



# The “inverted Napoleon’s hat” sign

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Imagine Napoleon Bonaparte’s iconic two-cornered hat (Fig. 1) abandoned and lying upside down as the emperor fled the Battle of Waterloo [1]. The image of an “inverted Napoleon’s hat” has been used as a metaphor for the frontal radiographic appearance of severe spondylolisthesis at the lumbosacral junction, which can be observed on frontal abdominal radiographs (Fig. 2). Spondylolisthesis is the anterior displacement of one vertebral body with respect to the adjacent inferior vertebral body or sacrum. With severe subluxation of the L5 vertebral body, the anterior slip, focal kyphotic curvature, and compensatory hyperlordosis of the lumbar spine result in the projection of the anterior cortex of the L5 vertebral body over the sacrum on the frontal view. The anterior cortex forms the “dome” of the inverted hat and creates a continuous line with the L5 transverse processes which represent the two tapered “corners” (Fig. 2a, b) [2].

While there are numerous causes of spondylolisthesis, fatigue fracture of the pars interarticularis, degenerative, and postsurgical etiologies are the most frequently encountered causes [2]. An acute pars fracture is extremely rare and usually seen in the setting of severe trauma [3]. Regardless of the underlying cause, L5-S1 spondylolisthesis can result in compression of the exiting L5 nerve roots.



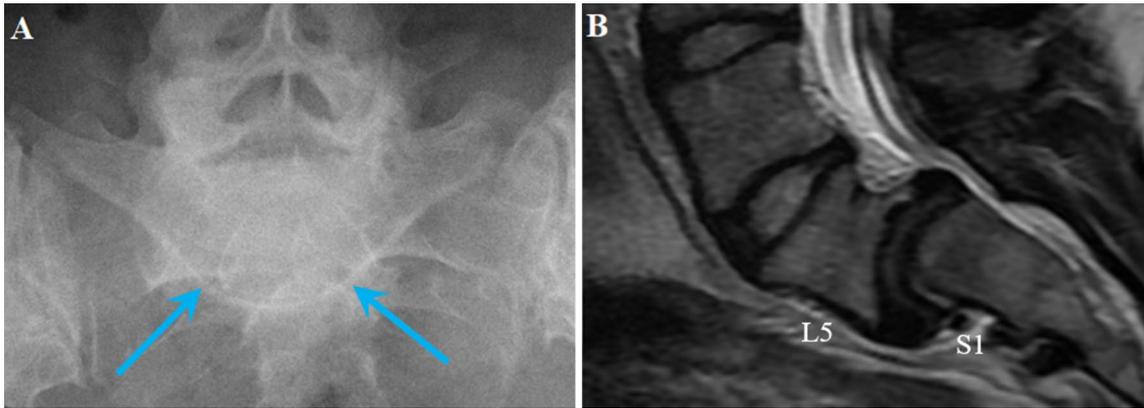
**Fig. 1** Statue of Napoleon Bonaparte adorned with his iconic bicorne (two-cornered hat). (<https://www.publicdomainpictures.net/en/view-image.php?image=208855&picture=napoleon-statue>), accessed February 6, 2019 (public domain)

Familiarity with the “inverted Napoleon’s hat” sign allows radiologists to identify lumbosacral spondylolisthesis even in the absence of lateral images, potentially providing an explanation for the common clinical scenarios of low back pain and sciatica.

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**Fig. 2** **a** Frontal abdominal radiograph demonstrating the “inverted Napoleon’s hat” in this patient with spondylolisthesis. The anterior cortex of the slipped L5 vertebral body (*blue arrows*) forms the

“dome” of the inverted hat. **b** T2-weighted sagittal lumbar spine MRI in the same patient confirms grade II anterolisthesis of L5 on S1

### Compliance with ethical standards

**Conflict of interest** The authors declares that they have no conflict of interest.

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