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Case Report

Topsy turvy in the line of fire

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ABSTRACT

In literature there are several schools of thoughts regarding the tooth present in line of fracture. Some supports the preservation to tooth and others in contrast against to the preservation of the tooth. A case of mandibular fracture with a tooth in the fracture line is presented in this paper. Removal of tooth done followed by reduction under G.A with 1 month postoperative follow-up. Different authors supporting different treatment plan for tooth in fracture line. It depends on case whether to remove the tooth or preserve. There are several pro and cons for both the treatment plan discussed in this paper.

Keywords: Mandibular fracture, Facial bone, Internal fixation

INTRODUCTION

About 25% to 33% of all mandibular fractures include the mandibular angle.[1] Between 36% and 54% of all maxillofacial trauma cases involve fractures of the mandible, making it the most fracture-prone facial bone.[2] Moore state that transition between body of mandible and ramus of mandible that is change in orientation of bone (horizontal body and vertical ascending ramus meet) result in increased susceptibility of angle of mandible to fracture.[1]

The risk of angle fracture is higher with incompletely erupted third molars. However, a number of other factors, including the presence of soft tissue bulk, the direction and intensity of the forces, impact, and the biomechanical inherent features of the mandible (such as bone mass and density), affect the fracture patterns in the jaw. Mandibular fractures are mostly caused by physical assaults and road accidents. According to Paza et al, maxillomandibular fixation is rarely sufficient to reduce displaced angle fractures. Thus, it is recommended to plan an open reduction and internal fixation for these fractures.[1]

A lower third molar decreases bone amount and density in this area, which raises the possibility of local fractures. The high occurrence of lower third molars in mandibular angle fractures (60.4%). In most of mandibular fracture molar tooth most frequently present in fracture line. Tooth in fracture line is removed when there is pulpal necrosis, tooth exposure, avulsion, pericornitis, pathology involved or restricting the reduction of fracture segments.[3]

In this case report we will presenting a case of mandible angle fracture with buccally impacted lower 3rd molar tooth in the fracture line with displaced fracture segments which was managed under G.A with open reduction and internal fixation along with extraction of tooth present in the fracture line.

CASE REPORT

A 31 year old male reported to our institute with chief complain of swelling and pain w.r.t. to right side of face from previous 15 days.

Patient was apparently well 15 days back when he meets an accident on 16 January 2023 at 4:30 pm, no history of unconsciousness, vomiting and bleeding from nose or ear. Primary management done in nearby government hospital and referred to our institute for further treatment.

On extra oral examination facial asymmetry present with diffuse, non fluctuant, tender swelling with respect to right lower side of face with restricted mouth opening. Step deformity palpable w.r.t. right angle and left body, Mobility present w.r.t. to the fracture fragments.

Figure 1: Preoperative photo.

On intraoral examination, deranged occlusion present with step deformity present distal to right 2nd molar and left canine and 1st premolar (Figure 1). Mobility first grade present w.r.t. left lower canine and 1st premolar.

Figure 2: Preoperative radiograph.

Preoperative CBCT reveals left parasymphsis and right angle fracture with lower right 3rd molar present in angle fracture line in inverted position (Figure 2).

Treatment planned was open reduction with internal fixation with removal of tooth under G.A.

Patient intubated successful and uneventfully, submandibular incision given in right side and vestibular incision given in left side, dissection done in layers to exposure fracture site and right 3rd molar (Figure 3). Removal of tooth done followed by manual reduction of fracture segments and stabilization of occlusion using inter-maxillary fixation. Straight Reconstruction plate with 6 holes given in right angle region and 4 hole 2.5 mm miniplate with 5 hole 2 mm continuous plate given in left parasymphsis region (Figure 4 and 5). Closure done in layer using 3-0 vicryl and 3-0 prolene followed by extraoral dressing.

Figure 3: Intraopertive photo.

Figure 4: Placement of recon plate w.r.t. angle.

Figure 5: Miniplate placement w.r.t. parasymphysis.

Figure 6: Postoperative occlusion.

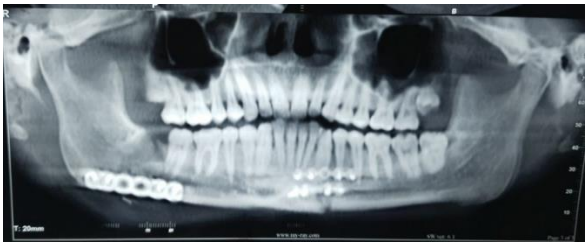

Figure 7: Postoperative radiograph.

On follow-up, occlusion was stable with proper intercuspation bilaterally with adequate mouth opening (Figure 6 and 7). Extraoral surgical site and intraoral surgical site show satisfactory healing. Extraoral post-surgical scar was minimum. Post operative no paraesthesia with respect to surgical site, suggestive of no or minimum trauma to nerve during surgical procedure.

DISCUSSION

According to some studies mandibular fracture accounts for highest among the mandibular fracture. There are so many factors which determine the probability of fracture like direction and amount of force, velocity of objects, musculature of face, architecture of bone, soft tissue bulk, presence of 3rd molar.[4] Dhuan et al stated that impacted mandibular third molars raise the risk of mandibular angle fractures and lower the risk of mandibular condylar fractures by moderate trauma force.[5] According some studies partially impacted molar increase the increase of angle fracture chances because partially impacted tooth disrupt the continuity of mandible result in weakening of bone and became susceptible to fracture with moderate force, where completely impacted 3rd molar doesn't increase the fracture susceptibility.[1]

The treatment of third molars in the mandibular angle fracture line is a topic of debate in the literature. According to some author for the purpose of bone repair and fracture reduction, the preservation of an impacted tooth along the fracture line helps stabilize the fracture segments.[6] When there is partially erupted tooth present in line of fracture it's removal increases the chances of post operative infection because it create the space of accumulation of organic substance which can result in infection and wound dehiscence. Therefore, the removal of the third molar may leave the mandible with a fragile area that encourages higher displacement and low stability of the fracture fixation, along with an increased risk of infection following surgery.[3]

Other authors, on the other hand, have argued against this fact, pointing out that the third molar is a removable tooth and that leaving it in the fracture line could lead to pathogenic microbial colonization and worsen the surgical prognosis.[7] The study by Bouchard et al suggested that if the tooth is absence in the fracture line prior to the moment of fracture, there will less post operative complications.[3]

The third 3rd molar is thought to decrease contact between fracture segments during the postoperative phase of angle fracture treatment, which hinders proper fracture reduction and bone regeneration and, as a result, lowers local vascularization.[8] A change in the vascularization may impede the healing process and increase the risk of infection.[9] But according to some studies there is no significant difference in presence and absence of 3rd molar in angle fracture in context to the post operative healing and complications.[10]

CONCLUSION

It depends on the tooth which is present in fracture line, if the involved tooth is related to pathology, infected, fractured or resist the reduction of fracture segments, the removal of tooth should be consider. As in the above case discussed the tooth was out the socket and displaced buccally which was hindering the reduction of fracture segments. Removal of tooth was done followed by reduction. postoperative follow up shows satisfactory functional and structural adaptation and reduction with minimal post operative complications.

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