Case report

SURGICAL REMOVAL OF TRANSMIGRATED MANDIBULAR CANINE: A CASE REPORT

ABSTRACT

Introduction: Mandibular canine transmigration is a rare occurrence and is an occasional diagnosis. The majority of patients have no symptoms, and these canines are frequently discovered during a radiological examination prior to orthodontic treatment. The exact aetiology is unknown, and treatment of impacted transmigrated canine can be challenging for a practitioner if it is diagnosed at later stages. Early detection of impacted canines and prompt treatment is utmost important to ensure facial harmony and improved function.
Aims: To determine the management of rare case of an impacted mandibular canine that had transmigrated to the opposite side.
Place of Study: Department of Oral and Maxillofacial Surgery, CSMSS Dental College and Hospital, Chhtrapati Sambhaji Nagar(Aurangabad)
Methodology: A patient with transmigrated mandibular canine with crowding in mandibular anterior teeth where orthodontic repositioning of tooth was not possible, was surgically removed by an intraoral approach followed by placement of Platelet Rich Fibrin (PRF) in the defect and that was followed by orthodontic treatment.
Results: PRF placed in the defect enhanced the healing process as PRF is rich in growth factors that promotes early healing and bone formation.
Conclusion: The rare phenomenon of transmigration of the mandibular canine crossing the mandibular midline should be carefully evaluated and proper treatment modality according to the case should be considered for the management. Early detection and treatment is necessary to preserve adjoining tissues, and dentition, resulting in improved aesthetic and function. Surgical removal of the transmigrated canine under local anaesthesia appears to be the best form of treatment

Keywords: Transmigration, Mandibular Canine, Surgical Extraction, Platelet Rich Fibrin (PRF)

1. INTRODUCTION

Tooth impaction, translocation, and transmigration can occur when teeth do not emerge in the proper place in the dental arch. An unerupted tooth may migrate to a location some distance away from where it formed, but it

usually remains on the same side of the arch. The only tooth in the dental arch that has been reported to migrate across the midline is the mandibular permanent canine.[1]

The term "transmigration" was coined by Ando et al. This appears to be the most appropriate phrase. Transmigration was defined by Tarsitano et al as the phenomenon of an unerupted mandibular canine crossing the midline. Javid broadened the definition to include cases where more than half of the tooth passed through the midline. Joshi believed that the predilection of a canine to cross the barrier of the mandibular midline suture was more important than the distance travelled. Furthermore, the stage of transmigration of the tooth at the time of examination influences the distance travelled.[1]

In their clinical practice, oral and maxillofacial surgeons commonly encounter such clinical entities. Canines are the most important and foundational teeth of the dental jaws in the human dentition. They are essential for maintaining the beauty and functionality of the face, thus any change in their eruption is very concerning to the patient.[2]

Transmigrated canines may persist as impacted and remain asymptomatic, or they may cause root resorption of neighbouring teeth, causing discomfort, pain, and neuralgic symptoms in the patient.[3] The incidence of impacted mandibular canines is 20 times lower than that of maxillary canines. The prevalence of transmigrated canines in the mandible ranges from 0.14% to 0.31%. [4] Clinical outcomes associated with canine transmigration include atypical retention of mandibular deciduous canines or the absence of mandibular permanent canines in the dental arch. The majority of the time, the transmigrated canines were lying horizontally below the apices of the anterior teeth.[5] This paper describes an unique example of transmigrated mandibular canine and its surgical treatment.

2. CASE REPORT:

A 15 years old female patient was referred from department of orthodontics and dentofacial orthopaedics in association of radiographic finding of horizontally impacted permanent canine seeking orthodontic treatment. On clinical examination, there was no obvious facial asymmetry, and TMJ movements were within normal limits with adequate mouth opening.

Intraoral examination revealed over retained deciduous canine on lower dentition on right side of the jaw with all four third molars missing side with class I molar relationship and anterior deep bite, there was no pain and tenderness on palpation. There were no significant findings in the dental or medical histories.

