Short and Intermediate Term Effectiveness of Coblation-Nucleoplasty, Preliminary Experience in Egypt

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Citation


Abstract

INTRODUCTION

The spine can be an important source of pain and causes disability, affecting two thirds of adults at some time in their lives. The intervertebral disc is the focal point of pathology for most low back pain and contained disc herniation is a common cause of low back pain. Treatment in these patients is mainly conservative medical management, based on medication, physical therapy, behavioral management, and psychotherapy, surgery being limited to elective cases with neurologic deficits or those not responding to conservative measures.\(^1\)

Nucleoplasty is a minimally invasive percutaneous intradiscal coblation therapy option in patients with chronic discogenic low back pain. The technique generates a plasma field that produces ablation of the degenerated disc material.\(^3\)

The purpose of this study was to assess the effectiveness of nucleoplasty in our patients up to 1 year after treatment.

PATIENTS AND METHODS

All patients included in this study suffered from established back pain and/or radiating pain in the lower extremities. Age, gender, weight, body mass index (BMI) and smoking status were recorded and the clinical status of the patient documented using a visual analogue pain scale (VAS).

All patients were evaluated clinically and with radiography and MRI in order to confirm the presence of lumbar and/or sciatic pain, in the absence of major neurologic deficit and with lack of response after 6 weeks of conservative management.

Additionally, patients were asked to provide details regarding analgesic consumption and satisfaction from the procedure. Nucleoplasty was carried out under fluoroscopic guidance. All treated patients were reviewed at 3, 6, 9 and 12 months, with MRI done post-operatively at 6 weeks.

Figure 1

Figure 1: Preoperative MRI show contained L5-S1 disc herniation and intraoperative discography proving it is contained disc.
Figure 2
Figure 2: (a) Preoperative T2 MRI showing L4-5 disc herniation and (b) postoperative T2 MRI show adequate decompression of thecal sac.

Figure 3

RESULTS

Between January 2007 and June 2008, 12 patients underwent nucleoplasty in our department. The mean age of the 4 females and 8 males in this study was 38 years (range 28-44). The mean duration of symptoms was 6 months (range 3-9 months). Average follow up was 6 months (3-12 months). All patients showed marked immediate postoperative improvement of their symptoms. 2 patients showed moderate recurrence of their symptoms which were managed successfully by medical treatment. One patient had persistence of facet pain which was moderately improved by local injection. One case had mild discitis which was improved by medical treatment and brace for 3 months. Average preprocedural pain level for all patients was 8.2 (on a visual analog scale of 1 to 10), while the average pain level at 12 months follow-up was 4.1. A statistically significant reduction in analgesic consumption, disability and sick-leaves from work were obtained after using the coblation nucleoplasty procedure. 66% of Patients are fully satisfied from the procedure.

DISCUSSION

Percutaneous disc decompression using Coblation (Nucleoplasty trade mark) confirms the principle of volumetric reduction to achieve disc decompression and reduce intradiscal pressure. Previous analyses have shown that Nucleoplasty achieves reduction in volume and intradiscal pressure with minimal damage to surrounding tissue in the treated disc. All our cases were performed under local anaesthesia which enabled the patients being discharged from hospital on the same day of the procedure.

The procedure was performed under fluoroscopic guidance using a single C-arm device changed between different projections as required. Needle insertion was performed with the patient in the prone position and the C-arm positioned obliquely to the patient but parallel to the end plates of the target disc level.

We performed the procedure unilaterally in all our patients. Percutaneous disc decompression can be used to treat patients with severe spinal stenosis using Nucleoplasty. In such cases, access to the disc is done bilaterally using a paramedian approach. Channels were created bilaterally using Coblation and stabilized using coagulation.

The procedure may result in some complications, which include bowel or bladder symptoms, muscle spasm, new pain, numbness/tingling or weakness, fevers/chills, rash/pruritus, headaches, nausea/vomiting, bleeding, and needle insertion site pain. Complications reported also include discitis, increased back pain, and reherniation.

The most common side effects at 24 hrs post-procedure reported in literature was pain at the needle insertion site, new numbness and tingling, increased intensity of pre-procedure back pain, and new areas of back pain.

The only complication we encountered during the study was
pain at the needle insertion site. Three patients had temporary parasthesia during the procedure, which ended as the procedure was completed.

CONCLUSION

Nucleoplasty is a safe, effective therapy for patients with chronic, discogenic back pain and/or radiculopathy who had failed conservative therapies, and are not considered candidates for open surgery. The procedure resulted in significant reductions in levels of disability and incapacity for work as well as decreased analgesic consumption.

Nucleoplasty seems to be associated with short-term increased pain at the needle insertion site and increased pre-procedure back pain and tingling numbness but without other side effects.

Nucleoplasty for disc decompression is one of the least-invasive techniques in the minimally invasive category, thus far exhibiting a very low incidence of complications.

References

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