Surgical Options for Nerve Disorders of the Shoulder

Lennard Funk
Common Pathologies:

1. Long Thoracic Nerve
2. Suprascapular Nerve
3. Spinal Accessory Nerve
4. Brachial Neuritis / Parsonage Turner
Surgical Options:

1. Neurolysis
2. Nerve Grafting
3. Muscle Transfers
Neurolysis
Nerve Grafting

Nerve Graft

Incision

Damaged nerve

Nerve graft placed
## Muscle Transfers

<table>
<thead>
<tr>
<th>Long Thoracic Nerve Palsy</th>
<th>Pec Major for Serratus</th>
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<tr>
<td>Spinal Accessory Nerve Palsy</td>
<td>Modified Eden-Lange Procedure</td>
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</table>
Serratus Wall Test
Long Thoracic Nerve Palsy - Natural History

1. Most recover within 1 year
2. May take up to 3 years
3. 25% never fully recover

Long Thoracic Nerve Palsy
- Indications for Surgery

Symptoms > 1 year

+ No improvement on EMG
Long Thoracic Nerve Palsy - Neurolysis

• Supraclavicular:
  • Disa et al. 2001 - 4 Patients
  • Nath et al. 2004
    • 47 cases, Heterogeneous
    • 98% improve in lesions < 10yrs duration

• Distal:
  • Laulan et al. 2011
    • Pure LTN palsy cases (Brachial Neuritis excluded)
    • Mean time to surgery = 16 months
    • ‘Most’ patients recovered
    • Best results if surgery < 6months after onset (!)
Long Thoracic Nerve Palsy
- Muscle Transfer

Pectoralis Major for Serratus
**Long Thoracic Nerve Palsy - Pec Major Muscle Transfer**

<table>
<thead>
<tr>
<th>Author</th>
<th>No. of Patients</th>
<th>No. of Surgeries</th>
<th>Follow-up</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gotta and Harris</td>
<td>14</td>
<td>3</td>
<td></td>
<td>All 3 had satisfactory function; 1 reoperation</td>
</tr>
<tr>
<td>Pott</td>
<td>8</td>
<td>8</td>
<td>Average 2 y</td>
<td>All excellent</td>
</tr>
<tr>
<td>Noordlinger et al</td>
<td>15</td>
<td>15</td>
<td>64 mo</td>
<td>Would undergo the procedure again; pain decreased in 11 patients; function improved in 10 patients; excellent in 2 patients, good in 5, fair in 4, poor in 4; better results when at least 80° of external rotation postoperatively; most returned to preoperative level of activity</td>
</tr>
<tr>
<td>Connor et al</td>
<td>11</td>
<td>11</td>
<td>43 mo</td>
<td>10 (91%) had improvement in motion, function, reduction of pain, and elimination of scapular winging; 1 unsatisfactory; recurrence of winging secondary to noncompliance postoperative</td>
</tr>
<tr>
<td>Warner and Navarro</td>
<td>8</td>
<td>8</td>
<td></td>
<td>7 had satisfactory results; 1 unsatisfactory, deep infec- tion and graft removal</td>
</tr>
</tbody>
</table>

From Safran. AJSM. 2004
Suprascapular Nerve Palsy

- Idiopathic
- Paralabral Cyst / Ganglion
- Trauma
Suprascapular Nerve Palsy

- Idiopathic
- Paralabral Cyst / Ganglion
- Trauma
Suprascapular Nerve Palsy

- Supraspinatus +/- Infraspinatus
  - Wasting
  - Weakness
Suprascapular Nerve Palsy - Investigations

- EMG:
  - Proximal - Suprascapular Notch
  - Distal - Spinoglenoid Nc
Suprascapular Nerve Palsy
- Investigations

• MRI Scan:
  • Ganglion Cyst / Mass lesion

Suprascapular
Spinoglenoid
Suprascapular Nerve Palsy - Natural History

<table>
<thead>
<tr>
<th></th>
<th>Recover in 1 year</th>
<th>No recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Cyst</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyst</td>
<td></td>
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</tbody>
</table>
Suprascapular Nerve Palsy
- Arthroscopic Decompression
Spinal Accessory Nerve - Trapezius

Causes:
- Blunt Trauma
- Sharp Trauma (neck surgery)
Spinal Accessory Nerve
- Trapezius
## Spinal Accessory Nerve - Prognosis

<table>
<thead>
<tr>
<th>Type of Trauma</th>
<th>Prognosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blunt Trauma</td>
<td>Usually Recover in 1 year</td>
</tr>
<tr>
<td>Sharp Trauma</td>
<td>No recovery</td>
</tr>
</tbody>
</table>
Spinal Accessory Nerve - Modified Eden-Lange Procedure
Parsonage-Turner Syndrome
(Brachial Neuritis)
Parsonage-Turner Syndrome (Brachial Neuritis)

Surgical Options:
- Neurolysis
- Pec Major Transfer
- Scapulothoracic Fusion
Scapulothoracacic Fusion
Scapulothoracic Fusion
Summary:

- Always get EMG (& MRI)
- Atraumatic & Recovering = Non-op
- Traumatic / No recovery = Surgery
Summary:

- Neurolysis / Decompression:
  - Early results better than late
- Muscle Transfer / Fusion:
  - Good results
  - Limited expectations
  - Long recovery