



Management of Superolateral Dislocation of Intact Mandibular Condyle: A Case Report

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Introduction

Dislocation of the temporomandibular joint occurs when the temporomandibular joint is subject to large-amplitude movements, or suffers an injury. Dislocation of the mandibular condyle has been described as the clinical condition “when the condyle head is displaced out of the glenoid fossa but still remains within the capsule of the joint”. According to displacement direction complete dislocation of the mandibular condyle from the glenoid fossa can be classified into four groups: anterior, posterior, lateral, and superior dislocations. Antero-medial dislocation is the most common one owing to the pull of the lateral pterygoid muscle. All the groups except anterior dislocation are rare. These uncommon dislocations usually result from acute trauma and are associated with mandible fracture. [1]

Superior and Lateral displacement of the mandibular condyle is a rare entity. Superior and lateral dislocations are frequently related to a high energy mechanism of trauma. Superior and lateral dislocations is frequently associated with fractures of mandible but is rarely associated with other facial fractures. This case report attempts to add our case to the pre-existing numerical data along with the review of literature to understand the dynamics of etiology, pattern, and current methods of treatment of such dislocations.[2]

Case Report

A 56-year-old man moderately built and moderately nourished, with non-contributory medical, social and cultural records, was referred to outpatient department of Kothiwal dental college, Moradabad, India, after having his four-wheeler collided with the truck from back side. The patient presented with maxillofacial trauma gave history of bleeding from his mouth and had a history of vomiting. After having been examined for severity of injury by department of neurosurgery, the patient was treated conservatively for by a neurosurgeon and then referred to department of oral and maxillofacial surgery. Clinical examination demonstrated a gross facial asymmetry with diffuse edema in the midfacial area and a sutured lacerated wound over right eyebrow. Tenderness and step over bilateral Infraorbital region. Maxillary mobility noted over base of nose diffuse, bony-hard swelling in the left preauricular region. Intra-oral examination revealed right parasagittal palatal laceration. Tenderness over bilateral buttress, symphysis areas, restricted mouth opening of 24mm with a right Para symphyseal splay between the mandibular lateral incisor and canine. Deranged occlusion with anterior open bite. Department of ENT was also consulted for evaluation of injuries in relation to tympanic membrane.



Figure-1,2- Frontal and lateral profile of patient



Figure-3- Palatal view of patient



Figure-4- occlusion of patient

Three-dimensional computed tomography (3D CT) scans were taken, which presented a superolateral dislocation of the bilateral mandibular condyle as well as fractures in, Right para-symphyseal region of mandible, right Para alveolar palatal split and maxillary dentoalveolar fracture, left incomplete ZMC fracture.



Figure-5-Coronal CT section depicting supero-laterally dislocated bilateral mandibular condyle



Figure-6- 3D reconstruction CT of patient

Under local anaesthesia, IMF was done after which patient was admitted to the hospital and with nasotracheal intubation followed by manual reduction was planned. Multiple attempts were made to reduce condyle in its anatomic position by several methods described for closed reduction but it was not possible to place the thumb over the molar region in order to push mandible downwards to achieve reduction. All attempts were unsuccessful. Then right-angle region of the mandible was exposed via small submandibular incision, and a through-and-through hole was drilled by help of trocar to pass a traction wire. The traction wire was held firmly with a wire tightener and pulled downward and forward to reduce the both condyles individually condyle, and a channel retractor was engaged in the sigmoid notch to pull the condyle downward in the fossa (Finck's technique. Once both the condyles were reduced, mandibular movements were checked and condylar movements were palpated in the glenoid fossae. Semirigid fixation done on right Para symphysis and zygomatic buttress Pre-injury mouth opening was achieved on the table. IMF was done for 3 weeks, and the patient was kept on semisolid diet for 4 weeks.



