

Comparison of transbuccal and transoral approach for treatment of mandibular angle fracture: A literature review

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Abstract:

Various methods have been described in the literature for treating mandibular angle fractures comparing extra oral, intra oral and transbuccal approaches for accomplishing the goals of restoration of anatomic form, maintenance of segment position and good bony union. Each method has its own advantages. Selection of method is dependent on the type of case mandibular angle fracture, or whether it is associated with other fractures of the maxillofacial region. The aim of this study was to compare the transoral and transbuccal approaches, and to determine the effective approach to treat mandibular angle fractures.

Keywords: Mandibular angle fracture, transbuccal, transoral, miniplates.

INTRODUCTION:

In the facial bones, the mandible is located in a very prominent position and is therefore a favored target of intentional and unintentional trauma^{1,2}. Mandibular fractures show nearly 2/3rd of all the maxillofacial fractures (nearly 70%) out of which fractures of mandibular angle represent 26-35% respectively^{3,4}.

The oral and maxillofacial surgeon's preference for the approach to a fracture site depends on accessibility, ease of procedure, aesthetic demands by the patient, and surgical expertise. We will review trans-buccal and trans-oral approaches for the management of mandibular angle fracture.

Transoral approach

In the traditional extraoral approach skin incision was made extra-orally and masked in the submandibular shadow. This approach had definite drawbacks such as an unaesthetic scar and the risk of facial nerve injury.⁵

To counteract these disadvantages, an substitute method called the "transoral or intraoral approach" was proposed¹. Mandibular fractures that necessitate open reduction may be reduced via a transoral approach, which avoids external skin incisions. As the name suggests, the transoral reduction of mandibular fractures comprises of sub-mucoperiosteal wiring of the mandibular fracture segments without external skin incisions⁶.

In 1957, bradley and hildreth reported the transoral reduction of mandibular fractures. In the subsequent years, increased attention on transoral approaches for occlusal and cosmetic disfigurements of the lower jaw has provided the technical groundwork for use of this method for a wide variety of mandibular fractures⁶. Souyris et al., reported a series of 171 mandibular fracture patients in which all but 22 underwent transoral placement of their plates⁷.

The disadvantages are as follows^{1,8}:

1. Increase in dehiscence and exposure of the plate because placement of the plate in an anatomically unfavorable position
2. Breakage of the plate due to a greater degree of intraoperative plate bending

3. Placement of plate closer to the dentition, allowing a shorter path for bacteria to move from the periodontal sulcus to the plate
4. More loosening of the screw because of less bone density on the superior aspect of the mandible and the alveolus

Transbuccal approach:

This incision similar to the transoral approach was positioned along the angle and ascending ramus to expose the fracture site⁹. Gulses et al used extra-orally, a stab incision along with a small incision on facial skin for insertion of trocar instrument^{10,11}. The cannula with trocar was inserted through the facial tissue till down to the bone. For drilling and screw insertion the trocar was removed to open the cannula. The transbuccal instrument system including of transbuccal guide, mountable retractor, drill guide, drill sleeves, and 2 mm diameter drill bit was used.¹²

The advantages are as follows :

1. No external scarring
2. Direct visualization and desired occlusion during fixation
3. Fixation of the plates on the thicker lateral cortical plate of the mandible
4. Weakening of plates by over-bending is avoided so less chance of plate fracture
5. Lower infection rate due to less movement of pathogens

DISCUSSION :

Kroon et al.¹⁴ and choi et al.¹³ who witnessed bony gaps along the inferior fracture border and reported that this fracture movement leads subsequent infection. Wan et al.⁸ studied the transbuccal approach, no facial nerve palsy seen in patients, whereas 1 patient out of 227 (45%) developed a hypertrophic scar from the 6-mm facial skin incision.

Another study by sugar et al¹⁴. Described same findings in a population of 84 patients. In the transbuccal approach no incidence of unacceptable facial scarring and facial nerve palsy was noted. The primary motives given were ease of use, insignificant requirement for plate bending¹⁴

The study conducted by Khandeparker et al¹, which reported 1 case (3.3%) of hypertrophic scarring and no incidence of facial nerve palsy in transbuccal approach. They favored the transbuccal approach over the transoral approach due to easiness of use, negligible requirement for plate bending, and simplification of plate placement in the neutral mid-point area of the mandible.

A meta-analysis by al-moraissi and Ellis¹⁵ states that the use of one miniplate is superior to the use of two miniplates in the management of mandibular angle fractures, as the incidence of postoperative complications was considerably lower. In this study, they concluded better results obtained when a single miniplate was used either transorally or transbuccally.

CONCLUSION

In conclusion, the comparison between the transoral and transbuccal approaches for the treatment of mandibular fractures underscores the importance of individualized care. While the transoral approach offers direct access and minimal scarring, it has limitations in accessing certain fracture patterns. On the other hand, the transbuccal approach provides versatility but can result in visible scars. The choice between the two techniques should be guided by fracture complexity, patient anatomy, and surgeon expertise. Ultimately, a balanced consideration of advantages and limitations is crucial to ensure optimal outcomes and patient satisfaction in mandibular fracture treatment.

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