A panoramic radiograph revealed impacted 43 in midline of mandible. Cone beam computed tomography (CBCT) was recommended to determine the exact location of the mandibular canine relative to its adjacent tooth and to plan future treatment. CBCT revealed a horizontally transmigrated mandibular right canine, with the crown

passing the midline and approaching the opposite side canine and lying horizontally below the apices of the mandibular anterior teeth labially.

There were two surgical options: an extraoral approach through the lower border of the mandible or an intraoral labial approach through the mucobuccal fold. Because an extra-oral approach would require a sub-mental incision of at least an inch in length and was aesthetically unsuitable, the intraoral labial approach was chosen. . The intraoral method appeared to be more conservative. Before the procedure, the patient was given 1 g of Amoxicillin orally as a precaution. Local anaesthesia containing 2% lignocaine and 1:80000 adrenaline was injected as a Left inferior alveolar nerve block using sterile protocols . A no. 15 blade was used to make an incision from 1st premolar on right side to 2nd premolar on left side, and a full thickness mucoperiosteal flap was reflected. The symphysis region was exposed all the way to the lower border of mandible.

The bone was cut with a round bur no. 4, and a window was created to expose the crown of the canine, followed by sectioning of the tooth beneath with a straight bur till the cement-enamel junction. The crown was divided and luxated, removed first, followed by the removal of the root with minor luxation .Copious irrigation with betadine and normal saline was done to flush the empty socket. Dental follicle associated with the impacted canine was thoroughly removed and empty socket was inspected for any remnants.

Meanwhile, patient blood was drawn from the right ante-cubital vein and centrifuged at 10,000 rpm for 10 minutes to produce Platelet rich fibrin (PRF), which was then infused into the defect created and surgical closure was performed with 3-0 silk and pressure dressing was administered orally. The patient was prescribed analgesics for three days, with intermittent ice application for the initial 24 hours. The swelling and pain was minimal 3 days post surgery. The removal of the sutures on the seventh post-operative day revealed good healing with no post-operative complications. The patient received orthodontic treatment, and a 1-month post-operative orthopantomogram revealed a good amount of bone at the defect site, with on-going orthodontic treatment and healthy tissue.

