CASE REPORT

Intentional Replantation of Impacted Maxillary Permanent Central Incisor Associated with Compound Odontoma – A Case Report

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ABSTRACT: Knowledge of the normal tooth eruption pattern is essential for the identification and appropriate treatment of missing teeth. A delay between the exfoliation of a deciduous tooth and the eruption of its permanent successor may be related to a disorder known as dental retention. A case of compound odontoma that had caused delayed eruption of a maxillary central incisor is presented here. The odontoma, a collection of multiple tooth-like structures, was surgically removed and the impacted incisor was replanted in its position with composite resin splint. The healing was uneventful.

Key words: *intentional replantation, impacted central incisor, compound odontome.*

Impaction of maxillary permanent central incisor can have a major impact on dental and facial aesthetics, since it affects the self-esteem and social well-being of the individual. Various aetiological factors have been attributed to the impaction of maxillary central incisors. They are as follows:

1. Presence of supernumerary teeth
2. Retained deciduous teeth
3. Dilacerations
4. Ankylosis
5. Dense mucoperiosteum
6. Cysts and odontomes
7. Thickened or enlarged follicles around the unerupted tooth
8. Ectopic development
9. Generalized delay or failure of eruption in conditions like Cleido-cranial dysostosis, Gingival fibromatosis, Cleft lip, and Cleft palate^[1].

A detailed dental and medical history should be obtained to determine the cause of delayed eruption. Clinical examination with routine radiographic investigation can

detect the presence of impacted tooth.

Here a case of impacted maxillary central incisor associated with multiple odontome and its management has been reported.

CASE REPORT

A 14 year old healthy male patient was referred to Department of Conservative Dentistry and Endodontics Ragas Dental College and Hospital, Chennai, with the chief complaint of pain in lower front teeth during mastication. His medical history was non-contributory. On intra oral examination, mandibular central incisors, 31 and 41, were tender to percussion along with grade 1 mobility. Negative response to vitality test was elicited. Clinically there was no swelling and mouth opening was adequate. Radiograph revealed a rarefaction in relation to root apices of 31 and 41. A provisional diagnosis of non-vital pulp with acute apical periodontitis was made and root canal treatment was advocated.

Incidentally patient gave a history of unerupted upper front tooth and requested for its replacement (Fig-1). History did not elicit any extraction or avulsion due to trauma. An intra-oral periapical radiograph and occlusal view radiograph for 11, 21 region was done.

The radiographic examination revealed impacted upper central incisor along with multiple radio opacity

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resembling small tooth like structure (Fig-2). Considering the radiographic appearance with multiple teeth like structure associated with impacted tooth, a provisional diagnosis of impacted central incisor 11, with multiple compound composite odontoma was made.

TREATMENT

Surgical procedure to remove the multiple tooth like structure and orthodontic extrusion of impacted central incisor was planned and informed to the patient. However patient could not be convinced for the orthodontic extrusion as he insisted on immediate replacement of the missing tooth. Hence the option of intentional replantation of impacted maxillary central incisor was planned.

After obtaining the consent from the patient, local anesthesia using Lignocaine with 1:2,00,000 adrenaline, (Lignox) 3ml was used to block the right infraorbital nerve and nasopalatine nerve. A trapezoidal flap was elevated involving the labial frenum extending from distal of tooth 12 to 21. De-roofing of the labial cortex was done along the alveolar and basal bone junction with copious saline irrigation using surgical round bur no: 3. The thinned out labial cortex over the impacted tooth was exposed, and it was found to be surrounded by enlarged follicle.

The impacted right central incisor 11 was located apical to the root of the lateral incisor 12 and its crown was surrounded by multiple teeth like structures. De-roofing of the bone was continued in an intermittent and conservative manner with constant saline irrigation. Nearly eight tooth like structures were removed (Fig-3) and their thorough removal was confirmed using Radio Visuography (RVG).

The impacted central incisor covered with the follicle and gingival attachments, was gently luxated and removed completely from its embedded site and placed in Hank's Balanced Salt Solution (HBSS). During this procedure care was taken to avoid any perforation to the nasal floor or the maxillary sinus. The mesiodistal width between tooth 12 and 21 was found to be adequate for the correct positioning of the tooth no 11.

Simultaneously, using a surgical straight fissure No: 559 bur, a conical trough was prepared along the crest of the alveolar process up to the bony defect (Fig-4). During this procedure the harvested cancellous bone from the alveolar trough was collected and kept in the gauze

Fig 1: Unerupted central incisor 11

Fig 2: Occlusal radiograph showing location of 11 with multiple radio opaque masses

Fig 3: The extracted tooth with multiple tooth like structure

Fig 4: Graft material packed into the socket

Fig 5: Tooth replanted into the socket

Fig 6: Tooth splinted

Fig 7: 6 months post-operative x-ray showing satisfactory healing.

soaked in saline. Harvested bone was later mixed with the allogeneous bone graft material and was kept ready for grafting the osteotomy site .

