Outcomes of Modified Ilioinguinal Approach in Treatment of Pelvic and Acetabular Fractures

A Systematic Review and Meta-analysis of Literature

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Mohamed Mahmoud Abdel Samad

بسم الله الرحمن الرحيم

﴿وَعَلَّمَكَ مَا لَمْ تَكُنْ تَعْلَمُ وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ عَظِيمًا﴾

صدق الله العظيم

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List of Abbreviations

Abb.	Full term

ASIS .....Anterior superior iliac spine

HHS..... Harris hip score

HO ..... Heterotrophic ossification

LFCN ..... Lateral femoral cutaneous nerve

NI..... Not included

NR ..... Not recorded

PRISMA..... Preferred reporting items for Systematic reviews and Meta-Analyses

ROM..... Range of motion

Vs..... Versus

Abstract

Background: modified ilioinguinal approach was introduced to manage anterior acetabular fractures to reduce the morbidity & complications of ilioinguinal approach, however there were no clinical evidence to confirm its efficiency.

Purpose: So we conducted a systematic review to determine whether the outcomes of modified ilioinguinal approach is better in managing traumatic acetabular fractures by comparing the results in each study .

Methodology: 5 studies(from 2010-2017) were included & reviewed the results of 147 patients operated by modified ilioinguinal approach in terms of: operative details, intraoperative & postoperative complications, postoperative reduction quality & final clinical outcome assessment, & results was analyzed & pooled together to reach a satisfactory outcome.

Results: modified ilioinguinal approach showed operative time (123.2±6.83 minute), relatively small amount of blood loss (200-1000 ml) & better quality of reduction (84.8% had anatomical reduction, 10.9% had fair reduction, and 4.3% had poor reduction). However there were no significant differences in terms of postoperative complications & final clinical outcome assessment between different studies.

Conclusion: It was concluded that the modified ilioinguinal approach is preferred recently as an alternative to the classic ilioinguinal approach as an efficient, easy, and reproducible approach in simple fractures with a shorter learning curve and lower complication rate than those recorded for other approaches used for the same indications .

Keywords: acetabular fracture, modified ilioinguinal approach, anterior intrapelvic approach, quality of reduction, functional outcomes, intraoperative blood loss.

INTRODUCTION

Surgical management of displaced acetabular or pelvic fractures is widely accepted in most trauma units. The surgical decision making entails classification of the fractures and operative approach. The choice of operative approach is dependent on the fracture type, direction of displacement, skin situation at the surgical incision site, and duration from initial injury[1–4].

So Reduction of acetabular fractures are among the most challenging surgical objectives encountered by orthopaedic surgeon, so the surgical approach used for acetabular fractures is critical to achieving the goal of anatomic reduction of fractures with a minimum of complications[5], the approach should provide sufficient angle of visualization, allow anatomical reduction and permits good control of the fracture site & also it is defined by the general health status of the patient [6].

The acetabulum is the point at which the pubis, ischium & ileum are connected together by the triradiate cartilage which then joins together to form the innominate bone. The anterior & the posterior columns form the structure of the acetabulum resembling the two limbs of an inverted Y shape (fig.1).

