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Case Report

AN UNUSUAL COMPLICATION OF MANDIBULAR FRACTURES – CASE REPORT WITH REVIEW OF LITERATURE

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ABSTRACT

Fractures of the jaw in the tooth bearing area are more prone for infections because of close proximity to the oral cavity as the retained teeth act as nidus for infections in the fracture line. The most frequent complication of mandibular fractures is infection. In a developing country like India different medical modalities are involved in the treatment of facial fractures compromising the treatment outcome like retaining the teeth with prophylactic coverage & follow up & few suggest removal of the teeth. We report an unusual complication of mandibular fracture where failure of management of an impacted canine tooth in the fracture line has led to displacement of the tooth to the lower border of the mandible and formation of an extraoral sinus which was inappropriately managed by incision and drainage. Surgical exploration, removal of the impacted tooth and curettage led to the resolution of the infection. Hence efficient clinical, radiographic and surgical treatment & follow up is paramount requisite to avoid delayed complications.

Keywords: Mandibular fractures, Tooth bearing area, Impacted teeth, Infection, Prophylactic antibiotics.

INTRODUCTION

Mandible because of its prominent position in the facial skeleton and the complex nature of the anatomy and environment in which it resides is more susceptible for fractures & its related complications^{1,2}. Mandibular fractures mainly occur because of blunt trauma involving the teeth & sometimes without the teeth involvement². If there is teeth involvement the doctor has to be very agile to manage it otherwise it can lead to complication. The most frequent complication of mandibular fractures involving the teeth is infection. This can involve the soft tissue surrounding the fracture site ranging from cellulitis, abscess, necrotic fasciitis, Ludwig's angina or a more severe infection can result in osteomyelitis because of involvement of the cortical and medullary bone^{3,4}. Many factors have been implicated in the development of infection, including a delay in treatment, the lack or inappropriate use of antibiotics, teeth in the line of fracture, location of fracture, the type of fracture (comminuted versus noncomminuted), patient noncompliance, inadequate reduction or fixation, and concomitant medical conditions^{1,5,6}. Few Authors in their observation suggested that retained teeth in course of fractures become nidus for infection. They recommended that involved teeth should be extracted to

decrease the probability of untoward sequel such as osteomyelitis & non union^{7,8}. Certain studies however have supported the fact that teeth in line of fracture can be preserved with efficient prophylactic antibiotic coverage^{9,10}.

In our case the infection was due to the presence of an impacted tooth in the line of fracture which was not recognised and treated efficiently. Lack of awareness of the importance of teeth in the fracture line has led to this delayed unusual complication.

CASE REPORT

A 28 year old male patient reported to the department of oral and maxillofacial surgery, Army college of dental sciences secunderabad with a chief complaint of extraoral pus discharge from the left parasymphiseal region at the lower border of the mandible associated with pain on chewing. (**Fig1**) Patient gives a history of a road traffic accident four months back for which he received medical treatment and was diagnosed with left parasymphiseal fracture (**Fig2**). No other significant injury was noted.

Patient was regale with intermaxillary fixation for one month by a plastic surgeon. He noticed an extraoral opening on the lower region of face with continuous pus discharge in the region of the fracture with complain of pain on chewing after

one month. Patient reported this to the doctor, for this an incision and drainage procedure was performed by the specialist and antibiotics were prescribed, but there was no resolution of the infection & the problem persisted. As the problem was not resolved patient came to our department of oral surgery, Army dental college with the chief complain of extra oral opening along with pus discharge. Detailed Medical history of patient was obtained which was non contributory. There was positive history of habits smoking 5-6 cigarettes/day since 10 years and occasional alcohol intake.

Extra oral examination revealed an extraoral sinus 1x1cm in size in the region of left parasymphiseal region at the lower border of the mandible which was moderately tender on palpation with pus discharge. A firm mass of about 2x2mm was palpable besides the sinus opening. Palpable left submandibular lymph nodes was observed.

Intraorally examination exhibited missing upper anterior teeth (central incisors) & lower anterior teeth (31, 32) (Fig3). Chipping off of the teeth is noted & the teeth involved were 12, 22, and 42. Occlusion was stable without any no mobility in the region of the fracture could be elicited. Stains & calculus were moderate degree.

After through clinical examination patient was advised orthopantomogram which demonstrated the line of fracture from the left mandibular canine region to the lower border of the mandible. A tooth like structure 5x5mm was seen near the lower border of mandible between the fracture lines (Fig4).



