



Research Article

NOVEL LAG SCREW APPLICATION IN THE ORIF OF BILATERAL CONDYLAR FRACTURES: A CASE REPORT

Bala Vikhram, Sunil Vasudev, Deepak S, Sahana M S, Sarayu Gopal and Gowrishankar

D1002, Labrunum Block, Brigade Millenium JP Nagar 7Th Phase Bangalore 560078, INDIA

ARTICLE INFO

Article History:

Received 6th March, 2023

Received in revised form 15th

April, 2023

Accepted 12th May, 2023

Published online 28th June, 2023

Key words:

Treatment Methods

ABSTRACT

Open reduction of condyles is rarely indicated in young adults as union of condylar fractures occur regardless of intermaxillary fixation. Closed reduction usually suffices unless indicated in the absolute indications given by Zyde and Kent (1983). Most condylar fractures when opened can be plated. Our experience shows a case wherein conventional 3D plating of the condylar fracture proved ineffective leading to the placement of a lag screw in order to reduce the fracture site which was entered using a transmasseteric approach which ultimately led to the formation of a sialocele and was treated using simple repeated aspirations.

Copyright© The author(s) 2023. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Treatment methods for condylar process fractures remain controversial. Most fractures of the condylar process have been treated non-surgically, because acceptable function was achieved. However, surgical reduction and internal fixation is required for treatment of condylar process fractures with severe displacement or dislocation. Authors have reported using fixation methods such as trans-osseous wiring, Kirschner (K-) wires, miniplates and lag screws.

Previously, we used K-wires in such cases but they required long periods of maxillomandibular fixation (MMF). Since 1987 we have used titanium miniplates for fixation. However, we have frequently experienced fracture of miniplates and screw loosening, as reported previously. Although the miniplate is the most commonly used device for fixation in oral and maxillofacial surgery, monocortical osteosynthesis may not be ideal for immobilization of the condylar process. In 1994, we began using the Eckelt lag screw for condylar process fractures. Eckelt and Hlawitschka reported good clinical results and bone healing with this technique [1]

Methods of osteosynthesis may be evaluated not only by the reduction achieved and the stability of fixation, but also by their technical application, economic aspects involved, and increasingly by the extent of trauma resulting from the dissection necessary to expose the fracture. In the future, methods should be selected only when they ensure early full rehabilitation of the patient in combination with minimally invasive surgery and economic use of materials and time. The less technical input required for a particular method, the more

it will be accepted. Also, current knowledge of biomechanics and fracture treatment, in conjunction with the static and dynamic forces acting in the region being restored, need to be reflected in osteosynthesis. [2]

CASE REPORT

A 22 year old male patient reported with an alleged history of road traffic accident and sustained injuries to the face. The patient faced direct impact to chin more on the right side after he was hit by a 2 wheeler off the road. On examination gross asymmetry was noted with a diffuse swelling noted over the right cheek and pre-auricular region. A single laceration measuring 3 x 1 cm noted over the upper chin region (Figure 1). Reduced mouth opening of about 11mm with deviation of the mouth noted. Clicking noted in the TM joints bilaterally. Patient was conscious and well oriented with no other medical co-morbidities. CT revealed bilateral displaced mandibular condylar fractures, parasymphysis and body fracture on the right (Figure 1). Patient was then taken up for surgery post meeting the needed requirements.

Procedure

General anaesthesia was achieved via left nasal intubation. Local anaesthesia with vasoconstrictor was administered to the proposed surgical site. Upper and lower arch bars were placed and secured in place using 26 guage wires. The condyle was approached using the transmasseteric approach. A preauricular incision with lazy s extension (Modified blair incision) was marked and placed (Figure 2).

*Corresponding author: Bala Vikhram

D1002, Labrunum Block, Brigade Millenium JP Nagar 7Th Phase Bangalore 560078, INDIA



Figure 1 Pre operative radiographs

Mucoperiosteum was reflected. Subperiosteal tissue planes were dissected. The parotid parenchyma was not dissected to expose the facial nerve branches. The facial nerve branches along with the parotid gland were completely retracted safely superiorly and no window was created between any two facial nerve branches for access.

As the dissection is carried out by developing a cleavage between the parotid capsule and the underlying masseter muscle, the parotid gland was then retracted in toto without worrying about the facial nerve branches. Further, after retracting the parotid gland, blunt dissection through the underlying masseter muscle provided wider and quicker access to the fracture site (Figure 3). Once the fracture site

was viewed, a quadrilateral plate was placed over the fracture site and secured in place. After checking for vertical dimension, the movement of the jaws displaced the plate out of place. Hence, the plate was removed and 2 lag screws were placed (Figure 4). After placing the screws, the mandibular movements were checked and vertical dimension was established with an interincisal opening of 26mm.

