Scholars Journal of Dental Sciences (SJDS) **ISSN 2394-496X (Online)**
Sch. J. Dent. Sci., 2015; 2(2B):209-212 **ISSN 2394-4951 (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjds.2015.v02i02.024

Case Report

Preservation of Buccal Table with Bone Filling, after Removing Mandibular Incisor Ectopic by an Orthodontic Management Plan: A Case Study

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Abstract: Ectopic tooth eruption is a change in the pattern of eruption and final position of a tooth. So, during orthodontic handling possible should be considered the reposition or exodontia of tooth affected. When extraction is indicated, consider certain physiological changes in the alveolus after the absence of the tooth. Variation in the dimensions of the socket area may affect future results of treatment. The objective of this paper is to present a case report of attempted preservation of facial bone in lower incisor area during a management plan corrective orthodontic that involved extraction ectopic right lower central incisor. We performed the extraction of tooth 41, with topical tetracycline application diluted in alveolus, for five minutes and final positioning particulate demineralized and hydrated bone graft. Finally sutured and periodontal dressing placed for eight days. Clinical assessment was held at 15 and 30 days, of which no signs of inflammation and pain report, it was decided the placement of fixed orthodontic appliances. From the above we can conclude, the integrated management in dentistry can optimize the aesthetic and functional results. Specifically, orthodontics can be favored different surgical strategies. Where in this case the attempt to preserve the ridge profile anterior inferior buccal constituted an alternative to try to reduce the consequences of tooth 41 extractions for orthodontic purposes.

Keywords: Ectopic Tooth Eruption**,** Tooth Extraction**,** Tooth Socket**,** Bone Grafting**,** Tetracycline.

INTRODUCTION

The ectopic tooth eruption is characterized by a change in the eruption and final position of a tooth, which can occur in any region of the basal and alveolar bone [1]. Physiological tooth migration and eruption pathway can be highly influenced by the morphology and growth pattern of local bone tissue, targeting the root of time, space and mechanical obstruction of the maxilla, which can trigger from a position ectopic up a transposition [2]. Tooth replacement is not the only alternative in the alignment of teeth during orthodontics, extractions also need to be considered [3].

When a tooth is extracted, physiological changes occur in the socket, first six weeks sequential processes of stabilization of a clot, epithelial proliferation with angiogenesis, and occurrence of a connective tissue with subsequent mineralization are observed, then suffer a slowdown in apposition and accelerated bone resorption between 3-6 months [4]. It is estimated that during this six months horizontal bone loss is more important than the vertical, being from 2.46-4.56 mm and 0.8-1.5 mm, respectively [5]. For the anterior mandibular region the thickness of the bone walls reabsorbed from 40 to 60%, with the vestibular wall is the most affected in the process, during the first three years [6].

Preservation techniques post-extraction, are aimed at trying to keep the profile of the ridge to the existence of these hard and soft tissues, to optimize future aesthetic-functional performance and minimize additional procedures [7]. The objective of this paper is to present clinical management of a case report of attempted preservation of bone in vestibular area lower incisors during orthodontic corrective plan management involving the extraction of ectopic right lower central incisor.

CASE DESCRIPTION

Female patient, 26 years old, who attends dentistry faculty at the University of Cartagena, which manifested dissatisfaction with cosmetic dental malposition of the lower anterior and difficulty to carry out a proper oral hygiene.

Clinical and radiographic examination revealed malocclusion Class I molar and canine Class I relationship, severe lower anterior crowding, ectopic eruption of teeth 41 and 31 (Figure 1). The proposed treatment plan, with the patient prior arrangement, consisted of the extraction of mandibular right central incisor, placement of fill in the alveolar bone and orthodontic corrective phase.

Infiltrative anesthetic technique was applied and the tooth extraction of 41 is performed (Figure 2). After extraction, tetracycline was applied on sterile gauze for five minutes, for help the biomodification the socket, allowing greater exposure of collagen in the área [8,9], and to chemically detoxify the socket (Figure 3). The socket curettage was performed to stimulate bleeding and be used as a substrate for bone filling material, followed by placement of bone graft putty comprising a matrix of bovine origin, demineralized particulate hydrated with sterile physiological saline solution (Figure 4), was sutured with silk number 4-0, to permit confrontation of the soft tissue and minimize the risk of bone graft out towards the oral cavity, was placed periodontal dressing 8 days.

