

Scarless Modified Approach to Subcondylar Fracture Bypassing the Parotid Gland- A Case Report

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ABSTRACT

Subcondylar fractures contribute about 19-29% amongst all the mandibular fractures worldwide, yet the treatment paradigm remains slightly controversial. Subcondylar fractures are pivotal in maxillofacial surgery for diverse reasons, as they can result in number of complications, whether treated or not. Initial clinical outcomes may appear pragmatic but complications such as pain, restrictions of jaw movements, muscle spasm, mandibular deviation, malocclusion, and facial asymmetry may become apparent. Fracture of tympanic part, mandibular fossa of temporal bone, may or may not be escorted by dislocation of condylar segment into middle cranial fossa, damage to blood vessels, arteriovenous fistula are some additional complications. Choosing right surgical strategy is for minimising postoperative complications management of subcondylar fractures and it should be taken in account that, perioperative, functional, and patient-reported outcomes. The majority of studies that have been published describe the use submandibular, retromandibular, or preauricular incisions have drawbacks such as poor visibility, accessibility, and the potential to harm facial nerve and complications related to the parotid gland. Hereby, the authors present a case report of left subcondylar fracture in a 55-year-old, male patient, where a modified percutaneous approach was taken, to access the fracture, and aid in adequate reduction and proper fixation without any postoperative complications. In this approach, parotid gland is bypassed and masseter muscle fibres are excised to reach the fractured site at subcondylar region. It is small, straight forward, elementary, safe, reliable and scarless approach for the management of subcondylar fractures that ensures adequate exposure of the fractured site, osteosynthesis and minimal potential postoperative complications.

Keywords: Access, Facial nerve injury, Parotid fistula

CASE REPORT

A 55-year-old, male patient reported with the chief complaint of pain in lower right back teeth region days which was localised to preauricular region, dull aching and persistent in nature. Patient gave history of road traffic accident before seven days, wherein he had blown on left side of the face and bleeding from oral cavity. Patient received primary wound care at a local hospital along with antibiotics and analgesics, but pain did not subside.

On extraoral examination, bilateral facial asymmetry was noted [Table/Fig-1]. Mouth opening was 35 mm. Temporomandibular joint deviated on left side, while opening the mouth and restricted lateral excursions were observed. While examining intraorally, vestibular obliteration was also observed in right lower canine and lateral incisor region [Table/Fig-2].

Deranged occlusion was noted bilaterally. Orthopantogram revealed radiolucent line extending from sigmoid notch on left side upto



[Table/Fig-2]: Preoperative intraoral photograph depicting poor oral hygiene.



[Table/Fig-1]: Preoperative photograph showing facial asymmetry.

posterior border of the ramus. Another fracture line was observed at parasymphysis region [Table/Fig-3]. Based on clinical evaluation and radiological findings, diagnosis of right parasymphysis fracture and left subcondylar fracture was made.



[Table/Fig-3]: Preoperative orthopantogram depicting parasymphysis fracture on right side and subcondylar fracture on left side.

In order to maintain the continuity of the mandibular arch, co-existing parasymphysis fracture of right side was fixed first. After achieving the occlusion, intermaxillary fixation was done using upper and lower arch bars, securing with 2×6 mm and 2×8 mm screws all the teeth were periodontally compromised [Table/Fig-4]. Fractured fragments at right parasymphysis region were reduced and fixation was done using 2 mm titanium plate four hole with gap near lower border of mandible with 2×12 mm screws.



[Table/Fig-4]: Intraoperative intermaxillary fixation using upper and lower arch bars, securing with 2×6 mm and 2×6 mm screws.

A 3-3.5 cm skin incision was marked and made, 0.5 cm below the radix of auricular lobule to 1 cm above angle along the posterior edge of mandibular ramus [Table/Fig-5]. To reach the fracture, the subcutaneous tissues anterior and superior to the superficial muscular aponeurotic system were dissected [1]. Dissection was performed in the subdermal fat plane, below the Superficial Musculoaponeurotic (SMAS) layer, until the anterior margin of the parotid gland was reached [2]. Gently retraction of the gland posteriorly along its anterior border was done, just below the parotid duct, to expose the masseter muscle fibres, which were then divided in the direction parallel to the course of facial nerve branches to expose the fracture site [Table/Fig-6] [3]. Masseter fibres were carefully identified and excised. Then mandible was reduced and 2 mm Titanium delta plate was fixed using 2×6 mm and 2.5×6 mm [Table/Fig-7]. Layer-wise closure was done using 3-0 vicryl sutures. Skin closure was done using 4-0 ethilon sutures.



[Table/Fig-5]: Marking for the Transmassetric Anteroparotid (TMAP) approach, a 3-3.5 cm skin incision, 0.5 cm, below the radix of auricular lobule to 1 cm.

