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Introduction

Bertolotti's syndrome, which is present in 7% of chronic lumbalgia patients, can be defined as chronic back pain caused by a transitional lumbosacral vertebra. This anatomic variant may present with different clinical manifestations, ranging from asymptomatic cases to low back pain with or without radicular symptoms. It typically involves an enlargement of the L5 transverse process(es), with potential pseudo-articulation or fusion with the sacrum. The Castellvi classification system is commonly used to categorise the transitional vertebra according to the level of pseudo-articulation or fusion with the sacrum. We present a case where resection of the transitional lumbosacral vertebra provided ultimate pain relief in a patient with therapy-resistant lumbalgia despite several prior lumbar interventions.

Case Presentation

A 51-year-old male patient with a history of posterior lumbar interbody fusion L2-L3-L4-L5 and initiation of dorsal column stimulation was referred to our outpatient clinic because of chronic lumbalgia with pseudo-radicular irradiation to the right leg. MRI and SPECT-CT revealed a right transitional lumbosacral vertebra (Castellvi type IIA). Two local epidural steroid injections and radiofrequency ablation at the level of the transitional pseudo-articulation provided temporary pain relief. After multidisciplinary discussion, the assimilation joint was resected through a minimally invasive navigated 3D CT-scan approach.

Follow-Up

Postoperative imaging confirmed complete resection of the right transverse process and the assimilation joint. The patient's subjective back and leg pain on the NRS-scale improved respectively from 9 to 0 and from 6 to 4.

Conclusion

Bertolotti's syndrome often remains undiagnosed for years. Accurate identification through targeted imaging is therefore essential. In selected patients, surgical resection of the pseudo-articulation can provide significant and sustained pain relief, particularly when conservative and interventional treatments have failed. Minimally invasive, image-guided approaches offer a safe and effective option for achieving optimal clinical outcomes while limiting surgical morbidity.

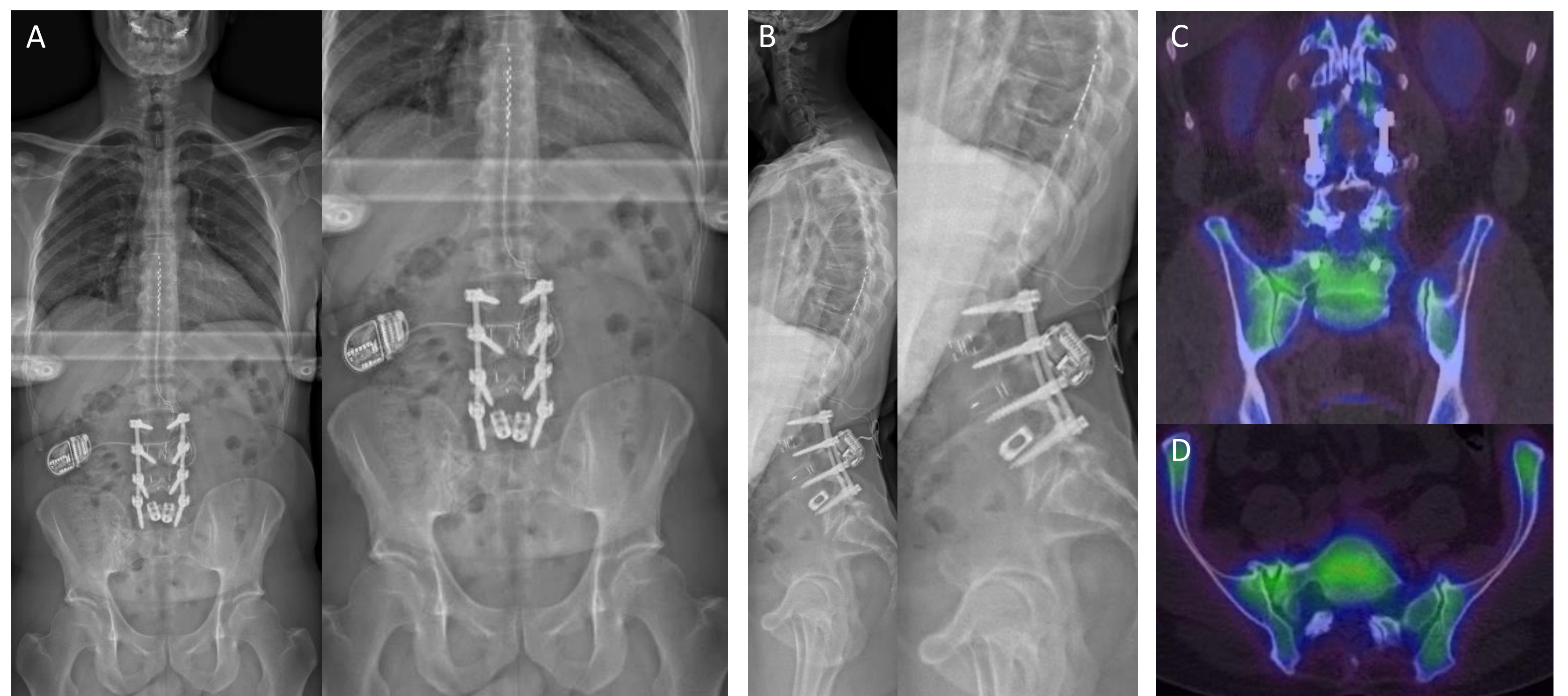


Figure 1. Anteroposterior (A) and latero-lateral (B) full-spine radiography displays the sagittal balance at initial presentation. The patient complained of chronic back pain with pseudo-radicular irradiation to the right leg despite PLIF L2-L3-L4-L5 and DCS. Further diagnostic work-up revealed a right transitional lumbosacral vertebra (Castellvi type IIA), as demonstrated on coronal (C) and axial (D) SPECT-CT.



