

Systematic Review Of Pediatric Pulseless Pink Humerus Supracondylar Fractures

Trauma / Elbow & Forearm Trauma / Surgical Treatment

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Background

The supracondylar humeral fracture (SCHF) is the most common fracture seen in children, forming up to 70% of all pediatric elbow fractures. The decision to surgically explore the brachial artery (BA) in a well perfused, pulseless arm remains controversial amongst vascular and orthopaedic surgeons.

Objectives

To do a systemic review of indications of brachial artery exploration in a well perfused pediatric pulseless supracondylar fracture.

Study Design & Methods

A systematic literature search according to Preferred Reporting Items for Systematic Reviews and Meta- Analyses (PRISMA) guidelines was conducted by two independent reviewers. Embase and Medline (Pubmed) databases were searched for studies focusing on the management of the pink pulseless hand (PPH) following SCHF. The search strategy involved searching study titles, abstracts and keywords by combining the terms “pediatric”, “pulseless pink humerus” and “supracondylar humeral fractures”. Synonyms and different spelling variations for each search term were used. Our inclusion criteria included only articles in the past 20 years, articles with full text in English and only primary studies focusing on the management of the PPH were used in this study. All articles were independently screened with the JBI Critical Appraisal checklist for cohort studies and articles that were deemed to have a high possibility of bias were excluded from the study.

Results

In our study, we identified 335 pulseless pink hands. Figure 2 is a flowchart treatment summary of all PPHs included. The observation strategy was employed in 70.7% (237/335) of all PPH, while primary surgical exploration was employed in 29.3% (98/335). 93.7% (222/237) of all cases that underwent observation had a successful return of pulse, however 6.3% (15/237) of cases had to undergo secondary exploration due to worsening clinical findings. All cases that underwent primary or secondary surgical exploration had a successful return of pulse to the hand. Of the 98 pulseless perfused fractures that underwent primary surgical exploration, 68.8% (64/98) were found with actual BA injuries while 15.1% (14/98) were found with confirmed BA spasm/normal BA. Of the 15 that underwent secondary surgical exploration after failure of observation, 80% (12/15) were confirmed to have actual BA injuries, with none found to have spasm/normal BA.

Conclusions

The literature suggests that 'watchful waiting' of PPH should be the first line of management. However, in the event of clinical deterioration, immediate vascular exploration is still indicated. By 'watching waiting' of PPH, unnecessary primary explorations and complications can be minimized.