CASE REPORT

Management of an overretained deciduous canine associated with horizontally impacted permanent successor - a case report

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Abstract

Retention of primary teeth beyond their expected exfoliation date is encountered frequently. This is most commonly due to absence of the permanent successor but, in present case, an over retained deciduos canine was associated with horizontally impacted permanent canine. Advances in treatment modalities with time have led to a more conservative approach to preservation of tooth structure for its longer retention in the dental arch as a functionally active unit. Patient also wished to conserve tooth which had a questionable prognosis. Teeth with fractured root, severe bone loss, endodontically inoperable root can be retained in the oral environment with various treatment modalities. The present case was managed with apicoectomy of fragmented apical root portion. Restorative techniques that led to improve aesthetics and function of the retained primary teeth are illustrated.

Key Words: Exfoliation, Permanent successor, Apicoectomy, Retained primary teeth

Introduction

The timely initiation and eruption of teeth into the oral cavity is very important for healthy dentition. It is the process by which tooth moves within the jaw bone, comes into the oral cavity up to the occlusal contact and maintains its clinical position.[1,2]

Eruption refers to the axial or occlusal movement of the tooth from its developmental position within the jaw to its functional position in the occlusal plane.[3] The eruption pattern of deciduous and permanent teeth is usually comprehensive and takes place at different chronological age levels.[4]

A primary tooth in some cases, can be retained beyond the time of normal exfoliation which results in an extended life for that tooth and the condition is known as "persistence." Primary teeth should exfoliate so that the permanent tooth underneath can come into the mouth.[5]

Primary teeth may be retained for a variety of reasons and the most common being the developmental absence of the permanent successor,[6] other reasons may be impaction or intrabony migration of the successor tooth.[7-9]

Impacted tooth is a tooth which is completely or partially unerupted and is positioned against another tooth, bone or soft tissue so that its further eruption is unlikely. It is described according to its anatomic position. Teeth may become impacted because of adjacent teeth, dense overlying bone, excessive soft tissue or a genetic abnormality. Most often, the cause of impaction is inadequate arch length and space to erupt, that is the total length of the alveolar arch is smaller than the tooth arch (the combined mesiodistal width of each tooth).[10]

Other causes for the persistence of primary teeth include translation or transmigration of successor teeth, existence of pathology, such as cysts, tumors, and odontoma under the primary tooth that result in the impaction of successor teeth and macrodontia of permanent dentition, partially or totally.[11]

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A retained deciduous tooth, with good crown, roots, and supporting alveolar bone, can render an adult patient many years of service. However, persistent teeth can lead to some clinical problems including periodontitis, profound caries, esthetic and phonetic problems and ankyloses.[12]

A cross-sectional study found that the most commonly retained predecessor was the mandibular second primary molar, followed by the maxillary deciduous canine.[6] In a study conducted by Aktan et al. in 2011, primary teeth were more frequently retained in the mandible than in the maxilla, and the right side was less affected than the left side.[11]

Treatment of Over-Retained Primary Teeth

When a patient presents with over-retained primary teeth, it is important that the patient's oral health be carefully assessed with a comprehensive clinical examination and dental x-rays. The shape, color, position and condition of the primary tooth is also important to evaluate.

The retention depends on the condition of the primary tooth and the surrounding structures. If the patient has several over-retained primary teeth, there may be several missing permanent teeth. It is important that, in addition to your dentist, an orthodontist should evaluate the patient so that a proper treatment plan can be developed.

If the primary tooth is structurally and aesthetically acceptable, the tooth can be retained and reshaped using a restoration or when the primary tooth is grossly crooked, it is better to extract it; the space can be closed using braces. Another treatment would be extraction of the primary tooth followed by the replacement of the tooth with a fixed bridge or dental implant. At this time, the dental implant is the treatment of choice after extraction due to its higher success rate.

Case Report

Female patient named Sajal, aged 22 years, was referred to the Department of Periodontics with the chief complaint of frequent bleeding from gum since last one month. She also had the complaint of moderate pain and pus discharge from her lower left front tooth region since3-4 days.

No relevant medical history was given by the patient. Periodontal examination revealed good oral hygiene with minimal plaque and calculus deposits. The patient had undergone scaling and root planing 2 years back.

Over-retained deciduous tooth #73 grossly carious crown, with significant destruction of hard tissue was found clinically(Fig. 1a).
The gingiva was pink and firm, and the papillae were intact. Clinical examination revealed shallow probing depths, with grade II mobility (Glickman's index 1972) and presence of sinus opening with respect to same tooth. A periapical X-ray demonstrated apical bone resorption (Fig. 1b).

Figure 1a: pre-operative view of deciduous retained tooth #73

Figure 1b: Preoperative radiographic view

Treatment plan comprising of endodontic treatment, apicoectomy of resorbed root portion and restoration of the crown and splinting with adjacent tooth and surgical removal of horizontally

impacted canine. This treatment plan was accepted by the patient as the patient did not want to go for extraction of the tooth and neither for implant or not for surgical removal of impacted tooth.

Treatment procedure

After adequate anaesthesia, access opening was done then working length was determined and the canals were biomechanically prepared by using step-back technique (Fig. 2).

