



IMPACTED MANDIBULAR CANINE IN FRACTURE LINE - EXTRACT OR EXEMPT

Maxillofacial Surgery

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ABSTRACT

Rationale: This case report describes a unique occurrence of an impacted canine in the line of parasymphysis fracture. **Patient Concern:** A 42 year old male reported to our department with pain in the lower jaw along with difficulty while eating. **Diagnosis:** Cone Beam Computed Tomography of the mandible showed a fracture line at the parasymphysis along with an impacted canine across its course and also a fracture line at the lower ramus region. **Intervention:** The patient was treated with open reduction and internal fixation by retaining the impacted canine within the fracture line.

KEYWORDS

Impacted Canine, CBCT, Parasymphysis, Fracture, Mandible, Case Report

INTRODUCTION:

Blunt trauma caused either by road traffic accidents or interpersonal violence or contact sports had led to a significant increase in maxillofacial trauma, of which mandibular fractures occupy the most incidence (30%) of facial fractures [1]. About 60% of mandibular fractures are compounded by a the presence of a tooth [2]. Besides the etiological factors, the eruption status of teeth and occlusion, position of tooth, root forms also play a pivotal role in dictating the fracture line [3]. The presence of an impacted tooth occupies a lot of space and undermines the bone reducing its density and quantity in this region [4]. Being the longest and commonly impacted tooth, mandibular canine may influence the fractures in the parasymphysis region.

Using PubMed data base as our source, we are reporting the first case of an impacted mandibular canine in a fracture line running in the parasymphysis region.

Case Report:

A 42 year old male patient reported to the Department of Oral and Maxillofacial Surgery, GSL Dental College and Hospital, with pain in the lower jaw and difficulty in eating after being hit by an unknown person in an event of interpersonal violence 3 days back. Patient gave a positive history of bleeding from oral cavity. There was no history of loss of consciousness, vomitings, seizures, ear and nasal bleeds as reported by the patient. Physical examination revealed mobility of the mandibular segment due to fracture at the parasymphysis and limited mouth opening. A step deformity was present in relation to right mandibular central incisor and right mandibular lateral incisor. A clinically computed tomography of face with axial, coronal and 3 dimensional reconstruction was performed which revealed fractures in the right parasymphysis with an obliquely placed impacted canine and left ramus regions of the mandible.

Pre operative CBCT of mandible was performed to assess the position and angulation of the impacted canine. A 2mm quadrangular 3D plate was selected for fixation.

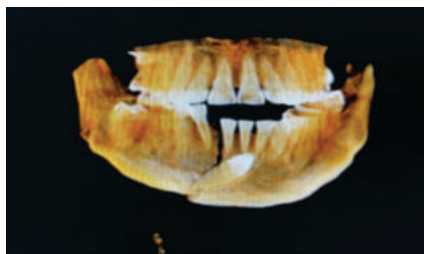


Fig 1 depicts fracture line at the parasymphysis and impacted canine

on Cone Beam Computed Tomography (DICOM image reconstructed using ON DEMAND software)

Patient was planned for maxillomandibular fixation with archbars and elastics, open reduction and internal fixation with miniplates under general anaesthesia. The arch bar was split in the region in the region of step deformity and fixed with a 26 gauge stainless steel wire. The upper and lower arch bars were fixed with elastics.

Following pre anaesthetic evaluation, patient was intubated through the left nostril, under general anaesthesia open reduction and internal fixation was done with miniplates. An extra oral submandibular incision was given and adequate exposure of the left ramus fracture was made. Skin incision through existing laceration was given to gain exposure to the parasymphysis fracture. After access, maxillomandibular fixation was performed to ensure satisfactory occlusion after adequate reduction. Both the fractures were properly fixed with 2mm quadrangular titanium 3D plate and 6mm and 8mm screws, leaving the impacted canine intact within the bone. An intra operative C- arm radiography was used to verify the position of screws.

