

**Purpose:** Degenerative lumbar spinal stenosis is an important problem. The presentation is chronic lower back pain with or without radiculopathy. Many treatment modalities including surgery and epidural administration of steroids, have been used to manage this pain. Hypertonic saline, which has been used as a percutaneous epidural adhesiolysis, can be injected in expectation of longer-lasting effects. Limited literature exists reporting outcomes of hypertonic saline injection with conventional epidural steroid injection (ESI). This study aimed to determine the effect of adding hypertonic saline to conventional ESI to provide pain relief for chronic radiculopathy patients.

**Methods:**

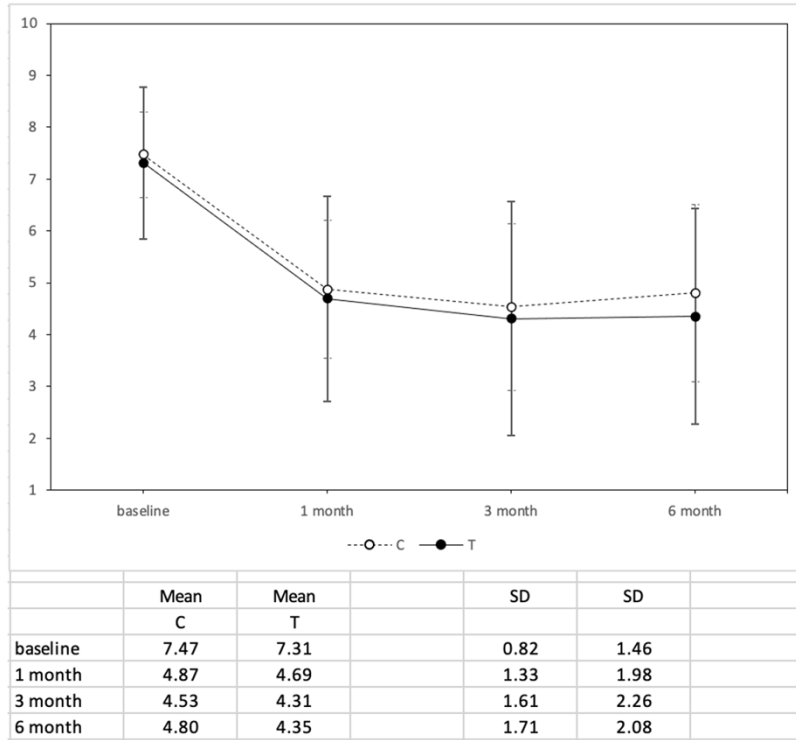
A prospective double blinded, randomized control study were studied between January 2019 and December 2020, A total of 68 patients with central canal stenosis were randomly allocated into either 2 groups. The 56 patients (26 in the hypertonic group, 30 in the control group) were reviewed and analyzed. Both groups had similar etiological characteristics. The hypertonic group received 10% sodium chloride solution added to 0.5% bupivacaine, and 80 mg. of methylprednisolone. The control group received 0.9% sodium chloride solution added to 0.5% bupivacaine and 80 mg. of methylprednisolone. Outcome measures were taken at baseline, one, 3, and 6 months after procedure. The primary outcome measures included the numerical rating scale (NRS) and Oswestry disability index (ODI). We considered a 50% change of NRS and a 40% of ODI as the minimum clinically important difference (MCID). The changes from baseline at each time point between 2 groups were compared using the Mann-Whitney U test.

**Results:**

Caudal epidural steroid injection, with or without the addition of 10% hypertonic saline, was effective and provided significant pain relief with the improvement of functional outcome within 1 months after the procedure ( $P < 0.001$ ). The estimated difference in NRS scores from baseline throughout a 6-month follow-up period in the hypertonic group were not clinically significantly higher than control group ( $P = 0.60$ ). The ODI was not different between the groups ( $P = 0.33$ ).

**Conclusion:**

Conventional ESI is a useful modality in treating pain secondary to central canal spinal stenosis, and the short-term functional outcomes were also improved significantly. The addition of hypertonic saline did not yield a clinically important reduction in pain or functional outcome. Considering the potential risks from hypertonic solution, we recommend routine use with awareness of this approach in practice.



**This graph shows NRS scores at baseline, 1, 3 and 6 months**