INTERNATIONAL JOURNAL OF CURRENT ADVANCED RESEARCH
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 11; Issue 11(A); November 2022; Page No. 1674-1679
DOI: http://dx.doi.org/10.24327/ijcar.2022.1679.0375

Research Article

MANAGEMENT OF IMPACTED CENTRAL INCISOR- A MULTIDISCIPLINARY APPROACH TO A RARE ENTITY, CASE REPORT

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A R T I C L E I N F O

Article History:

Received 11th October, 2022
Received in revised form 20th October, 2022
Accepted 18th October, 2022
Published online 28th October, 2022

Key words:

Inferior alveolar nerve, repositioning, dental implants

A B S T R A C T

This case report describes the treatment of two patients with impacted central incisors who were reported to our department. The first treatment plan included surgical removal of the impacted central incisor and the second involved surgical exposure of the impacted central incisor and subsequent traction through orthodontic treatment. This article provides insights into the various treatment protocols used to treat a rare entity impacted by the central incisor.

INTRODUCTION

Impaction of the tooth is not rare in our daily operations.With changes in the type of diet and lifestyle in the coming age generations, a different set of problems have arisen as growth and development have been modified.Unerupted teeth not only have a major impact on dental and facial aesthetics but are also known to be one of the most deviant and unattractive traits of the face. This can lead to psychological disorders and social anxiety. Unerupted teeth are mostly noticed in the mixed dentition stage where the patient is in his/her adolescent stage, and any amount of deviation from the ideal esthetic standards leads to social anxiety that further leads to more serious mental health issues. Although surgical extraction is never considered the treatment of choice, as it can be invasive and requires further interventions that need to be performed post-extraction for the rehabilitation of the empty space, orthodontic traction of the tooth is the gold standard for patients where minimum surgical intervention is required and is the least invasive and comparatively cost-effective.

Impaction of the permanent central incisors is a well-documentedentity that is usually encountered in clinical practice. Theyare usually associated with the supernumerary tooth, traumato the primary anterior teeth early in life (dilacerations orchange in eruption path of permanent successors), or the cyst(inflammatory dentigerous cyst, peri radicular cyst) associatedwith non-vital primary anterior teeth, The objectives of orthodontic therapy are to establish goodocclusion, enhance the health of the periodontium, andmost importantly, improve dental and facial aesthetics. Normally, a tooth erupts into the oral cavity after two-thirdsof the root formation is complete.An impacted tooth fails to erupt into the dental arch within the expected timeframe.Studies have shown that some teeth which fail to erupt pasttheir normal eruption time need to be surgically exposed andorthodontically aligned into their normal physiologic positionin the dental arch .

This article has presented two cases in which the patient underwent surgical extraction of the impacted central incisor and the second case underwent surgical exposure and orthodontic traction.

Case report 1

An 18-year-old female patient was admitted to the Department of Oral and Maxillofacial Surgery, Jaipur Dental College, with the chief complaint of a missing tooth and wanted to receive implants for the same. The patient had no relevant medical or family history. Her dental history revealed that she had been diagnosed with an impacted central incisor 2 years prior by her local dentist and suggested orthodontic treatment to get the incisor into the arch. The patient declined orthodontic treatment and was advised to wear a removable partial denture. The patient had been wearing a removable partial denture for 2 years. She visited the dental hospital for definitive treatment.

Extraoral examination revealed a normal facial profile and the presence of a good facial profile and balance in all proportions. Intraoral examination revealed the presence of all teeth except the maxillary central incisor of the second quadrant. There was a retained deciduous canine that was

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present intraorally The patient was advised to undergo orthodontic treatment for the same, but she refused and wanted to remove her tooth.

Cone-beam computed tomography was advised to determine the accurate placement of the tooth and for further treatment planning. CBCT revealed a horizontally impacted central incisor between the retained deciduous canine of the second quadrant and central incisor of the first quadrant. (Figure-1)

