Effectiveness of Distal Nerve Transfers – a Novel Treatment for Upper Trunk Obstetrical Brachial Plexus Injuries

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Obstetrical Brachial Plexus Palsy
- Common injury in newborns (0.5–3/1000 babies)
- 25% of cases do not recover spontaneously (some require surgical repair)
- Most common type of injury involves the upper trunk (Erb’s palsy)
- Injuries in the upper trunk affect shoulder and elbow movement and function
- Currently repair using sural nerve grafts but is not optimum: long surgery + hospitalization
- Distal triple nerve transfers circumvent lengthy period of regeneration
- Common surgery in adults but not in children

Introduction

Methods

3. Functional Assessment:
- Assessment emphasized functional outcomes rather than just range of motion
- Clarke Active Movement Scale (AMS) used
- Results compared for both surgeries using student’s t-test

Results

1. Post-Surgical Outcomes for Shoulder Function:
- In both surgeries, shoulder abduction, external rotation, and flexion improved post-surgery
- Shoulder external rotation in nerve transfers significantly better than nerve grafts

2. Elbow and Forearm Functional Outcomes:
- Elbow flexion and forearm supination improvements evident in both surgeries
- Both outcomes after nerve transfers were significantly better than repair from grafting

3. Donor Nerve Morbidity:
- No donor nerve morbidity
- Donor nerve function preserved.
- Redundant wrist flexors and elbow extensors compensate for loss

4. Operative and Hospitalization Stay Times:
- Operative time for nerve transfers significantly lower at 2.20 ± 0.22 hours vs. 9.38 ± 0.39 hours for graft reconstruction
- Hospitalization time significantly shorter at 1.13 ± 0.10 days vs. 3.5 ± 0.17 days for grafts.

Conclusions

1. Distal nerve transfers are as effective as sural nerve grafts in restoring shoulder abduction and flexion
2. Shoulder external rotation, elbow flexion and forearm supination improvement is significantly better following nerve transfer
3. Donor morbidity is not observed post-surgery
4. Shorter operating and hospitalization times for patients treated with nerve transfers

Distal nerve transfer repair of the brachial plexus in obstetrical injury is better than traditional sural nerve graft, surgically simpler, and results in quicker recovery and shorter hospital stays.