

Mini - Retromandibular access to sub condylar mandibular fractures - Our experience

ABSTRACT

Condylar fractures alone accounts to about 25% to 40% of all the fractures of mandible. Management of condylar fractures has always been a controversy. Nowadays there has been more emphasis on open reduction of condylar fractures by the surgeons. The reasons could be the result of complications of closed reduction where the patient may not be able to masticate properly and deviation still present thereby the structural and functional loss forcing the surgeons' choice to open up. The anterior parotid approach has lesser risk of injury to parotid gland and also to facial nerve we attempted to use mini retro mandibular access for such fractures. So the aim was to explore the feasibility of the mini retro mandibular approach to sub condylar fractures. The patients reported to the department of oral and maxillofacial surgery department clinically and radio logically diagnosed and treated for condylar fractures were included. The maximal mouth opening, protrusive and lateral excursive movements, midline orientation with opposing arch, scar visibility, sialocele and facial nerve weakness were all recorded post operatively and compared with pre-operative recording. The mini retro mandibular access with anterior parotid transmesetric approach to sub condylar fractures can be the choice for the surgical management of sub condylar fractures which is absolutely easy, reliable, with less visible scar and with less chances of landing in facial nerve complications.

Keywords: Condylar fractures, extracapsular fractures, jaw fixation techniques, mandibular fractures, open reduction of condylar fractures, subcondylar fractures

INTRODUCTION

Condylar fractures alone account for about 25%–40% of all the fractures of the mandible.^[1] Management of condylar fractures has always been a controversy.^[2,3] Nowadays, there has been more emphasis on open reduction of condylar fractures by the surgeons. The reasons could be the result of complications of closed reduction where the patient may not be able to masticate properly and deviation still present, thereby the structural and functional loss forcing the surgeons' choice to open up.^[3] There are many evidences showing the successful anatomic fixation of condylar fractures by open reduction.^[4] Surgical access to condyle is technically demanding that may lead to facial nerve injury, auriculotemporal nerve injury, parotid fistula, and visible scar.^[5] The number of approaches reported ranges from preauricular, retromandibular, submandibular, and combination of these depending upon the anatomic level of the fracture occurred.^[4-12] Each approach has its potential

surgical complications. Since the anterior parotid approach has lesser risk of injury to the parotid gland and also to the facial nerve we attempted to use mini retro mandibular access for such fractures.

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Aim

Hence, the aim was to explore the feasibility of the mini retromandibular approach to sub condylar fractures. The objectives were whether this approach could have a good access, anatomic reduction possible and postoperative assessment of facial nerve weakness, parotid fistula, and scar visibility.

CASE REPORT

The patients reported to the department of oral and maxillofacial surgery department clinically and radiologically diagnosed and treated for condylar fractures were included [Figure 1a and b] as per Loukota's Sub classification (Type 3–Fracture of condylar base) of mandibular condylar fractures (2014). These details were taken from the records treated for such condylar fractures. The radiological evaluation was done using orthopantomogram/posterior-anterior view or computed tomography [Figure 1c]. The inclusion criteria were those 13 unilateral condylar fractures patients with deranged occlusion and that required surgical reduction as per Zide and Kent criteria. The surgical risks involved explained to the patient and the informed consent was obtained. The mouth opening restricted protrusive and lateral excursive movements, midline shift, pain, and tenderness during chewing were taken from the records. The details of the fractures were tabulated [Table 1].

Surgical technique

The procedure was done with naso endotracheal intubation under general anesthesia. Maxillo mandibular fixation was