[Table/Fig-6]: Access to subcondylar fragment. **[Table/Fig-7]:** Fixation of fracture segment using 2 mm delta plate. (Images from left to right)

Postoperatively, fluid resuscitation was done using ringer lactate solution and 5% dextrose saline solution to ensure adequate organ perfusion electrolyte and pH balance and prevent dehydration. Intravenous medications were continued for five days and patient was then discharged. After 10 days of the surgery, extraoral sutures were removed. Intermaxillary fixation was removed after 30 days, occlusion was stable and mouth opening of 40 mm was noted [Table/Fig-8-11]. Patient was recalled periodically for follow-up, where he did not report with any fresh complaints regarding pain, mouth opening, masticatory function or paraesthesia.

DISCUSSION

The preferential treatment for subcondylar fracture is debatable and depends on the degree of displacement, location of the fracture, patient's age, and presence of other fractures [4]. Historically, closed reduction was considered standard treatment protocol for subcondylar fractures due to its non invasive nature causing no significant damage to facial nerve, parotid gland and surrounding vital structures. Although the major drawback was the prolonged maxillomandibular fixation period of 4-6 weeks, which had resulted in temporomandibular joint ankylosis and also reduction of ramal height. So this treatment modality is rarely taken into consideration these days [5].

When a closed reduction cannot be performed due to significant displacement and loss of functional occlusion, Open Reduction and Internal Fixation (ORIF) is advised because the outcome would eliminate the potential complications [4]. Percutaneous approaches are implemented in majority of surgical procedures for subcondylar region. As the position preauricular incision is too high and is also associated with many complications such as highest risk of facial nerve injury, damage to parotid gland, it is an incision of choice for subcondylar fractures [4]. The submandibular incision is the method of choice for fractures of the mandibular body and mandibular angle, but it presents limited space for exposure and operation for fractures of the ramus, condyle or subcondylar region which has a qualitative impact on rigid internal fixation [6]. Retromandibular incision was advocated by surgeons because of its proximity with condylar process, leaves no noticeable scars, and allows for better exposure of the fractured end and the posterior edge of the ramus. The technique, though, traverses the parotid gland tissue, which increases the risk of facial nerve damage and salivary fistula [4]. The retro-parotid approach is made via an incision right below the ear lobe towards the mandibular border. The condyle is exposed through a dissection of the subcutaneous tissues posteriorly around the parotid capsule and after retraction of the parotid gland. The transparotid approach offers an incision that runs parallel to the mandibular ramus's posterior border [7]. Retroparotid and transparotid approach have reported complications like salivary fistula and paraesthesia due to injury of greater auricular nerve [8].



[Table/Fig-8]: Postoperative orthopantogram after Open Reduction and Internal Fixation (ORIF) of parasymphysis region on right side and subcondylar region.



[Table/Fig-9]: Four month postoperative follow-up, scar has merged with preauricular cervicomastoid skin folds. **[Table/Fig-10]:** Frontal view postoperative four months. **[Table/Fig-11]:** Four months postoperative mouth opening which was 41 mm. (Images from left to right)

The Transmassetric Anteroparotid (TMAP) approach minimised the potential complications and improved surgical exposure [9]. In 2004, Wilson AW et al., stated that TMAP technique provides rapid access to the condylar neck while significantly reducing risk to the facial nerve and eliminating complications associated with transparotid approaches [10]. In 2015, TMAP approach was used as a Facelift approach for ORIF of condylar fractures to deliver aesthetic results to the patient [11]. TMAP approach avoids the complications associated with involving the parotid and provides better access to and visualisation of the condyle with a low risk of facial nerve injury [12]. It can also lessen the likelihood that a vertical ramus osteotomy will be necessary. It provides direct access to the proximal stump and ramus, enabling perpendicular screw placement. Because intraglandular dissection is avoided, other salivary complications such as salivary fistula and Frey's syndrome are uncommon [8]. Cosmetically, the incision is acceptable because it blends in with the preauricular and cervicomastoid skin folds and gives Scarless appearance [2].

According to reports, Endoscopically assisted Reduction with Internal Fixation (ERIF) is encompassing both the advantages of closed and open techniques. However, this technique demands expertise in skills, experience and economic considerations, which are few reasons, as to why it has not gained much popularity in India [5].

CONCLUSION(S)

The TMAP approach offers good access to subcondylar fractures, and if extracorporeal fixation is required, it makes retrieval, repositioning, and fixing the fracture easier. It is a straight forward method for treating fractures of the subcondyle. Being a small incision, authors' suggested method preserves the gland capsule, preserves the facial nerve branches and gives scarless appearance.

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AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Oct 21, 2022
- Manual Googling: Dec 13, 2022
- iThenticate Software: Dec 26, 2022 (12%)

ETYMOLOGY: Author Origin

Date of Submission: **Oct 16, 2022**
Date of Peer Review: **Nov 30, 2022**
Date of Acceptance: **Jan 03, 2023**
Date of Publishing: **Mar 01, 2023**