



2024 NEW YORK REGIONAL SOCIETY OF PLASTIC SURGEONS ANNUAL RESIDENTS' NIGHT RESEARCH COMPETITION

MONDAY, MARCH 11, 2024
NEW YORK ACADEMY OF MEDICINE

ABSTRACT SUBMISSION TITLE: *C2 - Articular Surface Damage Following Headless Intramedullary Nail Fixation of Proximal Phalanx Fractures*

Additional Author(s):

Nicholas G Cuccolo, MD; Sachin R Chinta, BS; Danielle Thornburg, MD; Jonathan L Bass, MD; Nikhil A Agrawal, MD

Abstract Presenting Author:

Jonathan M. Bekisz, MD, MSci

Plastic Surgery Residency Training Program:

NYU Grossman School of Medicine

Abstract Text:

PURPOSE:

Intramedullary nails and screw provide excellent options for the fixation of metacarpal and phalangeal fractures. Offering the benefits of rigid fixation while minimizing soft tissue dissection, they have become a popular choice among hand surgeons. Their placement often requires traversing or passing in proximity to joint surfaces. In the proximal phalanx, the possible resultant damage to articular cartilage of the metacarpophalangeal joint has not been clearly defined.

METHODS:

A cadaveric study comparing two techniques for antegrade placement of threaded headless intramedullary nails was conducted in 56 digits. The first entailed a single 2.1 mm intramedullary nail placed via the dorsal base of the proximal phalanx, while the second used two 1.8 mm intramedullary nails inserted via the collateral recesses of the phalangeal base. All specimens were analyzed for articular surface damage with the cartilage defect measured as a percentage of total joint surface area. Damage to the extensor tendons was also assessed in a subset of specimens.

RESULTS:

No significant difference in percentage of articular surface damage was observed, with an average $3.21\% \pm 2.34\%$ defect in the single 2.1 mm nail group and a $2.71\% \pm 3.42\%$ mean deficit in two 1.8 mm nails group ($p=0.109$). 18% of digits in each group had no articular surface injury. Damage to extensor tendons was seen in 3 specimens and in all cases involved either the extensor indicis proprius or extensor digiti minimi.

CONCLUSIONS:

Antegrade placement of threaded headless intramedullary nails offers a safe and reliable means of fixation of proximal phalanx fractures. Hardware insertion via either the dorsal base of the proximal phalanx or the collateral recesses of the phalangeal base both demonstrated minimal articular cartilage damage and infrequent injury to the extensor tendons.

Type of Study/Level of Evidence: Cadaver Study/Level V