Figure-7-Finck`s technique to reduce superolateral dislocation

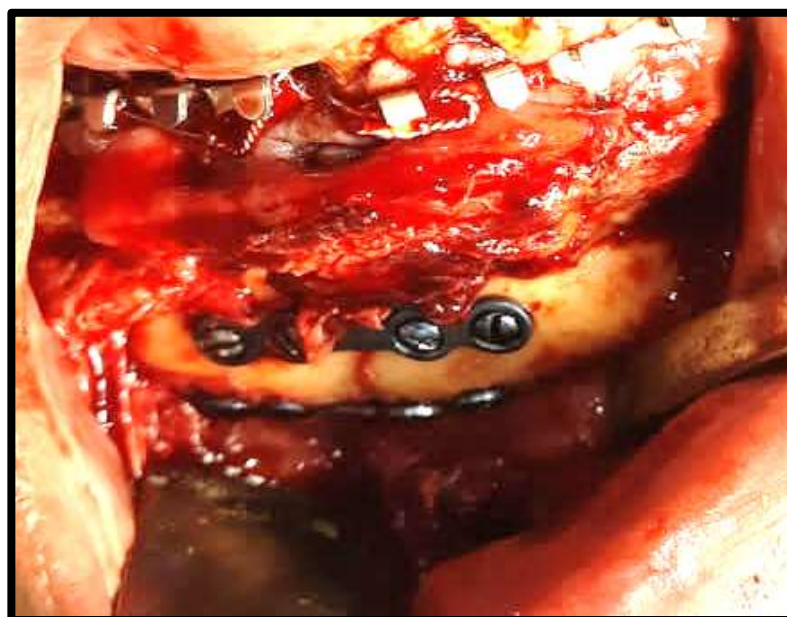


Figure-8-Semirigid fixation for right para symphysis fracture

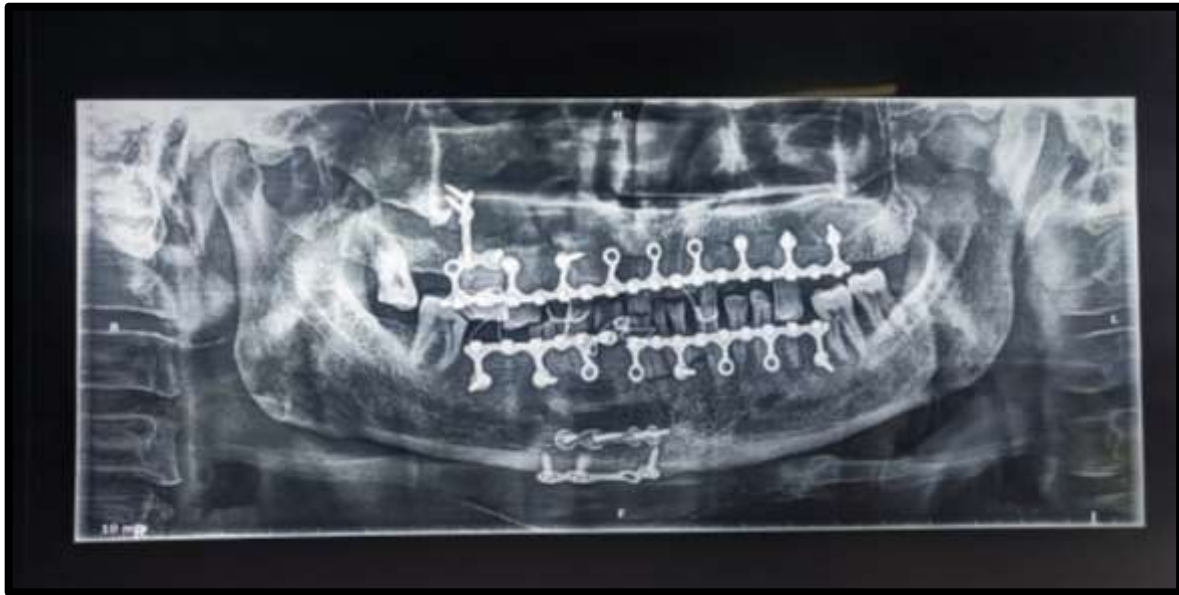


Figure-9-Postoperative OPG

Discussion

The rarity of these dislocations can be attributed to the varying anatomy of the condyle, the direction of pull of muscles attached to the condyle and low incidence of skull base fractures from an indirect blow.