Figure 2: Left parasymphiseal fracture



Figure 3: Missing anterior teeth



Figure 4: OPG showing fracture line on left parasymphiseal region

TREATMENT

Keeping in view the clinical & radiological findings treatment plan was to excise the extraoral sinus tract, explore the region of the fracture and remove the tooth from the fracture line. Preoperative antibiotics and analgesics were administered intravenously one hour prior to the surgery. An extraoral incision was given in the left lower border of the mandible in the region of the sinus opening, layered soft tissue dissection was done, the tooth exposed and removed (Fig5). An intraoral incision was made in the labial sulcus in the lower canine region, soft tissue dissection was done, and the fracture line was exposed. It was noted that there was a malunion (Fig6) of the fracture creating a step like deformity; nevertheless since there was no mobility in the mandible and the occlusion was stable it was decided not to refracture and plate the mandible. A thorough exploration of the region was done for granulation tissue which was curetted. The incisions were closed with 3-0 vicryl (Fig7).



Figure 1: Extraoral pus discharge from the left parasymphiseal region



Figure 5: An extraoral incision, tooth exposed and its removal



Figure 6: Malunion of fracture



Figure 7: Wound closure with 3-0 vicryl

DISCUSSION

Fractures of the jaw in the tooth bearing area are more prone for infections because of close proximity to the oral cavity, if by chance any retained teeth are in line of fracture it may act as nidus for infections in the fracture line. The complication of mandibular fractures can be immediate & long standing, immediate comprising of airway compromise, bleeding, loss of or damage to teeth or bone is infection & delayed complications constituting non-union, malunion, nerve injury, infection, temporomandibular joint problems malunion⁶. There are varied thought on management of the mandibular fractures pertaining to teeth & without involving the teeth.

Our case report is in accordance with studies carried out by authors like Converse⁷ & Hamil⁸ who in their observation suggested that retained teeth in course of fractures become nidus for infection. They recommended that involved teeth should be extracted to decrease the probability of untoward sequel such as osteomyelitis & non union. Our observations are in contrast to studies carried by Amaratunga NA⁹, Schneider¹⁰ who supported the fact that teeth in line of fracture can be preserved with efficient prophylactic antibiotic coverage.

Studies carried out by Vladislav o. Malanchuk, andrey v. Kopchak⁵ indicated that delayed medical care is the most significant determinant for infection in mandibular fractures. Similar observation n was noticed by Zachariades and Papademetriou, 1995; Mathog et al., 2000; Harley et al., 2002). In our case improper diagnosis & delayed correct treatment was one of the reason for the complication. Although the main reason for delayed medical care was social status, the number of cases with improper diagnosis and treatment by other non-specialist clinicians was also significant⁵.

With respect to the unerupted or impacted teeth in fracture line Literature review showed that there are many different opinions about complications, effects on healing, and recommended treatment procedures⁶. Rubin et al¹¹ could not find any relationship between the unerupted tooth and open or closed reduction with the healing of the fracture. Wolujewicz¹² analyzed 47 mandible fractures. Their results showed that the impacted teeth on the fracture line stabilize the fragments, and they recommend it be extracted after bone healing occurs. Wagner et al¹³ reported a higher complication rate if the impacted tooth was removed with open reduction with internal fixation compared with conservative treatment.

There is still a controversy on the fate of an unerupted tooth in the fracture line and its effects on bone healing, so further research may be required. Recent literature indicates that an individual decision be made in every case as to whether the tooth in the fracture line can be left in place

When this infection is acutely exacerbated or persistent, the infection can spread to the facial skin. If the infection is confined to the soft tissue, incision and drainage with copious irrigation should be performed and specimens should be sent for aerobic and anaerobic cultures and antibiotic sensitivity. While waiting for the results of this testing, the patient should be placed on appropriate antibiotics. Antibiotics were initially considered crucial until it was realized that antibiotics did not eliminate the source of infection (i.e., infected teeth and dead bone or foreign body)³. The area should be irrigated daily until no visible drainage is evident and the patient shows clinical signs of resolution. If it is deemed that a tooth in the line of fracture is the causative agent, it should be extracted at the time of incision and drainage.⁴

CONCLUSION

Cutaneous sinus tract of dental origin have been well documented in medical, dental and dermatological literature³⁻⁴ however the diagnosis continues to be a dilemma. Such patients usually seek treatment from a physician or plastic surgeon instead of a maxillofacial surgeon and often undergo multiple surgical excisions, biopsies and multiple antibiotic regimens. Misdiagnosis leads to noncurative treatment and often may cause unnecessary scarring.

Before any definitive treatment of mandibular fractures, the patient needs to be evaluated thoroughly. An accurate diagnosis and appropriate treatment plan is vital in achieving optimal success and decreasing complications. Knowledge of the anatomy and the principles of bone healing and occlusion is also an important factor in preventing complications. To limit long-term untoward effects, complications should be recognized early and the appropriate treatment should be started before a minor complication becomes a complex one that is more difficult to manage.

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