EPIDUROSCOPIC LASER NEURAL DECOMPRESSION

DAEHYUN JO
The management of Spine Origin Pain

- Blocks
- Neuroplasty
- Epiduroscopic Laser Neural Decompression
- L & D Fusion
DIAGNOSIS

History taking
Physical examination (INSPECTION)

MRI
CT
X-ray
ultrasound

EMG, NCV
Thermography

Diagnostic blocks

Epiduroscopy
SPINAL ENDOSCOPY

PELD
TELA

ELND

TX

DX & TX
Patient’s preparations
LETTER TO THE EDITOR

Epiduroscopic Laser Neural Decompression for Removal of L2–3 Disc Herniation in a Patient with Symptoms Suggestive of L5 Nerve Root Involvement

DAEHYUN JO, MD, PhD,*
PHILIP M. FINCH, MD, FFPMANZCA,† and
JINYOUNG OH, MD‡

*Department of Anesthesiology and Pain Medicine, Daejeon St. Mary’s Hospital, The Catholic University of Korea, Daejeon, Korea; †Perth Pain Management Center, Perth, Australia; ‡Department of Promotion of Health, Seosan Public Health Center, Seosan, Korea
The Extent of Tissue Damage in the Epidural Space by Ho / YAG Laser During Epiduroscopic Laser Neural Decompression

Daehyun Jo, MD, PhD and Dong Joo Lee, MD

Background: Lasers have recently become very useful for epiduroscopy. As the use of lasers increases, the potential for unwanted complications with direct application of laser energy to nerve tissue has also increased. Even using the lowest laser power to test for nerve stimulation, there are still risks of laser ablation. However, there are no studies investigating tissue damage from laser procedures in the epidural space.

Objective: This is a study on the risks of Ho/YAG laser usage during epiduroscopy.

Study Design: Observatory cadaver study.

Conclusion: Even with low power and short duration, a laser can destroy tissue if the laser beam makes direct contact with the tissue.

Key words: Epiduroscopic laser neural decompression, epiduroscopy, Ho/YAG laser, laser damage, neural decompression, dura histology
77 patients enrolleded

Age 58.1 (23 to 88)

Refractory low back a/o lower extremity pain

50% or more of the pain returned within 1 week despite other treatment (epi. steroid etc)

MRI findings
- Lumbar disc herniation 44
- Lumbar spinal stenosis 11
- Disc herniation + stenosis 16
- Lumbar facet joint syndrome 2
- FBSS 4

In epiduroscopic findings
- Fibrous tissue
- Adhesion
- Inflammation
- Herniated disc

67/77 (87%) showed symptom relief after 2 weeks
63/77 (81%) showed symptom relief after 1 month
The Comparison of the Result of Epiduroscopic Laser Neural Decompression between FBSS or Not

Department of Anesthesiology and Pain Medicine, Daejeon St. Mary's Hospital, The Catholic University of Korea, Daejeon, Korea
Dae Hyun Jo, Eung Don Kim, and Hyun Jin Oh

Table 3. Comparison Between Group 1 and Group 2

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male/female</td>
<td>10/7 (58.8%/41.2%)</td>
<td>9/13 (40.9%/59.1%)</td>
<td>0.341</td>
</tr>
<tr>
<td>Mean age (yr)</td>
<td>61.7 ± 11.5</td>
<td>59.3 ± 17.6</td>
<td>0.633</td>
</tr>
<tr>
<td>Duration of illness (yr)*</td>
<td>6.6 ± 5.7</td>
<td>3.4 ± 3.8</td>
<td>0.047</td>
</tr>
<tr>
<td>Satisfaction (good/acceptable/bad)</td>
<td>13/3/1 (76.5%/17.6%/5.9%)</td>
<td>14/5/3 (63.6%/22.7%/13.6%)</td>
<td>0.683</td>
</tr>
</tbody>
</table>

Values are number of patients (%) or mean ± SD. Group 1: Patients who have a history of lumbar surgery. Group 2: Patients who did not have the history of lumbar surgery. *P < 0.05 between two groups.
Approach for Epiduroscopic Laser Neural Decompression in Case of the Sacral Canal Stenosis

The patient was hospitalized one day before the operation, and provided written informed consent. He started fasting eight hours before the operation and showed nothing unusual in the preoperative blood test. On the day of the operation, cefazolin 1 g was intravenously injected one hour before the beginning of the operation for the purpose of preventing an operation related infection. The patient was put into the prone position on the surgical table after the S4 spinal canal was 3.40 mm, which was smaller than the 3.96 mm outer diameter of the dilator for the epiduroscopy introducer set used in the operation (4007 Epiduroscopy introducer set, Myelotec, USA), and smaller than the 3.89 mm outer diameter of the introducer sheath (Fig. 1). Therefore, we decided to perform a S4 laminotomy at the entrance of the narrowed sacral canal with a hiatus rasp (Fig. 2) designed to widen the canal opening. After making an incision of about 2 cm on the skin and on the sacrococcygeal ligament, the rasp was inserted into the narrowed region expanding the narrow sacral canal space by applying repeated rotational force (Fig. 3). Then, the dilator was normally inserted, and the channel and the space

Fig. 1. A lumbosacral MRI sagittal plane image showing a narrow sacral canal.

Fig. 2. The hiatus rasp.

Fig. 3. A C-arm image in which a S4 laminotomy is performed using the rasp.
Epiduroscopic views