

# Extracorporeal Foley catheter spring device mimicking an intervertebral foreign body in transforaminal lumbar interbody fusion surgery

The complications caused by iatrogenic foreign bodies are well known, but cases are rarely published because of the medico-legal implications.<sup>1</sup> Early identification of a foreign body can prevent hazardous and detrimental complications. Medical practitioners may occasionally be misled by overlapping images of radio-opaque objects on X-rays and misinterpret these as foreign bodies. We present a case where a spring device belonging to a Foley's catheter valve in the pelvic region could have been mistaken for an intervertebral foreign body on X-rays taken after a spinal operation.

## Case summary

A 38-year-old woman with good past health presented with a 2-year history of bilateral spinal claudication. Imaging confirmed a grade-3 spondylolytic spondylolisthesis with significant central canal and neuroforaminal stenosis at the L5/S1 level (Fig 1). We performed posterior pedicle screw instrumentation to the L5 and S1 vertebrae under BrainLAB navigation, an L5 laminectomy for decompression, bilateral L5/S1 facetectomies and a transforaminal lumbar interbody fusion with a Capstone PEEK cage. A 4.7-mm two-way 14 Fr/Ch 5-15mL Foley's catheter (STAR, Zhanjiang Star Enterprise Co Ltd, Guangdong, China) was

inserted after anaesthetic induction for urine output monitoring. The instruments and packing gauzes were counted and it was verified that all were out of the operative field before wound closure.

One day later it was noted on the postoperative lateral X-ray taken in the supine position that a 2 mm x 5 mm small metallic spring-like material was present in the anterior L5/S1 intervertebral region. It was anterior and distinct from the L5/S1 cage (Fig 2a). There were no external objects of a similar shape over the patient. It was reassuring that the image of the suspected foreign body was absent in the antero-posterior view (Fig 2b). Nevertheless, we could not find an explanation until we explored and cracked open another Foley's catheter, compatible with the suspicious object in the initial X-ray (Fig 3). The source of the image, a spring device, was identified before removal of the catheter, and another X-ray was taken to ensure this was the source of the suspicious image (Fig 4).

## Discussion

Iatrogenic foreign bodies have significant implications for patients and clinical management after spinal surgery. While foreign bodies may remain clinically silent for years, some patients develop neurological symptoms. Reports in the literature have described the complications of retained textilomas<sup>2,3</sup> and a

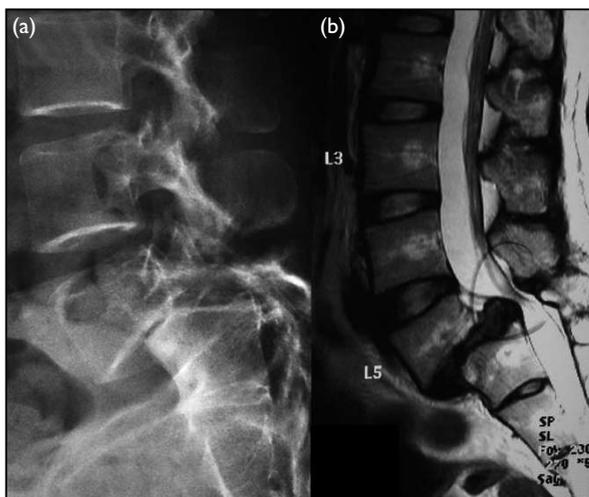


FIG 1. (a) Lateral X-ray and (b) T2-weighted magnetic resonance images showing severe spondylolisthesis and spinal stenosis

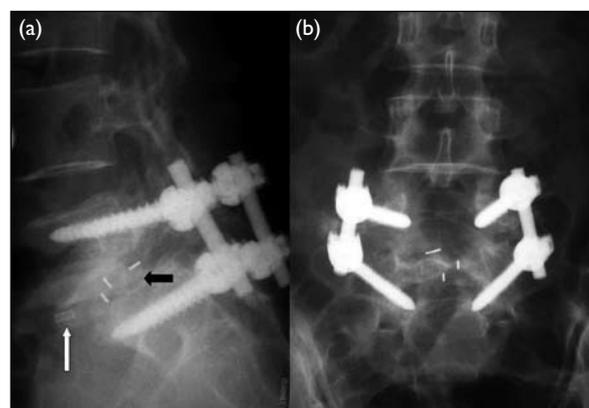


FIG 2. (a) The spring-like metallic structure (white arrow) is located anterior to the L5/S1 intervertebral region. The Capstone PEEK cage with 3 markings (black arrow) is well situated. (b) Antero-posterior view: no foreign body

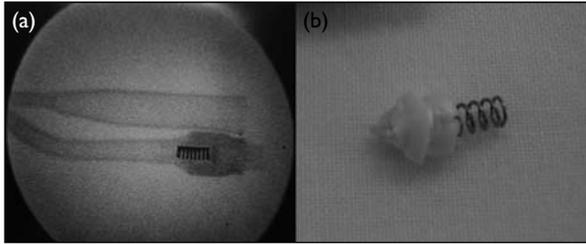


FIG 3. (a) X-ray screening of Foley's catheter shows a spring structure in the valve. (b) Once cut open, the spring device appears

broken knife blade<sup>4</sup> in the lumbar region years after initial operations. The clinical manifestations of these foreign bodies depend on their anatomical locations, their vicinity to the neurological structures and the extent of the foreign body reaction. Radiologically, the surrounding granulomatous reaction to a foreign body can mimic epidural abscess formation<sup>2</sup> and even neoplasm of the cervical region.<sup>1</sup>

If the image seen in the anterior intervertebral region in our patient was a genuine foreign body, migration during ambulation might have led to a hazardous outcome. Anterior migration of the spring could cause a local inflammatory reaction and mimic a paraspinal abscess formation or tumour. On the other hand, posterior migration into the spinal canal could have stimulated an epidural granulomatous reaction, causing neurological compression. As there was no neurological deficit, the surgeon would have had to choose between exploring and retrieving the foreign body at an early stage or observing closely.

Urethral catheterization with a Foley's catheter is a common clinical procedure. Awareness of and the ability to distinguish the metallic spring device from a genuine foreign body is of paramount importance. A wrong diagnosis might result in unnecessary exploratory surgery. Conversely, late identification or unawareness of the presence of a foreign body might lead to long-term complications.

Extra precautions should be taken when positioning a Foley's catheter and its connections to



FIG 4. No foreign body image after removal of Foley's catheter

avoid generating misleading 'foreign-body' images on X-rays.

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