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Comprehensive rehabilitation of a mutilated occlusion in a case of cemento ossifying fibroma

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Abstract

Cemento ossifying fibroma is a benign, slow growing tumor of jaw bones. It is mesenchymal in origin with predilection for women in their second to third decades of life, commonly affecting the mandible. Clinically, it is a large, asymptomatic tumor often causing displacement of adjacent teeth. It can be treated by enucleation and curettage or conservative surgical excision. However, it may sometimes require jaw resection and bone grafting. It has been reported to have a low recurrence rate, but, longterm follow upis recommended. The aim of this case report is to present a case of an 18year old girl with a large central cemento-ossifying fibroma of mandible causing occlusal derangement which was successfully treated with surgical excision. It also includes the details of complete oral rehabilitation which was achieved with a multidisciplinary approach.

Keywords: Cemento-ossifying fibroma, Mutilated occlusion, Oral rehabilitation, Multidisciplinary management.

Introduction

To put everything in balance is good. But, to put everything in harmony is even better. Oral rehabilitation of a severely mutilated dentition is an arduous task for the dentist and often requires a multidisciplinary approach. A complete treatment comprises of all the procedures required to attain a well-functioning, healthy, esthetic and self-maintaining masticatory mechanism. Dentists attempting complete oral rehabilitation should possess a sound knowledge of functional occlusion concepts, factors affecting forces of equilibrium, periodontal health and configuration of Temporomandibular joint. Careful treatment planning is essential to achieve comfortable oral function with long term stability. Mutilated occlusion rarely results from a single entity and almost invariably involves multiple factors. Multiple carious lesions, rotated or ectopically erupted teeth due to underlying pathological cysts or tumours, loss of multiple teeth or skeletal asymmetry can contribute to occlusal derangement. Hence, the etiological factors should always be taken into consideration and addressed before formulating the treatment plan. Patient's need and expectations may vary individually and it should be assessed prior to starting the treatment. Fibro osseous lesions are adiverse group of disorders of jaw bones characterized histologically by replacement of normal bone by cellular fibrous tissue in varying amounts1.Ossifying fibroma is a benign fibro-osseous lesion that demonstrates a well demarcated proliferation of cellular fibrous tissue with varying amounts of osseous products including bone, cementum or a mixture of both2.The central variant of ossifying fibroma is a relatively rare lesion which is commonly found in females compared to males and has a predilection for mandible than maxilla3.It tends to occur in second or third decades of life4. It usually presents clinically as a painless and expansive spherical or ovoid jawbone mass that may displace roots of adjacent teeth and cause resorption5.This article reports a case of central cemento-ossifying fibroma of mandible in an 18 year old female and its comprehensive management leading to complete oral rehabilitation.

Case Report

An 18 yr old patient reported for treatment with a chief complaint of a slowly growing painless swelling on right side of lower jaw causing displacement of several teeth, difficulty in chewing and an unsatisfactory smile. On extra oral examination a well-defined asymptomatic swelling was seen on right lower border of mandible. Intraoral examination also revealeda swelling causing displacement of several teeth and occlusal derangement. Arch asymmetry and severe canting of occlusal plane was present. Pretreatment photographs are shown in Figure 1.

Fig. 1 : Pretreatment extra oral and intraoral photographs showing swelling on lower right side of mandible causing displacement of teeth.

Right side of the mandibular arch was severely distorted and lingually collapsed causing arch asymmetry. Maxillary arch also showed crowding of teeth with ectopically erupting canines due to over retained deciduous teeth. Clinical presentation and radiological findings suggested a differential diagnosis of Fibrous dysplasia, Ameloblastic fibroma, Calcifying epithelial odontogenic tumor, Chondrosarcoma or Calcifying odontogenic cyst. Incisional biopsy was advised for final diagnosis. Histological findings as shown in Figure 2, revealed well circumscribed cellular fibrous tissue with isolated trabaculae of bone. Cementum like rounded calcifications were also observed. Actively proliferating,

irregularly shaped fibroblasts within delicate interlacing collagen fibrin matrix was seen. Based on these findings, it was diagnosed as a case of central cemento-ossifying fibroma.

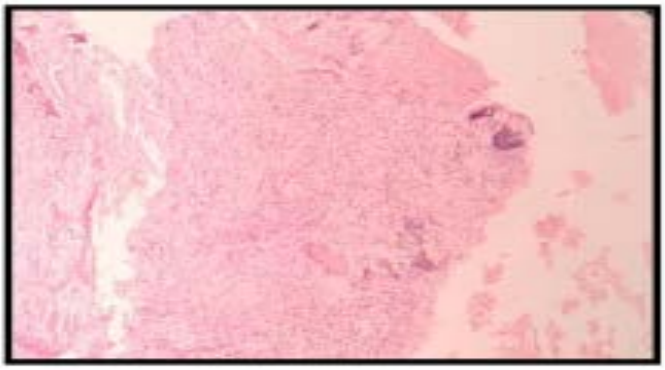

Fig 2: Histopathologic appearance shows spherules of cementoid material in a highly cellular fibrous connective tissue stroma.

Considering the extent of lesion and involvement of multiple teeth, complete surgical excision of the lesion along with extraction of involved teeth was planned as shown in Figure.3. This was followed by curettage and bone grafting with demineralised freeze dried bone allograft with PRP (Platelet Rich Plasma).After complete Enucleation of the lesion a very thin continuity of lower border of mandible was present which had to be supported and stabilized by a stainless steel mini plate. At 6 months follow up-post surgical excision, considerable amount of bone healing was observed. Comparison of OPGs post-surgery and after 6 months follow up is shown in Figure.4.Intraoral findings at this stage were as shown in Figure.5. Right-side of the mandibular arch remained collapsed with lingual tipping of first and second molars. Six teeth were missing from lower left lateral incisor to lower right second premolar as they had been extracted during surgical excision. With no proper intercuspation of upper and lower teeth, patient was having great difficulty in chewing food and was also concerned about her Unesthetic smile. Patient was then referred for orthodontic treatment for alignment of the dental arches.

