

A CASE REPORT ON HOW WE MANAGED A CASE OF DISPLACED COMMINUTED RIGHT ILIAC WING FRACTURE WITH ASSOCIATED UNDISPLACED ACETABULUM FRACTURE IN AN 83-YEAR-OLD MALE

Orthopaedics

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ABSTRACT

Background: Pelvic fractures, particularly involving the iliac wing, are severe injuries that frequently result from high-energy trauma such as road traffic accidents. These fractures pose unique challenges in elderly patients due to the potential for osteoporosis and other comorbidities. Understanding the appropriate management strategies is crucial for optimizing outcomes in this vulnerable population. **Case Report:** An 83-year-old male presented with a right iliac region injury following a road traffic accident on October 27, 2022. Clinical examination indicated a pelvic fracture, and imaging revealed a displaced comminuted right iliac wing fracture with an associated un-displaced acetabulum fracture. After routine preoperative investigations and anaesthesia assessment, the patient underwent surgery using the ilioinguinal approach. The comminuted fracture was stabilized with a 10-holed contoured reconstruction plate and 7 screws, with additional stability provided by a small dynamic compression plate fixed anteriorly with 2 cortical screws. The patient's postoperative recovery was uneventful, with satisfactory outcomes observed at follow-ups at 3, 6, and 12 months. **Discussion:** Elderly patients with pelvic fractures require specialized management due to reduced bone quality and the presence of comorbidities. The ilioinguinal approach offers excellent exposure for addressing complex iliac wing and acetabulum fractures. This case highlights the effectiveness of using contoured reconstruction plates and dynamic compression plates for achieving stable fixation. Early initiation of physiotherapy plays a critical role in enhancing recovery and functional outcomes. **Conclusion:** The case demonstrates the successful management of a displaced comminuted right iliac wing fracture with an associated un-displaced acetabulum fracture in an elderly patient. The surgical approach and fixation techniques employed provided stable fracture alignment, leading to an uneventful recovery. Comprehensive preoperative, perioperative, and postoperative care, along with timely rehabilitation, are crucial for ensuring positive outcomes in elderly patients with pelvic fractures.

KEYWORDS

Iliac wing fracture, pelvis, pelvic ring injuries.

INTRODUCTION

Pelvic fractures are relatively uncommon but can be severe injuries, particularly in elderly patients. The iliac wing, part of the pelvis, can sustain complex fractures due to high-energy impacts such as those from road traffic accidents^{1,2}. These fractures pose significant management challenges due to their anatomical complexity and the potential for associated injuries. The incidence of these kinds of fracture is about 2% of all pelvic fractures as per reports³. This case report aims to describe the clinical presentation, diagnostic approach, surgical management, and postoperative outcomes of an 83-year-old male patient with a displaced comminuted right iliac wing fracture and an associated un-displaced acetabulum fracture.

Classification of Iliac Wing Fractures

Iliac wing fractures can be categorized based on their anatomical characteristics and the extent of displacement:

1. Non-displaced fractures: Fractures where the bone fragments remain in their original anatomical position.
2. Displaced fractures: Fractures where the bone fragments are separated and not aligned.
3. Comminuted fractures: Fractures where the bone is broken into multiple pieces.
4. Associated fractures: Fractures involving adjacent structures such as the acetabulum.

The fracture is classified as a Tile A injury⁴ or as 61-A2 according to the AO/OTA⁵, which means that the integrity of the pelvis maintained.

Tiles Classification:

Type A	Stable (posterior arch intact)
A1	Avulsion of the innominate bone
A2	Iliac wing or anterior arch fracture caused by a direct blow
A3	Transverse fractures of the sacrum and coccyx
Type B	Partially stable (incomplete disruption of posterior arch)
B1	Open book injury (external rotation)
B2	Lateral compression injury (internal rotation)
B3	Bilateral B injuries

Type C	Complete unstable (complete disruption of posterior arch)
C1	Unilateral
C2	Bilateral, with one side type B, one side type C
C3	Bilateral

Case Illustration:

An 83-year-old male had a road traffic accident in October 2022. He sustained an injury to the right iliac region, he was further evaluated based on a multidisciplinary approach using ACLS protocol to rule out other occult injuries.

