



A Novel Management of Left Condylar Neck Fracture with Lateral Override: A Rare Case Report

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(Received: 04 February 2024

Revised: 11 March 2024

Accepted: 08 April 2024)

KEYWORDS

Condylar fracture, temporomandibular joint, lateral override, maxillofacial trauma, fracture reduction.

ABSTRACT:

Condylar fractures are infrequent but challenging injuries in maxillofacial trauma. They are caused by high-energy trauma, such as motor vehicle accidents, falls, or sports injuries. They make up 5 to 8% of all mandibular fractures. An in-depth comprehension of condylar fracture classification, etiology, diagnostic results, and management techniques is required. This report emphasizes a rare case of lateral override of the condyle and the importance of a comprehensive approach in managing condylar fractures to achieve optimal outcomes.

Introduction:

Condylar fractures, although relatively uncommon, are significant within the domain of oral and maxillofacial surgery due to their intricate nature and potential impact on mandibular function, especially concerning the temporomandibular joint (TMJ) dynamics¹. These fractures often present complex diagnostic challenges and require tailored management strategies to achieve optimal outcomes². Among the diverse presentations of

condylar fractures, lateral override cases represent a particularly rare subset that necessitates specialized approaches for effective treatment³. A comprehensive understanding of condylar fractures, including their classification, diagnostic protocols, and treatment modalities, is essential for clinicians to navigate the complexities associated with these injuries⁴. Several studies have delved into the intricacies of condylar fractures, providing insights into fracture patterns,



associated soft tissue injuries, and functional considerations post-treatment¹. The diagnostic accuracy of cone-beam computed tomography (CBCT) in assessing condylar fractures, highlights the importance of advanced imaging modalities in precisely evaluating fracture displacement and orientation⁵. In this context, we delve into a detailed analysis of managing a rare left condylar neck fracture with lateral override. This case presents a unique challenge due to the atypical fracture pattern and potential implications on mandibular function.

Case Presentation:

A 22-year-old male patient residing in Ramtek sought medical attention due to persistent pain localized in the lower left back region of his jaw, a complaint that had been troubling him for the past 4 days. This pain stemmed from a recent road traffic accident on 22nd June 2023, during which the patient fell from his bike. Despite this traumatic incident, the patient remained conscious, alert, and well-oriented to time, place, and person. Notably, there were no immediate signs of bleeding from the nose, mouth, or ears, except for localized bleeding observed from the chin region. Promptly after the accident, the patient received initial care at a nearby private clinic, where medical professionals applied dressing to the lacerations on the chin and prescribed

necessary medications to manage any associated discomfort or pain. There was no significant medical or dental history. During the extraoral examination, the patient's facial symmetry was noted to be bilaterally symmetrical, with competent lips. However, a notable finding was the presence of a laceration on the skin over the lower border of the mandible on the right side, likely resulting from the recent trauma (Fig 1). The examination of the temporomandibular joint (TMJ) revealed specific abnormalities, including a deviation observed on the left side during the opening of the jaw (Fig 2), indicating potential TMJ involvement in the patient's pain complaint. Palpation of the left TMJ elicited tenderness, further supporting this assessment. Additionally, TMJ movements were synchronized with no clicking sound noted on the right side, while limited movements were accessible on the left side, suggesting restricted TMJ function. Intraoral examination findings revealed stable occlusion (Fig 3 and 4). These findings collectively guided further diagnostic investigations, including Orthopantomogram (Fig 5) and Cone Beam Computed Tomography with the left condylar region (Fig 6 and 7), revealing a left condylar neck fracture with lateral override. Treatment planning and management strategies aimed at addressing the patient's presenting symptoms and optimizing his overall oral and systemic health.



Figure 1: Extraoral profile of the patient



Figure 2: Deviation of Mandible



Figure 3: Intraoral Profile - Right Side



Figure 4: Intraoral Profile - Left Side



Figure 5: Pre-operative Orthopantomogram

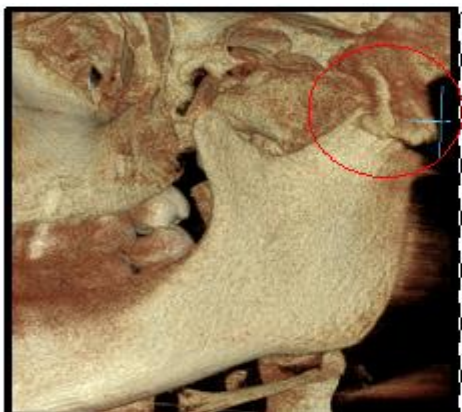


Figure 6: Pre-operative CBCT

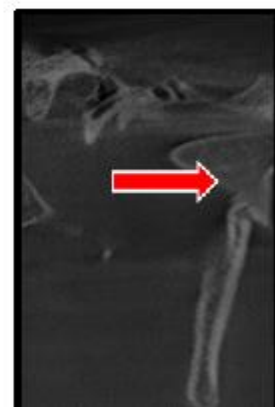


Figure 7: Pre-operative CBCT (cross-sectional view)



Management:

In the emergency phase, immediate attention was given to stabilizing the fractured condyle through intermaxillary fixation. This critical step aimed to prevent further displacement of the fractured condyle, mitigate potential malocclusion, and promote early healing. Following stabilization, the etiologic phase, focused on addressing the underlying cause of the fracture, was deemed unnecessary as the fracture was predominantly due to traumatic injury without systemic implications or underlying pathologies requiring specific interventions.

