

BILATERAL DISLOCATION OF INTACT MANDIBULAR CONDYLE ASSOCIATED WITH PARASYMPHYSIS FRACTURE: A RARE CASE REPORT

Gourav Popli¹, Vishal Bansal², Avi Bansal³, Srijan Srivastav⁴

1.Senior Lecturer, Department of Oral and Maxillofacial Surgery, Subharti Dental College, Meerut

2.Professor and Head, Department of Oral and Maxillofacial Surgery, Subharti Dental College, Meerut

3.Senior Lecturer, Department Oral and Maxillofacial Surgery, Subharti Dental College, Meerut

4.Postgraduate Student, Department of Oral and Maxillofacial Surgery, Subharti Dental College, Meerut

ABSTRACT:

Superior or lateral dislocation of intact mandibular condyle is a rare and often neglected condition with high incidence of unsatisfactory results. Only 23 cases were reported in the English Literature by 2012 and amongst these only 9 involved the bilateral intact condyles. We describe a case of bilateral dislocation of intact mandibular condyle with associated parasymphysis fracture. Excellent results were observed with closed reduction of dislocated condyles and open reduction internal fixation of associated mandibular fracture. We intend to discuss the dynamics, diagnostic approach and clinical management of such dislocations.

Keywords: Superolateral dislocation, Mandibular fracture, Intact Condyle, Parasymphysis fracture, Temporomandibular joint



INTRODUCTION:

Temporomandibular joint dislocation occurs when it is subjected to large-amplitude movements or suffers an injury, when condyle leaves the glenoid fossa due to movement beyond the normal.^[1] Temporomandibular Joint dislocation have been classified into 4 groups:- Anterior, Posterior, Lateral and Superior dislocation.² All groups other than anterior dislocation are rare with the superolateral dislocation being the rarest.^[2] Shen Longduo et al in their retrospective analysis, observed only 23 cases of superolateral dislocation of mandibular condyle in English literature from 1969-2014.^[3] David Tauro attributed the rarity of these dislocations to the varying anatomy of condyle, direction of

muscle pull attached to the condyle and fuse box mechanism leading to condylar fracture to prevent skull base injuries.^[4] Due to their extremely rare occurrence, superolateral condylar dislocations are often misdiagnosed and neglected.^[5] Yoshii et al recommended that, whenever signs, symptoms and clinical course are not typical of mandibular fractures, then possibility of unusual condylar dislocation should be considered.^[6]

We report a case of bilateral dislocation of intact condyles involving superolateral dislocation of right side and lateral dislocation on left side associated with mandibular parasymphysis fracture.

CASE DETAIL:

A 28 year male patient was referred to the department of Oral and Maxillofacial Surgery with a history of motorbike accident 1 week back. Patient complained about the restricted jaw movements and open mouth subsequent to trauma. Detailed history revealed a brief period of unconsciousness and multiple orthopaedic injuries. Patient was admitted in orthopaedic ward from last 1 week. Clinical features involved restricted mandibular movement, open bite with bilateral posterior gagging, facial asymmetry, malocclusion and mandibular retrognathism with chin laceration slightly towards right side. Palpation at preauricular region revealed bony bulge on both sides. Unusual clinical features and bulge in preauricular region on both sides indicated the need for CT scan face with 3-D reconstruction. CT scan revealed superolateral dislocation of intact condyle on right side and lateral dislocation of intact condyle on left side associated with right parasymphysis fracture. Patient was planned for reduction under general anaesthesia and was shifted to Operation Theatre 2 days after reference. Manual reduction was achieved with the help of mouth props which acted as fulcrum at molar region and simultaneous upward force on chin. IMF was done by applying bigonial pressure to achieve satisfactory pretrauma occlusion on both sides. Exposure of right parasymphysis fracture was carried out followed by internal fixation by 2 plates based on Champy's line of osteosynthesis. Postoperative IMF was done for 10 days followed by jaw physiotherapy. But due to poor patient

compliance to jaw physiotherapy, mouth opening at 1 month follow up was 30 mm. unfortunately, patient was uncooperative, and long-term follow-up could not be performed.

