The Role of Surgery in the Management of Neuritis
Role of Surgery in the management of Neuritis

- Clinical treatment has achieved remarkable advances
  WHO MDT has create a new face for an old disease

Prevention and treatment of nerve damage is still not adequate

Prevention of disabilities, by simple or complex methods, depends on modification of patient’s behavior.

… by modifying the way tasks are performed, the chances of being injured or developing further damage could be reduced.
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Results are not encouraging - POD

- lack of motivation
- the need for modification of behavior

Figure 1 – Reduced prevalence of cases with GD2 among new cases detected worldwide.
Source: WHO-W.E.R.

Figure 2 – Percentage of cases with disability grades 1 and 2 at diagnoses from 2001 to 2006 in Brazil.
Source: Ministry of Health.

- MDT will not prevent all nerve damage.
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Neuritis

- Neuritis is an inflammation of a nerve or a group of nerves accompanied by modification in sensation, muscle strength and pain, although this symptom may not be present in all cases.

Occurrence of neuritis during leprosy reactions

RR - 43% (Saunderson, 2000) to 73% (Rego, 2007)
ENL - 56.4% (Penna, 2002)

Surgical intervention on nerves in leprosy

Muir, 1920
Lowe, 1929
Eurico B. Ribeiro, 1934
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Paul W. Brand
– anglophonc school

Andre Carayon
– francophonic school

• anatomical constriction
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Ultrasonography and Magnetic Resonance seems to be of some help in determining more accurately cases that can profit from surgical release.

• anatomical constriction is a macroscopic event that calls for some macroscopic intervention.

Nerve entrapment
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### Indications for surgery
- careful indication
- delicate technique
- use of magnification
- qualified surgeon

### Conditions

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**Nerve abscess**

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**Nerve abscess**
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Nerve abscess

Lack of improvement of nerve function with adequate steroids

Intermittent neuritis

Surgical technique

leprosy affected persons must have the best available quality of medical attention
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• the need for full release of fibrous tunnels
• the release of accessory anatomical structures such as the fibrous arcade of the Flexor carpi ulnaris in ulnar nerve release
• ulnar transposition at the elbow, surgeons now-a-days seem to be more conservative and left it to the very clear condition of nerve subluxation.
• epicondilecomy should be avoided due to its invasiveness and secondary complications.

An up-date view on the perception of surgical treatment for neuritis

there is still no consensus on the use of surgery for treating neuritis in leprosy

Although the surgical treatment of neuritis, in addition to the use of steroids, is undertaken in some centers, there is currently no firm evidence of cost-effectiveness, compared with steroids alone (Consensus, 2006).

An initial look through the literature indicated that there is little evaluation of neurolysis in leprosy other than anecdotal evidence (Minutes, 2001).


RECOMMENDATIONS ON THE USE OF SURGERY FOR THE TREATMENT OF LEPROSY NEURITIS: CAUTION CONCERNING THE USE OF SURGERY IN PREVENTION OF DEFORMITIES

PRELIMINARY RECOMMENDATIONS ON THE USE OF SURGERY FOR THE TREATMENT OF LEPROSY NEURITIS: CAUTION CONCERNING THE USE OF SURGERY IN PREVENTION OF DEFORMITIES

Even if for more than thirty years, good results of nerve surgery in leprosy have been reported by many authors, these authors have not had the same data and methods of evaluation. In particular, the duration or the type of neuritis and the duration of follow-up have hardly been specified. Furthermore, all surgeons have not had the same facilities and not all have used the same indications for surgery, ....

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It (neurolysis) could have a dramatic effect on nerve pain, but its long-term benefits, particularly compared to steroid therapy, were not known (Minutes, 2001).


A recent and positive comment:

In the literature there is anecdotal evidence that surgery might have a role in the management of acute and chronic neuropathic pain. Notwithstanding, we see a possible role for surgery for patients with severe nerve pain who do not respond to medical treatment and for those whose nerve function has not improved or is deteriorating during or after steroid treatment. (International, 2007)


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PRELIMINARY RECOMMENDATIONS ON THE USE OF SURGERY FOR THE TREATMENT OF LEPROSY NEURITIS: CAUTION CONCERNING THE USE OF SURGERY IN PREVENTION OF DEFORMITIES

I - Even if for more than thirty years, good results of nerve surgery in leprosy have been reported by many authors, these authors have not had the same data and methods of evaluation. In particular, the duration or the type of neuritis and the duration of follow-up have hardly been specified. Furthermore, all surgeons have not had the same facilities and not all have used the same indications for surgery, ....
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Prof. Bourrel

2 - Sometimes therapists have thought the immediate result of surgical decompression was a failure because they do not know that recovery is not immediate. Usually recovery duration may take some months or even one year for ulnar nerve.

