

Management of Subcondylar Fracture Through Transparotid Approach: A Prospective Study

Giridhar Kumar Velagapudi^{1*} Sajjad Salam² Bhargav Nalamolu³ Aditya Mohan Alwala⁴

¹Private Consultant, Department of Oral and Maxillofacial Surgery, Hyderabad, Telangana, India.

²Private Consultant, Department of Oral and Maxillofacial Surgery, Guntur, Andhra Pradesh, India.

³Private Consultant, Department of Oral and Maxillofacial Surgery, Guntur, Andhra Pradesh, India.

⁴Private Consultant, Department of Oral and Maxillofacial Surgery, Hyderabad, Telangana, India.

ABSTRACT

Background: Treatment of condylar fractures has generated a great deal of discussion and controversy in oral and maxillofacial surgery practice. Many different methods exist in the management of these fractures depending on various parameters. Both open and closed methods of management are being widely practiced. Open reduction of condylar fractures has emerged to be a more suitable treatment option in the recent times keeping in view of the unfavorable sequelae of untreated condylar fractures. Various extra oral and intra oral approaches exist in treatment of these fractures.

Herewith we present a case series of 8 cases which were effectively managed by open reduction and internal fixation through transparotid approach.

Keywords: Evidence, Implantology, Periodontal disease.

INTRODUCTION

Condylar fractures are managed by open and closed reduction. Closed reduction and immobilization can be achieved by means of acrylic splints, circumferential wiring, arch bar and gunning splints¹. However the choice of surgeons varies considering the merits and demerits involved in each procedure. Among all mandibular fractures condylar fractures range from 25% to 50%. For decades the most preferred approach for condylar fractures was closed reduction due to the complications involved in open reduction. Brandt and Haugh in their study demonstrated the failure and consequences of closed reduction².

In skeletal fractures the biology should be understood properly to stabilize components and restore function. Due to the wide availability of various plating systems management through open

reduction has become more enthusiastic over past two decades³. Here we present our experience of treating 8 cases (6 unilateral and 2 bilateral) of condylar fractures which were managed by open reduction and internal fixation through transparotid approach.

PATIENTS AND METHODS

The article presents a series of 8 cases of Condylar fractures treated via transparotid approach. In this case series, there were 7 males and 1 female in the group [Table 1]. There were 6 unilateral and 2 bilateral condylar fractures. All unilateral fractures were reduced fixed via transparotid approach. In case of bilateral condylar fractures, one side was opened, reduced and fixed via the same approach.

Thorough history and clinical examination was made and necessary investigations were

Received: Dec. 19, 2015; Accepted: Feb. 11, 2016

*Correspondence Dr. Giridhar Kumar Velagapudi.

Department of Oral and Maxillofacial Surgery, Hyderabad, Telangana, India.

Email: drgiridhar.v@gmail.com

obtained. Apart from routine blood investigations, Orthopantomogram and CT Scans were advised [Figure 1]. Based on the investigations, condylar fracture diagnosis was made and the patients were divided based on the anatomic site of fracture into condylar neck fractures and subcondylar fractures. Case series includes 2 condylar neck fractures and 6 sub condylar fractures [Table 1].

All cases was posted for surgery under general anesthesia for open reduction and fixation via transparotid approach. Under all aseptic conditions, retromandibular, transparotid approach was used to approach sub condylar region. 2.0 cm skin incision was given in the retromandibular area and blunt dissection was done to reach parotid capsule. Parotid capsule was incised and carefully separated taking care of the branches of the facial nerve, the parotid was retracted to reach masseter

muscle. After dissecting the muscle layer, subperiosteal dissection was done to reach the fracture site [Figure 2]. The fractures were reduced and fixed with 2.0 mm Stainless steel 4 hole plate with bar and 4 – 2.0 mm × 8 mm [[Figure 3]Stainless screws under copious saline irrigation. The closure was done carefully in layers using 3 – 0 vicryl suture. The parotid capsule is closed carefully to prevent sialocele. Skin closure is done with 5 – 0 proline.

Post operative evaluation was done to assess facial nerve function immediate post operative day, at 3 months and at 6 months post operative. Post operatively orthopantomograph was advised to [Figure 4]. Post operative occlusion was checked and mouth opening was assessed at 3 months and 6 months.

