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# Our Experience about Two Cases of Surgical Management of Bilateral Clavicle Fractures

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## Abstract

Bilateral clavicle fractures are rare injuries. Their management is a subject of controversy. Some authors advocate surgical intervention, while others recommend orthopaedic treatment. Several surgical implants are used, including anatomical screws, reconstruction plates, Kirschner wires and external fixators. We would like to share our experience with osteosynthesis using one-third tubular plate in bilateral clavicle fractures. This about two patients. At the six-month follow-up, excellent anatomical and functional outcomes were achieved.

Keywords: Bilateral clavicle, Targeted plates, Surgical management.

## Introduction

Clavicle fractures are relatively common, accounting for 2.4 to 4% of all fractures [1]. They are often encountered in young adult between 5 to 10% [1, 6]. Etiologies are predominantly related to road traffic accidents. Bilateral clavicle fractures are rare, representing 0.43% of all clavicular fractures [1, 7, 8]. There is no consensus on surgical versus non-surgical treatment and the choice of implant [9, 10]. Many authors recommend the use of locked, anatomical plates and unlocked reconstruction plates [1, 3, 4] regarding their favorable anatomical and functional outcomes. In our context with very limited resources, using one-third tubular plates for the management of bilateral clavicle fractures constitutes an alternative. We would like to share our experience about two patients presenting bilateral clavicle fractures treated surgically with double one-third tubular plates

## Case Presentation

**First Cases :**

Mr. B. A, a 25-year-old right-handed, military, alcoholic and smoking, without known pathological antecedents was admitted to the emergency department for closed chest and bilateral shoulder traumas. This resulted from a road traffic accident involving an automobile. The patient was passenger and the mechanism was a direct anteroposterior impact. On examination, he was conscious without neurogical deficit, the hemodynamic parameters were stable. There was no dyspnea, but a sharp pain was noted in the left hemithorax, a relative functional impotence of both shoulders. There was exquisite pain on palpation in the middle third of the clavicle. Neurovascular examination was normal. The x-ray identified bilateral clavicular displaced fracture at the mid-third with significant displacement of the fragments on the right. Fractures of the mid-shafts of the 2nd, 3rd, 4th and 5th ribs on the left hemithorax without hemopneumothorax were noted too (Fig. 1).

Surgical intervention was carried out under general anesthesia and orotracheal intubation after days post traumatic. The patient was placed in chair position. The intervention began at the right shoulder following by the opposite side. The approach was centered on the clavicles in the two cases. Fractures were reduced under direct visualization and contained with a small fragment one-third tubular plate stabilized by 3.5 mm cortical screws. Two redon drains were installed. Additional contention was done with bilateral scarves before leaving operating theater. Physiotherapy has started 48 hours post operatively after removing redon drains. Postoperative recovery was uneventful, and consolidation obtained in two months. The patient resumed his professional activities after two months while avoiding significant constraint on the shoulders. He had a unsightly scar. Complete recovery was declared five months post-operation with an excellent University of California, Los Angeles score (UCLA).

**Second Case :**

Mrs. M. H, a 45-year-old right-handed, without particular known medical history, admitted after bilateral closed trauma of shoulder and chest. Circumstance and mechanism were similar to the precedent case. The particularity of the clinical examination compared to the first case was a cutaneous threat at the left fracture site.

X-ray revealed a mid-third comminuted clavicular fracture on the left and the similar outer third fracture on the right (Fig. 2). Surgical intervention was indicated and performed. The surgical procedure was similar to this of the first patient. Consolidation was achieved within

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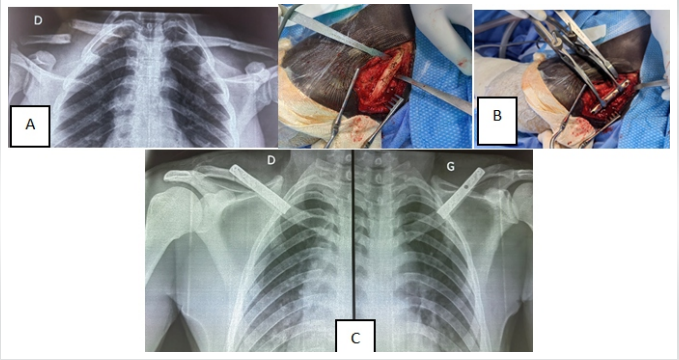


**Figure 1:** A) Pre-operative x-ray of the left and right shoulders ; B) Per-operative reduction of fractures ; C) Immediate post-operative x-ray control.

two months and she was declared completely healed four months after surgery. The UCLA score was also excellent after four-month post operative.

