



# An Unusual Case of Bilateral Fracture of Both Condyle and Coronoid Process of the Mandible - A Case Report

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## Abstract

Fractures of the mandibular coronoid process are extremely rare. However, fracture of coronoid process without the fracture of zygomatic arch is further rare. We report an unusual case of bilateral fracture of both condyle and coronoid process without fracture of overlying zygomatic arch on both side and its conservative management. Bilateral coronoid process of mandible without zygomatic arch fracture is extremely rare and can be successfully managed conservative position of mandible during trauma and forces acting on coronoid process by temporalis muscle are key factors in fracture of coronoid process without fracture of zygomatic arch and acrylic blocks to maintain vertical dimension are key to manage such cases.

**Keywords:** Trauma; Bilateral coronoid fracture; Unusual fracture

## Introduction

Mandibular fracture is the second most common facial bone fractures after the nasal bone [1]. Mandibular condylar fractures are extremely frequent of all mandibular fractures resulting from alleged assault and violence being the most common causes, while recently it has been shown that Road Traffic Accidents (RTA) is the most frequently observed cause [2]. The proportion of condylar fractures among all mandibular fractures is between 29% and 52% [3]. Most are not caused by direct trauma, but follow indirect forces transmitted to the condyle from a blow elsewhere. Mandibular and condylar fractures are relatively common injuries; however, fractures of the coronoid process are very uncommon and account for only 1% of all mandible fractures [4]. Isolated coronoid fractures due to direct trauma are very uncommon because the coronoid process is anatomically protected by the zygomaticomalar complex and its associated muscles [5]. Most coronoid fractures are due to indirect blunt or penetrating trauma. In the literature, reports of unilateral fractures of both condylar and coronoid process without any evidence of trauma to the mandible are very rare. We report a very rare unusual case of bilateral fracture of condylar and coronoid processes and its management.

## Case Presentation

A 25 year old male patient reported to our institute with the h/o road traffic accident and an initial loss of consciousness for 24 h. Clinical examination revealed facial asymmetry with diffuse swelling over the right zygomatic region, bilateral periorbital edema and circumorbital ecchymosis with increased facial height (Figure 1). TMJ movements was not palpable bilaterally. Intraoral examination showed deranged occlusion with an anterior open bite, avulsed 11 tooth, subluxation 12 teeth, segmental mobility present with entire maxilla, step defect palpable between 42 & 43 teeth. A Computed Tomography (CT) scan shows bilateral fracture of coronoid and condylar process, bilateral lefort II fracture of maxilla and right parasymphiseal fracture of the mandible (Figure 2, 3). Treatment objective for this panfacial trauma case was to achieve the occlusion, maintain the posterior vertical height, along with the functional and aesthetic concern. The patient was operated under general anesthesia. The nasoendotracheal intubation was done. Circumvestibular incision was given in the maxillary vestibule exposing the pyriform buttress and zygomaticomaxillary buttress. Fracture site of maxilla was exposed. Circumvestibular incision was given in respect to mandibular anterior region and mucoperiosteal flap was reflected and fracture site was exposed. The fracture was reduced and posterior bite blocks were placed bilaterally in molar region to attain the occlusion and posterior vertical height (Figure 4, 5). Maxillomandibular fixation was done. Maxillary fractures were fixed with the miniplates. Fracture site was fixed with 6 holes continuous miniplates with 2 mm x 8 mm screws in the mandibular parasymphysis region. IMF was kept for 10 days. Patient was

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Figure 1: Clinical scenario.



Figure 4: Postoperative 3D volume image.



Figure 2a & 2b: 3D reconstruction image showing bilateral coronoid and condyle fracture.



Figure 5: Postoperative orthopantomogram.



Figure 3: Postoperative clinical picture with bite blocks *in-situ*.

reviewed at 1, 3, 6 and 12 month with no further complains, stable occlusion and complete functional and esthetic recovery.

**Discussion**

The coronoid process is considered a relatively weak part of the mandible. Coronoid fractures due to direct trauma are very uncommon because of their protected position under the zygomaticomalar complex. Condylar fractures are relatively more common fractures of the facial skeleton. As in this case report, the zygomaticomaxillary complex is not fractured, the occurrence of the direct trauma to the coronoid process does not seem to be the etiology behind the fracture. Coronoid process is not related to the cranial base so the indirect impact of the occurrence of trauma is unlikely. A case has been reported in the literature where reflex of temporalis muscle contracture was proven to be likely cause of unilateral fracture of coronoid process [6]. In this case report the bilateral fracture of the coronoid process seems to be related to the

position of the jaws. At the time of RTA, it is likely that patient jaw is in closed position & there is sudden reflex contraction of temporalis muscle leading to the simultaneous transmission of the forces to the coronoid process.

Condylar process is the frequently occurring fracture of the mandible. Condylar process is in direct relation with the cranial base so the indirect impact of the trauma can lead to fracture. When the kinetic energy derived from the movement of the individual and expended upon a static object likely the fracture occurs in the symphysis region and the forces are transmitted equally to both the condyles [7]. In this case report parasymphysis fracture along with the bilateral condylar process likely to be because of the increased kinetic energy of the subject than the object.

Treatment depends on the degree of the displacement of the fractured coronoid and condylar process and the severity of the symptoms. In this case report, we managed the bilateral fracture of coronoid and condylar process conservatively. The difficulties which were seen in this case are that the decrease in the vertical height of the mandible leading to the premature contact of the posterior tooth and occurrence of open bite. With the conservative approach the vertical height of the mandible was achieved with the help of posterior bite blocks. Bite blocks placement in the posterior region allows to pull the mandible upward anteriorly and increase the vertical height of the mandible.

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