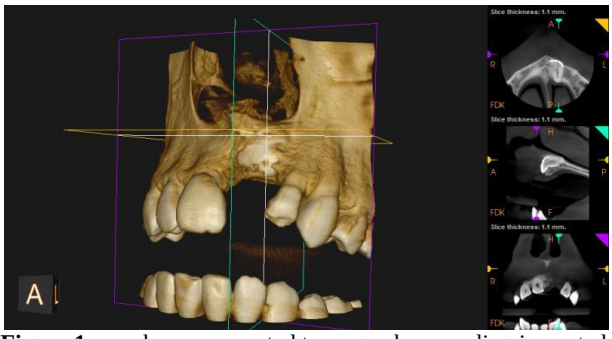

Figure 1 cone beam computed tomography revealing impacted central incisor

Consent was obtained from the patient for the removal of the central incisor, and surgical removal was planned.A full-thickness mucoperiosteal flap was created, wherein a crevicular incision along with a crestal incision was made on the adjacent teeth and the alveolar ridge respectively. 2 vertical releasing incisions was also made near the deciduous canine and the central incisor of the adjacent quadrant. Once the flap was raised, a bulge was felt on the labial aspect at the level of the mucogingival junction of the adjacent retained deciduous canine of the second quadrant and the central incisor of the first quadrant. A round burr (701) along with a straight handpiece was used to create a window in the area of the bulge and remove the bone covering the tooth.After adequate bone removal, the tooth was sectioned and cut into two pieces. During extraction was being conducted, the patient's blood was withdrawn, and platelet-rich fibrin was prepared for dead space management. After extraction, the PRF was placed into the traction socket and the flap was sutured back with five interrupted sutures with 4-0 vicryl suture. The patient was pleased with this surgical procedure. The sutures were removed eight days postoperatively. (Figure-2 and Figure-3)

Figure-2 post extraction of maxillary central incisor

Figure 3- placement of platelet-rich fibrin for dead space management

Case report 2

A 26-year-old male patient reported to the department of oral and maxillofacial surgery from the department of orthodontics and dentofacial orthopedics for the surgical exposure of the impacted central incisor for orthodontic traction into the arch. The treatment was fully planned by the department of orthodontics. Intraoral examination revealed the presence of all teeth except the maxillary central incisor.Cone beam computed tomography of the patient revealed a vertically impacted central incisor at the junction of the adjacent lateral incisor. A full-thickness mucoperiosteal flap where crestal incision was made on the alveolar ridge and a crevicular incision was made in the adjacent teeth. 2 vertical releasing incisions were also made near the adjacent teeth. A full-thickness flap was raised and the tooth was exposed. A lingual button was bonded onto the tooth along with a wire placed onto the tooth. The flap was closed subsequently with 5 interrupted sutures. The suture was 3-0 silk suture. The patient was satisfied with the surgical procedure and sutures were removed 8 days postoperatively. (figure-4, figure-5, figure-6, figure-7)

Figure 4 incision marking for full thickness mucoperiosteal flap

Figure 5 flap raised for exposure of the surgical region

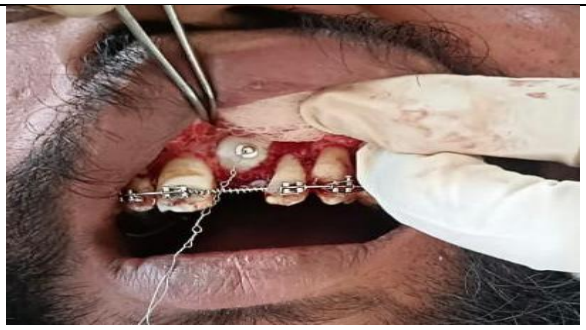

Figure 6 lingual button placed on the tooth

Figure 7 closure with 3-0 silk sutures

DISCUSSION

The impacted central incisor poses a confusing esthetic dilemma because of its prominent position in the esthetic region of the arch. It becomes a challenge for clinicians to make the correct treatment plan as it can cause major alterations in one's facial features. The clinician should diagnose the presence of an impacted incisor early on, that is, in the growing age for the tooth to erupt easily into the arch. It is extremely important for the clinician to inform the patient of the possible outcomes that the treatment might have and give all the advantages as well as the disadvantages of the planned treatment.

Radiographic diagnosis can be done through intraoral periapical radiographs, orthopantomograms, and cone beam computed tomography. The cases that were highlighted in the article used cone beam tomography as it gave the 3-dimensional orientation of the impacted tooth along with its relation to the adjacent anatomical structures.

The occurrence of unerupted maxillary incisors can be associated with hereditary and environmental factors. However, the relevant importance of these different factors is not known. For example, the presence of supernumerary teeth does not necessarily mean that the incisor will be prevented from the eruption. Often the position of the impacted incisor (desistance from the alveolar crest, rotation, angulation, and inclination) determines the surgical procedure used. One study of 30 patients suggested that the closed technique resulted in a more aesthetically pleasing gingiva than the apically repositioned flap. The timing of intervention has been suggested as being important, with several studies suggesting that the younger the age, the quicker the tooth erupts. However, if the tooth is completely developed and has unfavorable positions, a combination of surgical as well as orthodontic treatment has to be done for proper results.

CONCLUSION

Impacted central incisors can be a challenging problem. Proper case preparation, radiographic analysis, and counselling of the patient about the treatment plan are key to a successful treatment. If the eruption is delayed, the exposure of the permanent tooth should be done at an early age for the proper eruption pattern of the tooth to occur. The treatment will always be challenging as it involves a pivotal tooth in facial aesthetics.

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