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Exposure of an Impacted Canine for Orthodontic Management: A Case Report

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ABSTRACT

Introduction: The occurrence of impacted maxillary canine is common and can occur due to inadequate space, premature loss of the primary dentition, excessive crown length, hereditary factors, tumours and traumas. This case report describes the diagnosis and treatment of impacted maxillary canine surgically by apically repositioned flap and positioning of orthodontic button for further orthodontic management.

Methods: A 19-year-old male patient reported with the chief complaint impacted maxillary canine on right side. Clinical and radiographic analysis by cone-beam computed tomographyhelped in confirming the location of canine.Surgical exposure of buccally placed canine was done by reflecting a partial thickness flap. It was then positioned apically to ensure adequate width of attached gingiva post operatively. Orthodontic button was placed over the tooth at the same time button for further orthodontic management .

Results: The procedure resulted in favourable healing of the surgical site and adequate width of attached gingiva was attained post-operatively.

Conclusion: This procedure for surgical exposure of impacted canine by apical positioning of flap, when used considerately, gives excellent results and helps in preventing future mucogingival problems by increasing keratinized gingiva around the tooth.

Key words- Apically repositioned flap, impaction, maxillary canine, orthodontic extrusion

I. INTRODUCTION

Impacted teeth, especially canines, can be problematic during orthodontic treatment. They can hinder orthodontic movement and compromise the aesthetic outcomes.[1] Resorption of adjacent roots can also be seen. The maxillary and mandibular third molars are the most commonly impacted teeth due to their long development time.[2] The maxillary cuspid is the second most frequently impacted tooth (2%).[3]An estimated 0.71% of10 to 13 years old children have permanent incisors with root resorption caused by ectopic eruption of maxillary canines.[4,5] Approximately 80% of teeth with root resorption are lateral incisors.[6] Proper exposure of impacted canines is essential for complete orthodontic treatment when indicated. Various techniques for facially impacted canines include gingivectomy, apically positioned flap and closed-eruption method with the repositioned vestibular flap.An adequate amount of keratinized gingival tissue is a fundamental requirement for periodontal health.[8] Labially or buccally erupting teeth show reduced dimensions of keratinized gingiva as abnormal eruption of permanent teeth restricts or eliminates the keratinized tissue between the erupting cusp and the deciduous tooth.[9] A lack of attached gingiva poses a potential risk for gingival recession in labially or buccally erupted teeth due to the possibility of accumulation of plaque and/or traumatic tooth-brushing during subsequent orthodontic treatment.[10]

II. CASE REPORT

A 19-year-old systemically healthy male patient presented with the complaint of impacted right maxillary canine.[Fig.1]A delayed eruption of the maxillary right canine was noted upon intraoral clinical and radiographic examination. The impacted canine was clinically palpable on canine prominence.The accurate position of the impacted canine in relation to the adjacent teeth was confirmed using cone-beam computed tomography (CBCT).[Fig.2] On palpation, the tooth showed an erupting position that was facial to the crest of the alveolar process and entirely within the soft tissue. Apically positioned partial-thickness flap was the procedure of choice for soft tissue management.

III. TREATMENT

Pt was appointed for surgery after thorough scaling. After adequate anaesthesia by infiltrating with lidocaine HCl 2% with epinephrine 1:80 000, incision was made on the crest of the edentulous ridge. The incisions are then extended vertically into the vestibule to permit apical positioning of the flap. A split thickness mucosal flap was raised.[Fig.3] The bony cover was removed with a round bur. About two thirds of the crown was exposed and the dental follicle was removed by a curette. The flap was apically positioned and stabilised with 3-0 non resorbable

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silk suture.[Fig.4]The impacted tooth was cleaned and orthodontic button was then applied to the tooth at the same time to facilitate its movement to the desired position.[Fig.4]

Post-op instructions were then given to the patient. Patient was advised to rinse with 2% chlorhexidine solution for seven days and was told to refrain from brushing on surgical site. Sutures were removed a week later and the area was evaluated. Afavourable response with no adverse events during healing was noted.[Fig.5] Mechanical tooth-brushing was allowed one week after the surgery. After three weeks, the surgical site revealed an adequate width of keratinized gingiva.

IV. DISCUSSION

This case report described exposure of a buccally impacted canine for the purpose of orthodontic extrusion. Maintenance of an adequate band of keratinized gingiva is imperative during orthodontic treatment, failure of which can cause periodontal problems.[11]Gingivectomy procedure, if performed, could lead to loss of attached gingiva for the canine. Apically repositioned flap or grafting of keratinized gingiva from the palate to the site of exposure were procedure in option for achieving adequate attached gingiva. According to Proffit, there are three categories of problems when dealing with an impacted tooth: Surgical exposure, attachment to the tooth, and orthodontic mechanics to bring the tooth into the arch.[11]Impacted canines are treated with a multidisciplinary approach.[12] The choice of treatment is based on factors such as the location of canine, severity of impaction, patient's age and other patient considerations. The two basic surgical methods for exposure of an impacted canine are the open method andthe closed method. The structure of the soft tissue covering the impacted tooth is one major factordetermining the choice of a method. The treatment should simulate the natural eruption pattern of the impacted tooth through the attached gingival tissue. Other factors such as operating time and the extent of the surgery,[13] patient comfort,[14,15] need for repeated surgery,[13,16,17] time of the eruption/extrusion of the impacted tooth, overall treatment time, [13,18,19] success of treatment,[16] relapse and postoperative periodontal outcomes have been discussed in literature and should be kept in mind before selection of procedure.[20-29]

V. CONCLUSION

When dealing with maxillary canine impactions, a proper diagnosis is critical for the success of the surgical treatment.The correct surgical treatment will lead to improved aesthetics, orthodontic movement, and functional results.Selection of an appropriate surgical technique for canine exposure is important. The level and position of tooth impaction, bone thickness and available keratinized soft tissue are the most important factors in selecting the surgical approach. This procedure for surgical exposure of impacted canine by apical positioning of flap, when used considerately, gives excellent results and helps in preventing future mucogingival problems by increasing keratinized gingiva around the tooth. Future studies are required to evaluate the long-term efficiency of such procedures.

Fig.1 Pre-operative picture

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Fig.2 Cone beam computed tomography images

Fig.3 Intra-operative pictures showing reflected flap

Fig.4 Post operative picture showing apically positioned flap

Fig.5 Picture at one week follow up

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