

BERTOLOTTI SYNDROME A REAL PAIN IN THE LOW BACK: A CASE REPORT & REVIEW ON PSEUDOARTICULAR INJECTIONS AS A TREATMENT APPROACH

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INTRODUCTION

Bertolotti syndrome is a congenital spine disorder in which an anatomical variation of the caudal most lumbar vertebrae fuses or articulates with the sacrum or the ilium leading to low back pain.¹ This anatomical variant, also known as lumbosacral transitional vertebra (LSTV), was first coined by Bertolotti in 1917. Subsequently, these anatomical changes promote altered spine biomechanics, leading to an early age onset of spondylosis and degenerative disc disease. The prevalence of Bertolotti Syndrome is estimated to be about 4 to 8% in the general population and up to 25% involving individuals less than 45 years of age.² The clinical presentation often presents as non-traumatic, localized, and lateralized low back pain without associated neurological deficits.

Standard management primarily uses conservative treatment modalities, including oral NSAIDs, physical therapy, and spine manipulation. A treatment algorithm beyond these traditional measures for Bertolotti Syndrome remains challenging due to insufficient interventional treatment guidelines and available data. More aggressive treatment options have been explored, ranging from fluoroscopic-guided injections at the site of transitional articulation to surgery. The primary objective of this study is to describe a successful injection intervention technique with particulate corticosteroid injection under fluoroscopy at the site of pseudoarticulation and discuss a comprehensive review of the efficacy of corticosteroid injections for treating Bertolotti Syndrome. Herein, we present a 45-year-old male patient with a long-standing history of low back pain.



Figure 1: Lumbar spine radiographs showed levoscoliosis measuring 24 degrees from T12 to L4, degenerative disc disease involving L4-5 and L5-S1, and enlarged left L5 transverse process forming pseudoarthrosis with the infra adjacent sacral ala.

CASE DESCRIPTION

A 45-year-old male with a history of chronic low back pain for 20 years presented with six months of progressively worsening, non-radiating, non-traumatic, left lower back pain. The primary complaint was a focal lower deep back pain described as an aching and throbbing sensation, worse with extension, prolonged standing, and one-legged activities. The patient had previously been treated with physical therapy, chiropractic care, a home exercise program, activity modification, an inversion table, meloxicam 15 mg daily, and tizanidine 2 mg PRN TID with no relief of symptoms.

The patient's physical examination was significant for reproducible symptoms with lumbar extension and lateral bending to the left. Dural tension signs were negative. Neurological examination revealed no strength, sensory, or reflex deficits. Severe tenderness to palpation along the left sacral sulcus, approximately L5/S1 lateral level was present. Lumbar spine radiographs showed levoscoliosis measuring 24 degrees from T12 through L4, degenerative disc disease involving L4-5 and L5-S1, and an enlarged left L5 transverse process forming pseudoarthrosis with the infra adjacent sacral ala [Figure 1].

The patient underwent a left L5/S1 pseudoarthrosis corticosteroid injection with local anesthetic. Lying in a prone position, the patient was prepped using a sterile technique. 1.0cc of 1% lidocaine was used as a local anesthetic for the skin. A 22-gauge 5-inch Quincke needle was advanced using fluoroscopic guidance to access the L5/S1 pseudoarthrosis injection target location. Once the injection site was identified under fluoroscopy, the position was confirmed using iohexol contrast [Figure 2]. The medication involving 1cc of lidocaine 1% and 20 mg methylprednisolone was injected at the confirmed location. Pre-procedure pain levels were reported to be 7/10, and post-procedure was reported to be 0/10. One and six-month clinic follow-up visits documented 0/10 pain, with baseline pain returning at the ten-month clinic visit.



Figure 2: Intraoperative fluoroscopic guidance injection with contrast confirmation.

DISCUSSION

The etiology of the primary pain generator in symptomatic cases of Bertolotti Syndrome is multifactorial and difficult to assess due to the changes in the biomechanics of the spine, thus making the target of interventional procedures challenging. Unilateral LSVT causes significant loading throughout the spine, resulting in oblique pelvic alignment and scoliosis. This malalignment or alteration in biomechanics is an imbalance that perpetuates further loading, leading to a significantly increased risk for unilateral degenerative changes involving the facet joints and segmental intervertebral disc compared to the general population.³ One hypothesis for the primary pain generator includes the articulation of the transverse process with the sacrum or ilium, resulting in degenerative changes at the focal site. Hence, we elected to perform a targeted and precise approach with a fluoroscopic-guided corticosteroid injection at the site of pseudoarthrosis for sustained pain relief.

Within the current literature, there are multiple suggested injection techniques for this spine condition. Transforaminal or interlaminar epidural steroid injections may provide some benefit when a clinical presentation is consistent with nerve root irritation due to LSTV.³ In 2021, a retrospective study analyzing pain outcomes among 67 patients utilizing various injection techniques that included trigger point, transforaminal epidural, medial branch block, sacroiliac joint, and pseudoarticular injections demonstrated significant pain relief with pseudoarticular injections compared to other techniques (88% vs 61%).⁴ Also, among the literature, many other published case reports and case series demonstrate sustained pain relief and substantial reduction in pain intensity scale relative to baseline with the pseudo articulation injection techniques utilizing particulate and non-particulate corticosteroids.

In conclusion, we discuss a case where interventional management with particulate corticosteroid injections at the site of pseudo-articulation with fluoroscopy can benefit patients refractory to conservative management. Given the evidence-based success of corticosteroid injections at the site of pseudo-articulation, we support interventional spine or pain clinicians who confirm the diagnosis of Bertolotti Syndrome on radiographic imaging without radicular symptoms to consider a targeted and precise approach with particulate corticosteroid injection at the site of pseudo-articulation under fluoroscopy for potential sustained pain relief for their patients.

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