Classifications of Shoulder Dysfunction Post-Neck Dissection in Head and Neck Cancer

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Objective

- To determine if prehabilitation with a physical therapist improves patients' quality of life (QOL) and functional status post-neck dissection (ND).
- To determine the prevalence of shoulder impairments based on pre- and post-ND measurements.

Background

- Surgical NDs to remove regional lymph nodes are completed as part of head and neck cancer treatment. NDs can cause significant decreases in QOL through spinal accessory nerve palsy (SANP).
- SANP is a complication of NDs, which can be exhibited by neck and shoulder functional deficits. Scapular flip sign test (SFS) can indicate SANP when winging of the scapula is present.
- SANP can be present in as many a third of ND patients, but there may be underreporting of the incidence/degree of functional deficits post-ND.[1,2]
- Evidence suggests early physical therapy (PT) post-ND results in improvement in neck and shoulder function compared to no PT.[3,4]
- We hypothesized that if patients scheduled for a ND undergo supervised prehabilitation with a physical therapist, then their post-ND QOL and functional status will demonstrate improvements.

Methodology

- Retrospective study of twenty-four patients scheduled for ND were prospectively evaluated pre- and post-ND by a physical therapist utilizing neck and shoulder functional assessments.
  - Unilateral ND (UND) in 14 patients
  - Bilateral ND (BND) in 10 patients
- Demographic and surgical data were analyzed to identify the prevalence and degree of SANP.
- Prehabilitation protocol consisted of patient education, scapular stability and strength exercises, and aerobic endurance.
- PT exercises post-ND were tailored to degree of CN XI weakness.

Results – Positive SFS and Shoulder ROM & Trapezius Weakness Post-ND

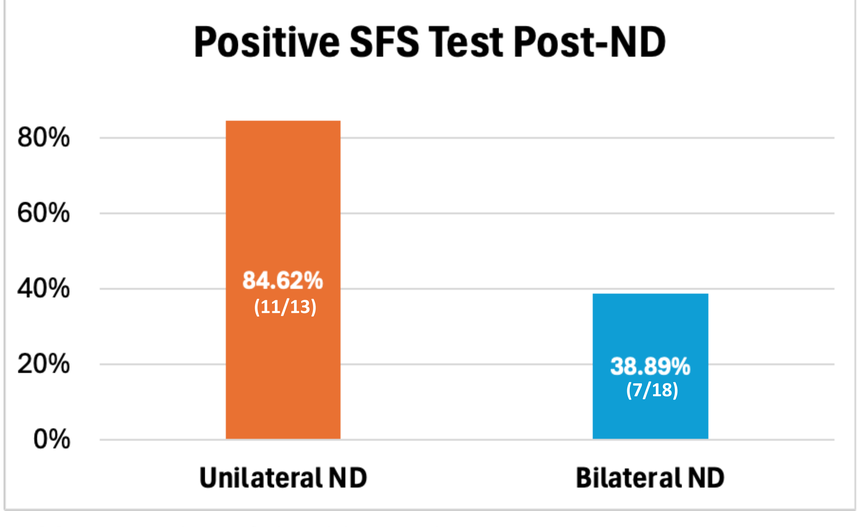


Table 1: Number of shoulders with a positive SFS test post-ND.

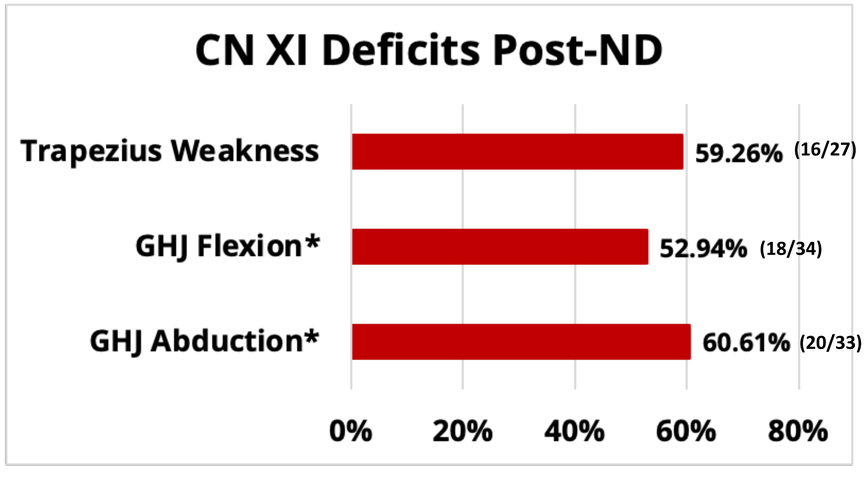
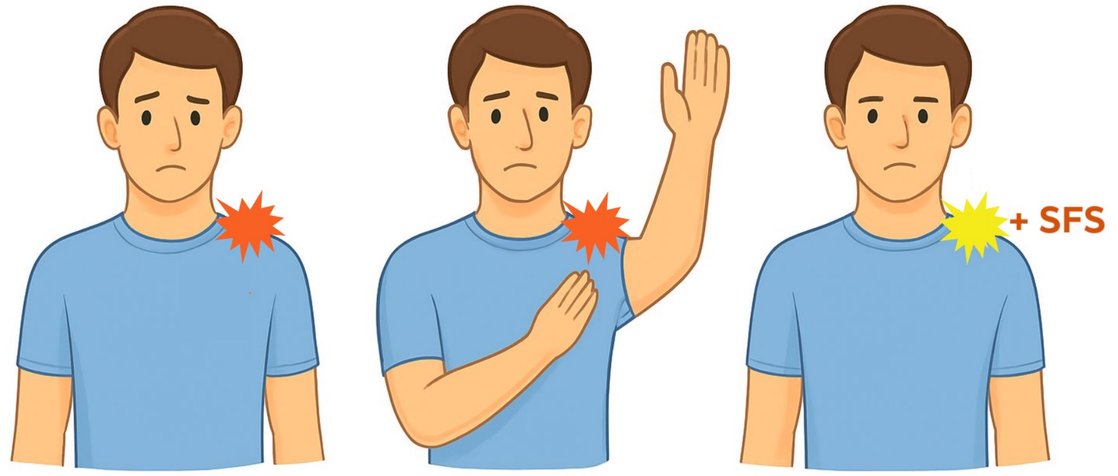


Table 2: Number of shoulders with decreased upper/middle trapezius strength, GHJ flexion/abduction ROM. * indicates a significant decrease in ROM.

Results – Classifications of Shoulder Dysfunction Post-ND



1) Pain with abduction <90° & Trapezius Weakness
54.5% (12/22 shoulders)

2) Pain with abduction >90° & Trapezius Weakness
18.2% (4/22 shoulders)

3) Painless with Positive SFS & Trapezius Weakness
27.3% (6/22 shoulders)

Figure 1: Classifications of Shoulder Dysfunction Post-ND

Results – Functional Status Post-PT

- Increase in ≥ 1 functional domain ≥ 1 month in 10 patients (41.67%) post-ND.
  - 4 patients (16.67%) significant increase in GHJ abduction
  - 2 patients (8.33%) significant increase in GHJ flexion
- 5 patients (20.83%) ≥ 1 domain measurement higher than baseline pre-ND.

Conclusion

- Novel SANP classification system based on pain, ROM, and trapezius function may enable targeted rehabilitation strategies to improve outcomes and support further research into post-ND care.
- Findings reveal higher percentage of shoulder dysfunction than expected based upon prior literature and PT results in post-ND functional improvements.
- Future directions: Obtain assessments from a greater number of patients and patients who do not receive prehabilitation to compare with the presented cohort.

References

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