

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1: Identify patients that may benefit from minimally invasive bullet removal in the lumbar spine:
- 2: Describe the benefit of using minimally invasive techniques for bullet removal in the lumbar spine.

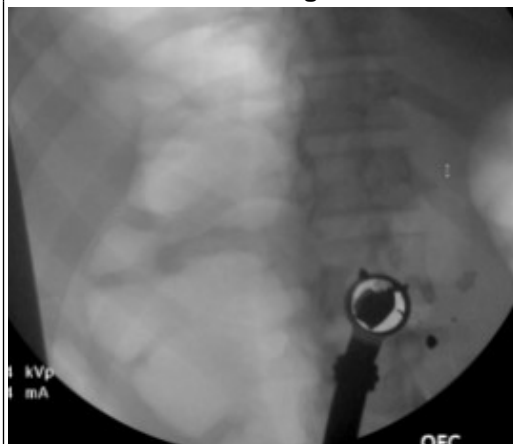
Introduction

Treatment of penetrating gunshot wounds (GSW) to the spine remains controversial. We present a series of 5 patients who underwent minimally invasive (MI) lumbar decompression and bullet removal at a Level 1 Trauma Center.

Methods

We performed a retrospective review of gunshot wounds to the spine from 2010 to 2017.

Crutcher Fig 1 D



Intraoperative A/P fluoroscopic view

Crutcher Fig 1 E



Intraoperative lateral fluoroscopic

view

Crutcher Fig 1 F



Intraoperative lateral fluoroscopic view
after bullet removal

Results

Five male patients with spinal GSW were treated with the MI techniques at our institution. Their ages ranged from 20-55 years (mean: 32 years). The mechanisms of injury were GSW to the abdomen (n=4) and direct GSW to the spine (n=1). Based on the neurological examination, the injuries were characterized as complete (n=1) or incomplete (n=4). Decompression and bullet removal were performed using a tubular retractor system. All but the complete patient showed good neurologic recovery. Four patients described improvement of varying degrees in their lower extremity strength and improvement in their lower extremity pain/paresthesia. One patient presented with cauda equina and postoperatively reported improvement in saddle anesthesia and ability to voluntarily void. One patient had extensive dural damage from the bullet and required intraoperative dural repair and insertion of a lumbar drain. There were no post-operative wound infections, cerebrospinal fluid leaks, or other complications related to the procedure.

Conclusions

Minimally invasive decompression and bullet removal is a safe technique that can help reduce the risk of post-operative infections and