ROSALIND FRANKLIN UNIVERSITY of MEDICINE AND SCIENCE

# Suture Button Suspensionplasty with Trapeziectomy: A Retrospective Analysis Utilizing a Novel Staging System for Proximal Migration


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## Introduction

The purpose of this study is to retrospectively review the results of a technique for suture button suspensionplasty with full trapeziectomy utilizing a novel staging system for proximal migration. Traditional post-operative measuring systems, which measure the space between the metacarpal base and the scaphoid do not adequately account for arthritic changes and osteophyte formation, position of the metacarpal, or adduction contractures. Our goal was to create a post-operative staging system, which would be consistent irrespective of the degree of osteoarthritic changes or adduction contractures (Figure 1).

## Methods

We evaluated 53 patients who received suture button suspensionplasty and full trapeziectomy with follow-up ranging from 1-2 years. We performed a radiographic analysis of proximal migration according to a novel staging system 12 weeks post-operatively. Inter-observer reliability was calculated by Cohen's kappa statistics with 95% confidence intervals.

## Figure 1

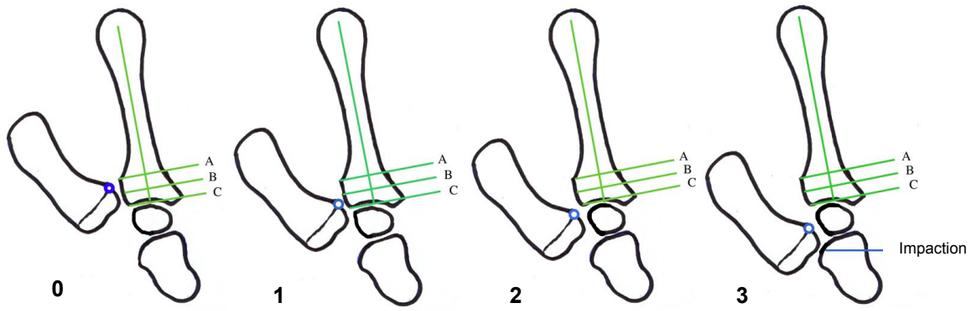


**Figure 1.** (0) Stage 0, (1) Stage 1, (2) Stage 2, (3) Stage 3—Failure/Impaction

## Staging System

We created the following staging system (Figure 1):

- **Longitudinal Axis:** a line was drawn along the index finger metacarpal axis.
- **Line A**: a line was drawn perpendicular to the longitudinal axis at the distal metaphyseal flare.
- **Line C**: A second line was drawn perpendicular to the longitudinal axis at the level of the proximal radial metaphyseal flare.
- **Line B**: A third perpendicular line was drawn equidistant between the two previous markings.
- A **Thumb Marker** was placed on the thumb metacarpal at the proximal ulnar metacarpal flare, precisely at the level where the physeal scar intersects with this flare.

Four stages were subsequently identified (Figure 1):

- **Stage 0** - corresponds with the space between lines A and B, and represents normal positioning.
- **Stage 1** - corresponds with the space between lines B and C, and represents mild proximal migration (Figure 2).
- **Stage 2** - exists proximal to line C, and represents moderate proximal migration.
- **Stage 3** – represents severe proximal migration with impaction against the scaphoid (i.e.-failure).

## Results

This staging system yielded excellent inter-observer reliability with a kappa of 0.82 (95% CI 0.67-0.97). We demonstrated that 96% of our patients maintained a proximal migration stage of 0 or 1 when evaluated 12 weeks post-operatively, which, according to our staging system, corresponds to normal positioning and mild proximal migration, respectively.

## Figure 2

## Conclusions

Our results indicate that this staging system is reliable and an improvement upon earlier methods for evaluating the degree of proximal migration post-operatively. We encourage other hand surgeons to utilize this staging system to evaluate the success of the suspensionplasty.