Tissue planes were closed in layers using 3 - 0 vicryl, and closure of the skin was achieved with 5 - 0 prolene. The laceration present on the chin was sutured in layers using 3 - 0 vicryl (Figure 5).

Patient was then extubated and shifted to recovery. Intermaxillary elastics were placed post the operation.



Figure 2 Incision marked

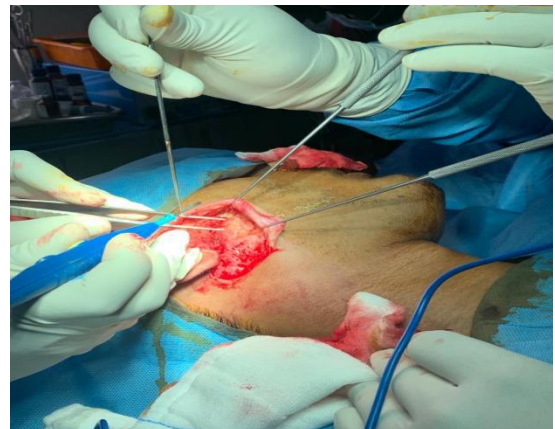


Figure 3 Post dissection, fracture site viewed and reduced

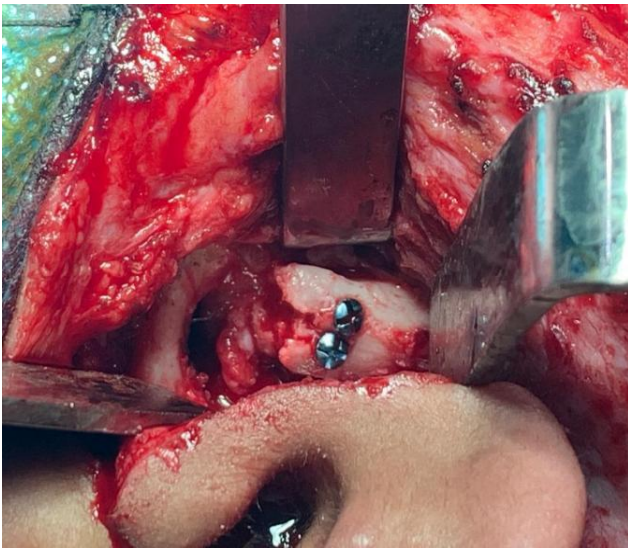


Figure 4 Lag screws placed.

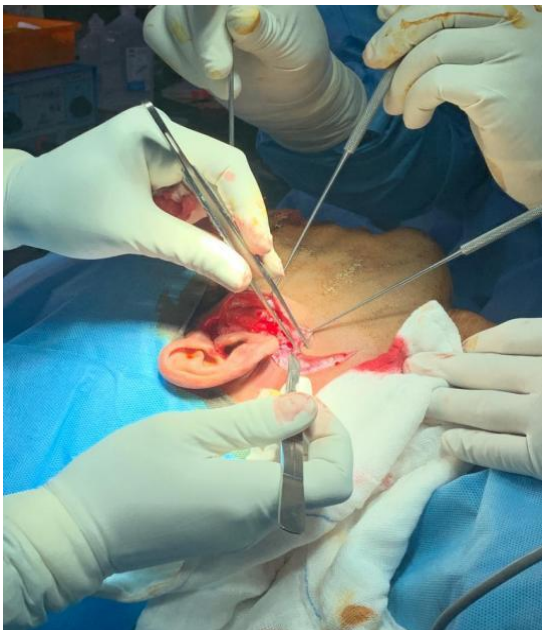


Figure 5 Closure achieved

Post Operative Period

During the post operative period, the patient presented with a sialocele of the right parotid gland. The sialocele was treated over a period of 6 weeks with repeated aspirations with no other signs or symptoms (Figure 6). Intermaxillary elastics and arch bars were removed 6 weeks post operation (Figure 7).



