THE EFFECT OF PERINEUROTOMY ON NERVE REGENERATION IN DIABETIC RATS

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Nothing to Disclose
Purpose

To investigate the effect of perineurotomy on nerve regeneration in diabetic rats
Materials and methods

<table>
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<th>Group</th>
<th>Description</th>
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<tr>
<td>1. group</td>
<td>Healthy control</td>
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<tr>
<td>2. group</td>
<td>Healthy perineurotomy</td>
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<tr>
<td>3. group</td>
<td>Diabetic control</td>
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<td>4. group</td>
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40 Male ‘Sprague Dawley’ rat (330 - 400 gr)
Materials and methods

3. group: Diabetic control

4. group: Diabetic perineurotomy

>270 mg / dl  =>  Diabetic

Polydypsie, polyuria, loss of hair, loss of weight and cataracts

After 8 week surgery was performed
Materials and methods

Control Groups (Group 1, Group 3)

The sciatic nerve was transected and sutured epineurally 1 cm proximal from the trifurcation point.
Materials and methods  surgical technic

Perineurotomy Groups (Group 2, Group 4)

The initial procedures were exactly similar to those in groups I and III.
In addition, perineurotomy was performed to the peroneal, tibial, and sural nerves, including their proximal extensions in the sciatic nerve trunk.
Materials and methods

- Walking track analysis
- Biopsy
- Myelinated axon counting with ‘Image J’ programme
- Light microscopy
- Electron microscopy
Results

walking track analysis

Grup 1 (Healthy Control)
Grup 2 (Healthy Perineurotomy)
Grup 3 (Diabetic Control)
Grup 4 (Diabetic Perineurotomy)

Grup 1 = Grup 2
Grup 3 < Grup 4 (p<0.05)
Results

axon counting results

Grup 1 = Grup 2
Grup 3 < Grup 4 (p<0.05)
Healthy Control

Healthy Perineurotomy

Diabetic Control

Diabetic Perineurotomy

(arrows show degenerated axons)
Vacuolizations (*) and disintegrated myelin sheath with abnormal contour (arrow)
Discussion

Endoneural edema $\rightarrow$ Pressure increase $\rightarrow$ Compartment syndrome $\rightarrow$ FASCIOTOMY

Peripheral nerves $\rightarrow$ PERINEUROTOMY
Discussion

ERINEUROTOMY \rightarrow \text{Functionally and Hystopathologically better results}