Class II elastics.

A lateral cephalogram taken near the end of treatment confirmed that the sagittal correction during the Twin Block phase of treatment had been maintained and that the upper and lower labial segments were sufficiently compensated to achieve a normal overjet. A panoramic radiograph was taken to assess root position. Just prior to debond, the functional occlusion was checked to ensure right and left canine guidance with absence of non-working side contacts and gentle posterior disocclusion with anterior guidance in protrusion. Following debond upper and lower Hawley retainers were fitted.

Case assessment

The patient presented with a Class II division 1 incisor relationship on a severe skeletal II base with mandibular retrognathism and increased maxillary mandibular planes angle. She had Class II buccal segments with an increased overjet and crowded labial segments. As a result of the Twin block phase of treatment both growth modification and dento-alveolar movement has contributed to the sagittal correction. Cephalometric superimposition demonstrated maxillary restraint, both horizontal and vertical mandibular growth or repositioning and a forward mandibular rotation. Dento-alveolar movement included retroclination of upper anteriors and proclination of the lower labial segment.

Extra-orally, her face has changed significantly as she looks less Skeletal II; however, she still has an element of mandibular retrusion. Her lips are now competent at rest. Intra-orally the crowding has been relieved, alignment has improved, the overjet has been reduced and the buccal segment relationship corrected. At the end of treatment, a good functional as well as static occlusion was achieved with canine guidance on lateral excursions and incisal guidance on protrusion, and no non-working side interferences. The prognosis for this case is good, as there is reasonably good buccal interdigitation, which should help to maintain the antero-posterior correction, and the lip competency should retain the overjet reduction.

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Inauguration of Men's hostel – 17.12.2011

Inauguration by Shri. Adoor Prakash, Hon. Minister for Health, Government of Kerala.

A view of the hostel

Workshop on Research Methodology 17th-19th November 2011

Inauguration by
Dr. Rajan Gurukkal,
Hon. Vice Chancellor, Mahatma Gandhi University, Kottayam

Dr. George Varghese, Principal addressing the delegates.