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RESEARCH ARTICLE

THE DIAGNOSIS AND TREATMENT OF ALTERED PASSIVE ERUPTION: A CASE REPORT AND REVIEW OF LITERATURE

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ABSTRACT

Altered passive eruption is a condition in which the gingival tissue remain positioned on the enamel prominence rather than at the cementoenamel junction. Difficult to detect, most of these cases go undiagnosed or misdiagnosed. Hence, it is necessary to be informed of this entity in order to adequately diagnose and treat it. Treatment modalities often involve surgical intervention and restoring esthetics is a prime concern in these cases. This article describes a review of literature and provides vital information in diagnosing and treatment this condition as well as describes a successfully treated case.

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INTRODUCTION

The eruption of a tooth is an activity during the process of the development of the teeth during which the tooth appears in the mouth and becomes clinically visible and is thought to be a perpetual process. Eruption can either be active or passive (Weinmann, 1946). Active eruption is the process by which the bodily movement of the tooth enables its passage from its origin of development to its functional position in the oral cavity (Oikawa, 2011). The process of active eruption can be summarized into five stages i.e. the pre-eruptive stage that's occurs before the completion of development of the crown, theIntraosseous eruption phase resulting in the emergence of an eruption pathway through soft and hard tissue, the mucosal penetration of the tooth resulting in the genesis of the primary junctional epithelium, the post-emergence stage before the functional occlusion is achieved and a final post occlusal eruption phase occurring for the remainder of life (Lee, 1995). In contrary to active eruption, passive eruption is the discernible elongation of the crown due to a decrease in the clinical attachment levels or gingival recession (Newman, 1994). Active and passive eruption is a simultaneous process, and the increase in the accumulation of the alveolar crestal bone and deposition of cementum on the root surface compensates for the active eruption (Weinmann, 1946). The term 'Altered passive eruption' ,also known as 'delayed passive eruption' or 'retarded passive eruption' was coined by Goldman and Cohen, and was described as a situation in which the marginal gingiva is located incisally to the cervical convexity of the crown and is removed from the cervicoenamel junction of the tooth (Goldman, 1968). It often refers to an alteration in the process of passive eruption (Weinberg, 2000). APE is classified according to the various stages as follows (Alpiste-Illueca, 2012):

- Location of the crest of the marginal gingiva on the enamel surface

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- Location of the dentogingival margin on the enamel as well as the cementum
- Location of the dentogingival margin exclusively on the cementum and extending to the CEJ.
- The crest of the marginal gingiva is on the cementum and a presence of gingival recession is noted.

The alveolar crest is normally placed at the Additionally, APE is also classified into two distinct subtypes (Evian, 1993):

Subtype A: Normal relationship between Alveolar crest-CEJ
Subtype B: Alveolar crest is at the level of the CEJ, thus resulting in the violation of the biologic width.

At present, very little is known regarding the etiology of APE. There are few causes that attribute the development of APE which involve an increase in the thickness of the epithelium thus resisting the movement of the tooth in an apical direction, thick and fibrotic gums, familialtrait, orthodontic treatment and idiopathic (Weinberg, 2000). The aim of this case report was to enable clinicians in diagnosing APE and treating it according to the situation.

Case Report

A 24 year old female presented to the department of Period ontology at the UB school of dental medicine with a chief complaint of "I do not like my smile". Upon clinical examination, the presence the gums exposed by the upper lip by 2-3mm resulting in gummy smile, along with short clinical crowns of the maxillary central incisors with a square appearance and flattened gingival festooning of the marginal gingiva all indicative of altered passive eruption (Figure 1).The oral hygiene was adequate. Radiographs showed very limited biologic width on the maxillary central incisors. It was classified as a type1 subtype B altered passive eruption. The treatment plan involved the removal of the excessive soft tissue to expose the natural teeth structure uptil the required length, and to remove osseous structure in order to maintain a biologic width.

Figure 1. Pre-operative picture (A) Facial view (B) Palatal view

The surgical planning involved the removal of at least 2 mm of alveolar bone at the sites to restore the correct biologic width and to enable bone remodeling in order to establish appropriate gingival architecture and scalloping. After the informed [verbal and written consent was obtained, local anesthesia (2% xylocaine; 1:100,000 epinephrine) was administered. Using a 15c no blade, the extent to which the soft tissues was going to be excised was arbitrarily recorded. Asulcular incision was then made and the excess tissue was excised (Figure 2).A full thickness mucoperiosteal flap was then raised to expose the alveolar crest (Figure 3). The osseous crest was found to be approximating at the level of the CEJ, thus violating the biologic width. Osseousrecontouring was then carried out in order to eliminate atleast 2 mm of the alveolar crest. The flaps were then repositioned and were suture with single interrupted resorbablesutures. The patient was prescribed a 0.12% chlorhexidine mouthwash. The patient was followed up on after a week and after a month with an uneventfulhealing. At the end of three weeks, there was complete healing and the patient mentioned that she received several compliments for her smile (Figure 4).