Figure 2: Biomechanical preparation of #73

On 5th day patient was recalled for surgical procedure. crevicular, interdental incision were given from distal aspect of #32 to mesial aspect of #34 and vertical releasing incision from mesial aspect of #32 were given(Fig 3) and flap was elevated and apicoectomy was performed (Fig 4a and 4b) and then canals were obturated with lateral condensation method and the chamber was sealed from both coronal and apical side and debridement of root portion was done and suture were given (Fig 5).

Figure 3: Incision given with 11 no. blade.

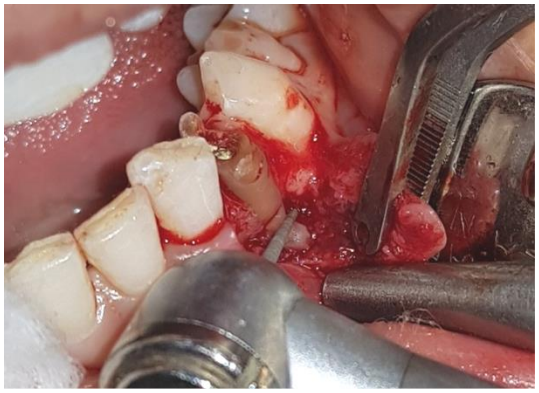

Figure 4a: Apicoectomy of retained tooth #73

Figure 4b: Fragmented portion of tooth was removed

Figure 5: sututreplaced to close the wound

0.2% Chlorhexidine mouthwash and analgesic with proper oral hygiene measures were advised and the patient was recalled after 7 days for re-evaluation and suture cutting.After 1 week, composite build up of tooth was done and interdental splinting was performed (Fig 6a and 6b).

Figure 6a: composite build up and interdental splinting was done

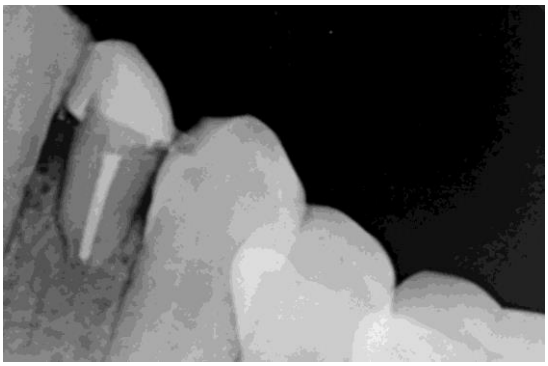

Figure 6b: postoperative radiographic view

Discussion

All the treatment options were explained in detail to the patient but she wanted to retain her tooth rather than opting for implant or extraction of retained tooth. Considering all these factors, the criteria for selection of retaining a deciduous tooth areabsence or presence of permanent successor, ectodermal phenotype of the erupted permanent teeth (absence of morphological deviations in the crowns or roots), morphology of the retained tooth (maximum morphology ensures maximum functional load or stress distribution or a positive abutment factor), existing root length and form, position in the arch, angulations and inclination of the tooth , radiological indicators and assessment guide (bone and periodontal ligament space verification).[13]

So, endodontic treatment followed by apicoectomy of resorbed root portion and restoration of the crown and splinting with adjacent toothwas done. The basic objective of endodontic treatment was total debridement of the pulp space and development of an impermeable fluid tight seal at the apex.[14]

Apicoectomy is last resort to surgically maintain a tooth with a periapical lesion that cannot be managed with conventional endodontic treatment. The main goal of apical surgery in present case was to prevent bacterial leakage from the root-canal system into the periradicular tissues by placing a tight root-end filling following root-end resection[15] and removal of resorbed root portion to prevent pulpal infection following injury to the predentin, infected dentinal tubules may stimulate the inflammatory process with osteoclastic activity in the pulpal or periradicular tissues, consequently initiating internal or external root resorption.[16]

A splint should allow periodontal ligament reattachment and prevent the risk of further trauma or swallowing of a loose tooth and stabilize the injured tooth/teeth in its correct position and maintain adequate stabilization throughout the splinting period.[17]

Removal of impacted teeth were instructed to prevent any serious complications, including cyst development around the tooth that may gouge the jawbone and damage adjacent teeth, chronic mouth discomfort and misalignment of teeth.[18]

Limitation

In present case, prognosis of retained deciduous teeth is unpredictable.Several studies have shown mandibular and maxillary primary canines and second molars have a much better prognosis than incisors and first molars.[19,20] Bjerklin,in a longitudinal study, assessed the fate of retained lower second molars from the age of 11-12 into adulthood. Of 59 teeth in 41 subjects only seven were lost, none of which were after the age of 20[21]. Other studies have found similar results[22,23]. Patient were instructed for follow up for impactedteeth by the time it was not surgically removed and for thecheck up of treated deciduous teeth.

Conclusion

In certain clinical situations, despite an obvious indication to extract the retained deciduous tooth, the challenge is not the extraction but solution that is offered by the clinician to preserve the space, especially when the decision involves a young

adult. An attempt made to retain the deciduous tooth rather than opt for the extraction, it offers a very viable option to any of the current temporary replacement solutions.

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