



# NEW YORK REGIONAL SOCIETY OF PLASTIC SURGEONS

## 2018 RESIDENTS' NIGHT ABSTRACT

### Abstract Submission: I2 (Group 3)

**Title:** *Proximal Row Carpectomy versus Four-Corner Arthrodesis for the Treatment of SLAC/SNAC Wrist: A Cost-Utility Analysis*

**Authors:** David Daar, MD, MBA; Jacques Hacquebord, MD; Vishal Thanik, MD; Ajul Shah, MD; Joshua Mirrer, MD

**Institution:** Hansjorg Wyss Department of Plastic Surgery, NYU School of Medicine

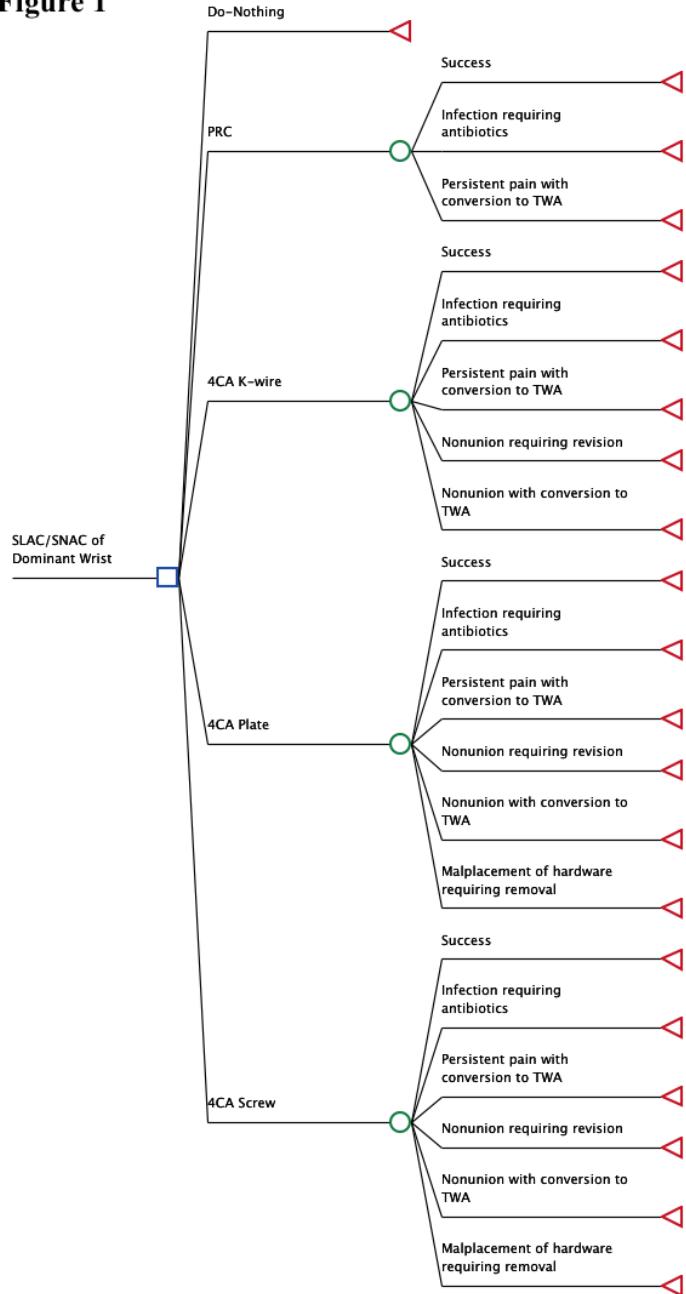
**PURPOSE:** Scapholunate advanced collapse (SLAC) and scaphoid nonunion advanced collapse (SNAC) can cause persistent pain, weakened grip strength, and decreased range of motion. These factors can lead to a significant reduction in quality of life. Two mainstay surgical options for salvage include proximal row carpectomy (PRC) and four-corner arthrodesis (4CA). This study evaluates the cost-utility of PRC versus three methods of 4CA for the treatment of SLAC/SNAC wrist.

**METHODS:** A cost-utility analysis was performed in accordance with the Second Panel on Cost-Effectiveness in Health and Medicine. A decision tree was created to illustrate the various health states (Figure 1), and a systematic literature review was performed to obtain the probability of potential complications. Costs were derived using both societal and health care sector perspectives. A visual analog scale survey of expert hand surgeons was performed to estimate utilities. Overall cost, probabilities, and quality-adjusted life-years (QALYs) were used to complete a decision tree analysis. Both deterministic and probabilistic sensitivity analyses were performed.

**RESULTS:** Forty studies yielding 1730 SLAC/SNAC wrists were identified. Decision tree analysis determined that both 4CA with screw fixation and PRC were cost-effective options, but 4CA with screw was the optimal treatment strategy. 4CA with K-wire fixation and 4CA with plate fixation were dominated (inferior) strategies and therefore not cost-effective. This was true for both societal and health care perspectives. One-way sensitivity analysis demonstrated that when the QALYs for a successful 4CA Screw are lower than 26.36, PRC becomes the optimal strategy. However, multivariate probabilistic sensitivity analysis confirmed the results of our model.

**CONCLUSIONS:** 4CA with screw fixation and PRC are both cost-effective treatment options for SLAC/SNAC wrist due to their lower complication profile and high efficacy, with 4CA with screw as the most cost-effective treatment strategy. 4CA with plate and K-wire fixation should be avoided from a cost-effective standpoint.

**Figure 1**



Simplified view of the decision tree for patients with SLAC/SNAC wrist undergoing one of four treatment options. SLAC, scapholunate advanced collapse; SNAC, scaphoid nonunion advanced collapse; PRC, proximal row carpectomy; 4CA, four-corner arthrodesis; K-wire, 4CA with K-wire fixation; Plate, 4CA with plate fixation; Screw, 4CA with screw fixation; TWA, total wrist arthrodesis.