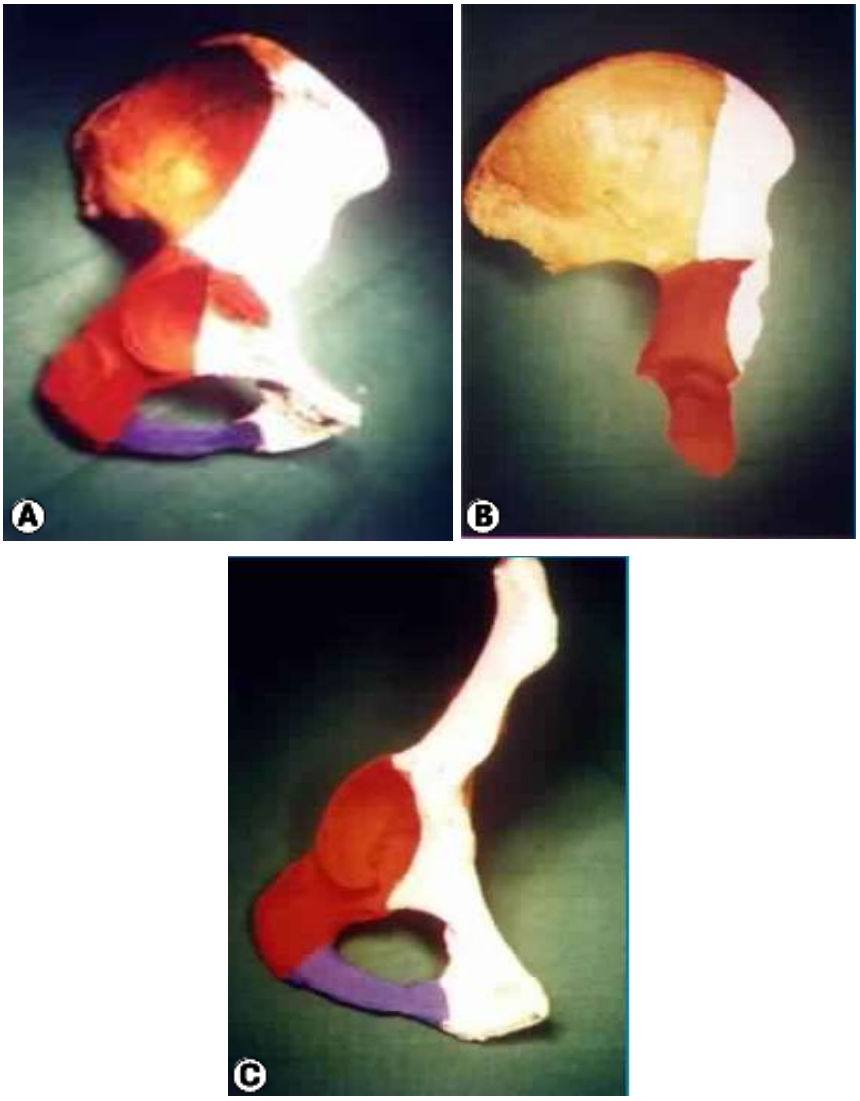

Fig. (1): A-Columns of the acetabulum, anteroposterior view. The white area is the anterior column, the red area is the posterior column, and the purple area is the tie beam (inferior pubic ramus), B- Columns of the acetabulum, iliac view, C- Columns of the acetabulum, obturator view[7].

The anterior column includes the iliac wing anterior border, the pelvic brim, anterior acetabular wall, and the superior pubic ramus. The posterior column constitutes the ischial portion of the bone, including the greater and lesser sciatic notch, the posterior acetabular wall, quadrilateral surface, and the ischial tuberosity. The acetabular anterior & posterior walls extend from the columns & are identified well on axial CT (fig. 2A). On radiographs, the anterior column is represented by the iliopectineal (or iliopubic line), while the posterior column is represented by the ilioischial line (fig.2B). The weight bearing portion of the acetabulum is the roof and forms an independent fragment in both column fractures. The medial wall or the floor of the actabulum is made by the quadrilateral plate. The best purchase for screws can be achieved by placing them through the sciatic butress or the posterior column (fig.3)[8].

The most accepted classification of acetabular fractures is that described by Judet and Letournel[9-11] that identified five types of elementary & five types of associated fractures.

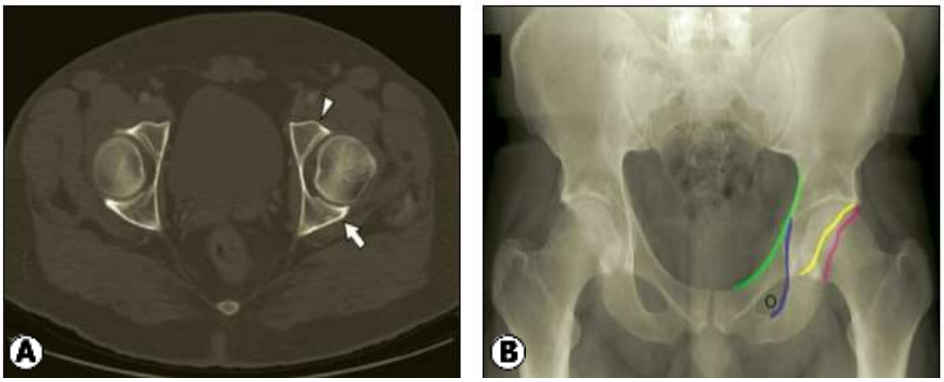

Fig. (2): A-Axial section through acetabulum shows anterior (arrowhead) and posterior (arrow) walls. B-Anteroposterior radiograph shows iliopectineal line (green), ilioischial line (blue), anterior acetabular wall (yellow), posterior acetabular wall (pink), and obturator foramen (O) [7].

