Isolated thoracic spinous process fractures involving multiple adjacent vertebral segments are a rare occurrence in the setting of high-energy trauma. These findings should prompt further investigation to exclude other concomitant osseous or ligamentous injuries. Evaluation by computed tomography is often most useful to detect these fractures. Proper treatment of extensive multilevel injury is poorly defined in the literature. In our experience, conservative management consisting of initial bracing with graduated lifting restrictions has produced excellent functional results.

1. Introduction

The term “Clay-Shoveler’s fracture” was originally coined in 1940 to describe isolated spinous process fractures occurring from C6–T3 in Western Australian laborers [1]. In the modern era, this fracture pattern has been observed in a variety of patients, including football players, power-lifters, golfers, and trauma patients [2–6]. There have been only three previous reports in the literature documenting isolated thoracic spinous process fractures involving five or more contiguous vertebrae [2, 5, 7]. Despite the paucity of published literature, this entity may be more common than previously believed. We report two cases that presented to our institution over the past year of contiguous isolated thoracic spinous process fractures occurring in the setting of high-energy trauma.

2. Case Discussion

2.1. Patient 1. A 53-year-old male was involved in a motorcycle collision at a speed of approximately 40 mph. Physical exam was significant for right-sided paraspinal tenderness in the thoracic region. He had no neurologic deficits. Computed tomography (CT) revealed thoracic spinous process fractures within T5–T10 without evidence of vertebral body injury, extension into the lamina, or ligamentous compromise (Figure 1). He also sustained right-sided posterolateral rib fractures involving ribs 3, 4, 6, and 7. The patient was initially placed in a thoracolumbar sacral orthosis (TLSO) brace with 5-pound lifting restrictions for 6 weeks; after which time the brace was discontinued and he was increased to 25-pound lifting restrictions. The patient was completely asymptomatic with well-maintained spinal alignment 10 weeks after his injury (Figure 2). At that point, he was allowed to return to full activities without any restriction.

2.2. Patient 2. A 53-year-old man without a helmet lost control of his motorcycle and collided with a guardrail. He had loss of consciousness and an initial Glasgow coma scale score of 12. Physical exam revealed no gross abnormalities of the spine; however he expressed significant left-sided paraspinal tenderness in the thoracic region. CT of his spine revealed isolated fractures of the thoracic spinous processes within T6–T10 without any other evidence of spine pathology (Figure 3). He also sustained fractures of ribs 4–8 on the left side. The patient was placed in a TLSO brace and treated in a similar fashion as described previously.

3. Discussion

Isolated thoracic spinous process fractures involving five or more contiguous vertebrae are rarely encountered in
Figure 1: (a) Sagittal computed tomography (CT) image demonstrating thoracic spinous process fractures (arrows) spanning from T5 to T10. (b) Axial CT showing select (T6, T9, and T10) spinous process fractures (arrows). No evidence of vertebral body or intralaminar extension is noted.

Figure 2: Sagittal (a) and anteroposterior (b) plain film in thoracolumbar sacral orthosis brace at 10 weeks after the initial injury, demonstrating good osseous union and well-maintained sagittal alignment.
Figure 3: (a) Sagittal CT demonstrating thoracic spinous process fractures (arrows) spanning from T6 to T10. (b) Axial CT showing select (T6, T9, and T10) spinous process fractures (arrows). No evidence of vertebral body or intralaminar extension is noted.

Ligamentous damage to ensure spinal column stability before commencing with conservative treatment.

Ethical Approval

The authors certify that their institution has approved the reporting of this case, that all investigations were conducted in conformity with ethical principles of research, and that informed consent for participation in the study was obtained.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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