A Rare Procedural Complication of Retained Stylette Sheath During Percutaneous Kyphoplasty: A Case Report

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Background

Percutaneous Kyphoplasty (PKP) treats symptomatic vertebral compression fractures by delivering and inflating a balloon into the vertebral body, then filling the cavity with polymethylmethacrylate (PMMA) cement to restore vertebral body height.

Device-related complications such as balloon rupture or needle retention are relatively uncommon. Balloon rupture is reported about **6.7%** of the time, while only one case report discusses needle retention.[1] Cement extravasation is the most common technical complication, reported an average of **1-9%**, and is usually asymptomatic.[2]

We present a case report about a novel complication of **mechanical disconnection and subsequent retention of a J-stylette sheath** during PKP.

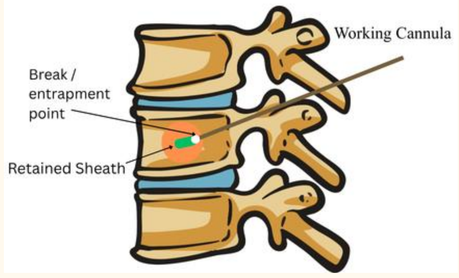


Figure 1. Schematic (not to scale): the J-stylette sheath separated at the break point, leaving its terminal segment in the vertebral body.

Case Presentation

A 29-year-old presented with low back pain after a mechanical fall. Magnetic resonance imaging (MRI) revealed acute bony marrow edema with a 40% compression fracture of the L5 vertebra. After failing conservative management with oral medications and LSO bracing, the patient elected for kyphoplasty.



Figure 2. Sagittal T2W MRI of Lumbar Spine

Procedure

Using a transpedicular approach, the kyphoplasty balloon was introduced through an 11-gauge trocar. The J-stylette sheath was then retracted, and **the winged cap of the J-stylette disconnected from the sheath.**

Several initial attempts to grasp the recessed sheath were unsuccessful. A 10-gauge trocar was then introduced over the existing assembly to provide a sleeve for extraction. While most of the hardware was retrieved, **the terminal 2-3 cm of the sheath remained embedded within the vertebral body.**

Given the fragment's stable position and the risk of further morbidity from aggressive retrieval, the team proceeded with cement stabilization. Only 1 mL of cement was injected due to resistance from bone density.

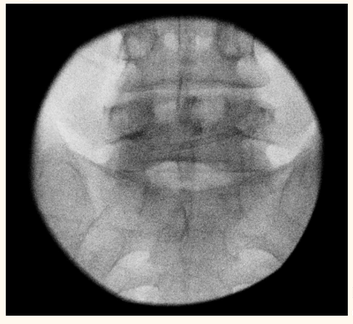


Figure 3. AP Fluoroscopy of L5 Vertebra

Outcome & Discussion

ONE WEEK AFTER THE PROCEDURE

- Back Pain Improved
- No analgesics needed
- No signs of systemic infection

While the retained fragment has not caused immediate adverse effects, this case underscores the importance of acknowledging instrument fragmentation as a complication of kyphoplasty procedures.

There are no procedure specific guidelines to address a fractured and/or retained J-Stylette Sheath. The decision to retrieve the sheath surgically or leave it in place is therefore made case by case.

Prevention [3,4]

- Inspect instrumentation for pre-existing defects.
- Avoid excessive leverage against the pedicle with the stylet.
- Rotate and withdraw the cannula with sheath before the cement fully hardens.

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