

# Total Alloplastic Joint Reconstruction in a Patient With Temporomandibular Joint Ankylosis Following Condylar Dislocation Into the Middle Cranial Fossa

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Traumatic dislocation of the mandibular condyle into the middle cranial fossa is an extremely rare complication of maxillofacial injury. The rarity of this injury has led researchers to propose a set of anatomic features that might explain this injury. These features include a small rounded condylar head, hyperpneumatization of the temporal bone, a thin roof over the glenoid fossa, and missing posterior teeth. The greatest risk factor for this injury is a blow to the chin when the mouth is open without fracture of the condyle (and therefore no dissipation of the forces). This nonfracture of the condyle (especially in patients with thicker condylar necks) results in the concentration of all this energy on the roof of the glenoid fossa, resulting in its fracture and subsequent superior displacement of the mandibular condyle into the middle cranial fossa (MCF). Even rarer are cases of temporomandibular joint (TMJ) ankylosis after dislocation of the condyle into the MCF. This report describes a case of TMJ ankylosis of an intact condyle into the MCF that also was associated with a condylar head fracture on the contralateral side. A literature review and treatment with total alloplastic TMJ reconstruction also are discussed.

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*J Oral Maxillofac Surg* ■:1-5, 2016

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displacement of the mandibular condyle into the middle cranial fossa (MCF).

Even rarer are cases of temporomandibular joint (TMJ) ankylosis after dislocation of the condyle into the MCF. This report describes a case of TMJ ankylosis of an intact condyle into the MCF that also was associated with a condylar head fracture on the contralateral side. A literature review and treatment with total alloplastic TMJ reconstruction also are discussed.

## Report of Case

A 17-year-old boy presented to the maxillofacial and oral surgery outpatient clinic of the Chris Hani Baragwanath Academic Hospital (Johannesburg, South

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Received May 31 2016

Accepted July 25 2016

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0278-2391/16/30624-3

<http://dx.doi.org/10.1016/j.joms.2016.07.020>

Africa) complaining of the inability to open his mouth. He provided a history of being involved in a motor vehicle accident 6 months previously, after which he lost consciousness for an unspecified period. The patient was admitted to intensive care unit for 1 week, after which he was transferred to a general ward, where he stayed for 3 months. The extent of his injuries while he was in the hospital could not be ascertained, but no surgery was performed on him. Physical examination showed scarring on the chin, 4 missing upper anterior teeth, an anterior open bite, premature occlusal contact on the right posterior teeth, and an inability to open his mouth beyond 3 mm.

Conventional and panoramic radiographs failed to show any mandibular fractures. Computed tomographic (CT) scans visualized superior dislocation of an intact right mandibular condyle into the MCF and a left condylar head fracture with areas showing bony fusion (ankylosis) between the condyle and the glenoid fossa bilaterally (Fig 1). The diagnosis of bilateral TMJ ankylosis after left condylar head fracture and dislocation of the right condylar head into the MCF was made.

Neurosurgical consultation showed no focal deficit or signs of cerebrospinal fluid leak. For this reason, and because of the potential dangers associated with the retrieval of the intruded condylar head segment, a joint decision was taken not to retrieve the dislocated condylar head but rather to let it consolidate for 6 months.

Surgical planning consisted of bilateral arthroplasty in the ankylotic articulation accompanied by total joint

replacement using titanium joint prostheses (Biomet 3i, Jacksonville, FL). Exactly 1 year after the injury, arthroplasty was performed through a preauricular incision as modified by Al Kayat and Bramely. An arthrotomy cut was made at the level of the sigmoid notch for removal of the extracranial ankylosed fragment of the dislocated condyle. Then, the temporal region was flattened on the 2 sides, followed by reconstruction with the Biomet Microfixation TMJ stock replacement system (Figs 2, 3). Immediate postoperative maximal interincisal opening (MIO) was 28 mm. Postoperatively, the patient was placed on light elastics, discharged after 72 hours, and referred for physiotherapy for 3 months.

MIO at 3-year follow-up was 35 mm, occlusion was intact, and the patient was functioning optimally (Fig 4).

## Discussion

The paucity of reported cases of condylar dislocation into the MCF is evidence of the rarity of this event. The first reported case in the English-language literature was by Dingman and Grabb in 1963.<sup>8</sup> Including the present case, 55 case presentations have been reported in the English-language literature.

Most reported reviews have shown a pediatric and female predilection.<sup>8-11</sup> Patients with condyle dislocation into the MCF generally present with nonspecific clinical features, such as preauricular tenderness, deviation of the mandible to the ipsilateral side, malocclusion with anterior open bite, and severe restriction in mandibular movement.<sup>2,5,10-12</sup> Cerebral



**FIGURE 1.** Computed tomogram showing displacement of the right mandibular condyle in the middle cranial fossa and bony ankylosis of the left temporomandibular joint.

Rikbotso and Bobat. Reconstruction of TMJ Ankylosis. *J Oral Maxillofac Surg* 2016.

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