At 15 days was performed clinical control in which great healing and decreased signs of inflammation was observed (Figure 5) subsequently control was performed at 30 days in which no inflammation was observed and proceeded to placement of orthodontic fixed appliances in the jaw for dental alignment (Figure 6).

Fig-1: In the image show the initial patient crowding is observed. Initial state of ectopic eruption of teeth 41 and 31.

Fig- 2: Show the state of the alveolus after the extraction of tooth 41.

Fig- 3: The chemical detoxification the socket was performed with tetracycline diluted in physiological serum and placed with gauze for five minutes.

Fig-4: Illustrate the consistency as carried lyophilized bone grafting the socket, using a spatula 7A.

Fig-5: Oral status at 15 days after surgery tissues were observed. Although the scar can be seen from the surgical wound, which corresponds to the shape of wound healing according to suture tissue.

Fig-6:The placement of fixed orthodontic appliances for dental alignment starts. No signs of inflammation or symptoms such as pain contraindicating placement of orthodontic observed.

DISCUSSION

Consider the possibility of asymmetric extractions in orthodontic treatment preserves the normal canine and molar ratios of the patient [10]. Matsumoto et al. [11] state that one of the indications for extracting a mandibular incisor in orthodontics, this is the class I dental malocclusion patient with intermaxillary teeth normal right and anterior-posterior intercuspation lower crowding with lack of space for a approximately mandibular incisor. It also defines that to decide which incisor extract, consider the type of malocclusion, periodontal status, and overall the worst positioned incisor. The risk of dehiscence compared to orthodontic movement of incisors in the vestibular-lingual [12], also influenced the decision to extract the tooth in this case.

Other case reports as Pinto et al. [13], Bayrama et al. [14] reported positive results regarding orthodontic treatment after the completion of the extraction of a mandibular incisor; agreeing with the present case where number 41 tooth extraction was performed for alignment without compromising appropriate canine and molar relationships patient.

Kaya et al. [15], evaluated the clinical and radiographic changes after application of demineralized bone matrix putty and particulate in horizontal bone defects, the results emphasize that the measurement of the depth to the survey indicated significant bone gain in both groups and radiological evaluation showed increased bone resorption in both groups; coincides with the actual case in which bone graft with demineralized bone particles was applied.

In literature reported nonantibiotic tetracycline applications as anti-inflammatory, anti-apoptotic, anti-proteolytic, inhibition of angiogenesis and tumor metastasis [16]. In the socket allows to biomodification by inhibiting enzymes such as metalloproteinases (MMP-1, MMP-8, MMP-13) and gelatinases (MMP-2, MMP-9), these are responsible of the collagen degradation [8,16], by allowing increased exposure of collagen in the area. Anti-inflammatory effect by inhibiting leukocyte migration, and inhibition of granuloma formation, mechanism presumably explained by the inhibition of kinase C, involved in signal transduction [17].

The use of diluted tetracycline used topically in the socket is reported as a cost-effective alternative to reduce the incidence of post-extraction tooth socket difficulties, such as alveolitis during extraction of third molars [18]. For 2004, Sanchis et al. [19] in a study of 200 sockets of third molars to measure the incidence of alveolitis and inflammatory changes, they determined that there was no significant difference in the variables evaluated, although less trismus and pain in the tetracycline group was observed, in addition, this group reported no nerve inflammation associated with the surgical site. Meanwhile, Bosco et al. [20], in 2008, through an in-vitro study sockets maxillary incisors rights of rats, to measure the interaction of tetracycline with the microbiota and effect of alveolar osteitis, determined a significant reduction in the occurrence of alveolar osteitis and anaerobes in the area of injury. But with an increase in the participation of bacteria resistant to tetracycline and multiresistant. These data, combined with postoperative pain and delays healing or clinical signs of infection suggest that topical tetracycline could positively influence diluted or at least not affect the results of healing.

From the above it can be concluded that the treatments in dentistry require an integrated management, where multiple specialties can join forces to optimize the aesthetic and functional results. In this case it is important to consider the results of corrective orthodontics can be favored by different surgical approaches, where the attempted preservation of the anterior-inferior vestibular ridge profile provided an

alternative to try to reduce the consequences of tooth extraction 41 for orthodontic purposes.