Figure 2. Coronal CT from posterior (A) to anterior (B, C) shows the transitional lumbosacral vertebra, classified as type IIA according to the Castellvi classification.

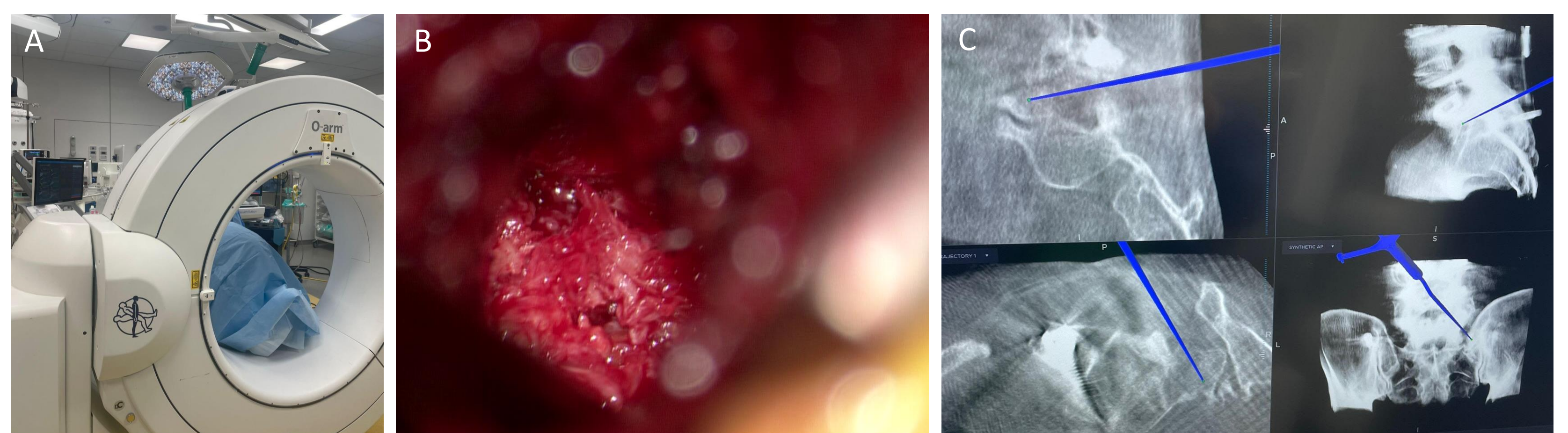


Figure 3. The assimilation joint was resected through a minimally invasive navigated 3D CT-scan (O-arm, Medtronic) approach. Using the 3D CT-scan (A), the navigation probe (B) guided the approach (C).

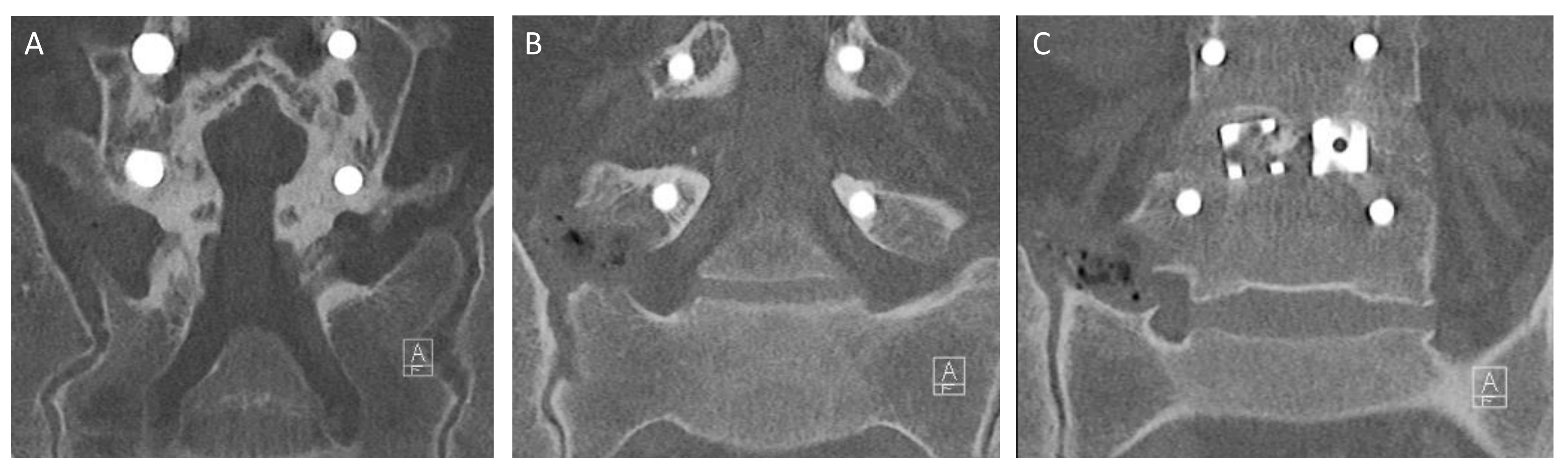


Figure 4. Coronal CT from posterior (A) to anterior (B, C) shows the postoperative status after resection of the transitional lumbosacral vertebra, in comparison with figure 2.