Shoulder Injury and Brachial Plexus Injuries; A Prospective Evaluation of Outcomes

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BACKGROUND

- Brachial plexus injuries (BPI) represent 1 % of injuries at trauma centres
- Often multiple injuries exist due to high energy trauma
- Concomitant BPI and shoulder injuries have been reported on in the literature
  - Shoulder dislocation = 17%
  - Humeral # = 15%
  - Clavicle # = 19%
- A recent retrospective review at our institute revealed the prevalence of rotator cuff injuries (RCT) in the BPI population to be ~35 %
  - This number is likely an underestimation of the true prevalence
  - Does not represent the full range of pathology that can affect shoulder function
  - Does not describe the impact on function these concomitant injuries have
- Treatment paradox
  - RCT ideally repaired in 3 months but require innervated shoulder for rehabilitation
  - BPI often require a 6 month observation period with reinnervation taking years

Hypothesis

Prospective evaluation of patients with dedicated shoulder imaging will increase the prevalence of shoulder injuries diagnosed
Increased awareness of these injuries should lead to more prompt surgical intervention
Earlier surgical intervention will result in improved functional outcomes

- Disclosure
  - The authors have nothing to disclose

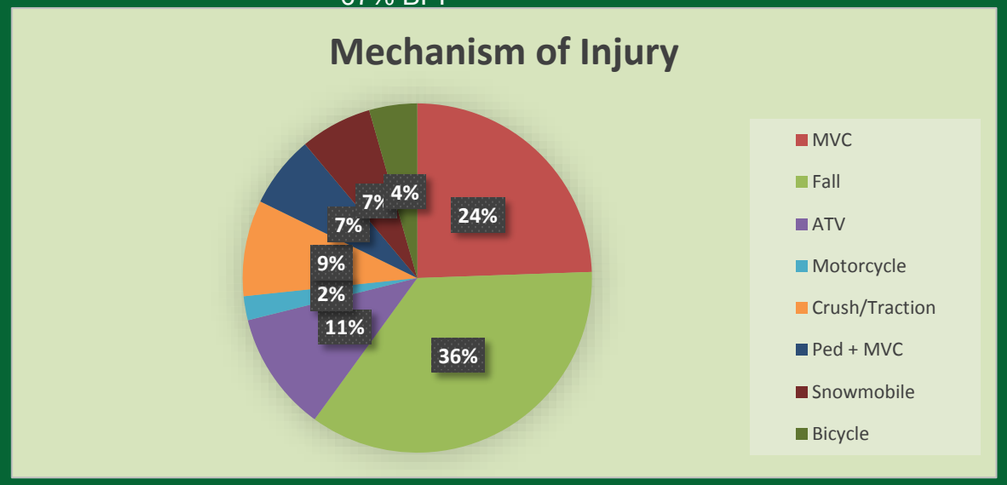
METHODS

- Prospective case series of all patients referred to the Northern Alberta Peripheral Nerve Injury Clinic
- All patients with a BPI, axillary or suprascapular nerve palsy were identified and included in the study.
- Non-traumatic and pediatric cases were excluded from the study
- Descriptive statistics were calculated. Parametric and non parametric analysis will be used to compare the prospective data to retrospective using STATA 14.

Outcome Measures
Demographics
Etiology
Presence of shoulder Injuries
Presence of RCT
Treatment of RCT
Time to Treatment of RCT
Pattern of Nerve Injury
Nerve Reconstruction
Time to Nerve Reconstruction
MRC Grading

RESULTS

Demographics
N= 45 patients
Male 67%
Age: 46.5 +/- 18.2 years
67% BPI



Shoulder Injuries and Nerve Injuries

Shoulder injuries	
Total	36(80%)*
Rotator Cuff	27 (61%)*
Full Thickness RCT	14 (31%)*
Total number requiring OR	18 (41%)*
Time to OR	7.28 +/- 6.6 m
Nerve Reconstruction	
Number of Patients	9 (20%)*
Time to OR	6.9 +/- 2.6 m
MRC	
Shoulder Abduction	3 +/-1
External Rotation	2+/-3
Follow-up	8.1 +/- 13.9 m

* $p < 0.05$

DISCUSSION

- Prevalence of shoulder injuries significantly increased when evaluated prospectively
  - Number of ORs also increased significantly
- Time to OR did not significantly change from retrospective study
- MRC grading improved over the course of the study
  - No difference from the retrospective study
  - MRC as a primary outcome
  - Length of follow-up

CONCLUSIONS

- Shoulder injuries are prevalent in brachial plexus injury patients
- Requires a dedicated assessment to ensure timely diagnosis and management