

OPEN REDUCTION AND INTERNAL FIXATION OF SUB CONDYLAR FRACTURE THROUGH RETROMANDIBULAR INCISION : A CASE REPORT

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ABSTRACT

Sub condylar fracture associated with contralateral para symphysis fracture is a common type of fracture associated with mandibular fracture. In our centre several cases of this combination fracture presents after personal violence or due to road traffic accident. This type of fracture can be reduced either with open or closed reduction. Ramal height shortening remains the main problem associated with closed reduction of sub condylar fracture. So patient presenting with this kind of fracture can be managed through open reduction internal fixation using retromandibular approach. This paper presents a case report of sub condylar fracture with contralateral parasymphysis fracture treated with ORIF through retromandibular approach and an intraoral degloving incision.

KEYWORDS

**Subcondylar fracture,
retromandibular incision,
miniplate fixation.**

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INTRODUCTION

One third of all mandibular fractures involve the condylar region¹. In reported cases fractures of the condyle account for between 25 and 35% of all mandibular fractures²⁻⁸. It seems that the battle will rage on forever concerning the treatment of condylar fractures between the extremists who urge nonoperative treatment in practically every case and the other extremists who advocate an open reduction in almost all cases⁹. Since the introduction of rigid internal fixation devices open treatment of fractures of the mandibular condylar process has been met with enthusiasm. However, few outcome data offer definitive information about when or if condylar process fractures should be treated surgically¹⁰. It has been shown in numerous clinical studies that open reduction and internal fixation (ORIF) of condylar fractures give results similar or superior to those of closed treatment¹¹. Ellis and Throckmorton showed that ORIF provides a more rapid and complete functional recovery, and that the masticatory system requires less adaptation using this method³. One technique first described by Hinds and Girotti in 1967 was retromandibular incision¹². Because of the proximity of the operative field to the branches of the facial nerve, retromandibular vein and the parotid gland this approach was not carried out widely. Retromandibular approach offers greater advantages when compared with other methods because of the shorter working distance from the skin incision to the condyle, greater access to the posterior border of the mandible and sigmoid notch, less conspicuous facial scar and easy reduction. The paper presents a case of ORIF of a subcondylar fracture through retromandibular approach.

CASE REPORT

A 36 year old male patient come to department of Oral & Maxillofacial Surgery, Dr. R. Ahmed Dental College & Hospital with complain of pain in the right side of the face followed by a road traffic accident who fell from the motor bike striking the left side of the face on the road. Clinical examination reveals deviation of chin to the right during mouth opening, an obvious step deformity on the left parasymphyseal region and gaging of posterior teeth on the right side. Left sided parasymphyseal fracture associated with right sided subcondylar fracture was suspected and an orthopentogram was sought. The orthopentogram reveals fracture of left parasymphysis region associated with medially displaced



Fig 1: Pre operative



Fig : 2 Pre operative occlusion



Fig 3 :Preoperative OPG



Fig 4: Incision marking



Fig 5: Incision and soft tissue dissection



Fig 6: Condylar fracture exposed



Fig 7 :Miniplate fixation



Fig 8 :Post operative occlusion



Fig 9 :Post operative mouth opening



Fig 10 :Post op facial nerve test



Fig 11 :Post operative facial nerve test



Fig 12: Post operative OPG

subcondylar fracture [fig. 3]. Patient was assessed for undergoing general anaesthesia ,pre operative arch bar was applied to both upper and lower dentition.

Operative technique

The surgical technique adopted was a retromandibular transparotid approach using a skin incision made 0.5 cm below the ear lobe and continues inferiorly for 3 to 3.5 cm [fig. 4] just behind and parallel to the posterior border of the mandible. Through skin and subcutaneous tissue to the level of platysma muscle dissection was carried

out in the vertical plane. A scalpel was used to incise through the fusion of platysma muscle, SMAS (superficial musculoaponeurotic system), and parotid capsule. The parotid capsule was identified and entered by incising the capsule which appears as a white glistening layer. Once entered the parotid gland was clearly visible. Blunt dissection within the gland towards the posterior border of the mandible was carried out in an anteromedial direction. Facial nerve branches encountered were carefully dissected out for a short distance and retracted either superiorly or inferiorly. Dissection was then carried out until the only tissue remaining on the posterior border of the

mandible was the periosteum of the pterygomasseteric sling. The periosteum is incised sharply with scalpel and retracted. Now the fracture segment is visible and properly reduced with the help of fixation of a miniplatescrew and downward traction is given with stainless steel wire attached to the screw. A 4hole with bar 2mm miniplate with 4 screws are used for fixation on the posterior border of ramus. Another 2mm miniplate 4holecontineous is just anterior to the first one and fixed with 2mm screws. After fixation occlusion and movement of the mandible was checked. The pterygomassetric sling and the parotid capsule were closed in two layers using 4-0 Vicryl sutures. Skin was closed using 4-0 nylon sutures. The parasymphysis fracture was approached with an intraoral degloving incision properly reduced and fixation was done with a 4 hole with bar 2.5 mm miniplate on the lower border and another 2mm 4 hole with bar miniplate 4 mm apart from the previous one and the incision was closed with 3-0 vicryl. At the end of the procedure IMF was released. Soft diet was recommended for the patient.

Post operatively the patient gets a functioning occlusion, normal mouth opening and undisturbed facial nerve function [fig. 8, fig, 10, fig 11].