## Discussion

Bilateral clavicular fractures are not common and they are in several cases meeting in context of polytrauma with in the literature, possibly of underestimation. The gold standard for some authors is the surgical intervention for this kind of lesion [1-3]. However, Marya et al. [4] reported five cases of non-surgically treated bilateral fractures in 2002, with a consolidation period of 6 to 8 weeks. Moreover, their study lacked details on follow-up duration, functional recovery, and return to normal activities. The general principle in orthopaedics emphasizes reducing and immobilizing any osteoarticular injury [2, 4]. Non-surgical treatment of bilateral clavicular fractures exposes to a high risk of short-term joint stiffness related to pain and functional impairment. Considering the young age, nature of injuries, and professions of our patients, surgical management was deemed necessary. Other authors in this case recommend similar attitude [1, 11]. Bajuri et al. [3] and Jean-Gabriel et al. [2] concluded that surgical management of bilateral clavicular fractures is necessary, allowing early resumption of activities and improving functional recovery. In our routine practice, unilateral clavicular fractures are typically managed orthopaedically, with drawbacks including prolonged immobilization and delayed return to

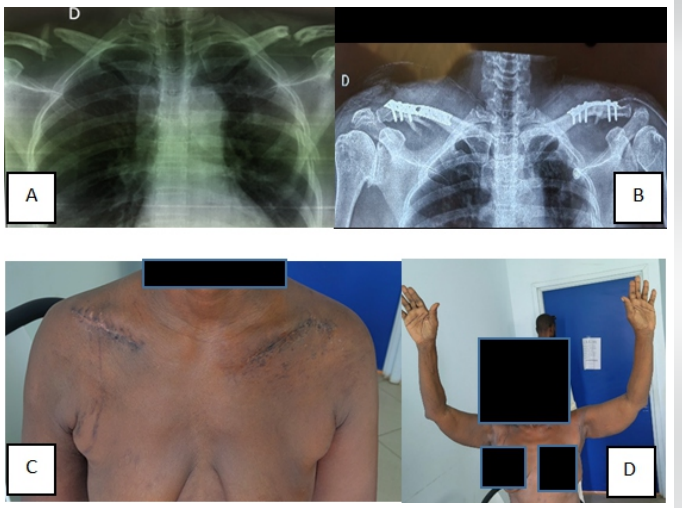


**Figure 1:** A) X-ray of the left and right shoulder; B) Follow up x-ray; C) Non-disfiguring scar; D) Preservation of joint ranges of motion

work. The bilateral nature of the injuries led us to recommend surgical treatment, as immobilizing both shoulders could be highly restrictive for patients.

The choice of implant is debatable. Van Den Bout [5] used a locked anatomical plate for elderly and osteoporotic patients. In contrast, Bajuri et al. [3] used reconstruction plates with excellent functional and anatomical results. In our cases, the absence of locked anatomical plates and reconstruction plates conditions due to socio-economic difficulty obliged to use one-third tubular plates for their management. Functional and anatomical results were excellent in both patients, capable of lifting both arms above the shoulder immediately postoperatively.

## Conclusion

Surgical management of bilateral clavicular fractures remains the gold standard while the use of different implants remains debatable. Therefore, the one-third tubular plate stands is a reliable alternative in the therapeutic arsenal for clavicular fractures. Especially in our African context because its accessibility, cost-effectiveness and efficacy.

**Declaration of patient consent :** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his/her consent for his/her images and other clinical information to be reported in the Journal. The patient understands that his/her name and initials will not be published, and due efforts will be made to conceal his/her identity, but anonymity cannot be guaranteed.

**Conflict of Interest:** None, **Source of Support:** None

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