

PERCUTANEOUS LASER DISCECTOMY. A PROSPECTIVE RANDOMIZED STUDY versus RADIO FREQUENCY DISC THERMAL ABLATION.

P. P. M. Menchetti, M.D., F.R.C.S.(US);

L. Longo, M.D.[°] ;

W. Bini, M.D., F.R.C.S. (US)^{°°} ;

G. Canero, M.D.^{°°°}

Orthopaedic Surgeon, Professor Florence University – Italy

[°] Professor, Siena University – Italy

^{°°} Neurosurgeon, Associate Professor, Seligenstadt - Germany

^{°°°} Orthopaedic Surgeon, San Feliciano Hospital, Rome – Italy

Abstract

A prospective randomized study comparing Laser Discectomy and Radio Frequency Thermal Ablation in disc herniation treatment has been performed. Percutaneous procedures in the disc herniation treatment over the years had several changes, not only related to the different types of energy (Laser, Radio Frequency), but also related to different indications (i.e.: contained or non contained discs). A 980 nm Diode (Biolitec AG) Laser energy introduced via a 21G needle under C-arm or CT-Scan guidance and local anesthesia, vaporizing a small amount of nucleous pulposus with a disc shrinkage and a relief of pressure on nerve root, has been employed in both contained and non contained disc herniation treatment. A bipolar radio frequency energy introduced via a 21G needle reaching the temperature of 50-70° C inside the disc has been also employed in both contained and uncontained disc herniation treatment.

Material and Method: A multicentric prospective randomized study on 50 patients affected by contained and non contained lumbar disc herniation has been performed. The parameters related to sex, age, lumbar discs level, symptoms duration were overlapping. Subannular and transannular extrusions were treated under CT-Scan Guidance (**Aquilion 64 Slices Toshiba**). No free disc fragment (absolute contraindication) has been treated. The average 980 nm Diode (**Biolitec AG**) Laser energy delivered in a pulsed wave was of 1500 Joules (12 Watt, 2 sec. pause, 0.60 sec. exposure time). A bipolar pulsed Radio Frequency (**Cosman**) with 15mm active tip has been used for disc thermal ablation.

Results: The results according to Macnab's criteria and VAS showed no statistically significant difference ($p < 0.05$) in the effectiveness of Laser vs Radio Frequency disc thermal ablation in contained disc herniation treatment. A statistically significant ($p > 0.05$) difference in the results, was found in non contained disc herniation group: Laser group showed a successful result in 89% of cases vs 60% of Radio Frequency cases. Radio Frequency group were more painful during the procedure. Laser energy delivered under CT-Scan was on average 40% (S.D. 0.36) more than under C-arm.

In conclusion, percutaneous procedures appear to be safe, effective and a valid alternative respect to standard microdiscectomy in order to treat both contained and non contained disc herniation reducing postoperative complications (i.e.: recurrence rate, peridural scar, infection rate, instability).