Figure no 1: Preoperative intra-oral view

Figure no. 2: Preoperative OPG showing Transmigrated Canine

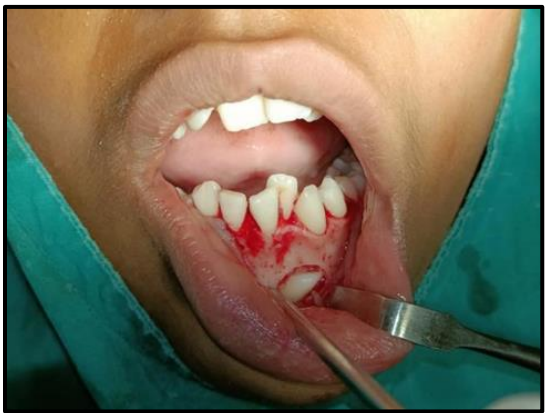

Figure no 3: Intra oral exposure of canine

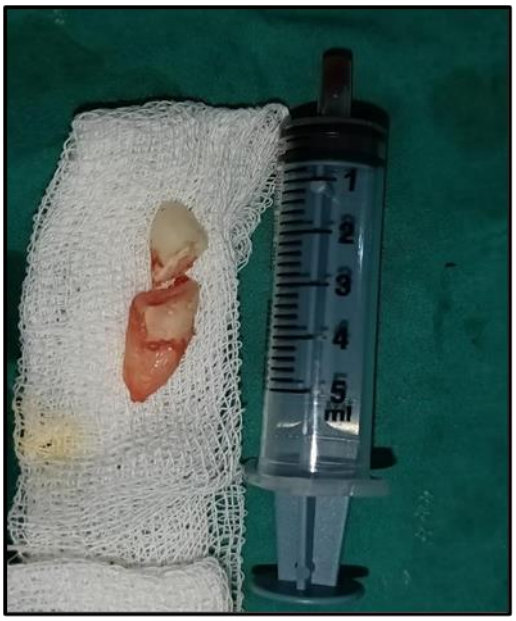

Figure no. 4: Extracted mandibular impacted canine

Figure no. 5: Empty socket

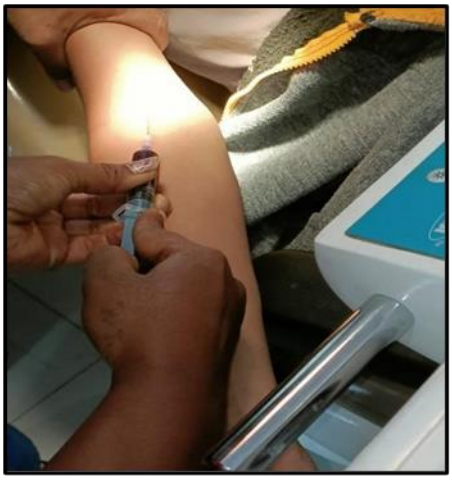

Figure no 6: Blood withdrawn for PRF

Figure no 7: PRF

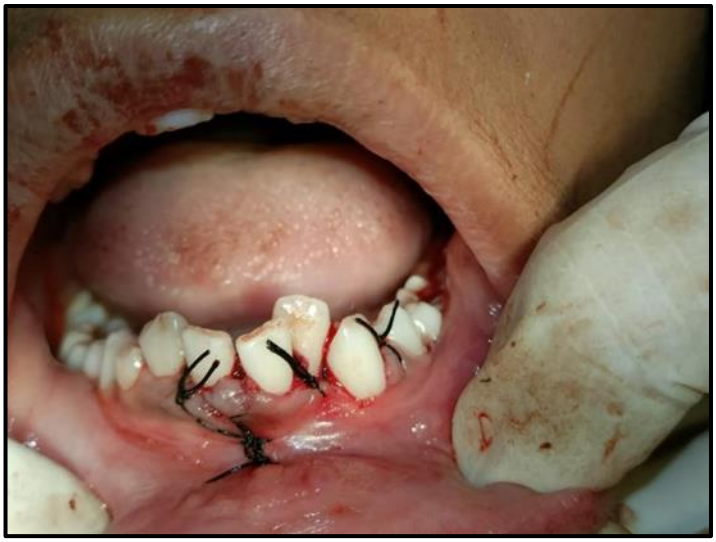

Figure no 8: Sutures placed

Figure no 9: Postoperative 1st day

Figure no 10: Postoperative 3rd day

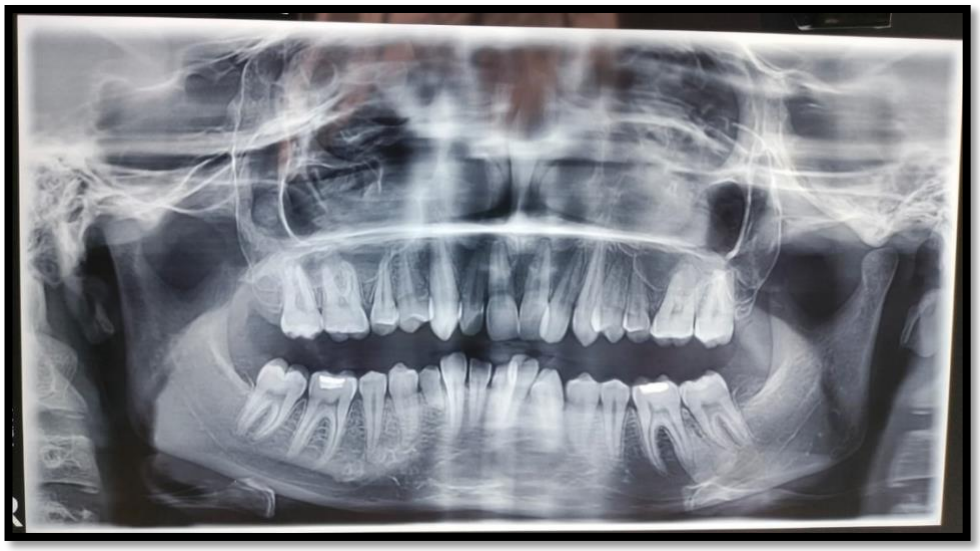

Figure no. 11: 1st month post-operative orthopantogram

DISCUSSION:

Canines are considered to play significant aesthetic and functional roles in human dentition. Impaction, translocation, and, in particular, transmigration involving mandibular canines are uncommon. There is relatively little research on mandibular canine impactions. There have been few references to diagnostic criteria or surgical management of these teeth. The scarcity of these impactions is most likely to blame for the scarcity of material in this area.[2,6]

Panoramic radiographs, in addition to occlusal radiographs, are routinely recommended to detect transmigrated canines. Other investigation methods include lateral cephalograms, CBCT, and, in rare cases, computed tomography (CT). With the introduction of CBCT into the field of dentistry, it is now possible to accurately localise impacted canines and associated vital structures, as well as detect root resorption of adjacent teeth.[7]

Mupparapu proposed a classification system for transmigrated teeth, categorising them into five types based on the position of the teeth in the jaw and the pattern of migration. Following this classification, our case falls into the type 2 category.[8]

The majority of the time, transmigrated canines are asymptomatic, though follicular cyst development surrounding the impacted tooth, chronic infection, and fistula formation have been documented.[9] In our case, the patient was accidentally diagnosed with impacted canine despite the absence of clinical symptoms.

To some extent, the persistent retention of the primary canine is a consistent sign that results in the detection of its impacted permanent successor. The left canine is more affected than the right canine, and females are more likely to be affected than males. According to Joshi et al, the root resorption of the primary canine is