Figure 6 Post operative sialocele



Figure 7 Post operative profile

DISCUSSION

In intra-articular fractures plain radiographs and the orthopantomogram can only serve as screening methods, as precise imaging of the small fragments can only be obtained with CT scanning. After analysis of the CT scan, the surgeon has to decide whether surgical or conservative treatment should be used. The fracture line always runs obliquely from superolaterally to inferomedially, and depending on the position of the fracture line, the condylar height can be either maintained (type A) or shortened (type B). The indication for operative treatment is a type B intra-articular fracture with shortening of the condyle, whereas type A fractures are usually managed conservatively. Another indication for conservative treatment is comminution of the condylar head, when the bony fragments are too small for stable fixation. In some of these cases a reconstructive procedure will be necessary sometime in the future, as the function of these joints remains poor. Replacement of the irreparably deranged TMJ with a total prosthesis may become a routine operation in the next decade, just as it had become in orthopaedic surgery. If the intra-articular fracture is undisplaced, surgery is not undertaken. As in other cases of conservative treatment, patients are placed first on a liquid diet and later on a soft diet for 4 to 6 weeks with regular weekly control visits.

However, active mobilization of the joint with vigorous mouth-opening exercises has to start early, within a few days after injury, to avoid development of ankylosis [3].

Hinds and Girotti first described the retromandibular incision for good exposure of the mandibular condyle. As compared to the submandibular approach, this incision allowed direct access to the mandibular ramus and condylar process. The traditional retromandibular approach traverses the parotid gland and requires careful dissection of facial nerve branches. Variations of the retromandibular approach that exist are trans-parotid, transmasseter, high cervical trans-masseteric anteroparotid, mini retromandibular and retroparotid approach. The anteroparotid as well as the high cervical trans-masseteric approach causes a temporary facial nerve palsy in 30–50% of cases as a result of intraoperative visualization of facial nerve branches. The approach to the subcondyle and ramus region via a retroparotid direction, by retracting the parotid gland in toto in a superior and anterior direction and dissecting bluntly through the masseter muscle, minimizes nerve injury and

provides adequate access. The approach is retroparotid and not trans-parotid or anteroparotid.

The scar produced is esthetic and barely 2 cm long. As the parotid capsule is preserved, occurrence of salivary fistulas is nil. Another advantage of approaching from a retroparotid direction is shorter operating time, as time-consuming dissection to identify and preserve the facial nerve branches is avoided [4]

The sialocele occurred postoperatively, due to inadvertent rupture of the parotid capsule during harder retraction in high condylar fractures. The sialocele was managed conservatively and resolved completely.

CONCLUSION

After years of debate on approaches and the very need for opening condylar fractures, a consensus can be reached to an extent on which approach suits best when needing to open condylar fractures. The anterior parotid transmasseteric approach has some unique advantages which are those of the facial nerve being protected, no parotid fistulas, a good aesthetic scar that heals well and is almost camouflaged after a while. We did however face a sialocele which was treated conservatively and did not cause any significant morbidity to the patient. The placement of lag screws after opening the fracture site itself proved useful as the mouth opening and vertical dimension was established easily and improved from a meager 11mm to 26mm in a jiffy. Following this mouth exercises would be sufficient to bring it back to pre normal values.

Closed reduction in this case could have resulted in reduced mouth opening and difficulty in restoring the form and function of the condyle. Post opening the fracture site, plating conventionally may not prove to be efficient as the joint is 3 dimensional and produces a joint that is bi-functional in that it hinges and slides. Hence a lag screw proves more useful in this case. Hopefully, this information can shed light into more confidently opening condylar fractures through a simple approach as well as fixing it rather easily with just a lag screw and equip future surgeons in widening their scope in the diagnosis and treatment planning of condylar fractures.

References

1. Sugiura T, Yamamoto K, Murakami K, Sugimura M. A comparative evaluation of osteosynthesis with lag screws, miniplates, or Kirschner wires for mandibular condylar process fractures. *Journal of oral and maxillofacial surgery*. 2001 Oct 1;59(10):1161-8.
2. Pilling E, Schneider M, Mai R, Loukota RA, Eckelt U. Minimally invasive fracture treatment with cannulated lag screws in intracapsular fractures of the condyle. *Journal of oral and maxillofacial surgery*. 2006 May 1;64(5):868-72.
3. Vesnaver A. Open reduction and internal fixation of intra-articular fractures of the mandibular condyle: our first experiences. *Journal of oral and maxillofacial surgery*. 2008 Oct 1; 66(10):2123-9.
4. Tomar K. Efficacy of the retroparotid trans-masseteric approach via retromandibular incision in ORIF of subcondylar fractures: our institution experience. *Journal of maxillofacial and oral surgery*. 2018 Sep; 17:332-8.

How to cite this article:

Bala Vikhram *et al* (2023) 'Novel Lag Screw Application in the ORIF of Bilateral Condylar Fractures: A Case Report', *International Journal of Current Advanced Research*, 12(06), pp. 2116-2119.
DOI: <http://dx.doi.org/10.24327/ijcar.2023.2119.1464>