SNO	AGE	SEX	TYPE	SITE	MM		FACIAL NERVE ASSESSMENT			SIALO-COEL	OCCLUSION	
					PRE	POST	PREOP	POST day 1	POST OP 3M		PRE	POST
CASE 1	24	M	U	SC	R	ACC	I	I	I	NO	D	S
CASE 2	28	M	U	SC	R	ACC	I	I	I	NO	D	S
CASE 3	34	M	B	SC	R	ACC	I	I	I	NO	D	S
CASE 4	42	F	U	N	R	ACC	I	W/B	I	NO	D	S
CASE 5	21	M	U	SC	R	ACC	I	I	I	NO	D	S
CASE 6	27	M	U	SC	R	ACC	I	I	I	NO	D	S
CASE 7	37	M	B	N	R	ACC	I	I	I	NO	D	S
CASE 8	29	M	U	SC	R	ACC	I	W/MMd	I	NO	D	S

TYPE: Unilateral (U), Bilateral(B)

SITE : Neck of condyle(N), Subcondylar (SC)

MM : Mandibular movements: Restricted(R), Acceptable (Acc)

PREOP : Preoperative

POST OP : Post operative

3M : 3 MONTHS, W/B – Buccal nerve Branch of facial nerve weakness,

W/MMd – Marginal mandibular nerve weakness

OCCLUSION: D – Derranged, S - Satisfactory

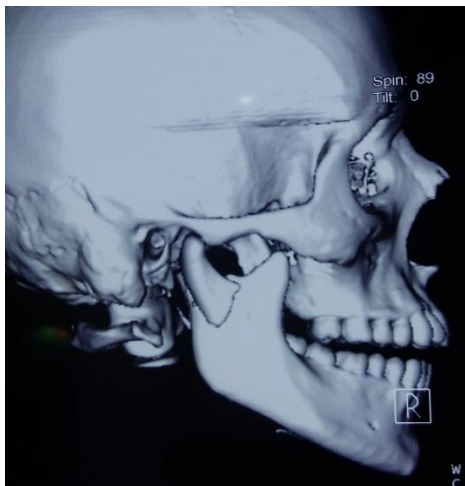


Fig 1: Preoperative CT Scan



Fig 2: Exposure of fracture site .



Fig 3: Fixation of SS plate.



Fig 4: Post operative OPG.

DISCUSSION

Management of condylar fractures have been debated since long with various philosophies. They can be treated via a conservative or a surgical approach, on the basis of several factors like degree and direction of displacement, level of fracture, position of the condylar head in relation to the glenoid fossa, position of the fractured bone segments of the subcondylar region with possible loss of vertical ramus height, patient age, potential for good occlusion and the patient's general condition.

Surgical problems in management of these fractures consist of limited access to the site of fracture, risk of damage to the facial nerve and its branches, postoperative auricular anaesthesia –

paraesthesia due to injury of the greater auricular nerve, damage to parotid gland function causing sialoceles, fistula, etc. hence surgical approach for these fractures require great experience to limit traumatic surgical manoeuvres by internal fixation and obtain good surgical exposure with good illumination.

Clinicians are still faced with the dilemma regarding the optimal approach to the condylar neck and subcondylar region as various approaches described in the literature testify to the shortcomings of most techniques. In the last few decades, many different approaches have been proposed for open reduction of condylar fractures. According to Choi and Yoo⁴, pre-auricular, sub-mandibular and retro-mandibular approaches are not useful when operating on high condylar neck

fractures due to limited access for accurate placement of the plates and screws is. The extended pre-auricular incision reported by Hammer et al.⁵ has provided sufficient exposure to the sub condylar region and the entire ascending ramus of mandible, but masseter muscle detachment from the zygomatic arch entails considerable damage.

A technique for removal and replantation of the condylar segment through the use of ramus osteotomy has been proposed but resorption of the replanted condyles⁶ has been a major risk in this technique. The facelift-transparotid approach⁷, the trans-masetericantero-parotid approach⁸ and the transparotid transcutaneous approach⁹ are valid but do not prove much safer than a transparotid approach with little parotid tissue removal, as excellent preservation of the facial nerve and approach to fracture site especially in subcondylar fractures. Dunaway and Trott¹⁰ used bicoronal approach with myotomy of masseter which proved to be a too traumatic procedure. An endoscopically-assisted trans-oral approach has also been described to treat selected cases of low subcondylar fractures¹¹, which requires special instruments and additional training, with an increased surgical time.

