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MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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Primary Hinged External Fixator for Complex Fracture Dislocations of the Elbow:
Systematic Review and Meta-Analysis

Submitted for Partial Fulfillment of
Master Degree in ***Orthopedic Surgery***

By

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List of Abbreviations

Abb.	Full term
AMCL	Anterior medial collateral ligament
DASH score	Score of disability of arm , shoulder and hand
HEF	Hinged external fixator
LCL	Lateral collateral ligament
LUCL	Lateral ulnar collateral ligament
MCL	Medial collateral ligament
MEPS	Mayo elbow performance score
ORIF	Open reduction and internal fixation
PLRI	Posterolateral rotatory instability
PRUG	Proximal joint of the radius and ulna
RCL	Radial collateral ligament

INTRODUCTION

Knowledge of the static and dynamic stabilizers of the elbow is essential for the understanding the underlying pathology and choice of treatment strategy. [1]

High-energy and fracture dislocations with compromise of the medial and lateral ligamentous complex, the joint capsule, and potentially the tertiary stabilizers (i.e., the flexor pronator, extensor supinator masses, and brachialis) often demonstrate residual instability after osseous and ligamentous stabilization. [2]

The optimal management of a complex elbow injury should result in restoring joint stability and its full range of motion. However, this is often difficult to achieve by surgical means and a marked restriction of movement remains a frequent con- sequence of severe elbow injury. [3]

This systematic review discusses the usage of hinged external fixator of the elbow as a primary method of fixation in complex elbow fracture-dislocations.

The primary therapeutic objectives are to maintain concentric elbow reduction and stability by the spanning effect of the fixator and avoid joint stiffness by allowing early range of motion provided by the rotation around the axis of the fixator's hinge at the same time as protecting osseous and ligaments healing. Nevertheless, the application of this type of fixator is technically demanding. [4]

AIM OF THE STUDY

The aim of this study is to discuss the results of using a lateral hinged external fixator as an adjunct stabilizer in the treatment of a variety of acute destabilizing elbow injuries as a primary method of fixation not only in chronic or complicated cases.

The application of an external fixator can be used statically as a temporary stabilization of the elbow as a "damage-Control surgery "for osteoligamentous lesions with extensive soft tissue damage and in polytrauma patients.

Over and above, a "dynamic" External fixator is a functional treatment for highly unstable osteo-ligamentous injuries and persisting tendency to dislocation of the joint and sometimes as a standalone procedure.

In some cases, the procedure is also used in distraction arthrolysis of stiff elbows and as a salvage procedure in patients with correlated comorbidities as part of fracture treatment.

The most common treatment of complex elbow fracture-dislocations is ORIF and ligament repair (particularly lateral collateral ligaments [LCL]) with the aim to gain back bone-articular surface and joint stability. Radial head prosthesis is sometimes essential when it is not feasible to reconstruct this structure.

Complex fracture-dislocations of the elbow, such as terrible triad injuries and olecranon fracture-dislocations may remain unstable after reconstruction of the bony and ligamentous structures.

Subsequently, the results of treating these injuries sometimes are disappointing because of post-traumatic instability, stiffness, and early arthrosis. Consequently, there is a need for further treatment and additional procedures regularly.

The dynamic external fixator enables protection against rotational, valgus and varus forces if used properly using the best possible centring of the humeroulnar articulation. This control of the joint guidance enables functional follow-up treatment by reducing the compromising forces on the osteoligamentous structures. To achieve the aim of this study, we formulated the following research questions:

(1) In complex elbow fracture-dislocations, does treatment with a hinged external fixator result in reduction of disability and pain, and in improvement in ROM, function, and quality of life?

(2) What are the complications seen after external fixator treatment?