

## CASE REPORT

# Multilevel lumbar transverse process fractures in a professional association football player: a case report

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## Abstract

We present a case of multilevel lumbar transverse process fracture in a professional association football player, incurred after a fall from height during competitive play. Traditionally associated with high impact trauma in the general population, this injury is relatively rare in the context of professional football where it is more likely to be associated with lower impact trauma. We outline our experience of mechanism of injury, treatment options and recovery time serving as a guide for fellow clinicians when treating this condition in practice. In this particular case, the return to play time was 68 days.

## INTRODUCTION

Transverse process fracture (TPF) is a rare injury in sport, most often associated with either direct trauma or violent muscular contraction. TPF in the general population has been reported relatively widely in the literature [1–5]. Conversely, coverage of TPF in the context of sport is sparse, especially with respect to the factors informing the sports physician in practice, namely mechanism of injury (MOI), treatment and recovery times. Indeed, it is unlikely that our understanding of TPF injury in the general population can be directly applied to TPF in sport. We present our experience of MOI, treatment and recovery in a case of multilevel lumbar TPF in a professional football player, incurred after a fall from height during competitive play.

## CASE REPORT

A 31-year-old professional footballer was playing in an English Premier League tie. During the course of the match, the player attempted an acrobatic ‘overhead-kick’ clearance during which he landed heavily on his left side and lower back (Fig. 1). The player

was unable to carry on due to on-going lumbar pain and was substituted soon after.

After substitution, lower back and left flank pain persisted, associated with some difficulty in breathing. Initial examination revealed diffuse left lateral lumbar pain to palpation. Abdominal examination was normal, with no evidence of tenderness over the renal angles or spleen. Cardiovascular, respiratory and neurological examinations were all normal as were bedside observations. Specifically, there was no evidence of saddle anaesthesia. No urinary or bowel-related problems were evident and urinalysis revealed no evidence of haematuria. Indeed, routine blood tests were reassuringly normal.

An initial differential diagnosis comprised:

- (i) Soft tissue contusion/muscle strain
- (ii) Rib fracture
- (iii) Lumbar spine bony injury
- (iv) Pneumothorax
- (v) Renal trauma
- (vi) Splenic trauma
- (vii) Other intraperitoneal visceral injury

Received: January 26, 2015. Revised: April 21, 2015. Accepted: April 27, 2015

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Figure 1: Two-view pictorial progression demonstrating MOI. (A) Prior to kicking ball, (B) immediately post-kick and (C) point of impact.

A 1-day post-trauma MRI spine scan revealed oedema, suggestive of left-sided TPF of L2 and L3 vertebrae. At the radiologist's recommendation, computed tomography (CT) of the spine was undertaken on Day 2 post-trauma. This confirmed left-sided TPF at levels L2 and L3, with some anterior displacement of the fracture at L2 (Fig. 2).

The player was excluded from training, treated conservatively with rest as previously described in the literature [6] and prescribed oral analgesia for symptomatic relief (paracetamol, ibuprofen and codeine). In addition, diazepam was prescribed as a muscle relaxant after the development of lower back muscle

spasm 2 days post-trauma. At this time, the player also developed transient paraesthesia of the lateral aspect of his left foot—an area incongruent with the level of the TPF. This was precipitated by massage while lying prone on the treatment table and resolved spontaneously once the spasm had been treated.

The player returned to low-level physical activity (gym-based cycling) at Day 21. He returned to outdoor training at Day 57 and return to play (RTP) time was 68 days post-trauma. The recovery was otherwise uneventful. To date, the player has not experienced any further morbidity associated with this injury and continues to play regular professional sport.