Allen and Young classified lateral dislocation of the mandibular condyle into type I (lateral subluxation) and type II (complete dislocation) in which the condyle is forced laterally and then superiorly. Satoh et al sub-classified type II dislocations into type IIA, in which the condyle is not hooked above the zygomatic arch; type IIB, in which the condyle is hooked above the zygomatic arch; type IIC, in which the condyle is lodged inside the zygomatic arch, which is fractured. According to these classifications our case falls under the type IIA category. Allen and young 1 suggested that an associated fracture of anterior mandible, near the symphysis, is a prerequisite for a type II dislocation but Li et al recently described a case of type IIB dislocation without any associated mandibular fracture. Based on their report, there arises a need to modify the existing classification of lateral dislocation of intact condyle. [3]

Tauro et al propose certain modifications in the existing classification:

Type I—Lateral subluxation

Type II—Complete dislocation with associated fracture of anterior mandible

Type IIA—Condyle not hooked above the zygomatic arch

Type IIB—Condyle hooked above the zygomatic arch

Type IIC—Condyle lodged within the zygomatic arch which is fractured

Type III—Complete dislocation without associated fracture of anterior mandible

Type IIIA—Condyle not hooked above the zygomatic arch

Type IIIB—Condyle hooked above the zygomatic arch

Type IIIC—Condyle lodged within the zygomatic arch which is fractured

Li et al explained the dynamics of dislocation by simulating the dislocation on a dried skull. They concluded that, the factors considered essential to such an injury occurring are the size and the direction of applied force, the position of the jaw during impact (the mouth may be in a wide-open position), and the anatomic features of the joint (joint capsule and pterygoid muscles may be flabby). In most of the reported cases, the etiology was road traffic accidents (motor-bike accident). We suggest that more than one impact is necessary for such type of dislocations to occur with or without an associated fracture of the mandible. In our case in view of the nature of trauma there must have been another impact from a different direction to the already fractured mandibular symphysis (primary impact) to cause extreme lateral dislocation of the left condyle out of the glenoid fossa, overriding the zygomatic arch. In other words, the initial (primary) impact to the chin resulted in fracture of the para-symphysis and subsequent (second) impact resulted in the dislocation.[2] Even in the case of type IIB dislocation of condyle without any associated fracture of anterior mandible as described by Li et al, there was more than one impact and a tiny fracture piece detached from the top of the left condyle had reduced the bulk that would have facilitated the hooking of left condyle over the zygomatic arch.[4]

The goal of treatment of any dislocation is the return of the condyle to its original physiologic position. If the condyle is hooked on the zygomatic arch, manual reduction might be difficult, thereby requiring open reduction or strong traction. Open reduction is to be reserved for those cases not amenable to closed reduction. Ferguson and Kapila have described use of traction through wires placed in holes drilled in the exposed angle region. Shen et al. used mandibular sagittal split ramus osteotomy and condylar reduction. Direct exposure of dislocated condyle through a preauricular approach is useful for difficult cases and more so in long standing ones (fibro-osseous ankylosis) where condylectomy with or without arthroplasty would be necessary. Rigorous mouth-opening exercises are to be advocated as early as possible to prevent fibrosis from developing postoperatively.

Conclusion

Superior or lateral dislocation of the intact condyle is often neglected yet requires thorough physical and radiographic examinations. Early diagnosis and management are strongly emphasized because prolonged dislocation can make reduction more difficult, leading to unsatisfactory results. Manual reduction is the first treatment option for superior-lateral condylar dislocations; in delayed cases, however, open reduction is highly recommended.

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