For these reasons, in our opinion, transparotid approach permits good anatomical repositioning of the displaced condylar or subcondylar osseous segments in all fractures, as isolation and preservation of the facial nerve branches and blunt dissection through parotid gland tissue overlying the fracture allow perfect exposure of the fracture site. However, care must be taken to prevent injury to the facial nerve, to achieve haemostasis and to close the capsule of parotid gland. Adequate surgical field allows the preservation of facial nerve¹² and permits easy internal rigid fixation.

In the case series, there was adequate exposure of the fracture site and no difficulty was felt while fixation in subcondylar fractures. But little difficulty was felt in cases of condylar neck fracture when the patient was well built. The incision was short and acceptable but when compared with pre auricular incision, scar was more conspicuous especially in fair skinned individuals.

In the case series post operative function of facial nerve was evaluated within 24 hrs and at 3rd

and 6th months post operatively.. Two of the 8 cases resulted in transient facial nerve palsy. Branches of the facial nerve that were involved were the buccal (n=1) which recovered in 2 months post-operatively and marginal mandibular (n=1) which recovered in 3 months post-operatively. The retromandibular transparotid approach in our cases did not permanently damage the branches of the facial nerve. But the facial nerve weakness was observed in cases of condylar neck fractures (n =2) which could be related to extensive retraction of the tissues. A certain degree of limitation in the mandibular movements is observed initially which could be attributed to dissection of masseter muscle. Though few authors observed occurrence of sialocele as a post operative complication, it was not observed in our case series probably due to a smaller group size or may be due to careful layered closure. We excise a tight skin closure and a loose parotid capsule closure.

Among the wide variety of approaches available for condylar fracture management by open reduction retromandibular transparotid approach is a promising approach, easy to learn, safe, expeditious and easy to perform. Though, caution should be exhibited in selecting the appropriate approach to treat condylar fractures especially in case of high condylar fractures where a preauricular approach is more suitable.

CONCLUSION

In our opinion, trans parotid approach is a safer approach for the management of condylar fractures with limited scar and complications. The only complication we observed was transient facial nerve weakness in condylar neck fractures which recovered completely by the 3rd post operative month.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

REFERENCES

1. Shakya Prabha, Sonkesriya Subhash .A prosthodontist can play a vital role in management team of maxillofacial fractures in young patient: A clinical report. Int J Oral Health Sci 2015;5:63-5.

2. Brandt MT, Haug RH: Open versus closed reduction of adult mandibular condyle fractures: A review of the literature regarding the evolution of current thoughtson management. J Oral Maxillofac Surg 61:1324 (2003).
3. PedroM. Villarreal, Florencio Monje, Luis M. Junquera, Jesu's Mateo, § Antonio J. Morillo, and Cristina Gonza'lez,Mandibular Condyle Fractures: Determinants of Treatment and Outcome. J Oral Maxillofac Surg. 2004 Feb;62(2):155-63.
4. Choi BH, Yoo JH. Open reduction of condylar neck fractures with exposure of the facial nerve. Oral Surg Oral Med Oral Pathol Oral RadiolEndod. 1999;88:292-296.
5. Hammer B, Schier P, Prein J. Osteosynthesis of condylar neck fractures: a review of 30 patients. Br J Oral Maxillofac Surg. 1997;35:288-291
6. Boyne PJ. Free grafting of traumatically displaced or resected mandibular condyles. J Oral Maxillofac Surg. 1989;47:228-232
7. VeL.aver A, Gorjanc M, Eberlinc A, et al. The periauriculartransparotid approach for open reduction and internal fixation of condylar fractures. J Craniomaxillofac Surg. 2005;33:169-179
8. Wilson AW, Ethunandan M, Brennan PA. Transmassetericantero-parotid approach for open reduction and internal fixation of condylar fractures. Br J Oral Maxillofac Surg. 2005;43:57-60
9. Güerrissi JO. A transparotid transcutaneous approach for internal rigid fixation in condylar fractures. J Craniofac Surg. 2002;13:568-571.
10. Dunaway DJ, Trott JA. Open reduction and internal fixation of condylar fractures via an extended bicoronal approach with a massetericmyotomy. Br J Plast Surg. 1996;49:79-84.
11. Schön R, Schramm A, Gellrich NC, et al. Follow-up of condylar fractures of the mandible in 8 patients at 18 months after transoral endoscopic-assisted open treatment. J Oral Maxillofac Surg. 2003;61:49-54
12. Bhutia O, Kumar L, Jose A, Roychoudhury A, Trikha A.Evaluation of facial nerve following open reduction and internal fixation of subcondylar fracture through retromandibular transparotid approach. Br J Oral Maxillofac Surg. 2014 Mar;52(3):236-40.