

A case report on angle fracture with TMJ ankylosis - A rare combination

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Abstract

Reduced mouth opening has multiple etiology, like, TMJ ankylosis, maxillofacial fracture, space infection, MPDS, etc. It is to see if they are present in the patient simultaneously. This case report is regarding a patient having non-union of angle of mandible with TMJ ankylosis. The patient was planned for surgery. Osteoarthrectomy with reconstruction of angle was done with the same distracted segment.

Keywords: TMJ, MPDS, CT face.

Introduction

Treatment of fracture has always been aimed at approaching anatomical & functional reduction, so is for maxillomandibular trauma. These have included maxillomandibular fixation with and without intraosseous wiring, external rigid fixation, and, more

recently, rigid internal fixation. However, each method is beset by complications—specifically, those of infection, malunion, delayed union, non-union, disturbances of sensation, malocclusion, and facial deformity. Most of these unfortunate results can be prevented or corrected, but probably the most challenging is the non-union [1]. Patients having non-union have to undergo mental & physical stress of multiple surgeries, to prevent deformity or permanent disability.

Mat hog et al reported 29.3% non-union in the angle region of mandible, next to the body region of mandible (39%). Reasons given have included an impaired blood supply associated with atrophy of the bone that often occurs in edentulous patients. The risk of poor healing can be further increased by mucoperiosteal stripping and

additional difficulties in establishing correct occlusion [1].

After undergoing trauma 20 years before, our patient was managed under general anesthesia with transosseous wiring in relation to bilateral fronto-zygomatic suture, left infraorbital rim, which can be appreciated in CT face.

Transosseous wiring was an economical & popular procedure before plate & screw fixation. Transosseous wiring at upper border was given by Sir William Kelsey Fry. Lower border & upper border wiring were done with their advantages though wire osteosynthesis is not stable on its own. Some of wire internal fixation disadvantages include the fact that it is not strong enough to prevent interfragmentary motion across the fracture and lack of directional control. [2]

Temporomandibular joint ankylosis is the fibrous or bony fusion of condylar portion of mandible & glenoid fossa & zygomatic arch of temporal bone. It is mainly caused by trauma or infection. The patient suffers through reduced mouth opening, becomes malnourished & is psychologically unwell since he/she is not able to meet up to the Esthetic requirement set by the society.

Case report

A 75 years old male reported to our unit, Oral & maxillofacial surgery in March 2022, with chief complain of tension in right side of his face since 3 months. Upon examination, he was having depression in relation to right angle region of mandible with continuity defect felt in the same region. His mouth opening was reduced to 7 mm with tip of upper & lower alveolar ridge as reference points.



Fig 1: Frontal & lateral profile picture of patient

Upon taking further history, the patient informed about trauma due to road traffic accident in the year 1999, after which he was taken admitted in the same unit. He was tracheostomised for 15-20 days. He gives history of his jaw fracture & was operated for the same.

The patient was further investigated & his NCCT face led us to diagnosis which did not cross our heads. It showed continuity defect beyond right angle region of mandible & the right ramus was rotated medially with right TMJ ankylosis. It also showed wires in relation to bilateral Fronto-zygomatic region & left infraorbital region with left deformed condyle.



Fig 2: Pre-operative OPG, showing distracted ramus

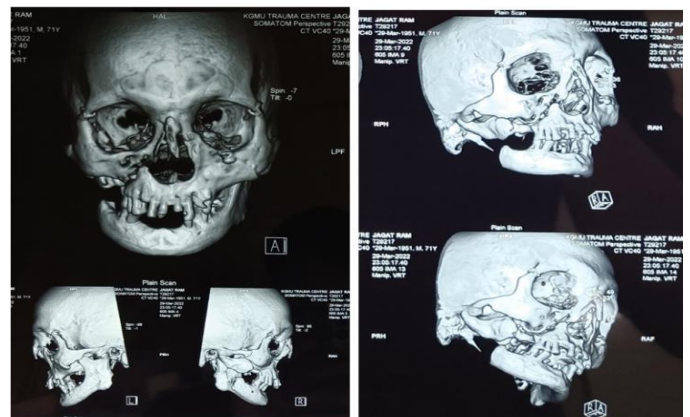


Fig 3: Pre operative NCCT face showing wiring in relation to bilateral Fronto-zygomatic region, left infra-

orbital region, non-union of right angle of mandible, Right TMJ ankylosis

After which we reached to our final diagnosis of Follow through case of fracture bilateral ZMC & fracture right angle of mandible with right TMJ ankylosis.

The patient was planned for surgery under General anesthesia. Surgery held in April 2022, where he was nasally intubated. Right Alkayat-Bramley incision was given & ankylosed portion of mandible was released using motor driven bur. Right submandibular incision was given & angle of mandible was exposed with further exposure of medially rotated ramus of mandible which was in fibrous union with zygomatic arch. The right ramus was released from zygomatic arch & was brought down to form the mandible.



