Role of Nucleoplasty in the Treatment of Discogenic Axial Low Back Pain
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Introduction: Chronic discogenic pain is a condition afflicting a fair majority of adult population. The treatment ranges from non operative treatment (physiotherapy, acupuncture, chiropractic manipulation) to major interventional surgery (disc replacement/spinal fusion). A lot of minimally invasive procedures have been developed over time ranging from primary chemonucleolysis in 1964 to intradiscal electrothermy in 2000. Nucleoplasty is one such procedure. Nucleoplasty is a minimally invasive procedure that utilizes the principle of radiofrequency ablation to achieve volumetric reduction, reduction of intradiscal pressure and disc decompression. Literature supports the role of nucleoplasty in discogenic leg pain to an extent but the effectiveness in terms of back pain has not been evaluated much so far. The discogenic leg pain has various treatment options of root block, endoscopic discectomy, and open microdiscectomy with successful outcome in treating the leg pain. Back pain still remains a major disabling problem which is yet to be addressed in a minimally invasive way.

Objective: To evaluate the effectiveness of nucleoplasty in the treatment of chronic discogenic axial low back pain in patients who failed conservative treatment for a period of 3 months.

Subjects: 30 patients undergoing nucleoplasty performed by a single surgeon at one or more levels from Oct 2008 to Dec 2009 were included in the study. Patients with clinically symptomatic back pain with or without leg pain who failed conservative treatment were included. The patients with working diagnosis of infection or malignancy, clear cut nerve root pain with working diagnosis of disc prolapse, pregnancy and children were excluded. All patients who underwent the procedure had discography carried out for the levels in question.

Study design: Patients were assessed clinically with using the Visual analog Scale (VAS) back and leg, Oswestry disability index (ODI), and Short Form-36 (SF-36) preoperatively. MRI was studied for evaluation of degenerate disc with regards to disc height, presence and location of annular tear. In the post operative period they were followed at 6 weeks, 3 month, 6 month and 1 year.

Outcome measures: The patient satisfaction was determined by VAS back and leg, ODI and SF-36 at 6 months and 1 year. Clinical and radiological outcomes were compared with preoperative outcome measures to ones at 6 month and 1 year.

Results: Significant improvements was noted only in 66% (20/30) of the treated patients. The ones that improved showed significant improvement in outcome indicators of ODI, VAS (back) and SF-36.

We analysed the reason for success in the population that improved after the procedure. Presence of 'high intensity zone (HIZ)' indicating annular tear was associated with poor outcome. Patients with positive discography (11/18) surprisingly did not show an improvement as against the ones with negative discography (9/12).

Conclusions: Nucleoplasty has an effective role in the treatment of patients with chronic discogenic back pain in a select group.