DISCUSSION:

Superior or Lateral dislocations are rare because mandibular condyle is encircled by articular capsule, temporomandibular ligament, articular disc, lateral pterygoid muscle and other structures which restrict the movements.³ Allen and young have classified the lateral dislocation of the mandibular condyle into :- Type 1 (lateral subluxation) and Type 2 (complete dislocation), in which the condyle is forced laterally and then superiorly.^[7] Later, Satoh et al subclassified type 2 dislocations into type 2A, in which the condyle is not hooked above the zygomatic arch; type 2B, in which the condyle is hooked above the zygomatic arch; type 2C, in which the condyle is lodged inside the zygomatic arch, which is fractured.^[8] According to these classifications, our case involved type 2B on right side and type 2A on left side. Allen and Young reported the first case of lateral dislocation of the intact mandibular condyle in English literature in 1969 and suggested that an associated fracture of anterior mandible, near the symphysis is a prerequisite for Type 2 dislocation.^[7]

Shen Longduo reviewed 23 cases the condition in literature from 1969 to 2012 and found the sex ratio to be 3.6:1 (male: female). Among these, there were 3 cases of Type 1 and 20 of Type2 dislocation;

14 patients had unilateral dislocation and 9 had bilateral dislocations. In 19 cases, dislocation was accompanied by fracture at other mandibular sites and in 4 cases there was no fracture at any other mandibular site.^[3] It is a general consideration that fracture of symphysis and/or body of mandible is an essential prerequisite for lateral dislocation of intact condyle. However, recently 4 cases have been reported in last decade, where mandibular or zygomatic fractures were not associated with lateral dislocations. Hegde et al in 2010 reported a case of unilateral superior type 2B dislocation of intact condyle without any associated fracture.^[9] Li et al in 2009 also described a Type 2B dislocation without any associated mandibular fracture. This reported case involved detached tiny fractured piece from the top of condyle which might had reduced the bulk and facilitated the hooking of condyle above the zygomatic arch.^[10] Even, David Tauro et al recommended the modification of classification by Satoh et al and proposed the inclusion of Type3 and mentioned it as complete dislocation without associated fracture of anterior mandible. They classified it into Type 3A, 3B and 3C which were similar to Type 2A, 2B and 2C.^[4]

Li et al enumerated the factors essential for Superior or Lateral dislocation as size and direction of force, position of jaw during impact and anatomic factors of joint.^[10] It is generally considered that more than one impact causes the superolateral dislocation. First impact results in fracture of the anterior mandible, either in symphyseal, body or

angle region and the second impact results in dislocation.^[4] Associated mandibular fracture from first impact promotes the rotation and movement of ramus, thus facilitating the superior or lateral dislocation of intact condyle.^[4] However, our case was a motor bike related accident and probably had a high impact to the jaw. The force from the front and upward direction must have resulted in the bilateral condylar dislocation, rupturing the capsule and ligament beside parasymphysis fracture. Parasymphysis fracture caused the flaring at dentoalveolar border, compression at lower border and rotation of both the ramus leading to lateral dislocation of both intact condyles. Secondarily during the accident, driver would have suddenly opened his mouth due to fright, thus displacing the condyles lateral to the glenoid fossa from the impact of force, rupturing the capsular and ligamentous attachments and driving the condyles superiorly and laterally to the zygomatic arches.

These type of conditions are rare and often misdiagnosed, so, Worthington et al described certain diagnostic features which were:- Malocclusion, Open bite, Restriction of mandibular movements, Apparent loss of ramus height and Facial asymmetry.^[11] All the above enumerated features were observed in our case, which directed the authors to go for CT scan of face with 3-D reconstruction. Authors recommended that, one should consider an unusual condylar dislocation whenever clinical features are atypical of mandibular fractures. CT scans with 3-D

reconstruction can demonstrate dislocated condyle, dislocation type and presence of other related features.^[2] In present case, CT scan revealed superolateral dislocation of right side and lateral dislocation of left side associated with mandibular fracture in parasymphysis region.

It is a general consideration that early diagnosis and reduction should be the aim of treatment. The longer the lateral dislocation of condyle exists, the more difficult the reduction is and the worse the prognosis is, as the delay in reduction induces fibrosis, resulting in imperfect or unsuccessful reduction.^[2] Manual/closed reduction is the simplest, least traumatic and safest of all the alternatives. Thus, authors recommended that early manual reduction under general anaesthesia should be the first choice for condylar dislocations.^[12] Reduction under general anaesthesia not only alleviates the pain of reduction, but also gives the surgeon an opportunity to reduce and fix associated fractures and an option to perform open reduction if close reduction fails in long standing cases.^[4] Waiting time of treatment correlates with higher rate of open reduction.^[13] If the closed/manual reduction under general anaesthesia is unsuccessful, combined method involving open traction with closed reduction should be attempted as early as

possible.^[2] In the present case, closed reduction with the help of mouth props as fulcrum in molar region and simultaneous upward chin pressure reduced the dislocated condyles. The reduced condyle has a tendency to return to preoperative position. To prevent this, 2 week of IMF is recommended by various authors. In addition, IMF also facilitates healing of damaged ligaments.^[2] In our case, IMF was done for 10 days postoperatively. The clinician has to decide between a short period of immobilisation with a risk of dislocation, or prolonged immobilisation with a risk of ankylosis.^[11]

CONCLUSION:

Superior or lateral dislocation of the intact condyle is often neglected and rare condition with high incidence of unsatisfactory results. Early diagnosis and management are strongly emphasized. We attribute satisfactory results in our case, to the early and accurate diagnosis. Moreover, multiple factors determining the outcome are early diagnosis and reduction, post-operative IMF and patient compliance for physiotherapy. Authors believe that the present case report will add to the existing academic literature and will be beneficial for the clinicians in attaining the early diagnosis, reduction and rehabilitation.

