

## Disc coablation and epidural injection of steroids: a comparison of strategies in the treatment of mechanical spinal discogenic pain

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### Summary

In this study two strategies in the treatment of Mechanical Spinal Discogenic Pain have been compared: Disc Coablation and Epidural Injection of Steroids.

In 2003 50 patients treated with one or two epidural injections have been selected “ad random” and 50 patients treated with disc coablation.

Comparison of the data indicated an improvement of average VAS when relaxed for both groups ( $p < 0.01$ ), while after slight-moderate strain, this value was significant only after coablation ( $p < 0.001$ ). Finally, average VAS was clearly lower ( $p < 0.01$ ) after coablation as compared to epidural injections.

*Keywords:* Discogenic pain; epidural injection; disc coablation.

### Introduction

In the anterovertebral compartment (anterior space of the transverse process) pain may be caused by stretching or spraining of the discal annulus fibrosus, by thickening or partial destruction of the yellow ligament, and by anterior periduritis.

According to a recent study, the incidence of Mechanical Spinal Discogenic Pain (MSDP) occurs in 39% of the population with low back pain and from the clinical point of view it is an axial nociceptive or laterolumbar pain aggravated by flexure, valsalva and the digital pressure on the spinous processes on algic level.

It may or may not be associated with radiculitis (neuropathic component of pain) and may be related to the superoanterior part of the thigh (L1-L2) since many roots of the principal segments on this level contribute to innervation of the discal annulus posterior. Radiologically (CAT and NMR) bulging of disc is always present, which in a more or less marked

manner may interact with muscle-ligament and adjacent nerve structures.

Until about a year and a half ago, patients who came to our Pain Therapy Centre suffering from MSDP were treated with a cycle (on average two) of Selective Epidural Injections (S.E.I.) of depo-cortisone while the practice of lumbar disc coablation (L.D.C.) was subsequently introduced.

The purpose of this paper was to compare the two therapeutic approaches in terms of pain relief when relaxed and after slight-moderate strain.

### Materials and methods

In 2003 we randomly selected 50 patients suffering from MSPD with an average age of 55 years (22–74), who were treated with an S.E.I. cycle of steroids (two segmentary infiltrations 15 days apart with 80 mg of Depo-cortisone) and 50 patients who were treated with L.D.C. (Perc-DLE probe and ArthroCare System 2000 generator, AMS, Italy), making 6 channels in the disc nucleus pulposus with an ablation time of 10 seconds and a coagulation time of 20 seconds.

All the patients had developed algic symptoms for at least 3 months and the average VAS (VAS<sub>m</sub>, considering the neuropathic and nociceptive component) was 8.57 when relaxed and 9.72 after slight-moderate strain.

The evaluation of the entity of strain was made considering the “Quality of Life” parameters expressed in the “Brief Pain Inventory”, Italian version, modified by Caraceni in 1996.

Lumbar pain was present in 80% of the patients and was mostly accentuated by flexure, while 20% of the patients exclusively had radicular and low back pain and radiculitis was associated with 40% of the patients.

The NMR was positive in all patients for degenerative discopathy associated with bulging or contained slipped disk, and the main exclusion criterion for coablation was when disc thickness was reduced by more than 50% of the normal value and when severe neurological deficiencies were present.

In all the patients that underwent coablation a preoperative discography was performed and a “chemical” lesion (congruent severe

pain after intradiscal infusion of 1–2 ml of water soluble contrast) was found in 25% of patients and partially in the remaining patients who underwent treatment.

Levels treated most were L4-L5 (70%) associated with L2-L3 in 10% and L5-S1 in 20% of the cases, and at the end of procedure 40 mg of triamcinolone acetate was infused into the homolevel radicular pouch on the affected side.

## Results

Two follow-ups were done at three and eight months by means of a direct interview conducted by a physician not participating in the study.

The VAS when relaxed and after slight-moderate strain was required, considering the parameters of the latter expressed as “Quality of Life” in the “Brief Pain Inventory”, modified Italian version [1].

The statistical analysis was carried out considering the Interval Confidence by difference of two averages compared with the Student “t” test, and the physical entity of relative improvement of the VAS (Mbefore-Mafter/Mbefore) was evaluated.

At three months the patients treated with S.E.I. of cortisone showed a VASm when relaxed of 3.25 and after strain of 6.82, while at eight months, the VASm when relaxed was 4.75 and after strain 7.52 and the percentage of patients treated again in this period was 57%.

In the patients treated with disc coablation, VASm at three months when relaxed was 0.65 and after strain 2.51, while at eight months the values were 1.55 and 3.52, respectively.

From comparison of the data it can be deduced that the relative improvement of VASm when relaxed is statistically significant at three and eight months for both the patients treated with S.E.I. and for those treated with coablation ( $p < 0.01$ ), while after slight-moderate strain, this value is significant only after coablation ( $p < 0.001$ ).

Finally, the VASm values were clearly lower ( $p < 0.01$ ) after coablation as compared to epidural injection.

## Conclusions

Analysis of the gathered data shows that coablation allows obtaining greater and more constant pain relief

over time as compared to epidural injection of cortisone and, above all, allows a valid functional recovery with improvement of the quality of life in the largest part of the patients treated, without the need for another operation.

These positive results can also be obtained with patients that have partially degenerated and not completely continent discs without signs of chemical irritation, provided that they do not have grave discal degeneration or a slipped disk.

The lumbar pain component (nociceptive) is more sensitive to the treatment as compared to the radicular neuropathic component and for this reason the dexamethasone is injected into the homolevel radicular pouch on the affected side.

In the partially successful cases, in diabetic patients or in patients allergic to corticosteroids, the treatment can be complemented with Pulsed Radio Frequency of Incurrae zigapophyseales and the posterior dorsal ganglion on level L2.

In conclusion, we believe that the disc coablation method is the best approach for treating MSDP when compared with epidural injection of cortisone because of the particular simplicity of the method together with a low incidence of side effects and greater therapeutic efficacy.

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