Evaluation of Fractured Condylar Head Along the Sagittal Plane: Report of Three Cases

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Abstract There are case reports of sagittal fractures of the condylar head leading to bifid condyle. However bifid condyles maybe found in patients with no history of trauma. A split in the sagittal plane of the condyle is not visible with a lateral, oblique or panoramic radiographs but only with anteriorposterior, transorbital projections or CT scan of the temporomandibular joint. The chances of condyle being split in the sagittal plane may be due to the medial pole extending beyond the condylar neck, moreover the condyle is composed of cancellous bone covered by a thin layer of cortical bone. Here we are presenting three case reports of Sagittal split condyles and stress the need for inclusion of these type of fractures in the classification of condylar fractures.

Keywords Sagittal · Split · Condyle

Introduction

Incidence of the mandibular condyle fracture is 25–30%. Fractures of the condyle are classified based upon the site of the fracture line, relation of the condylar head with the glenoid fossa and to the ramus. Dislocation of the fractured condyle may be anterior, posterior, or lateral. Traumatic sagittal fracture of the condyle is a rare finding and is easily missed on plain films like lateral oblique, or panoramic radiograph. It could be detected with an anteroposterior, or transorbital projections of TMJ. We are reporting three cases of sagittally split condyles. Neff et al. presented a

subclassification of intracapsular fractures of the mandibular condyle. They distinguished a fracture type A with displacement of the medial parts of the condyle maintaining vertical mandibular dimensions, a fracture type B affecting the lateral condyle with reduction of the mandibular height, and a fracture type M that include high extracapsular fracture—dislocation [5].

Case Report: 1

A 22 year old male patient reported to our unit with a chief complaint of limited mouth opening & pain in front of the right ear since 9 days. Patient had suffered trauma to the chin when he fell off his two wheeler, hitting his chin onto the ground. Clinical examination revealed deviation of the mandible towards the right side on mouth opening, & tenderness was elicited in the right preauricular region. Maximal incisal opening on reporting was 18 mm & occlusion was found satisfactory. No shift of the dental midline was evident. There was no evidence of head injury, or bleeding from the ear or nose. Pantomogram revealed a medially displaced right condylar head fracture. Upon an attempt to retrieve the fractured head of the condyle, under general anaesthesia, the lateral & medial poles were found detached from each other & were separately retrieved (Figs. 1, 2, 3).

Case Report: 2

An 18 year old female patient reported to our unit with a chief complaint of inability to open the mouth since 3 months. Patient gave a history of road traffic accidents, 3 months back, where she was hit by a 4 wheeler and fell

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Fig. 1 PA Mandible showing fractured left condyle in Case 1

with her chin hitting the ground. It was then followed by bleeding from left ear and no evidence of head injury was noted. On examination there was a linear scar over the chin and her facial profile was convex. Her maximum incisal opening was 20 mm with left side deviation of the jaw during mouth opening. On palpation masseter muscle tenderness and left pre auricular tenderness were elicited. Right TMJ movements were normal and occlusion was found to be satisfactory. Oral pantomogram revealed fibrous ankylosis in relation to the left TMJ. The case was treated with left condylectomy with resection of the ankylotic mass and the condylar head was found to be sagittally split (Figs. 4, 5, 6).

Case Report: 3

A 48 year old female patient reported to our unit with chief complaint of pain and swelling over the right side of the face since one day. Patient gave history of fall from the bike where she was a pillion rider. There was bilateral bleed from the ears with loss of consciousness and a single episode of vomiting. Following primary care at Govt. hospital she was referred to our unit. On reporting her GCS

Fig. 2 Cephalometric tracing of the anterior posterior projection of the Mandible in Case 1

Fig. 3 Sagittally split condyle in Case 1

score was 15. She was referred to ENT regarding ear bleed, clinically left tympanic membrane rupture was diagnosed and was advised for a CT scan, following which temporal bone fracture was diagnosed and was advised conservative management. Clinical examination revealed gross facial asymmetry and edema of lower one-third of face on the right side. Mouth opening was 19 mm. There was right body fracture. Lateral tomogram, Orthopantomogram and,

Fig. 4 OPG showing left condylar mass in Case 2

Fig. 5 Sagittally split condyle in Case 2

Fig. 6 Ankylosed mass in Case 2

PA skull were taken which revealed eminence fracture and condylar head fracture on left side. CT Scans revealed sagittal split of the left condylar head and was medial pole displaced. She was treated with open reduction and internal fixation for the right body fracture and maxillo-mandibular fixation for the left condyle (Figs. 7, 8).

Fig. 7 Lateral tomogram showing fractured condyle in Case 3

Discussion

Since then only 25 cases have been published [3, 4]. A study by Yamakoa et al. on the assessment of fracture of the mandibular condyle by the use of computed tomography, which included 33 patients, reported the sagittal splitting of the condyle with an incidence of 9.8% [9]. These fractures have an high incidence of subsequent ankylosis and so their early identification is very important [1]. These case reports presents the sagittally split condylar head. Sagittal or vertical fracture of condyle head and chip fracture of the medial part of the condylar head are very rare. There are case reports of sagittal fractures of the condylar head leading to bifid condyle. However bifid condyles maybe found in patients with no history of trauma [1]. A split in the saggital plane of the condyle is not visible with a lateral, oblique or panoramic radiographs but only with anteriorposterior, transorbital projections of the temperomandibular joint [9] (Figs. 9, 10).

The chances of condyle being split in the sagittal plane may be due to the medial pole extending beyond the condylar neck moreover the condyle is composed of cancellous bone covered by a thin layer of cortical bone [7]. Hovinga [2] reported a case of split condyle which healed as a bifid condyle. Thomason and Yusuf [8] reported two cases of bifid condyle formed after remodeling of fractured

Fig. 8 Cephalometric tracing of the Lateral tomogram in Case 3

Fig. 9 Axial view of the CT scan showing fractured and medially displaced left medial pole of condyle

condyles. Poswillo suggested that bifid condyle might develop after remodeling of traumatic injury to the condyle [6]. The retrieval of the condyle were done here since the patients had restricted mouth opening. CT imaging would definitely help in the early detection of sagittal split of the condyle. We did a cephalometric tracing of the anterior

Fig. 10 Coronal view of the CT scan showing the fractured condyle of the left side with medial pole displaced

posterior projection of the mandible, which demonstrated the displacement of the split condylar heads.

As the chances of bifid condyle formation or ankylosis were high, we decided to surgically intervene and remove the split condylar heads in both the cases. In the second case there was already a fibrous ankylosis taking place.

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