

FIELDORTHOPAEDICS

CASE REPORT

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Comminuted Middle P2 Phalanx Fracture

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The Use of NX Nail for Fixation of a Comminuted Middle P2 Phalanx Fracture



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OVERVIEW

A 20-year-old female professional Australian Football League (AFLW) player suffered an injury to the ring finger of her dominant right hand in a collision at training. She was seen by Prof. Couzens the next day and presented with pain, swelling and an angulated finger. Radiographs showed a comminuted fracture of the middle P2 phalanx. Prof. Couzens achieved definitive fixation with a 2.0mm x 22mm NX Nail through a percutaneous approach. The operative finger was buddied to the middle finger initially and she was seen by a hand therapist for provision of a training and playing splint. By six weeks she was cleared to return to contact ball work with no restrictions in the gym. In this instance, Prof. Couzens was able to treat a painful and debilitating injury for a young patient whose vocation requires the full use of her hand and fingers.

INTRODUCTION

A 20-year-old female professional Australian Football League (AFLW) player suffered an injury to her right ring finger in a collision at training. As a young professional athlete and part-time retail assistant with an injury to her dominant hand, rapid return to full function was the highest priority.

PRESENTATION

The day after sustaining the injury, the patient was seen by Prof. Couzens. Upon examination, she had pain, swelling and an angulated finger. Radiographs showed a comminuted fracture of the middle P2 phalanx of the right ring finger.



PRE-OPERATIVE PLAN

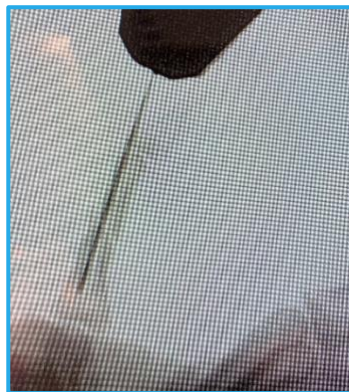
To facilitate a rapid return to function, Prof. Couzens planned for definitive fixation with an NX Nail through a percutaneous approach. This minimally invasive approach would allow him to realign and stabilise the fracture with limited disruption to surrounding soft tissues. Hand therapy would also be required to mobilise the finger post-operatively so the patient could return to training in stages as she progressed through her recovery.

OPERATIVE APPROACH

Under intra-operative fluoroscopy, the fracture could be reduced with traction.



Once realigned, Prof. Couzens passed a 0.8mm K-wire across the fracture to temporarily hold it in place before using a cannulated drill to prepare for the implant.



A 2.0mm diameter NX Nail which was 22mm in length was used to stabilise and fix the fracture. Implant placement was confirmed under fluoroscopy before the guidewire was removed and the small incision closed with a 5-0 suture. The operative finger was buddied to the middle finger initially and she was seen by a hand therapist on the first post operative day for provision of a training and playing splint.



FOLLOW UP

Two weeks post-operatively, the incision site had fully healed, and the patient was doing exceptionally well. She did not report any significant pain and the swelling had resolved. She was rapidly recovering range of motion. She was provided with a resting splint due to a tendency for mild swan neck deformity.

At five weeks, the patient was progressing well with range of motion in hand therapy and had minimal swelling at P1 and P2 of the right ring finger. Range of motion at the proximal interphalangeal joint was from 5° of hyperextension to 100° of flexion. At the distal interphalangeal joint range was from -5° of extension to 50° of flexion. During the day the operative finger was buddy strapped to facilitate active range of motion and allow the patient to continue strength training. While the patient was hypermobile through her adjacent fingers, there was a very slight hyperextension through the PIP joint of the operative finger compared to the contralateral side. However, this did not progress.

At six weeks, x-rays showed no evidence of hardware failure, anatomic alignment of the digit and callus formation around the fracture sites. On examination there was a slight lag at the DIP joint, which had been improving over previous weeks. Subsequently, there was a slight asymptomatic swan neck deformity present which hand therapy was focusing on to improve the Flexor Digitorum Superficialis (FDS) gliding. At this time the patient was cleared to return to contact ball work with no restrictions in the gym.



DISCUSSION

In this instance, Prof. Couzens was able to treat a painful and debilitating injury for a young patient whose vocation requires the full use of her hand and fingers. With the NX Nail, Prof. Couzens was able to achieve definitive fixation through a percutaneous approach which gave the patient the best chance of returning to the field as soon as possible.

Product Resources

Field Orthopaedics. (2024). NX Nail Phalanx Surgical Technique. Brisbane, Australia: Field Orthopaedics.

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