The pivotal aspect of the management lay in the surgical phase, where a detailed operative plan was executed to address the anatomical disruption caused by the condylar fracture. The operatory details involved thorough patient preparation, including draping and disinfection of the operative site with betadine. Airway management was ensured through nasal intubation on the right side, with the insertion and secure placement of an appropriate endotracheal tube. Local anesthesia with adrenaline was administered below the lower border of the mandible to

provide pain control and vasoconstriction, aiding in both surgical access and hemostasis.

The surgical procedure progressed with a carefully planned incision and layer-wise dissection to access the fracture site, expose the angle of the mandible, and dissect the masseter muscle for optimal visualization and access (Fig 8). Reduction of the condylar fracture was achieved using precision instruments, and a 24-gauge wire was passed for retraction of the segment to facilitate proper alignment and fixation. A delta plate, chosen for its rigidity and stability, was utilized along with four screws of appropriate dimensions to secure the fractured condyle in place, ensuring structural integrity and support during the healing process (Fig 9).

Attention to hemostasis was paramount throughout the procedure to minimize intraoperative bleeding and post-operative complications. The meticulous layer-wise suturing of tissues ensured proper closure and facilitated optimal wound healing (Fig. 10). Post-operatively, the patient was extubated and transferred to the Intensive Care Unit (ICU) for close monitoring, pain management, and further post-operative care.



Figure 8: Intraoperative - Incision & layer-wise dissection

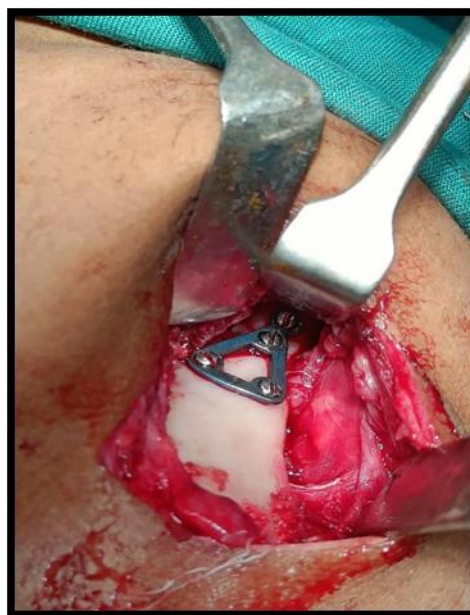


Figure 9: Intraoperative - Delta plate with four screws



Figure 10: Intraoperative - Layer-wise suturing



Figure 11: Post-operative Orthopantomogram

Follow-up & Outcomes:

Regular follow-up assessments were conducted to evaluate fracture healing, mandibular function, and symptom resolution. Radiographic imaging confirmed successful fracture reduction and stable fixation. The patient regained normal mandibular movements, with no pain or deviation on jaw opening. Occlusion remained stable, and there were no postoperative complications noted during the follow-up period.

Discussion:

Condylar fractures account for approximately 5 to 8% of all mandibular fractures and typically result from high-

energy trauma such as motor vehicle accidents, falls, or sports injuries⁶. These fractures necessitate a thorough understanding of their classification, etiological factors, diagnostic findings, and management strategies. Several classification systems, including those by Rowe and Killey⁷, MacLennan⁸, Wassmund, and Lindahl⁴, describe the degrees of displacement and fragmentation associated with condylar fractures, aiding in treatment planning. Etiological factors include both intentional trauma, such as interpersonal violence, and unintentional trauma, including accidents and sports injuries⁹. Diagnostic findings involve clinical examination and imaging studies, with common presentations including localized pain, swelling, limited mouth opening,



deviation on opening, and occlusal disturbances¹⁰. Management aims to achieve pain relief, stable occlusion, restoration of mandibular movements, and prevention of complications¹¹. Nonsurgical management is indicated for fractures without significant displacement or functional impairment, while surgical intervention is reserved for cases with severe displacement or dysfunction¹². Condylar neck fracture with lateral override is uncommon. Still, cases of the same are reported in the literature. Nicholas Zachariades et al. in their review reported that out of 368 cases, in 22 cases, the lateral overlap was observed on the right, and in 19 cases, on the left. More precisely, among bilateral cases, the lateral overlap was noted in 12 cases on the right and 6 cases on the left. In contrast, there were 10 unilateral cases on the right and 13 on the left¹³. Similarly in a recent study, Jasper Vanpoecke et al. reported that out of 90 cases of condylar fracture, 41 presented with lateral override¹⁴. In the above case the comprehensive surgical approach, characterized by meticulous planning, precise execution, and diligent post-operative management, was aimed at restoring anatomical integrity, promoting functional recovery, and minimizing potential complications associated with condylar fractures, thereby facilitating the patient's swift and favorable recovery process.

Conclusion:

Surgical procedures for condylar fracture typically involve intermaxillary fixation and open reduction with internal fixation. Regular follow-up is essential to ensure successful healing and functional recovery. Understanding the complexity of condylar fractures and the appropriate management strategies is crucial for optimal patient outcomes. For condylar fractures, patients with lateral override constitute an extremely rare category that requires specialized care.

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