REFERENCES

1. de Paula VAC, Giacomet F, Bolognese AM, Maia LC; Ectopia and Partial Transposition of Mandibular Lateral Incisors in a Child Patient. ISRN dentistry, 2010.
2. Mattos BSC, Carvalho JCM, Matusita M, Alves APPP; Tooth transposition a literature review and a clinical case. Braz J Oral Sci., 2006; 5(16): 953-7.
3. Saldarriaga JR, Patiño MC; Ectopic eruption and severe root resorption. Am J Orthod Dentofacial Orthop, 2003; 123(3): 259-65.
4. Kubilius M, Kubilius R, Gleiznys A; The preservation of alveolar bone ridge during tooth extraction. Stomatologija, 2012; 14(1): 3-11.
5. Tan WL, Wong TL, Wong MC, Lang NP; A systematic review of post-extractional alveolar hard and soft tissue dimensional changes in humans. Clin Oral Implants Res., 2012; 23(supl5): 1-21.
6. Allegrini SJr, Koening BJr, Allegrini MR, Yoshimoto M, Gedrange T, Fanghaenel J, Lipski M; Alveolar ridge sockets preservation with bone grafting--review. Ann Acad Med Stetin., 2008; 54(1): 70-81.
7. Hämmerle CH, Araújo MG, Simion M; Osteology Consensus Group 2011. Evidence-based knowledge on the biology and treatment of extraction sockets. Clin Oral Implants Res., 2012; 23(Supl5): 80-2.
8. Golub LM, Ramamurthy NS, McNamara TF, Greenwald RA, Rifkin BR; Tetracyclines inhibit connective tissue breakdown: new therapeutic implications for an old family of drugs. Crit Rev Oral Biol Med., 1991; 2(3): 297-321.
9. Sapadin AN, Fleischmajer R; Tetracyclines: nonantibiotic properties and their clinical implications. J Am Acad Dermatol, 2006; 54(2): 258-65.
10. Ruellas A, Ruellas R, Romano F, Pithon M, Dos santos R; Tooth extraction in orthodontics: an evaluation of diagnostic elements. Dental Press J. Orthod, 2010; 15(3): 134-157.
11. Matsumoto MAN, Romano FL, Ferreira JTL, Tanaka S, Morizono EN; Lower incisor extraction: an orthodontic treatment option. Dental Press J. Orthod, 2010; 15(6): 143-161.
12. Garib DG, Yatabe MS, Ozawa TO, Silva Filho OG; Alveolar bone morphology under the perspective of the computed tomography: defining the biological limits of tooth movement. Dental Press J. Orthod, 2010; 15(5): 192-205.
13. Pinto MR, Mottin LP, Derech CD, Araújo MTS; Mandibular incisor extraction: a treatment option. R Dental Press Ortodon Ortop Facial, 2006; 11(1): 114-121.
14. Bayram M, Ozer M; Mandibular incisor extraction treatment of a class I malocclusion with bolton discrepancy: a case report. Eur J Dent, 2007; 1(1): 54-9.
15. Kaya Y, Yalim M, Bahçecitapar M, Baloş K; Comparison of applying particulate demineralized bone matrix (DBM), putty DBM and open flap debridement in periodontal horizontal bone defects. A 12-month longitudinal, multi-center, triple-blind, split-mouth, randomized, controlled clinical study. Part 1 - clinical and radiographic evaluation. J Oral Rehabil, 2009; 36(7): 524-34.
16. Tilakaratne A, Soory M; Anti-inflammatory Actions of Adjunctive Tetracyclines and Other Agents in Periodontitis and Associated Comorbidities. Open Dent J, 2014; 8: 109-24.
17. Webster G, Del Rosso J; Anti-Inflammatory Activity of Tetracyclines. Dermatol Clin, 2007; 25: 133–135.
18. Vezeau PJ; Dental extraction wound management: medicating postextraction sockets. J Oral Maxillofac Surg, 2000; 58(5): 531-7.
19. Sanchis JM, Sáez U, Peñarrocha M, Gay C; Tetracycline compound placement to prevent dry socket: a postoperative study of 200 impacted mandibular third molars. J Oral Maxillofac Surg, 2004; 62(5): 587-91.
20. Bosco JM, de Oliveira SR, Bosco AF, Schweitzer CM, Jardim Júnior EG; Influence of local tetracycline on the microbiota of alveolar osteitis in rats. Braz Dent J, 2008; 19(2): 119-23.