Novel Injection Technique Predictive of Postoperative Pain Relief in Removal of Lumbar Spinal Instrumentation

Evans, C.[1], Synovec, J.[2], Pahl D.[2]
chlevans@utmb.edu

Disclosures: Douglas W. Pahl: 4WEB Medical: Other financial or material support, Nanovis: Stock, NASS: Board member, VAS: Unpaid consultant, Tainer Rx: Stock

INTRODUCTION: Instrumentation-related postoperative back pain is a potentially debilitating complication of lumbar fusion. To delineate who will be the most appropriate patient to undergo removal of instrumentation (ROI), a reliable diagnostic indicator is needed. Diagnostic injections around the instrumentation can provide valuable feedback on source pain. The purpose of this study is to evaluate to see if there is a positive correlation between the pain relief seen in a peripedicle screw lidocaine injection and pain relief after ROI.

METHODS: An IRB approved retrospective review was completed examining patients with 1- 3+ levels of lumbar spine fusions who underwent ROI following injection. Visual Analog Scale (VAS) and pain journals following novel lumbar injections in the pre-ROI period were examined. Various patient factors and comorbidities were analyzed to evaluate effect on 1-level, 2-level, and 3+ level fusions ROI outcomes using mixed ANOVA analysis. Pearson's correlations were utilized to evaluate relationship between pain level after injection and pain level after ROI.

RESULTS SECTION: 197 patients underwent lumbar ROI at for 1, 2, or 3+ levels were included in the study. VAS pre-op is significantly higher than best VAS score immediately after injection for all three groups ($p<0.001$). VAS post-injection is significantly lower than VAS post-op for all three groups ($p<0.001$). There was no significant difference in relief of symptoms in patients who received a Wiltse screw versus open approach ($p<0.05$). The relationship between pain level after injection and after ROI showed a very strong correlation of 0.849 ($p<0.001$). Lastly, if there are more levels involved, there is a significantly greater pain relief compared to when less levels are involved ($p<0.05$).

DISCUSSION: This study demonstrates a potential strong correlation between diagnostic lumbar instrumentation injections and predictable postoperative pain relief following lumbar ROI, with greater degrees of pain relief and a greater correlation between injection relief and ROI relief being found when more levels are involved. Further prospective evaluation of diagnostic lumbar instrumentation injections is necessary to assess the validity of this potential correlation.

SIGNIFICANCE/CLINICAL RELEVANCE: Peripedicle screw injection serves as a reliable diagnostic indicator for pedicle screw related pain. The amount of pain relief seen is greater when more levels are involved. Therefore, the authors propose that peripedicle screw injections are a reliable diagnostic indicator of pedicle screw related pain regardless of whether a percutaneous or open approach was used in the initial procedure.