

# Utilizing Diagnostic Injections and Assessing Surgical Outcomes in Treatment of Bertolotti's Syndrome

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## Introduction

Bertolotti's Syndrome, congenital lumbosacral transitional vertebra (LSTV) causing back, hip, groin, sacroiliac, and/or lower extremity pain, is poorly recognized with few studies of diagnosis or treatment. Conservative management provides minimal or delayed relief with no cure. Steroid and anesthetic injections targeted at the transverse-ala junction have been shown in small series to provide diagnostic clarity as well as transient relief.<sup>1,2</sup> No large-scale injection study with surgical cohort analysis for Bertolotti's Syndrome has been recorded to date in the literature. We propose that these injections, when targeted to patients with the above symptoms, predict favorable surgical response.

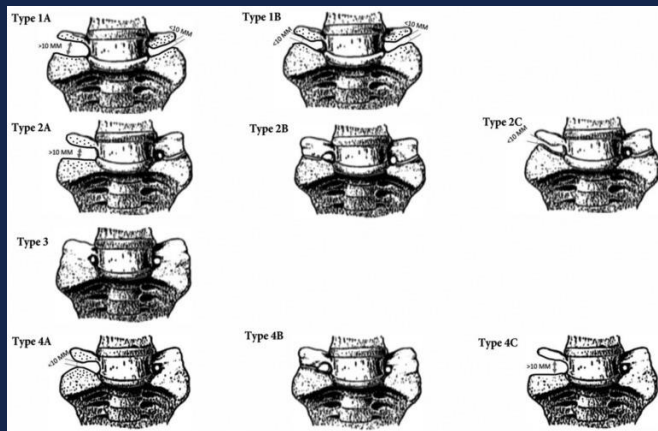


Figure 1. Schematic presentation of the classification of unilateral and bilateral LSTV

## Methods

- Retrospective cohort study (2022-2023) of 100 consecutive patients presented to Jenkins NeuroSpine receiving dedicated injections ranging from 2019-2023 into the LSTV anatomy, performed with bupivacaine, dexamethasone, lidocaine, and/or Kenalog-40 with intraoperative fluoroscopic or CT confirmation.
- Patients were advised to maximize their symptoms with known triggers pre- and immediately post-injection to assess diagnostic value.
- Recorded VAS pain score and relief duration.
- Subanalysis of surgical outcomes for patients undergoing subsequent Bertolotti's surgery at Mt. Sinai Hospital by a single surgeon.

## Results

- 100 patients (37 men, 63 women, aged  $39.2 \pm 1.63$ ) received injections (52 unilateral, 48 bilateral) at their LSTV transverse ala junction by 65 different practitioners.
- Prior injections (102, average 1.02 per patient) had <50% response without diagnostic value.
- 95 of 100 patients reported improvement, averaging 83.6% pain relief for 5.35 days, ranging from 5 minutes to 3 months.
- Of 5 patients with <50% improvement in symptoms, their Bertolotti's Injection was still felt to be diagnostic in 4/5 and the 1 did not continue with the practitioner.
- We do not have a clear FN rate due to our use of the positive response as a "hard-stop" predictor of benefit with surgery.

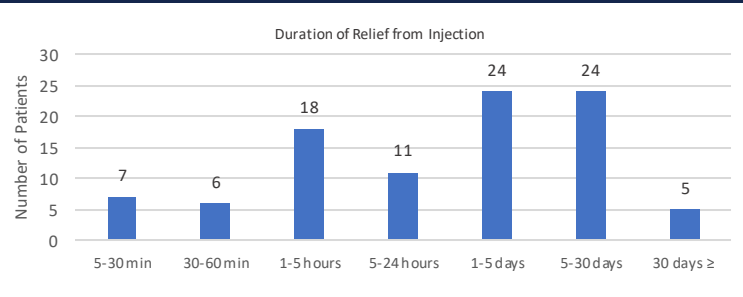


Figure 2. Duration of relief from injection

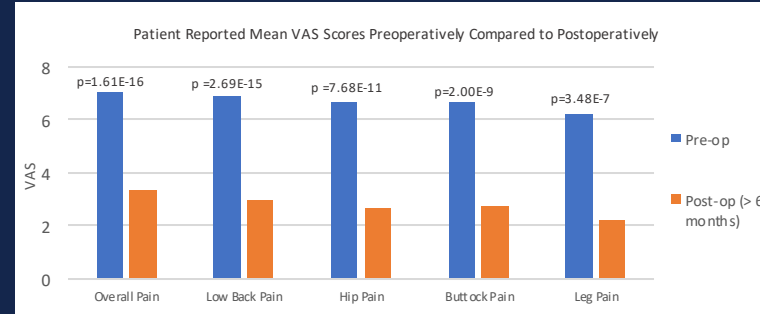


Figure 3. Mean VAS scores Pre-Op vs Post-Op (> 6 months) of patients who underwent surgical treatment for their Bertolotti's Syndrome.

- 51 out of 95 patients who reported relief opted for surgery with the primary surgeon (7 decompression, 44 fusion).
- 46 of 51 (90.2%) patients ultimately experienced good relief (>50%) when fully healed from Bertolotti's surgery.
- In this surgical cohort, no significant correlation found between the duration of relief from injection and post-surgical pain relief ( $\rho = 0.079$ ,  $p = 0.606$ ).

## Discussion

Many patients and practitioners deem injections unsuccessful or nondiagnostic when pain relief is short-lived. Regarding Bertolotti's Syndrome, our data shows that a favorable response, however transient, to lumbosacral intertransverse injections can predict a durable response to surgery. Given this, operative selection of resection and/or fusion surgery was based on the anatomic subtype according to our previous surgical outcomes study.<sup>4</sup> Given the high sensitivity in patients with transitional anatomy and symptoms suggestive of Bertolotti's Syndrome as well as its predictive value for surgical outcomes, patients with LSTV and suggestive symptoms should be considered for injections to diagnose Bertolotti's Syndrome, which responds well to surgical management.

## Conclusion

- Localized LSTV intertransverse injections provide brief, yet significant diagnostic pain relief for Bertolotti's Syndrome, confirmed with high surgical success via resection and/or fusion.
- The preliminary data suggests Bertolotti's injections should be valued diagnostically based on the amount of relief rather than the duration.

## References

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