Many authors have reported good results with medical treatment alone and they consider that the need for both external and internal nerve surgical decompression has been very much reduced.

Nevertheless, it may be observed:

• That medical treatment alone may have drawbacks.
• That in some published cases (but how many are unpublished?) of corticosteroid treatment, sometimes prolonged for more than one or even two years, there was no recovery. If nerve surgery is then subsequently performed, it has no utility.

TABLE 1 – Summary for result of three studies on nerve surgery

<table>
<thead>
<tr>
<th>Author</th>
<th>Type</th>
<th>N</th>
<th>Surgical group</th>
<th>Clinical group</th>
<th>Nerves</th>
<th>Cases</th>
<th>Follow-up</th>
<th>result</th>
</tr>
</thead>
<tbody>
<tr>
<td>PANNIKAR V.K. et al.</td>
<td>Prospective randomized</td>
<td>70</td>
<td>36</td>
<td>34</td>
<td>ulnar</td>
<td>all</td>
<td>1 year</td>
<td>no difference</td>
</tr>
<tr>
<td>EBENEZER D. et al.</td>
<td>Prospective randomized</td>
<td>97</td>
<td>25</td>
<td>25</td>
<td>ulnar</td>
<td>all</td>
<td>1-2 years</td>
<td>no difference</td>
</tr>
<tr>
<td>BOUCHER P. et al.</td>
<td>Prospective randomized</td>
<td>95</td>
<td>45</td>
<td>50</td>
<td>Ulnar, median, tibial, posterior</td>
<td>all</td>
<td>2 years</td>
<td>improvement in both groups</td>
</tr>
</tbody>
</table>

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Review of ulnar nerve release in Bauru *

91 ulnar nerves

standard neurolysis

followed for average two years

* Data not published yet

Conclusion

- surgery in association to steroids seems not to lead to an expressive improvement in muscle force and skin sensation.

- the duration of NFI and age showed no interference in modifying the degree of efficacy.

Ulnar nerve neurolysis follow-up

<table>
<thead>
<tr>
<th>test</th>
<th>Not improved*</th>
<th>improved</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST</td>
<td>61 (67.1)</td>
<td>30 (32.9)</td>
<td>91 (100)</td>
</tr>
<tr>
<td>VMT</td>
<td>52 (57.2)</td>
<td>39 (42.8)</td>
<td>91 (100)</td>
</tr>
</tbody>
</table>

*worsened + stable

ST

<table>
<thead>
<tr>
<th>NFI</th>
<th>Not improved</th>
<th>improved</th>
<th>TOTAL</th>
</tr>
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<tbody>
<tr>
<td>&gt; 6 months</td>
<td>53</td>
<td>27</td>
<td>80</td>
</tr>
<tr>
<td>&lt; 6 months</td>
<td>8</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>61</strong></td>
<td><strong>30</strong></td>
<td><strong>91</strong></td>
</tr>
</tbody>
</table>

Fischer = 0.478
### Role of Surgery in the management of Neuritis

#### VMT

<table>
<thead>
<tr>
<th>NFI</th>
<th>Not improved</th>
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<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>&gt; 6 months</td>
<td>45</td>
<td>35</td>
<td>80</td>
</tr>
<tr>
<td>&lt; 6 months</td>
<td>7</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>TOTAL</td>
<td>52</td>
<td>39</td>
<td>91</td>
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</table>

Fischer = 0.449

#### ST

<table>
<thead>
<tr>
<th>age</th>
<th>Not improved</th>
<th>improved</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>&gt;0 - 15</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>&gt;15 - 30</td>
<td>16</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>&gt;30 - 45</td>
<td>22</td>
<td>9</td>
<td>31</td>
</tr>
<tr>
<td>&gt;45 - 60</td>
<td>15</td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>&gt;60 - 75</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60</td>
<td>30</td>
<td>90</td>
</tr>
</tbody>
</table>

χ² p = 0.719

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### Study in Nepal

- **208 nerves (ulnar, median and TP)**
- flowed for an average of 2 years

Conclusions
• improvement of sensation can be obtained by selective meshing of epineurium
• improvement is best when operation is performed within six months after loss of sensation.

Back to Prof. Bourrel
1 - immediacy of result, one should remember that nerve regeneration takes its time to occur.
2 - steroids treatment: expected recovery rate of nerve function during reactions is 60%.

Conclusion
It is urgent to conduct a randomized, controlled multicenter trial involving leprosy patients treated with steroid only and one group receiving added surgical treatment.

Conclusion
There are some evidences that with surgery:
1 - reduction of pain is an important achievement in most cases
2 - in carefully selected cases, reasonable improvement nerve function can be obtained by carefully conducted nerve surgery
clinicians should not deny to theses cases this concrete possibility.
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