

Laser Discectomy In Lumbar Recurrent Disc

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Citation

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Abstract

INTRODUCTION

The symptomatic lumbar recurrent disc, important complication of the surgical treatment of lumbar disc herniation, has a rate of incidence of 5-15%^{1,2,3,4,5}. It's one of most causes of failed back syndrome; The common surgical treatments are open surgery as discectomy and microdiscectomy, minimally invasive procedures like endoscopy until stabilization procedures (PLIF, ALIF). Percutaneous laser discectomy under CT-scan guidance can be considered an alternative technique and a new approach to this disease, in order to minimize the surgical complications (spine instability, peridural scar, bleeding, postop pain...) due to a traditional surgery and a general anesthesia. A 980 nm Diode (Biolitec AG TM) Laser energy (with the properties of polarization, spatial and temporal coherence and polarization) introduced via a 21G needle under CT-Scan guidance and local anesthesia, vaporizes a small amount of nucleus pulposus with a reduction of volume of the disc (closed hydraulic space) by a shrinkage and a relief of pressure on nerve root with disappearance of pain due to the disc protrusion pressing against the nerve root (figg. 1-3).

MATERIAL AND METHOD

A retrospective multicentric study with a mean follow up of 1 year (6-18 months) has been conducted on thirtyeight patients treated on one single level, twentyfree females and fifteen males, affected by an image documented and symptomatic lumbar recurrent disc, one year after previous open surgery . They were unresponsive to conservative treatment for at least 3 months on average. The level involved in 4 cases was L3-L4 (8%), in 16 cases L4-L5 (43%) and in 18 cases L5-S1 (49%); the mean age was 38 (18 – 42). The exclusion criteria have been a free disc fragment, cause disc herniation must be in contact with the parent disc in order to obtain a reduction of pressure on the nerve root, peridural scar entrapment by previous surgical

approach (even if a previous surgery does not contraindicate the treatment), severe spondylosis with osteophytes and calcifications of the posterior spinal ligament and post surgical instability. Finally according to the North American Spine Society and AAOS guidelines, very important is also the patient involvement in surgical decision. The procedure, approved by International Society of Laser Assisted Spine Surgery (ISLASS, www.islass.org) protocol, has been performed under multi slices CT-Scan guidance (64 Slices), Laser Decompression has been performed via a 21 G needle inserted percutaneously into the herniated disc under a e.v sedation, local anesthesia and antibiomatic prophylaxis. The total Laser energy delivered was of an average of 1500-1800 Joules, in pulsed - 2 sec – wave, 12 Watt powered. A specific Diode Laser 980nm (Biolitec AG), and a dedicated 360 µm optical fiber (NA 0.22) has been used. A smoke evacuation system specifically designed and worldwide patented (Menchetti's handpiece) connected to the needle permits to eliminate the gas formation during the treatment, by reducing the postoperative muscle contracture with relative pain.

RESULTS

A retrospective clinical evaluation at an average follow up of 12 months, have been performed by applying the Macnab's criteria (tab. 1) and the VAS (Visual Analogic Score). The Excellent/Good results (according to Macnab) were 55%, the Fair results were 10% and Poor were 35%. The VAS decreased from a preoperative 8.7 to a postoperative 4.3. In the Excellent/Good results no other treatment has been employed. Under CT-Scan guidance no complication occurred.

CONCLUSIONS

In conclusion percutaneous Laser Discectomy^{7,8,9} under multi slices CT-Scan, can be a valid surgical choice in the

management of symptomatic lumbar recurrent disc if the selective inclusion criteria are respected. The CT scan guidance offers a better visualisation of disc herniation and nerve root permitting to delivery more laser energy when required.

Anyway randomized clinical trials must be performed and as we always say, open surgery is not precluded, if needed.

Table 1: Macnab's criteria

- Excellent/Good : Resumed preop function, occasional backache, no objective signs of nerve root involvement
- Fair: Intermittent episodes of mild lumbar pain and/or low back pain, no objective signs of nerve root involvement
- Poor: Subjective: no productivity, continued pain, inactive, objective signs of nerve root involvement

{image:1}

{image:2}

{image:3}

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