comparatively slow due to the absence of the developing permanent mandibular canine beneath the primary canine, as our patient had retained deciduous canine on the right side of the mandible.[2]

The nerve supply from the area of origin is retained by the transmigrated canine. As a result, anaesthetizing the nerve of the involved side to where the impacted canine is located is mandatory, especially under local anaesthesia. Henceforth this justifies administration of left inferior alveolar nerve block in our patient.[2]

If transmigrated canine is discovered at a late stage, management becomes extremely difficult. Treatment options include orthodontic repositioning, surgical extraction of the abnormally positioned canine, tooth transplantation, and surgically exposing the canine with orthodontic alignment.[10,11] Because the mandibular arch was crowded in our case, and the position of the transmigrated canine was near the lower border of the patient's mandible, orthodontic repositioning was not an option, so surgical removal of the transmigrated teeth was the treatment of choice. Henceforth the transmigrated was surgically removed, and the defect site was infused with PRF for faster healing. PRF contains various growth factors that promote early healing and rapid bone formation. Because our patient was young and required immediate treatment, we recommended this treatment as the best available option.

CONCLUSION:

The erratic and elusive phenomenon of transmigration of the mandibular canine crossing the mandibular midline is described in the dental literature. Radiographic examination using panoramic radiographs is essential for diagnosing impacted canines, and newer technologies such as CBCT make it very effective for precisely diagnosing transmigrated canines. Early detection and treatment help to preserve such canines, adjoining tissues, and dentition, resulting in improved aesthetic and function. Furthermore, the canine occasionally migrates without any pathology, but in rare cases, a cyst or odontome supplements such teeth. The aetiology of this phenomenon is unknown. In the majority of cases, surgical removal of the transmigrated canine under local anaesthesia appears to be the best form of treatment. A complete diagnostic and therapeutic method, as well as sound.

CONSENT:

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

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