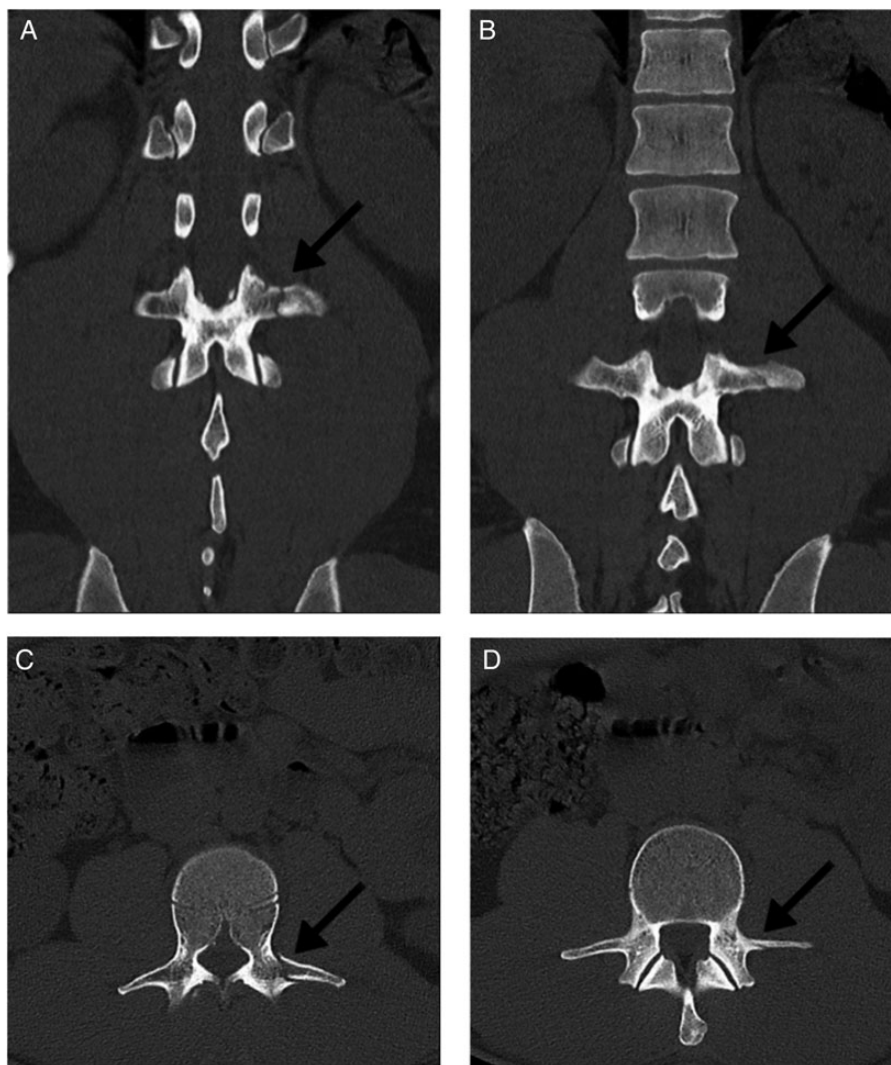


Figure 2: CT scan of lumbar spine showing left TPF at L2 (mildly displaced anteriorly) and L3 vertebrae (undisplaced). (A) L2 coronal slice; (B) L3 coronal slice; (C) L2 axial slice and (D) L3 axial slice.

## DISCUSSION

TPF has traditionally been associated with high-energy direct trauma or violent muscular contraction, often in the road traffic accident context [1, 3, 4]. TPF in the general population is more commonly complicated with visceral injury with or without nerve root injury. While TPF can occur in the athlete, it is probably associated with a lower energy MOI, rarely complicated and commonly associated with a relatively swift recovery [1]. Currently, there is a paucity of research in sport-related TPF with the existing literature taking the form of epidemiological studies or case reports. These are detailed as follows.

Dutson [7] outlined a case of TPF of L1 in a trainee association footballer, associated with direct blunt trauma to the players back from a goalkeeper's knee. The fracture was complicated by traumatic transverse colon rupture requiring a stay in intensive care and colostomy. This was reversed 12 weeks post-trauma. RTP data were not specified.

Brynin and Gardiner [8] detailed a single case of lumbar TPF at L2 and L3, confirmed on CT. The injury was precipitated by a 'spear' in the back during an American football game. The player

was precluded from contact sport with an RTP of 4 weeks without an adverse event.

Bali et al. [9] reported a case of multiple displaced lumbar TPF (L1–5) in a cricket bowler. The player presented with chronic lower back pain with no obvious precipitant. The authors hypothesized that the fractures occurred after repeated small stresses on the spine associated with fast-bowling.

Gertzbein et al. [10] conducted a retrospective epidemiological study of thoracic and lumbar fractures in skiers and snowboarders over a 5-year period and found 43 instances of isolated TPF accounting for 29% of all fractures reported. The authors postulated that these occurred secondary to avulsion forces from intense muscle spasm on impact from a fall. Recovery time data were not provided.

Finally, Tewes et al. [1] reviewed 29 cases of lumbar TPF in the American NFL (national football league) and found an average RTP time of 3.5 weeks. Rest was the most common management approach. Average RTP was further broken down based on the total number of fractures and was 16 days with 1 TPF, 19 days with 2 TPFs and 36 days with 3 TPFs. However, this trend was not statistically significant ( $P = 0.133$ ). Upon RTP, most players

wore flak jackets/padded wrap. The single re-injury reported occurred in a player wearing a flak jacket. The aetiology of injury was identified as 'impact' in 93% and 'torsion' in 7% of players. In terms of complications, five players suffered back spasms, akin to the present case. Additionally, one player sustained a visceral injury in the form of a kidney contusion.

TPF in the general population is associated with high-energy trauma compared with relatively low-energy MOI in the sports context. Our understanding of TPF in this context is limited. This case report intends to add to our understanding in terms of MOI, investigation, management and recovery time. This will clearly be invaluable information to the sports physician in practice when managing this relatively rare injury in the high-stakes professional sports context.

Here, the player was treated conservatively with rest, oral analgesia and muscle relaxant. Return to low-level physical activity was achieved at Day 21, outdoor training at Day 57 and return to competitive play at Day 68. To date, the player in question has had no long-term adverse sequelae associated with this injury.

### CONFLICT OF INTEREST STATEMENT

Patient consent obtained and kept on record.

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