Outcome of Open Reduction Internal Fixation versus Percutaneous Screw Fixation for Fractures of the Acetabulum

A Systematic Review and Meta-Analysis

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

By

Mohamed Ahmed Sayed Hasan
M.B.B.C.h

Under Supervision of

Prof. Dr. Yousri Mohamed Mousa
Professor of Orthopaedic Surgery
Faculty of Medicine, Ain Shams University

Dr. Ahmed Mohamed Sallam
Lecturer of Orthopaedic Surgery
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
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Mohamed Ahmed Sayed Hasan

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List of Abbreviations

Abb.	Full term
95%CI	*95% confidence interval*
DF	*Degree of freedom*
HS	*Highly significant*
I^2	*Inconsistency*
IQR	*Inter quartile range*
MD	*Mean deviation*
MIS	*Minimally invasive percutaneous screw fixation*
N	*Number of patients / papers*
NM	*Not mentioned*
NS	*Non-significant*
ORIF	*Open reduction internal fixation*
PSF	*Percutaneous screw fixation*
PTA	*Post traumatic arthritis*
RD	*Risk difference*
RR	*Risk ratio*
S	*Significant*
SD	*Standard deviation*

INTRODUCTION

The acetabulum is composed of the iliopubic column (anterior column) extends from the superior iliac crest to the pubic symphysis. The thicker structure is the ilioischial column (posterior column) extends from the inferior sacroiliac joint and sciatic notch to the ischial tuberosity ***(Werner et al., 2012).***

The Judet-Letournel classification system remains the most widely accepted. Which classify the acetabular fractures to five elementary and five associated fractures (Fig1). Although radiographic examination provides essential information for acetabular classification, CT, including multiplanar reconstruction, is helpful in the visualization of complex fractures ***(Durkee et al., 2006).***

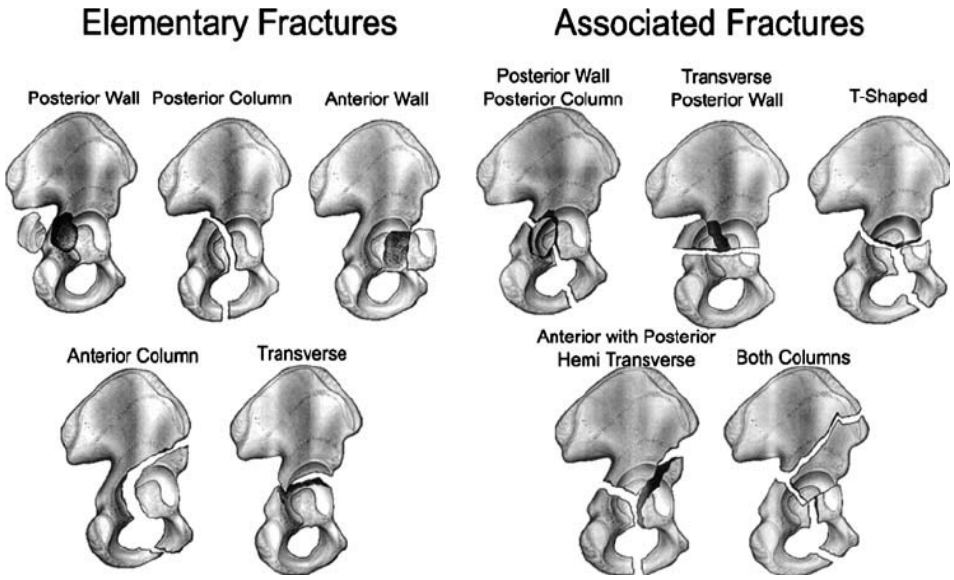

Figure 1: Judet-Letournel classification system ***(Eric P. et al., 2006).***

CT scans and three-dimensional reconstructions may improve the understanding of these fractures, but classification can be accomplished from review of the plain radiographs ***(Beaule et al., 2003).***

Indications of operative treatment of acetabular fractures include; displaced acetabular roof more than 2 mm, posterior wall fractures involving more than 40 to 50 %, marginal impaction, intra articular loose bodies and irreducible fracture dislocation ***(Tornetta et al., 2001).***

The goal of all treatment should be to restore the normal shape of the acetabulum to prevent post traumatic osteoarthritis and allow early mobilization of the patient ***(Mouhsine et al., 2005).***

Open reduction internal fixation has become the standard treatment for any acetabular fracture displaced by > 5 mm, promising results are also seen with closed reduction and percutaneous fixation for minimally displaced acetabular fractures ***(Giannoudis et al., 2011).***

The surgical approaches generally accepted in simple type displaced acetabular fractures are the Kocher-Langenbeck and ilioinguinal approaches. The rates of serious complications including deep infections, heterotypic ossification or nerve injuries are still high particularly in extended and combined approaches ***(Gungor et al., 2013).***

Internal fixation of these fractures often involves a combination of plates and screws to maintain perfect reduction. Fixation may involve plating of anterior column and posterior column or plating of one column in conjugation with lag screw fixation of opposite column ***(Khajavi et al., 2010).***

Percutaneous fixation of acetabulum fractures is a minimally invasive procedure that is associated with fewer complications compared with open procedures. As an alternative to nonoperative treatment or formal open reduction and internal fixation, closed reduction and percutaneous fixation can provide immediate stability. Additionally, as a minimally invasive technique, it may avoid complications associated with other treatment options. ***(Kazemi et al., 2012).***