بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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Parameters of Conversion from Temporary External Fixation to Internal Fixation in Open Fractures in Adults

A systematic Review / Meta-Analysis

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

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Ahmed Atef Ahmed Badr

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List of Abbreviations

Abb.	Full term
AO	*Arbeitsgemeinschaft für Osteosynthesefragen (The Swiss Association for the Study of the Problems of Internal fixation, ASIF)*
CT	*Computerized tomography*
ETC	*Early total care*
ExFx	*External Fixation*
IF	*Internal fixation*
IMN	*Intramedullary nailing*
LOE	*Level of evidence*
ORIF	*Internal fixation with screws and/or plate*
OTA	*Orthopaedic Trauma Association (North America)*
OTDC	*Orthopedic trauma damage cntrol*
RCT	*Randomized Control Trial.*
ROM	*Range of motion*
TF	*Temporary fixation*

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INTRODUCTION

The procedure for evaluation and management of open fractures is best described as a sset of principles that has evolved over time, These principles involve both initial management and subsequent surgical intervention, The first step is accurate diagnosis and documentation of mechanism of injury, Appropriate coverage of the wound and splinting of the fracture are performed in conjunction with initiation of appropriate antibiotic therapy. [(1)]

The soft-tissue injury was classified according to the Gustillo and Anderson grading system at the time of initial assessment in the theater. The geometry and degree of bone comminution were graded from type A to C using admission radiographs according to the classification of the Orthopedic Trauma Association.[(2)]

External fixation is a surgical treatment used to stabilize bone and soft tissue in open fractures, using uniplanar, biplane circular,hybrid types, unilateral external fixator used as primary and definitive treatment for open fractures with sever soft tissues injure threatened compartment syndrome and multiple injured patients.[(3)]

Although temporary external fixation promote immediate fracture stabilization, allows three plane correction of the injury, minimal blood loss, allow early mobilization and

ambulation, and sometimes an external fixator is inevitable in repairing an open fracture. pin track infections, delayed union, translation or malalignment, nonunion, and patient discomfort remain the most common complications associated with external fixation.[4]

Internal fixation of this open fractures allows accurate reduction and rigid immobilization, prevent injury to nerves and blood supply, prevent interposition of soft tissue between fracture ends, minimize complication of fracture healing. [5]

Definitive internal fixation is done after the patient's general systemic condition or local soft tissues had recovered. This generally meant that the traumatic wounds needed to be clean, swelling grossly resolved, and blisters reepithelialized.[6]

Aim of the Work

Systematically reviewing available evidence from published articles to assess points of conversion from this temporary external fixation to internal fixation in open fractures.

Chapter 1

OPEN FRACTURES

An open fracture is an injury where the fractured bone and/or fracture hematoma are exposed to the external environment via a traumatic violation of the soft tissue and skin. The skin wound may lie at a site distant to the fracture and not directly over it (**Figure 1**). Therefore, any fracture that has a concomitant wound should be considered open until proven otherwise [(7)].

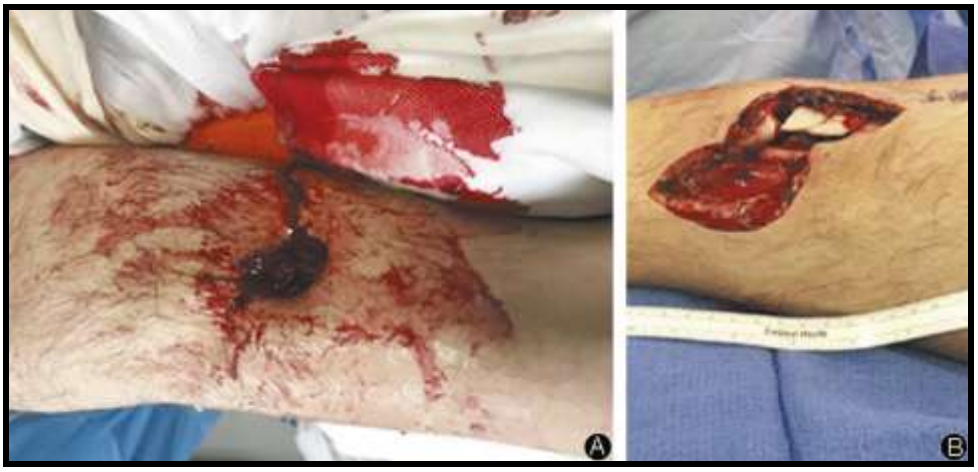

Figure (1): (a) (b) Clinical photograph of an open fracture lower limb. [(8)]

Open fractures are common with an incidence of 30 open fractures for every 100,000 people every year, with an average age of 45 years. Depending on the gender, distinguishing two peaks: in males between 15 and 19 years and in females in patients older than 60 years [(2)].

Classification:

The purpose of any fracture classification system in the clinical setting is to allow communication that includes fracture morphology and treatment parameters. In the setting of open fractures, there are two classification systems that surgeons treating these injuries should be familiar with. They are the Gustilo classification and the Mangled Extremity Severity Scale (MESS)[(2)].

The Gustilo classification has been the most widely used system and is generally accepted as the primary classification system for open fractures. This system takes into consideration the energy of the fracture, soft-tissue damage, and the degree of contamination. It has been modified since the original classification to allow a more accurate prognosis for more severe injuries (i.e., Type III injuries). There has been some concern in the literature regarding the interobserver reliability of this system (**Table 1**)[(9)].