Comparative study between percutaneous k-wire fixation and ORIF of unstable proximal phalangeal fracture

Protocol of Thesis
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ABSTRACT

Proximal phalangeal fracture is a common fracture affecting many patients during their work or participating in sports activities. It has a devastating effect on economical and psychological aspects of patients whose occupation is dependent on their manual activities. Many of these patients are not willing to have their hand immobilized for such long time.

This study aims to compare the results of proximal phalangeal fixation after percutaneous fixation using k-wires and ORIF.

The purpose of this prospective study is to document the functional outcome of different types of phalangeal fixation and to evaluate the clinical results.

Twenty nine patients was the sum of this study and were divided into three groups:

- Thumb group: three patients.
- Percutaneous fixation (Group A): eleven patients.
- ORIF (group B): fifteen patients.

These patients were followed up for a minimum of 6 months

Patients were 24 men and5 women within average age of 34 years. All patients were evaluated for clinical and radiographic results. Fracture union was achieved in 29 cases (100%) at a mean of 6.29 weeks (5 to 8 weeks).

Return to work ranged from 6 weeks to 9 weeks according to their occupation .

Summary

This study proves that percutaneous fixation of unstable proximal phalangeal fractures is a useful technique that do not demand open reduction. Soft tissue dissection and swelling is minimized. One limitation is that motion exercises are often delayed due to immobilization and sometimes cannot be started until the K-wires are removed. However, for many patients, percutaneous k-wires can minimize complications and provide excellent results in comparison to ORIF.

KEY WORDS

UNSTABLE PROXIMAL PHALANGEAL FRACTURES

PERCUTANEOUS FIXATION

OPRN REDUCTION AND INTERNAL FIXATION

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List of abbreviations

Abbreviation	The meaning
MP	Metacarpo-phalangeal joint
PIP	Proximal inter phalangeal joint
IP	Inter phalangeal joint
DIP	Distal inter phalangeal joint
PC	Per-cutaneous
ORIF	Open reduction and internal fixation
ROM	Range of motion
TAM	Total active motion
P1	Proximal phalanx
A/P	Antero-posterior view
Lat.	Lateral view

Aim of the work

Comparative study between percutaneous fixation using k-wires and ORIF using mini plates and screws, screws and tension band in the treatment of unstable proximal phalangeal fractures.

Protocol contains:

I- Review of literature:

1. Anatomy
2. Classification of proximal phalangeal fractures.
3. Diagnosis of fracture by:
    - History taking.
    - Clinical examination.
    - Imaging.
4. Treatment options.
    - Conservative.
    - Operative.

II- Patients and Methods:

The study will include 29 cases of unstable fracture of the proximal phalanx subjected to the following:

A- Diagnosis:

a. History and clinical examination.

b. Imaging study**:**

i. (X- Ray).

ii. C.T.

B- Technique.

C- Post-operative management and follow up: Where patients will be evaluated clinically and radiologically till final follow up.

D- Complications.

E- Results: Patients will be evaluated clinically and radiologically.

F- Discussion.

G- Conclusion.

H- Summary.

I- References.

J- Summary in Arabic.

Introduction

Hand injury is extremely common and accounts for about 15% of the attendance at accidents and emergency departments. Fractures of phalanges are probably the most common fractures in the skeletal system. Causes of hand injuries are crush /compression injuries, blunt trauma, fall down, road traffic accidents, machinery injury and sports related activity.
Proximal phalangeal fractures are considered unstable when they are irreducible, if acceptable reduction cannot be maintained, or if motion at adjoining joints cannot be started without loss of reduction. (**Thakur, 2008**)

In this comparative study we will compare between two fixation options; percutaneous fixation (group A) and open reduction and internal fixation (group B).
Group A includes k-wires and screws.
Group B includes screws, plate and screws and tension bands.

The choice of fixation type depends upon fracture site and morphology. Each method of fixation has its own advantage and disadvantage e.g. K - wire can be inserted with minimal soft tissue stripping, preserving the blood supply to bone and enhancing the potential for healing. In addition, K - wires are less bulky compared with a plate or screws and allow for easy closure of soft tissues, however distraction may be a problem if the bone ends are not firmly impacted during K -wires insertion. k -wires do not provide stable fixation, and the necessary cast or splint immobilization may result in tendon adhesion and stiffness.