Fig. (3): Posterior wall fracture: Postoperative anteroposterior (AP) view[8].

Elementary fractures:

1- **Posterior wall fractures**: one of the most common types of acetabular fractures with a prevalence of 27%[12], An isolated posterior wall fracture shows intact iliopectineal line which helps to exclude transverse fracture with posterior wall fractures. Best demonstrated on obturator oblique view & CT axial views (fig. 4).

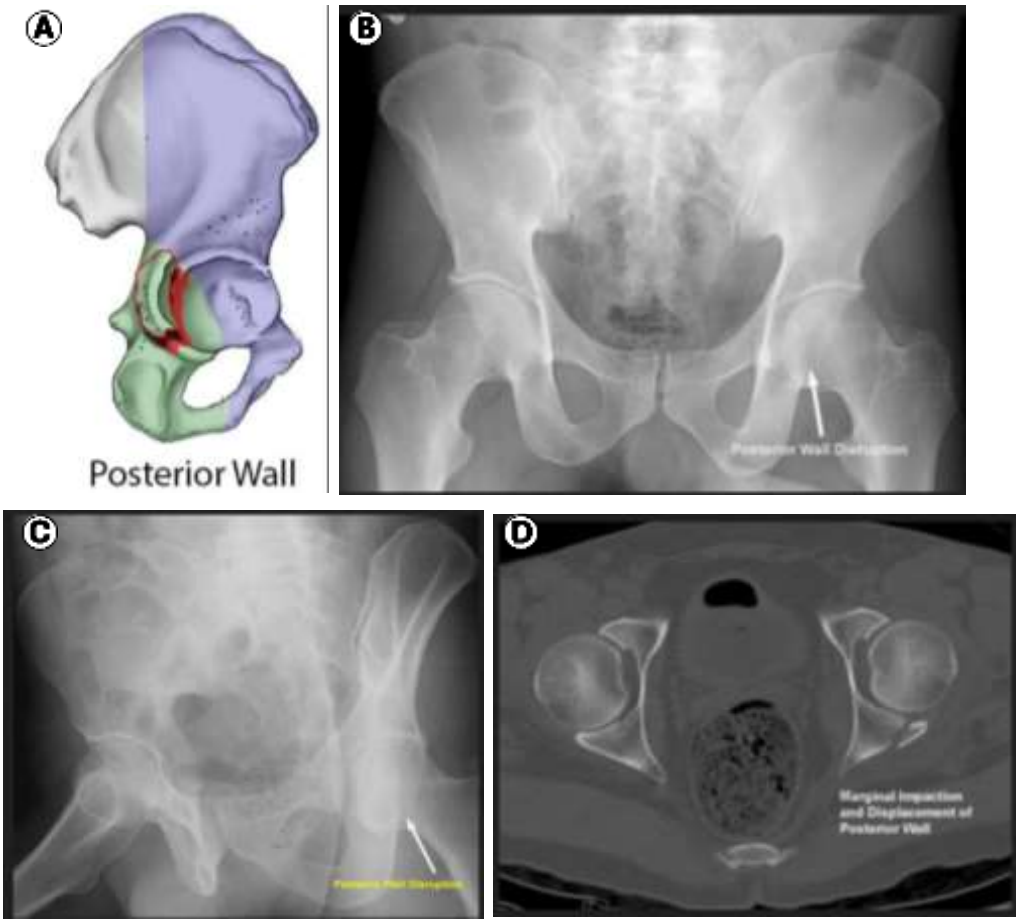

Fig. (4): A- illustration of posterior wall, B- pelvis showing both hips AP view showing posterior wall disruption c- obturator oblique radiograph showing posterior wall fracture, d- CT axial view showing the posterior wall fracture[13].

2- **Posterior column fractures**: shows disruption of the ilioischial line, with a greater risk of injury to the superior gluteal nerve & vessels. Best demonstrated on iliac oblique view & CT axial views (fig. 5).

3- **Anterior wall fractures:** very rare type.

4- **Anterior column fractures:** seen more often in elderly people who sustains a fall from height & commonly seen associated with medial column fractures (fig. 6)

5- **Transverse fractures:** is a fracture type that involves the anterior & posterior surfaces of the acetabulum without involving the obturator ring showing disruption of both the iliopectineal & ilioischial lines & considered to be the only elementary fracture to involve both columns & best demonstrated on CT reconstruction images Enface (fig. 7).