REFERENCES:

1. Baldwin AJ: Superior dislocation of the mandibular condyle into the middle cranial fossa. *J Oral Maxillofac Surg.* 1993;48:623-628.
2. Bu SS, Jin SL, Yin L: Superolateral dislocation of the intact mandibular condyle into the temporal fossa: review of the literature and report

- of a case. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2007;103:185-189.
3. Shen L, Li P, Long J, Tian W, Tang W. Management of superolateral dislocation of the mandibular condyle: a retrospective study of 10 cases. *J Craniomaxillofac Surg.* 2014; 42(1):53-58.
 4. Tauro D, Lakshmi S, Mishra M. Superolateral dislocation of the mandibular condyle: report of a case with review of literature and a proposed modification in the classification. *Craniomaxillofac Trauma Reconstr.* 2010;3:119-123.
 5. Kim BC, Kang Samayoa SR, Kim HJ. Reduction of superior-lateral intact mandibular condyle dislocation with bone traction hook. *J Korean Assoc Oral Maxillofac Surg.* 2013;39(5):238-241.
 6. Yoshii T, Hamamoto Y, Muraoka S, Teranobu O, Shigeta Y, Komori T. Traumatic dislocation of the mandibular condyle into the temporal fossa in a child. *J Trauma.* 2000;49:764-766.
 7. Allen FJ, Young AH. Lateral displacement of the intact mandibular condyle. A report of five cases. *Br J Oral Surg.* 1969;7(1):24-30.
 8. Satoh K, Suzuki H, Matsuzaki S. A type 2 lateral dislocation of bilateral intact mandibular condyles with a proposed new classification. *Plat Reconstr Surg.* 1994;93(3):598-602.
 9. Hegde S, Kamath VV, Deepa M, Priya A. Superolateral dislocation of the mandibular condyle not associated with fracture: A case report. *J Maxillofac Oral Surg.* 2010;9(4):424-427.
 10. Li Z, Li ZB, Shang ZJ, Wu ZX. An unusual type of superolateral dislocation of mandibular condyle: discussion of the causative mechanisms and clinical characteristics. *J Oral Maxillofac Surg.* 2006;67(2):431-435.
 11. Worthington P. Dislocation of the mandibular condyle into the temporal fossa. *J Maxillofac Surg.* 1982;10:24-27.
 12. Kallal RH, Gans BJ, Lagrotteria LB. Cranial dislocation of mandibular condyle. *Oral Surg Oral Med Oral Pathol.* 1977;43:2-10.
 13. Amaral MB, Bueno SC, Silva AA, Mesquita RA. Superolateral dislocation of the intact mandibular condyle associated with panfacial fracture: a case report and literature review. *Dent Traumatol.* 2011;27:235-240.

FIGURES:



Figure 1: Axial view

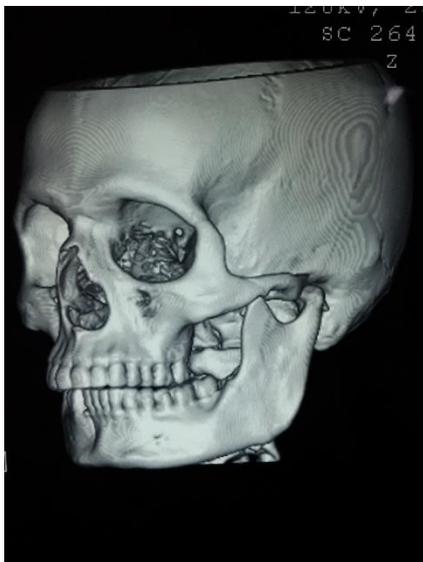


Figure 2: Left condyle- 3D Reconstruction



Figure 4: Postoperative maximal mouth opening



Figure 5: Postoperative Occlusion

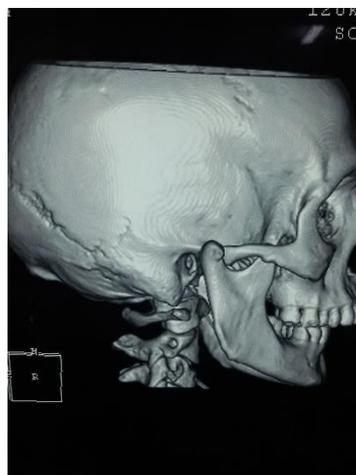


Figure 3: Right Condyle 3D Reconstruction