

Nonunion of Spinous Process Fracture Revealed by Interscapular Crepitus: A Case Report

W Bouaicha*, M Jlidi, S Daas, M Kharrat, MA Sbai and A Khorbi

Orthopedics Department, Hopital MTM Nabeul, Tunisia

*Corresponding Author: Orthopedics Department, Hopital MTM Nabeul, Tunisia.

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Abstract

Fractures of the spinous process are relatively common injuries especially in the cervical spine.

Those involving the thoracic and lumbar spine are rarely reported in literature due to very little clinical relevance and cases requiring surgical treatment are even rarer.

In this article we report the case of a symptomatic non union of a fractured spinous process of T3 treated with surgical excision of the non united fragment with good clinical results.

Keywords: Spinous Process Fracture; Non Union; Surgical Excision

Introduction

Spinous process fractures of the cervical spine are relatively common injuries in traumatized patients [1,2]. They usually affect less commonly the thoracic and lumbar spine [1].

Isolated, these fractures are of little clinical significance [3].

The treatment is in most cases functional, and the outcome is usually favorable. However, in some cases a persistent localized pain suggests non union of the fracture site [1,3].

Case Report

A 62-year-old male patient was a pedestrian involved in a motor vehicle accident. He was seen at the A&E department the same day. Clinical examination revealed an open injury to his lower left leg with a Gustillo and Anderson type IIIB open fracture exposing bone and deep soft tissues. Examination of the spine revealed pain on palpation of the high thoracic spine with no bruising or abrasion. Initial plain radiographic examination showed a comminuted supra-malleolar fracture of the left tibia and fibula.

No radiologic abnormalities were detected on X-ray of the thoracic spine AP and Lateral (Figure 1).



Figure 1: X-ray thoracic spine AP view showing absent spinous process (solid arrow) and “double spinous process” (ellipse).

The patient was treated with a spanning external fixator after surgical debridement followed a week later by sural flap to cover the skin defect with good results both radiologically and clinically.

The patient came back within the framework of a medical expertise 1 year later. His main complaint was a painful crepitus at the cervico-thoracic junction. Clinical examination revealed a visible and audible “clunk” at the interscapular region.

A cervicodorsal CT examination was performed. It concluded to a non union of a displaced fracture of the spinous process of T3 (Figure 2).



Figure 2: CT scan imaging with sagittal reconstruction.

A surgical excision of the spinous process as well as of the surrounding impinging tissues was performed with no further complications and good functional outcome.

Discussion

Fractures of spinous process are mostly seen in cervical spine injuries as well as injuries to the cervico-dorsal junction [1-3], they are considered merely a warning sign that severe spinal injury has occurred and other vertebral fractures should be sought [2]. When isolated, they require very little attention and symptomatic treatment yields satisfactory outcome [1,3].

Etiologies of spinous process fractures can be traumatic [2,4-7], iatrogenic during surgery, neoplastic or as a fatigue fracture [8-10] in some professions exposed to repeated minimal stress “clay shovelers’ fractures” [11].

In traumatic injuries, the fracture can be caused either by a direct posterior blow [2], or indirectly by a flexion-extension mechanism causing an avulsion fracture of the inter-spinous and supra-spinous ligaments [7,11,12].

Plain radiologic interpretation can be difficult because of the overlay of the scapulae on the lateral view of the high thoracic spine and the cervico-dorsal junction [4]. This explains the diagnostic delay in our case. A “double spinous process” is the typical finding of a displaced spinous process fracture on the AP view [6,7,10,13,14].

ACT imaging with sagittal reconstruction is the preferred examination to confirm the diagnosis, quantify the amount of displacement and detect possible associated vertebral lesions.

In the cervical spine, isolated spinous process fractures are usually treated with a cervical collar followed by physiotherapy [3,15,16]. In the thoracic and lumbar region, patients presenting with spinous process fractures are advised to rest until the pain subsides. The outcome is usually good with functional treatment, however in some rare cases symptoms made of pain and movement related crepitus can occur as in our case. Pseudoarthrosis must be considered when such symptoms are reported and further exploration must be done.

Although healing rates of these fractures are notoriously low (Matthes., *et al.* [13]: 3 out of 107 cases; Gershon-Cohen., *et al.* [12]: 7 out of 38; Jonash., *et al.* [17]. 30%), very little pseudoarthrosis of spinous process fractures treated surgically have been reported in the literature [1].

Venable., *et al.* [10] reported on a series of 10 cases of fatigue fracture of the spinous process treated by surgical excision of the bony fragment, all of them in the cervical spine.

Some authors emphasize the fact that surgery is never indicated in these fractures, the case that we report shows that in some symptomatic non unions, surgical excision can be done with little complications and good clinical outcome.

Conclusion

Isolated fractures of the spinous process are of a relatively common occurrence and result in non union in most cases. The vast majority of spinous process fractures pseudoarthrosis remains with very little clinical relevance that's why rigid bony union should not be the main goal of treatment. Surgical excision, however, can be advocated in symptomatic non unions with good results.

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