The central incisor was held safely at CE Junction with an upper anterior tooth forceps and gently repositioned into the prepared alveolar trough (Fig-5) ensuring snug fit. The harvested graft material was packed and condensed residual defect left after the removal of the incisor.

After achieving adequate haemostasis, the trapezoidal flap was repositioned with 3'0 braided non-absorbable silk sutures. Post-operative healing was uneventful. Oral hygiene instructions were given and 0.12% chlorhexidine mouthwash, 10 ml, twice daily, for 30 seconds, for one week, was recommended. During the recall, flexible splinting was done using resin composite for stabilization of the replanted tooth (Fig-6). Occlusal adjustments were done to minimize traumatic forces on the tooth during initial stage of healing. Patient was given instructions to have soft diet and avoid sticky food. A ten day course of antibiotic cover with systemic penicillin and analgesics was prescribed.

After two weeks sutures were removed and endodontic treatment was initiated in tooth number 11. Routine endodontic access cavity was prepared, working length was determined and confirmed with radiograph to be 21 mm. Cleaning and shaping was done using K- files up to 50 size file using crown down method with copious saline irrigation. Obturation was done in lateral condensation with guttapercha points and coronal seal was given with restorative Glass ionomer cement. Review after six months showed good healing of the surgical area radiographically (Fig-7).

DISCUSSION

The term odontome refers to a tumour of odontogenic origin ^[2]. It means a growth with both the epithelial and mesenchymal components exhibiting complete differentiation, resulting in functional ameloblast and odontoblast, that form enamel and dentin. This enamel and dentin are laid down in an abnormal pattern because the organization of odontogenic cells failed to reach the normal state of morphodifferentiation.

In 1867, Paul Broca first used the term odontome ^[3]. Odontomes are the most common types of odontogenic tumours. They are divided into compound and complex types. The compound odontome is composed of multiple, small tooth like structures. The complex odontome consists of a conglomerate mass of enamel and dentin, which bears no anatomic resemblance to a tooth ^[4]. Most odontomes are detected only during the first two decades of life, and the mean age at the time of diagnosis is 14 years. The majority of these lesions are completely asymptomatic, being discovered only during a routine radiographic examination ^[4].

The prevalence is more frequent in maxilla than in the mandible. It is reported that 59% occur in male and 41% occur in females ^[2]. Although compound and complex odontomes may be found in any site, the compound type is more often seen in the anterior maxilla (61%), and the complex type occur more often in the molar regions of either jaw ^[3].

A study done by Sanu et al ^[5] found that odontome were the common cause of lack of eruption of maxillary incisors with a prevalence of 21% , followed by retained

primary teeth 15.5%, supernumerary teeth 15.5%. They also found out that right maxillary central incisor are most commonly affected than left central incisor.

Radiographically the compound odontoma appears as a collection of miniature tooth like structures of varying size and shape, surrounded by a narrow radiolucent zone. The radiographic findings are usually diagnostic, and the compound odontoma is seldom confused with any other lesion. ^[4,2].

Among various treatment options for this case, orthodontic extrusion of the impacted maxillary central incisor would have been the ideal choice, considering the patient's age. However the patient could not be convinced for the orthodontic extrusion as he was not willing for prolonged orthodontic procedure and insisted on immediate replacement of the missing tooth due to aesthetic demand. Hence the option for intentional replantation was planned and executed.

Any atraumatically extracted tooth can be a potential candidate for intentional replantation. Although traditionally viewed as a treatment of last resort, in the recent past there has been a renewed interest in intentional replantation.

The most critical factor for a successful replantation is storage medium and extra oral time. Concerning the storage medium, it has been proved that the ideal one is Hanks Balanced Salt Solution, apart from milk. The extra oral time ideally should be up to 15-20 mins ^[6, 7, 8]. The successful outcome of this case could be attributed to favorable factors such as less extra oral time of 15 mins and the storage medium chosen.

CONCLUSION

This case report highlights the interdisciplinary approach in managing an impacted tooth associated with odontoma.

An odontome has a limited growth potential, but it should be removed because it contains various tooth formulations that can predispose to cystic change, interfere with permanent tooth eruption, and cause

considerable destruction of bone. Early diagnosis of odontome allows adoption of a less complex, less expensive treatment but ensures better prognosis.

Considering the patient's age, the treatment objective was to retain the impacted central incisor by intentional replantation to maintain the aesthetics and occlusion.

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DENTAL CONCEPT SUDOKU 1

Dental Implant Risks

Damage to adjacent blood vessels		Peri-Implantitis			Damage to the bone			Damage to adjacent tooth
Infection		Damage to the bone			Perforations			
Nerve injury	Perforation		Infection		Peri-Implantitis			Damage to adjacent blood vessels
Peri-Implantitis			Swelling	Perforation		Damage to the bone		Persistent pain
Persistent pain			Peri-Implantitis		infection	Swelling		
Swelling		Perforations		Persistent pain		Peri-Implantitis		
Perforations		Nerve injury						Swelling
	Swelling		Damage to adjacent blood vessels			Damage to adjacent tooth	Perforations	
		Persistent pain						