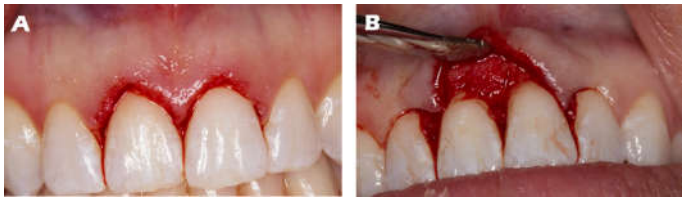

Figure 2. (A) Post Gingivectomy (B) Osseous recontouring

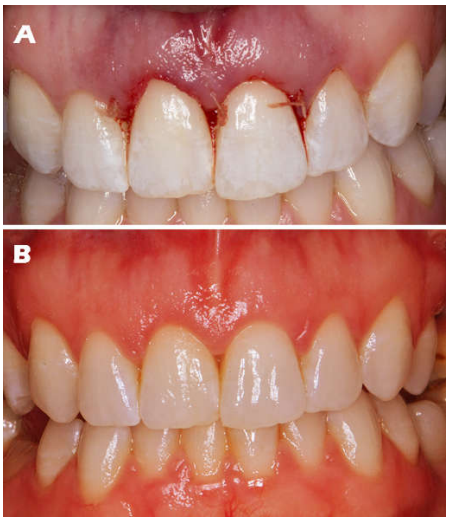

Figure 3. (A) Post Suture Placement (B) Three week follow-up Facial view

Figure 4. Post-operative facial view

DISCUSSION

The term 'primary failure of eruption' was assigned to cases of APE without any underlying etiology, suggesting a probable mechanism involving a variation in the metabolism or blood flow of the periodontal ligament (Coslet, 1977). Primary failure of eruption is also associated with conditions like gardner'ssyndrome,down'ssyndrome,osteoporosis,sternocleida ldysplasia,achondroplasia and chondroectodermal dysplasia (Evian, 1993). Literature has also established that altered passive eruption is a familial trait which may have a genetic co relation (Rossi, 2014). However, In ourcase, the patient denied any family members having Altered passive eruption. The primary author of this case has also observed two other similar

cases in the past with no familial history of the same. The patient had short square clinical crowns, with the placement of the crest of the marginal gingiva on the enamel surface in a more obvious incisal postion along with the flat festooning of the gingival margin, which is a clear indication useful in the diagnosis of APE (Coslet, 1977 and Dello Russo, 1984). A confusion between a differential diagnosis of gingival enlargement and APE should be avoided. A history (medical history, poor oral hygiene, drugs) would help eliminate gingival enlargement as a probable diagnosis (Moffitt, 2016 and Silverstein, 1997 and Luan, 2005). The greatest problems encountered with the presence of APE is a compromise in the esthetics leading to the patient taking dental consultations in order to improve the smile[8, 11, 15].Hence,when addressing such cases, it is important to bear in mind, that the primary objective should be the restoration of esthetics[16]. This can be done by restoring the ellipsoidal shape of the maxillary incisors and by a combination of prosthodontic, orthodontic and restorative therapy (Weinberg, 2006; Hempton, 2010; Reich, 1981 and Weinberg, 1996). Passive eruption usually occurs after tooth eruption and continues in teenagers and finally stops after the facial growth is complete. However, if it progresses after the teenage years, it may be termed as delayed passive eruption (Batista, 2012). Hence, corrections for APE should only be carried out after the complete facial growth of the individual is achieved (Alpiste-Illueca, 2011). APE often predisposes to plaque accumulation eventually resulting in periodontits in patient with such predilection (Alpiste-Illueca, 2011). Hence, maintainance of oral hygiene in such patients should be of primary significance. Violation of the biologic width should be avoided when treating these cases (Borges, 2009).

The treatment for APE correction can be summarized as follows:

- If no pathological or cosmetic problems – no correction is required
- Type 1A – Gingivectomy
- Type 2A – apically positioned flap since the alveolar crest will be at the CEJ
- Type 1B and 2B – Aesthetic crown lengthening procedure (gingivectomy and osseous surgery)

Conclusion

This paper presents a case of APE which was treated by aesthetic crown lengthening. A careful diagnosis of such situations can help in appropriate treatment planning for the patient. Aesthetic considerations should be borne in mind while treating such cases.

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