

PERCUTANEOUS LASER DISC DECOMPRESSION. A PROSPECTIVE STUDY UNDER C-ARM vs. CT-SCAN GUIDANCE.

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ABSTRACT

A 980 nm Diode (**Biolitec AG**) Laser energy introduced via a 21G needle under C-arm or CT-Scan guidance and local anesthesia, vaporizes a small amount of nucleous pulposus with a disc shrinkage and a relief of pressure on nerve root. The procedure in the disc herniation treatment over the years had several changes, not only related to the different types of lasers (Ho:YAG, Nd:YAG, Er:YAG), but also in the types of optical fibers employed and in the neuronavigation systems. In our department starting under C-arm, realized that the only way to visualize the nerve root and increase the total energy delivered in several points of disc herniation, was to use a CT-Scan guidance.

Material and Method: A prospective study on 400 patients (530 cases) affected by contained and non contained disc herniation was performed. The patients had a PLDD (Percutaneous Laser Disc Decompression) under CT-Scan guidance. A control group of 200 patients (350 cases) affected both by contained and noncontained disc herniation had a PLDD under C-arm.

Results: The results showed a statistically significant difference ($p < 0.05$) in the effectiveness of the PLDD in Disc Herniation treatment. Non Contained disc herniation had a successful result in 88.5% of cases under Ct-Scan guidance vs 70% of cases under C-arm . No statistically significant ($p > 0.05$) difference was found in contained disc herniation group. The laser energy delivered under CT-Scan was on average 40% (S.D. 0.36) more than under C-arm, because the visualization of nerve root and the size of the disc herniation permit higher and powerful application of laser light, without any damage on surrounding tissues.

In conclusion, CT-Scan guidance appear to be the best way to practice PLDD not only in terms of resolution, treating succesfully non contained disc herniation, but also because the visualization of the nerve root permits a safe application of the laser energy and the effectiveness of the procedure give a faster return to normal life.