DISCUSSION

Closed treatment in the past seems to give satisfactory results in most cases, and the surgical approaches to the condylar process is fraught with anatomical hazards; therefore, open treatment of fractures of the mandibular condylar process has been used reluctantly. Potential risk must be weighed against the potential benefits with any intervention. With open reduction and internal fixation of condylar process fracture many surgeons lack extensive experience and, therefore, there is a paucity of information about the risks and benefit of such treatment¹⁰. With acceptance and even the reliance on rigid internal fixation by the both surgeons and the patients a paradigm shift has occurred, as improved materials for fixation have been introduced, new plate and screw designs have been developed, and surgical techniques have been refined¹³. The decision how the patient with subcondylar fracture will be treated is made after the diagnosis of sub condylar fracture.

If the fracture is not displaced and the occlusion is normal a soft diet for three to four week period is recommended associated with regular follow up. Although adults with displaced and dislocated condylar fractures, shortening of ramal height 5mm or more, optimal occlusion not achieved after IMF in bilateral condylar fractures, those fractures at another site in the mandible other than the condyle are managed by open reduction and internal fixation (ORIF)¹⁴. As lengthy period of IMF is distressing for the patient, ORIF releaves the patient of this discomfort. Efficacy and safety of retromandibular

trasparotid approach was assessed clinically and radiologically, and long term result shows that in 8% of cases there was an injury to the facial nerve, while in 92% cases there was no weakness to the facial nerve branches¹⁴. If fracture is located at the head and neck region, there are chances of facial nerve weakness when approached through retro mandibular incision and transparotid approach in comparison to subcondylar fracture. This is attributed to the fact that extra dissection and traction applied cause neuropraxia to the branches of facial nerve. Due to lack of detail in the description of each technique regarding the surgical approaches to the mandibular condyle is often unclear in the literature. Various techniques have been proposed for surgical treatment of displaced condylar fractures, including the submandibular approach, the preauricular approach, the rhytidectomy approach, or the intraoral approach³. With the retromandibular approach synonymous such as modified submandibular, modified Risdon, modified Blair, and posterior mandibular are oftenused⁸. All these techniques differ significantly from one described by Ellis and Dean where blunt dissection is performed to transgress the tail of the parotid gland in order to reach the ramal part of the mandible³. The retromandibular approach minimizes the risk of permanent damage to the braches of facial nerve as the nerve lies in the deeper plane and in this region and identification is esier against the parotid parenchymal background. Any report of permanent damage to the facial nerve was not found in a series of cases presented by Ghezta¹⁴. The cosmetic appearance of the scar is not conspicuous in majority of the patients.

CONCLUSION

The retromandibular approach provides good access with low morbidity and good cosmetic results when open reduction and internal fixation of displaced subcondylar fracture is indicated.

REFERENCES

1. Blanc JL, Lagier JP, Gras R, Bremond D, Belloni D. Les sequelles des fractures condyliennesi travers l'experience du service et l'expertisemedicale. (Condylar fractures sequelaethrough our clinical experience and medical expertise). Rev StomatolChirMaxillofac 1985;86:29-31
2. Ellis E 3rd, Dean J: Rigid fixation of mandibular condyle fractures. Oral Surg Oral Med Oral Pathol 76: 6, 2013
3. Ellis E, Throckmorton GS: Treatment of mandibular condylar process fractures: biological considerations. J Oral Maxillofac Surg 63:115, 2005

4. Talwar RM, Ellis E 3rd, Throckmorton GS: Adaptations of the masticatory system after bilateral fractures of the mandibular condylar process. *J Oral Maxillofac Surg* 56: 430,1998
5. Hyde N, Manisali M, Aghabeigi B, et al : The role of open reduction and internal fixation in unilateral fractures of the mandibular condyle: a prospective study. *Br J Oral Maxillofac Surg* 40:19, 2002
6. De Riu G, Gamba U, Anghinoni M, et al: A comparison of open and closed treatment of condylar fractures: a change in philosophy. *Int J Oral Maxillofac Surg* 30:384, 2001
7. Alkan A, Metin M, Mu lali M, et al: Biomechanical comparison of plating techniques for fractures of the mandibular condyle. *Br J Oral Maxillofac Surg* 45:145, 2007
8. Manisali M, Amin M, Aghabeigi B, et al : Retromandibular approach to the mandibular condyle: a clinical and cadaveric study. *Int J Oral Maxillofac Surg* 32:253, 2003
9. Malkin M, Kresberg, H, Mandel L: Submandibular approach for open reduction of condylar fracture. *Oral Surg Oral Med Oral Pathol* 17:152, 1964
10. Ellis E 3rd, McFadden D, Simon P, et al: Surgical complications with open treatment of mandibular condylar process fractures. *J Oral Maxillofac Surg* 58:950, 2000
11. Gerbino G, Boffano P, Tosco P, et al: Long-term clinical and radiological outcomes for the surgical treatment of mandibular condylar fractures. *J Oral Maxillofac Surg* 67: 1009, 2009
12. Tang W, Gao C, Long J, et al: Application of modified retromandibular approach indirectly from the anterior edge of the parotid gland in the surgical treatment of condylar fracture. *J Oral Maxillofac Surg* 67:552, 2009
13. Haug RH, Assael LA: Outcomes of open versus closed treatment of mandibular subcondylar fractures. *J Oral Maxillofac Surg* 59: 370, 2001
14. Kumar GheztaN, Bhardwaj Y, Rani P, Ram R, Efficacy of Retromandibular Transparotid Approach for the Management of Extracapsular Subcondylar Mandibular Fractures using 2mm Titanium Miniplates. A Prospective Clinical Study, *Journal of Oral and Maxillofacial Surgery* (2016),doi: 10.1016/j.joms.2016.03.045.