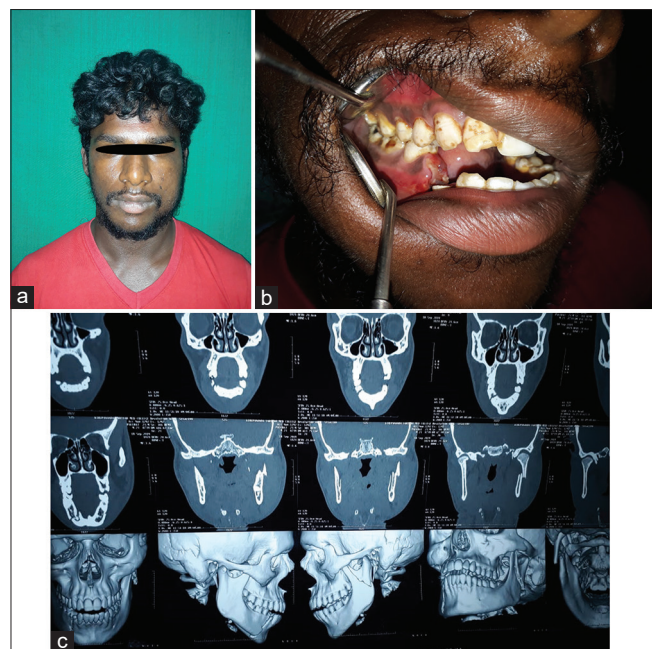


Figure 1: (a) Preoperative view. (b) Step deformity noted. (c) Computed tomography image of the pt

done. Associated fractures of the mandible were reduced and fixed [Figure 2a and b]. The mini-incision was within 15–20 mm length than that of the standard retro mandibular one [Figure 2c]. It was placed parallel to the posterior border of the mandible with BP scalpel No. 15 the incision was continued till the sub dermal fat plane. The dissection was made anteriorly through the musculo aponeurotic layer till the anterior edge of the masseter. Then blunt dissection was continued perpendicular to the bone through parallel to the course of muscle fibers to reach the ramus of the mandible. The periosteal elevator was used to retract the masseter fibers and finally, periosteum was incised. With the help of small langen back retractors, the soft tissues were gently retracted exposing the fractured condylar fragments [Figure 2d]. The buccal branch of the facial nerve if at all encountered would be within the soft tissues retraction by the retractors. The fracture fragments were then reduced and fixed with mini plates. In case if overridden ramus and subcondylar fragments were encountered, we usually do the reduction by removing the MMF and depress the ramus on that side with the help of a Mouth Prop followed by fixation [Figure 2e and f]. Watertight closure ensured with absorbable sutures.

RESULTS

The maximal mouth opening, protrusive and lateral excursive movements, midline orientation with opposing arch, scar visibility, parotid fistula and facial nerve weakness were all recorded post operatively and compared with preoperative recording [Tables 2 and 3]. All the 13 operated patients had adequate mouth opening with normal mandibular movements, good occlusion, midline spot on, less appreciable scar, and no facial nerve weakness [Figure 3a and b]. One patient developed parotid fistula on the incised site on the 5th postoperative day. It was managed with tight dynaplast dressing left for 3 days and after that it resolved. The patients' followed varied from 8 months to 12 months and no abnormality noted during that period.

Table 1: Number of patients operated using this approach

Associated fractures	Number of patients	Management
Symphysis	1	ORIF
Parasymphysis (opposing)	5	ORIF
Body (opposing)	1	ORIF
Angle (opposing)	1	ORIF
Other side condyle	-	
Zygomatico maxillary complex (same side)	2	ORIF
No associated #s but with shortening of ramus on that side	3	ORIF
Total	13	

