

RADIOFREQUENCY ABLATION AS A TREATMENT FOR SYMPTOMATIC BERTOLOTTI'S SYNDROME (LUMBOSACRAL PSEUDOARTICULATION): A CASE REPORT

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Background: Bertolotti's syndrome (BS) is an underrecognized cause of chronic low back pain, arising from a lumbosacral transitional vertebra with pseudoarticulation to the sacrum or ilium. Conservative management often fails, and surgical resection is typically considered. Radiofrequency ablation (RFA) is well established for facetogenic pain, but literature on bipolar RFA for BS is scarce.

Case Report: We present 2 patients with symptomatic BS who failed conservative therapies but experienced significant relief after bipolar RFA of the pseudoarticulation. Patient A achieved 80% pain relief, maintained at 7 months postprocedure. Patient B reported substantial initial improvement that persisted at 50% for 2 months before surgical referral. Both underwent fluoroscopically guided bipolar RFA targeting the pseudoarticulation.

Conclusions: Bipolar RFA may be a promising minimally invasive option for BS, offering broader, more continuous lesions suited for irregular joint anatomy. Further studies are warranted to confirm its efficacy and long-term outcomes.

Key words: Bertolotti, pseudojoint, back pain, radiofrequency ablation, bipolar radiofrequency ablation

BACKGROUND

Bertolotti's syndrome (BS) is an underrecognized cause of chronic low back pain, characterized by a congenital lumbosacral transitional vertebra (LSTV) in which the transverse process of the fifth lumbar vertebra (L5) articulates with the sacrum or ilium. First described by Mario Bertolotti in 1917, this altered anatomy disrupts normal biomechanics, potentially leading to axial back and radicular pain. The prevalence of LSTV ranges from 4% to 30%, but only a subset of patients become symptomatic, contributing to diagnostic uncertainty (1-3). Pain generation in BS is multifactorial and often results from abnormal mechanical loading across the pseudoarticulation,

with accelerated degeneration of adjacent facet joints and intervertebral discs (4,5).

Diagnosis requires a high index of suspicion and is confirmed by imaging (radiographs, computed tomography, magnetic resonance imaging). Image-guided diagnostic injections can help confirm the pseudoarticulation as the pain source (6,7). While conservative measures, such as physical therapy and analgesics, are first line, surgical resection is traditionally considered when these fail. Radiofrequency ablation (RFA) is well established for facetogenic pain; however, literature describing bipolar RFA for BS is limited (7,8). Bipolar RFA creates a broader, more continuous thermal lesion between 2 electrodes,

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which may be advantageous for irregular or elongated pseudoarticulations seen in BS (9,10).

CASE PRESENTATION

Patient A

A 27-year-old healthy woman presented with 8 years of chronic right-sided axial low back pain. Imaging revealed transitional lumbosacral anatomy with a broadened L5 transverse process and pseudoarticulation with the sacrum on the right. Conservative treatments, including physical therapy, chiropractic therapy, and medications, failed. Medial branch nerve blocks were negative, but a diagnostic pseudojoint injection provided 65% relief for 5 weeks. Bipolar RFA was performed under fluoroscopic guidance with 4 needles positioned along the joint (Figs. 1-4). Lesions at 80°C for 90 seconds yielded 80% pain relief, maintained at 7 months.



Fig. 1. AP Image of lumbosacral articulation circled in red.

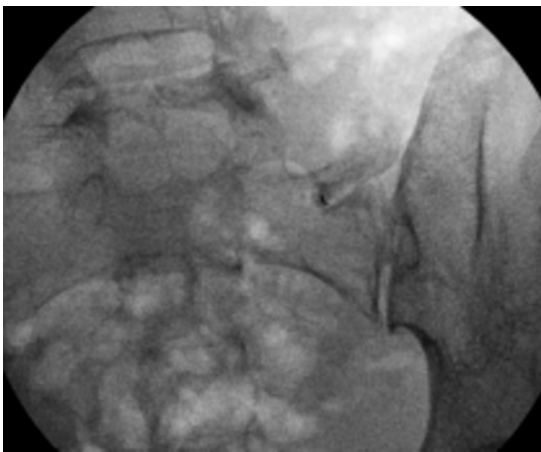


Fig. 2. Fluoroscopic steroid injection into Bertolotti joint.

Patient B

A 39-year-old active man presented with 4 years of chronic left-sided low back pain following stationary rowing. Imaging demonstrated left sacralization of L5 with pseudoarticulation to the ilium and sacrum. A diagnostic injection provided over 50% relief for 2 months. Bipolar RFA was performed at 6 sites along the pseudoarticulation, producing significant initial benefit that decreased to 50% relief after 2 months (Fig. 5). The patient was subsequently referred for surgical management.

Procedural technique for both patients involved fluoroscopic localization of the pseudoarticulation, needle placement along the joint line, bipolar stimulation for safety testing, lesioning at 80 °C for 90 seconds, and postablation injection of dexamethasone to reduce neuritis risk.



Fig. 3. Four needles placed along the pseudoarticulation which were ablated with bipolar RFA.



Fig. 4. Oblique view of bipolar RFA needles.

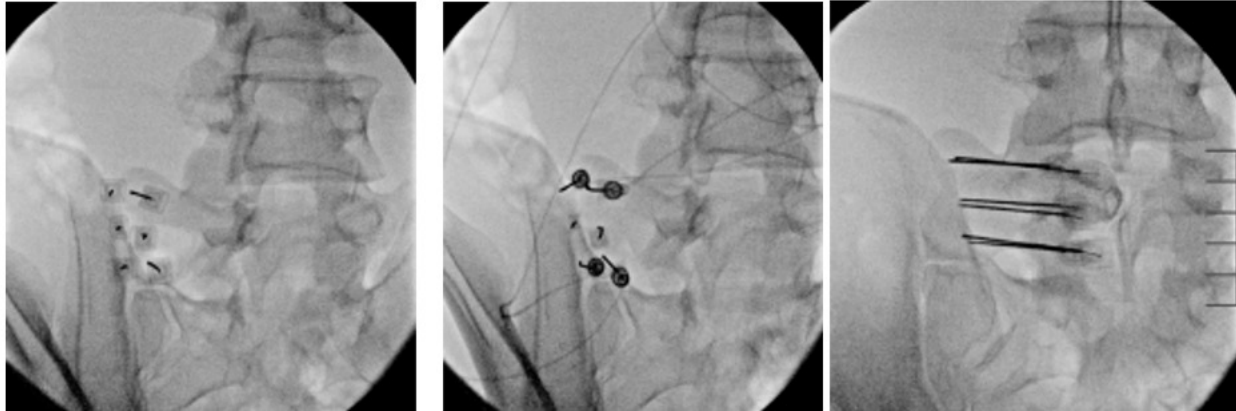


Fig. 5. Needle placement for patient B. A strip lesion was created using six needles with bipolar RFA.

Consent

All authors declare that written informed consent was obtained from both patients for publication of this case series and any accompanying images.

CONCLUSIONS

Our case series demonstrates that bipolar RFA can provide substantial pain relief in patients with BS refractory to conservative therapy. Compared with monopolar

techniques, bipolar RFA produces broader, continuous lesions suited for treating irregular pseudoarticulation anatomy. Patient outcomes varied, with one patient achieving durable relief at 7 months, and another experiencing partial, short-term benefit. These findings support bipolar RFA as a promising minimally invasive option for select BS patients. Further studies are needed to validate efficacy, optimize patient selection, and determine long-term outcomes.

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