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بسم الله الرحمن الرحيم

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قسم

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Management of Acute Dorsal Unstable Proximal Interphalangeal Fracture Dislocation

A Systematic Review / Meta-Analysis

Submitted for Partial Fulfillment of Master Degree in Orthopedic Surgery

By

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Abbas Hameed Rashid Al-khafaji

Dedication

Words can never express my sincere thanks to ***My Family and My Wife*** *for their generous emotional support and continuous encouragement, which brought the best out of me. I owe them all every achievement throughout my life.*

I would like to express my everlasting gratitude to all ***My Professors, Colleagues and Friends****, so many of them influenced, encouraged and inspired me throughout the years. I wish them the best of all.*

Abstract

Background: Fracture-dislocations of the proximal interphalangeal joint (PIPJ) are common injuries that, when inappropriately treated dysfunctional joint occurs secondary to persistent pain, stiffness, and arthritis. A thorough understanding of the biomechanics of the injured PIPJ, the principles of its treatment, and the available treatment options is essential to the proper management of these injuries.

Patients and Methods: Ranodmized clinical trials (RCT) were the gold standered to obtain the evidence followed by non randomized trials, available systematic review and meta-analysis were restored to whenever available. In this systematic review of management of acute dorsal unstable fracture-dislocations of the proximal interphalangeal joints of the fingers

Objective: To review systematically the results of management of acute dorsal unstable fracture-dislocations of the proximal interphalangeal joints of the fingers.

Data Sources: Medline databases (PubMed, Medscape, ScienceDirect. EMF-Portal) and all materials available in the Internet till 2019.

Results: There are several items for proper postoperative evaluation which include: pain, stiffness, postoperative infection, postoperative instability, and reoperation. Regarding the presence of postoperative pain; the lowest incidence proportion was in internal fixation with screws, while the largest proportion was in external fixation technique. Stiffness incidence was the lowest (10%) in hemi-hamate arthroplasty with a highest incidence at external fixation technique. Regarding the complications internal fixation has the lowest incidence of infection (0%), while external fixation had a high incidence (31%). On the other hand, fixation failure was higher in volar plate arthroplasty than other techniques, with a lowest incidence in internal fixation using wires. Finally, joint instability reached the highest incidence in hemi-hamate arthroplasty and external fixation with lowest incidence in Kirschner wire fixation.

Conclusion: There is little evidence in the literature to suggest superiority of various methods to treat fracture dislocation of PIP joint .According to our systematic review, internal fixation with screws (when feasible) may give acceptable outcomes with low rate of complications. On the other hand, usage of external fixation may have a high incidence of post-operative pain, stiffness, subluxation and infection.

Keywords: Proximal Interphalangeal, ORIF, Unstable, Fracture, Dislocation, External fixation, Proximal interphalangeal fracture, Proximal interphalangeal dislocation.

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List of Abbreviations

Abb.	Full term
ACL	Anterior cruciate ligament
CMC	Carpometacarpal
DASH	Disabilities of the Arm, Shoulder, and Hand questionnaire
DFD	Dorsal fracture dislocation
DIP	Distal interphalangeal Joint
ORIF	Open reduction and internal fixation
PCL	Posterior cruciate ligament
PIPj	Proximal interphalangeal joint
RCT	Ranodmized clinical trials
ROM	Range of motion
TFCC	Triangular fbrocartilage complex
VAS	Visual analog scale

INTRODUCTION

Fracture-dislocations of the proximal interphalangeal joint (PIPJ) are common injuries that, when inappropriately treated dysfunctional joint occurs secondary to persistent pain, stiffness, and arthritis. A thorough understanding of the biomechanics of the injured PIPJ, the principles of its treatment, and the available treatment options is essential to the proper management of these injuries [(1)].

Phalangeal fractures and dislocations account for nearly half of all hand injuries presenting to the emergency room [(2)]. Finger fractures occur most commonly in young men in the second to fourth decades of life and are often the result of athletic participation [(3)].

PIPJ fracture dislocations can be classified into 3 types based on the fracture geometry of the base of the middle phalanx:(1) palmar lip fractures, (2) dorsal lip fractures, and (3) pilon fractures. These fracture patterns are the result of characteristic mechanisms of injury [(1)].

PIPJ fracture dislocations occur commonly as a result of an axial load, the specific fracture pattern depends on the amount of flexion of the PIPJ at the time of axial loading. The movements of the hand and body in different sports have a direct impact on the type of finger injury sustained [(4)].