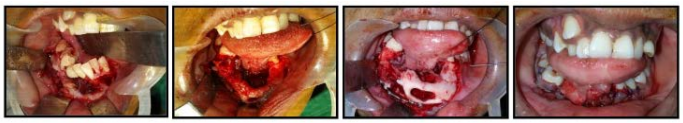

Fig.3: Surgical excision of lesion, extraction of involved teeth and stabilization of lower border with stainless steel mini plate

Fig. 4: Post-surgery and6 months Post-surgery OPGs

Fig.5: Intra oral photographs 6 months post-surgery. Orthodontic treatment goals included recreating a functional occlusion and improvement of co-ordination between upper and lower arches, which required expansion of lower arch. Improvement of smile esthetics had to be achieved by alignment of upper teeth. Up righting of lingually tilted molars on lower right side was very challenging as these teeth had limited bone support. A modified bihelx appliance was fabricated using TMA wire, which was pre activated and cemented onto the lower arch. After 3 months of delivering controlled expansion forces, considerable buccal up righting of molars was achieved. Bonding was done with upper and lower arches using Pre adjusted Edgewise appliance, MBT 0.022 slot as shown in Fig 6. Alignment and leveling of teeth was achieved starting with 0.012NiTi wire followed by 0.014 NiTi, 0.016 NiTi, 16x22 NiTi, 17x25NiTi and 17x25 ss. Open coil springs were used to create spaces bilaterally for alignment of upper canines. Once, the required space was gained, a piggy back 0.012NiTi wire

was used for alignment of the canines. Finishing was achieved with 19x25ss wire. Settling was done with the help of triangular elastics. Post orthodontic correction, patient was referred for prosthetic replacement of missing teeth.

Fig.6: Intraoral photographs of fixed orthodontic appliance

Fig.7: CBCT Images of the mandible post orthodontic treatment

Fig. 8: Modified Cast Partial Denture CBCT was advised to assess the bone availability for implant placement in mandibular anterior region for implant assisted prosthesis. CBCT findings were as shown in Figure7. It revealed that the continuity of lower border of mandible was reinforced by new bone formation though it had a distorted appearance. In the anterior region the vertical height of bone was insufficient for implant placement. Furthermore, there was inadequate bone support available for the posterior teeth that were up righted and clinically, these teeth presented with grade Immobility. Hence, preventing relapse of the corrections achieved so far was crucial. Considering the clinical and radiological findings, it was decided to go for a cast partial denture as an interim prosthesis till stability was achieved with the posterior teeth. Later, vertical ridge augmentation with implants for permanent replacement of teeth was planned.

Fig 9: Post treatment Extra oral and Intraoral photographs.

A modified cast partial denture with a labial bar was fabricated and delivered to the patient as shown in Fig.8. The post treatment photographs of the patient are shown in Fig 9. Considerable improvement in smile esthetics was achieved and a functional occlusion was recreated. Teeth were well aligned and arch symmetry was regained. Masticatory function was greatly improved. Hence, a complete esthetic and functional rehabilitation was successfully achieved. Four year follow up revealed no signs of recurrence of the lesion. Improved bone support with as table occlusion was present.

Discussion

The concept of fibro osseous lesions of bone has been evolving over past few decades. Cemento-ossifying fibroma exhibits features similar to odontogenic fibroma in terms of histopathology, growth and prognosis6,7. It is mostly divided into central, peripheral and aggressive

form. The central form is hypothesized to be derived from periodontal ligament and could histopathologically contain anything from bone to cementum2.In a recent classification given by World Health Organization (WHO) in 2017, cemento-ossifying fibroma has been placed under the benign mesenchymal odontogenic tumors8.The most common area of presentation is in middle aged females affecting the mandible3. Radiologically, it exhibits a circumscribed radiolucent lesion with well-defined margins and intralesional calcifications 4. Prognosis is generally favorable with little potential for malignant transformation. Enucleation and curettage has been reported as a method of treatment for cemento-ossifying fibroma9. The lesion permits resection with relative ease. In few reports, authors have favored conservative curettage compared to enbloc jaw resection9. In such cases, curettage is performed till healthy bone margins are reached. Few cases treated by conservative surgical excision have reported no recurrence over 10 years follow up10. However, few cases showing recurrence after 15 days of conservative surgery which required hemimandibulectomy followed by reconstruction have also been found11. A systematic review of literature has reported a recurrence rate of 12%12.Although the present case showed a large lesion, the surgical protocol applied was conservative because the lesion was well circumscribed and could be separated from normal bone during surgery. The current follow up has not shown any signs of recurrence and the patient continues to possess a comfortable and stable occlusion. Based on our findings in the present case conservative surgical excision may be considered as a versatile, secure and satisfactory treatment option. Although the recurrence rate of this tumor is reported to be extremely low, careful follow up is recommended since occasional recurrence cannot be ruled out completely.

Conclusion

Central cemento-ossifying fibromas generally shell out easily during surgery because of their circumscribed nature and have a fair prognosis. Only large lesions require resection and bone grafting. Cosmetic and dental occlusal problems are often the first manifestations as they are clinically asymptomatic. Careful treatment planning with a multidisciplinary approach is essential for complete oral rehabilitation and long term stability.

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