Fig 4: Intra-operative picture showing ankylosed right Tmj through Alkayat-Bramley incision



Fig 5: Intra-operative picture showing ramal fragment through right submandibular incision

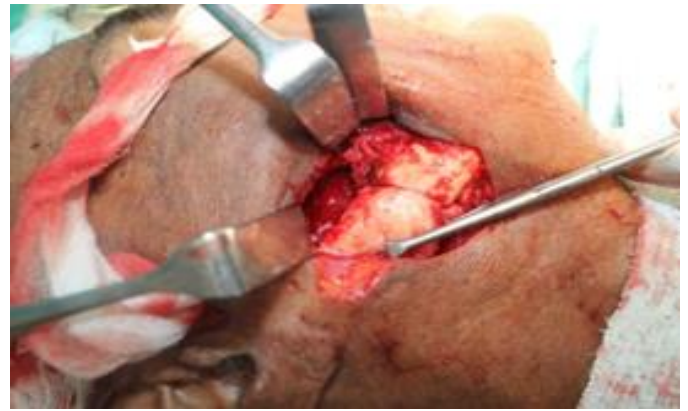


Fig 6: Intra-operative picture showing approximated ramal & body region of mandible



Fig 7: Intra-operative picture showing fixation of non-union fragments with reconstruction plates

Right angle & ramus ends were freshened using motor driven handpiece until bleeding margins were obtained, leading to reconstruction of mandible by fixation of fragments using 2.5 mm angle reconstruction plate.



Fig 8: Post-operative OPG, fragments were joined with Reconstruction plate

The patient was adviced for physiotherapy using jaw exerciser & follow up was done. Patient achieved 25 mm

mouth opening within one month post operatively with continuous physiotherapy.

Discussion

The diagnosis of Tmj ankylosis along with non-union in the same side angle region left us to think about the possibilities of what would have happened.

20 years ago, the patient went through a road traffic accident, followed by tracheostomy, for the management of his maxillofacial injuries. We don't have any record of that surgery; except we can see wiring present concerning bilateral fronto-zygomatic suture & left infraorbital rim. We can also say that there would have been fracture of right angle & bilateral condyle, when we appreciate right ankylosed condyle & left deformed condyle.

The horizontally & vertically unfavourable fracture line can be seen about right angle of mandible, leaving it at the mercy of medial pterygoid muscle allowing the proximal part to get distracted upwards & medially.

Mandibular fractures are extremely common in maxillofacial trauma, and condylar fractures account for 17.5–52% of them.[3] there is a high incidence of ankylosis after condylar fracture. Recent studies pointed out the fact that there are high chances of ankylosis after sagittal or fracture of medial pole of condyle [4-7], that is laterally or superiolaterally disc placed [8].

In addition, when a condylar head is fractured at the same time as the anterior mandible, the condylar stump can displace laterally and promote fusion [9]. In 1982, Rowe made the following observation: “In both the adult and the older child there is an inadequately recognized cause of ankylosis that is due to an anteroposterior split of the condyle. The lateral fragment passes upward over the outer rim of the glenoid fossa and the inner pole, to which the lateral pterygoid muscle is attached, is displaced anteromedially. The associated displacement

of the intra-articular disc, and the accompanying loss of mobility, frequently combine to produce ankylosis.” [9]. The lateral fragment of condyle can only get displaced upward over the outer rim of glenoid fossa when there is any other associated fracture of mandible, leading to an increase in intercondylar width.

As in this case fracture of angle of mandible, lead to outward positioning of lateral part of condyle. Immobilization of lower jaw due to inter-maxillary fixation & later post-traumatic pain, further gives a favourable environment for ankylosis. Medially & upward distracted ramus of mandible further proceeded with union of medial part of ramus with zygomatic arch. In this case, ankylosed portion was released from the zygomatic arch & was fixed with fracture portion of the angle of mandible, giving us the required results.

Conclusion

Although this case is 2 decades old, even today many condylar fractures are left untreated or even worse undiagnosed, putting the patient to risk of having ankylosis in his/her future. Although the rate of ankylosis caused by condylar fracture is not very high (<5%), it is the most serious(>5%), and it is the most serious complication because of the limitation of mouth opening [10].

The incidence of ankylosis after condylar fracture is more in developing countries than in developed countries. Because of the inexperience of medical or dental doctors on duty at a smaller level, adding less availability of radiographic investigations makes it very difficult for the patient to get correctly diagnosed. Also, longer periods of IMF may cause iatrogenic ankylosis. We emphasize that surgical treatment of condylar fractures enables not only anatomical reduction and stable fixation of the fractured fragment, but also

restoration or reconstruction of the soft tissues of the joint, namely “open functional treatment” [11].

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