ORIF: Open reduction and internal fixation

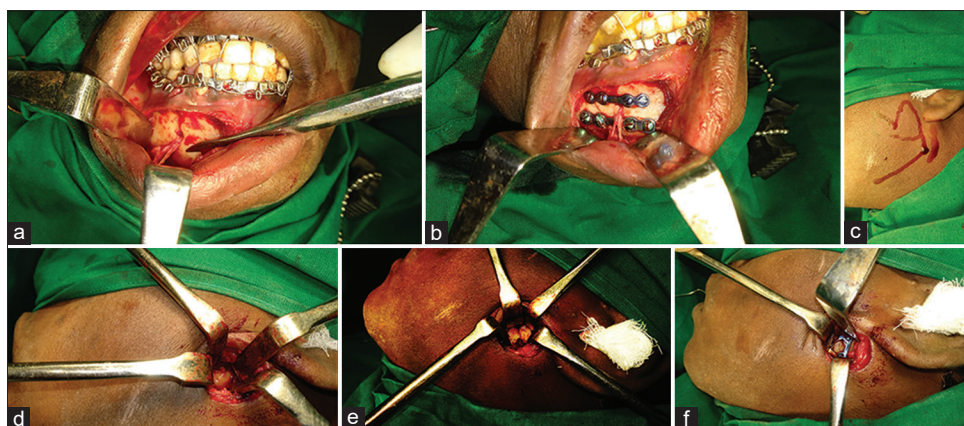


Figure 2:(a)Site exposed and reduced - the body of the mandible. (b) plating done (c) Left side - Mini retromandibular incision marking done. (d) laterally overridden condyle. (e)segments reduced by relieving occlusion. (f) Plating done after maxillo-mandibular fixation

Table 2: Complications encountered during the procedure

Complications	Number of patients	Management
Facial nerve injury	-	
Parotid fistula	1	Tight dressing for 3 days
Scar visibility	Very minimal	
Infection	Not seen	
Inadequate reduction	No	

Table 3: Comparison of parameters between pre- and post-operative period

Assessment	Preoperative	Postoperative (immediate)
Mouth opening	Mean 23 mm	Mean 35 mm
Midline shift	Present	Nil
Protrusive movement	No	Yes
Lateral movement	No	Yes
Occlusion	Deranged	Achieved

DISCUSSION

There are number of case series or studies upon the open reduction of condylar fractures. The preauricular approach is used traditionally for high condylar neck fractures and the risk of facial nerve injury is more and also visible scar.^[5] The submandibular approach would be insufficient for sub condylar fractures. The standard retromandibular incision was first described by Hinds and Girotti in 2001 for treating sub condylar fractures.^[6] This original retro mandibular approach requires trans parotid entry and then visualizes the sub condylar segments. The complications of this approach can be facial nerve palsy, parotid fistula and auriculotemporal nerve paresthesia.^[6] It was Wilson in 2005 who was the first to describe this anterior parotid trans messtetric approach to sub condylar fractures.^[7] They advocated those continuous incisions that can be connected to preauricular with retromandibular, cervico mastoid, or retro mandibular type for such type of fractures. However, the scar appearance, especially in the esthetic zone looks uncomfortable for some

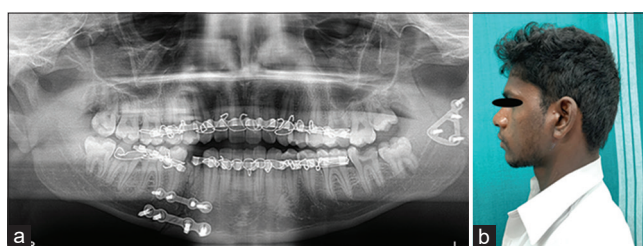


Figure 3: (a) Orthopantomogram of the pt. (b) Review of the pt - Profile vie

female patients. Biglioli and Colletti in 2009 described the mini retro mandibular access by the trans masseter approach could be the choice for condylar fractures and this would be easy, faster reduction, and minimal injuries to the facial nerve.^[8,9] The trans parotid approach even though provides good access equally carries the risk of the parotid fistula and nerve injury^[10,11] We in our experience used this incision to treat sub condylar fractures and yielded good cosmetic and functional as well as anatomic results. One case of the parotid fistula was met and was well managed conservatively.

CONCLUSION

The mini retro mandibular access with anterior parotid trans-mesenteric approach to sub condylar fractures can be the choice for the surgical management of sub condylar fractures which is absolutely easy, reliable, with less visible scar and with less chances of landing in facial nerve complications.

Statement of human and animal rights, or ethical approval

This article does not contain any studies with human participants or animals performed by any of the authors. This is the case series done with this approach, not as any study.

Declaration of patient consent

The authors declare that they have obtained consent from patients. Patients have given their consent for their images

and other clinical information to be reported in the journal. Patients understand that their names will not be published and due efforts will be made to conceal their identity but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest
There are no conflicts of interest.

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