Intradiscal Ozone Chemonucleolysis vs. Microdiscectomy: 48 Months Follow-up

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Objective: Comparison of efficacy between intradiscal ozone chemonucleolysis versus microdiscectomy in patients affected by non-contained lumbar disc herniations.

Background data: In the past 10 years, the quantity of literature on use of ozone in the treatment of lumbar disc herniations has been rapidly growing. The results seems promising with complication rates almost nil.

Materials & methods: Prospective, non-randomized, self-selected, control study with follow-up at 1, 2 and 4 years. From January till June 2005, 45 patients, mean age 45 yyyy (20-77), affected by low back and leg pain due to non-contained (extruded) lumbar disc herniation, were included in the study. Patients were informed adequately regarding the two treatment options: ozone chemonucleolysis and microdiscectomy, and they self selected their treatment. The symptoms duration prior to treatment was 5.9 months (±2.5) for ozone group and 3.3 months (±4) for microdiscectomy. In all cases neurological examination was found negative for palsy (≥ 4 on Fisher scale). The ozone chemonucleolysis group included 30 patients, mean age 45.8 yyyy, and microdiscectomy group included 15 patients, mean age 40.1 yyyy. Patient outcomes were assessed using the Visual Analogic Scale and Roland-Moriss Disability Questionaire at different time periods.

Results: At 12 months 27 patients (90%) in the ozone group and 14 patients (93.3%) in the microdiscectomy group showed a clinically relevant improvement in pain (P< 0.001, Wilcoxon test) and function (P< 0.001, Wilcoxon test). At 24 months 2 patients from the ozone group went to microdiscectomy while 1 patient repeated the ozone treatment. In the microdiscectomy group 1 patient presented a new disc herniation at the level adjacent to the original one and was operated. At 4 years, 2 patients from ozone and one from microdiscectomy group were lost from the follow-up. Furthermore, one patient from microdiscectomy group underwent fusion surgery for increase in low back pain. Finally, at 4 years follow-up, 73.3% (P< 0.001) of patients from ozone group and 73.3% (P< 0.005) of patients from the discectomy group maintained a statistically significant improvement as compared to the baseline values. There were no significant differences between two groups regarding the pain and function improvement.

Conclusions: The results of this study confirm the previous reports on ozone chemonucleolysis in lumbar disc herniations with results no different from surgical discectomy. Its advantages stay in its minimal invasiveness, absence of complications and lowering of hospital and social cost.

Keywords: Lumbar disc herniation, chemonucleolysis, ozone, percutaneous surgery, microdiscectomy