

## SED With Thermal Modulation For Multilevel Discogenic Pain

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**Purpose:** This is a preliminary report of a prospective study to evaluate selective endoscopic discectomy and thermal annuloplasty for the treatment of multilevel and non-contiguous discogenic back pain.

**Materials and Method:** 40 patients with three or more levels of discogenic back pain who were determined to be inappropriate for multi-level fusion elected to undergo percutaneous Selective Endoscopic Discectomy and Thermal Annuloplasty as an alternative to fusion. The patients had provocative discography by the senior surgeon before receiving this minimally invasive surgical procedure. Patients who had concordant back pain that also had an abnormal discogram pattern demonstrating at least a grade three annular tear were considered appropriate surgical candidates. No effort was made to exclude patients with medication dependency problems, workman's comp, or litigation. The patients all had Percutaneous Selective Endoscopic Discectomy utilizing a specialized operating spine scope with multi-channel irrigation ports.

Selective discectomy was made possible by incorporating a vital dye to stain degenerative disc tissue for targeted extraction, followed by thermal annuloplasty using a bipolar flexible radiofrequency probe and a special side firing Ho:Yag laser fiber developed specifically for the endoscope. At the time of surgery, a repeat intra-operative discogram using Indigocarmine, a vital dye mixed 1-9 with isovue 200, reconfirmed the painful level and labeled the disc tissue for extraction. Patient follow up ranged from 3 months to 2 years. Patients were asked to fill out an Oswestry questionnaire and selected questions from a modified SF -36 questionnaire.

**Results:** 32/40 patients responded favorably to the Oswestry questionnaire, indicating significant improvement of their back pain greater than 50% on a visual analog scale. All would do it again. There were no complications and no patient was worse.

**Discussion:** Treatment for non-radicular back pain is currently limited to fusion techniques that, due to its morbidity, is reserved only for carefully selected patients with severe, incapacitating pain. While fusion is an accepted option, there is currently no solution for multi-level discogenic pain or pain in non-contiguous segments. Recent reports on the use of an intradiscal catheter (IDET) demonstrated improvement in functional outcomes in select patients. The senior author had previously reported on patients with back pain relief following arthroscopic discectomy combined with KTP laser decompression, speculating that the heat from the KTP laser provided hemostasis and a thermal effect on the annulus.

**Conclusion:** The combination of selective discectomy and thermal annuloplasty provided pain relief in a population of patients with no surgical alternative. Fusion, the ultimate consideration, was not deemed advisable in all of these patients. The addition of an endoscope allows for direct identification of annular tears and permits the disc space to be decompressed selectively, removing the disc material producing substance P and the disc material serving as interpositional tissue between the annular fibers keeping the annular tissue from healing. This alternative technique to fusion improves on the IDET technique and provides a safe and effective alternative to fusion in patients with very few effective treatment options.

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