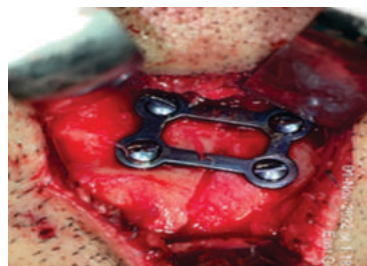


Fig 2 depicts fixation of the parasymphysis fracture with 3 dimensional strut plate.

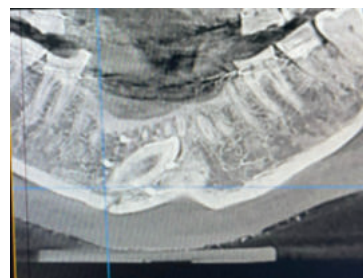


Fig 3 depicts position of screws on a computed tomography scan on immediate post operative day.

The maxillomandibular fixation was released. Incisions were closed in layers using resorbable sutures in the deep layers and simple interrupted suturing was done with non absorbable suture. Patient was extubated and the immediate post operative phase was uneventful.

DISCUSSION:

Mandible (30%) is the most commonly affected bone in maxillofacial trauma following the nasal bone(37.7%) [1]. This can be attributed to its mobility due to the temporo-mandibular joints. The fact that the presence of impacted teeth, canine prominence, narrowing of subcondylar region creates fragile areas in the mandible, readily predisposes it for fracture during maxillofacial trauma [5]. In our case under discussion, the reason was thought to be the presence of an impacted canine undermining the bone and making it vulnerable to fracture. This brings up the age old debate of whether to retain or remove the teeth in fracture line [2]. Early schools of thought advocated the concept of prophylactic extraction as the retained teeth in fracture line can act as a nidus of infection, further complicating the fracture healing [6]. But proper antibiotic regimen, rigid internal fixation and functionally stable osteosynthesis have surpassed prophylactic extraction in the recent years [6]-[7].

Gebrino. et al [8] in his retrospective study of evaluation of teeth in line of mandibular fractures in a group of 68 patients showed that incidence of complications when the teeth were extracted were higher than when they were left in place. He also concluded that, prophylactic extraction of teeth in fracture line can be avoided if mini plates and screws were used for fixation.

Khavanin. et al [9] in a systemic review and meta analysis where 1212 studies were screened have concluded that removal of an impacted third molar during open reduction and internal fixation results in further trauma to the bone, risk of inferior alveolar nerve injury and malocclusion. He also conclude that there is no evidence that suggests benefit in extraction of an asymptomatic impacted third molar.

Baykul. et al [10] analyzed the records of 117 patients with 121 mandibular fractures, having an unerupted tooth remaining in the fracture line. Time between injury and treatment made no difference in the results. No nonunion or malocclusion was observed. They asserted that removal of asymptomatic impacted teeth is an additional trauma, allowing displacement of fragments as well as increased infection risk.

Bobrowski. et al [11] in his study of 1542 mandibular fractures with teeth in fracture line assessed the incidence of post operative infection. Of 788 cases in which the teeth was extracted, 84 cases reported with post operative infection and of 754 cases where the teeth were retained also reported post operative infection in 84 cases. He concluded through his review that removing or retaining the teeth doesn't affect the occurrence of post operative infection.

In this case, reported by us, the impacted canine was caught on CBCT and the patient was completely unaware of the condition previously and was asymptomatic. Since there was no adequate literature for reference regarding the management of an impacted canine in fracture line, we have followed the literature available for an impacted third molar. Since the impacted canine in the case report is asymptomatic and impacted, we have decided not to extract the tooth. Recommended surgical principles, standard infection protocol, rigid internal fixation using a three dimensional strut plate, functionally stable occlusion and a prophylactic antibiotic regimen were followed as a rule of thumb.

The 1 year post operative period was uneventful and we are planning to intervene if the patient presents with symptoms of pain in the later post operative period.

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