Clinical Examination

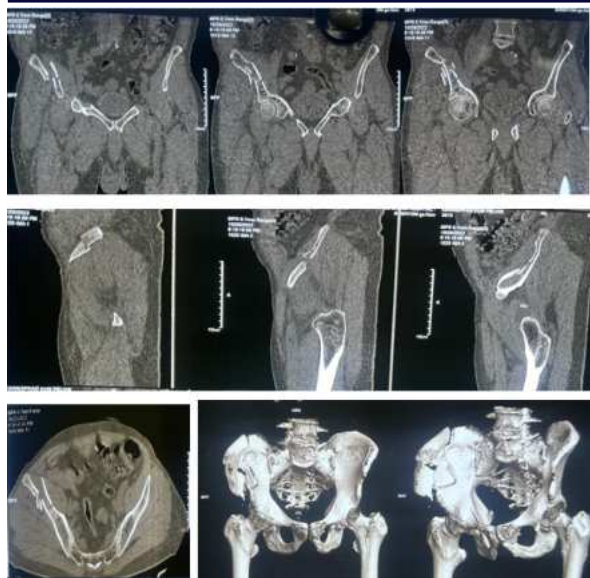
Upon examination, the patient exhibited positive pelvic compression, movement restriction, difficulty in straight leg raising and diffuse tenderness and warmth of right hip indicating a potential pelvic fracture. There were no signs of other injuries or significant trauma.

Investigations

- X-ray: Initial imaging revealed a displaced comminuted right iliac wing fracture.



- CT scan has a pivotal role in investigating pelvic injuries⁷. Further confirmed the presence of a displaced comminuted right iliac wing fracture and an associated un-displaced acetabulum fracture, providing a detailed assessment of the fracture morphology and guiding the surgical plan.



Surgical Technique

Preoperative Preparation

The patient underwent routine blood investigations and was assessed for anaesthesia fitness. No contraindications for surgery were identified.

Surgical Procedure

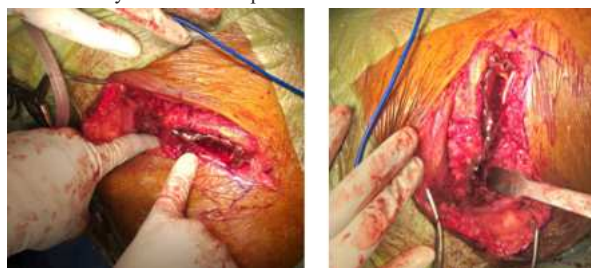
The patient supine on the operating table, and the ilioinguinal approach was chosen for surgical access due to its effectiveness in exposing the iliac wing and acetabulum.

1. Incision and Exposure:

- Using ilioinguinal approach an incision was made, providing access to the iliac wing and acetabulum⁸⁻¹¹.
- The fracture site was carefully exposed, ensuring minimal disruption to surrounding soft tissues.

2. Reduction and Fixation:

- The comminuted fracture fragments were meticulously reduced to restore the anatomical alignment of the iliac wing. Initially fractures fragments were reduced and temporarily held in place with the help of K-wires.
- Fracture was fixed using a 10-holed reconstruction plate after adequate contouring accordingly to the anatomy of the iliac wing and secured with 7 screws.
- To regain stability, a small dynamic compression plate was placed anteriorly and secured in place with 2 cortical screws.



Closure

The surgical site was irrigated with normal saline, antibiotic powder was instilled at the surgical site. Drain was secured in place & wound was closed in layers, and sterile dressings were applied.

Postoperative Protocol

Immediate Postoperative Care

- The patient was monitored in the recovery room for any immediate postoperative complications.
- Pain management was provided through a combination of analgesics and regional anaesthesia. Intravenous antibiotics were given for 5 days followed by oral antibiotics for 7 days.
- DVT prophylaxis initially with Inj. Enoxaparin 0.6cc subcutaneous for initial 3 days and were followed with oral anti-

coagulants for 1 month.

- Regular dressings done on post operative day 2,5,9,12 and 14. Drain tube removal done on post-op day 2, alternate staples removed on post op day 12 and complete staples were removed on post op day 14.

Rehabilitation

- Encouraging early mobilization helps prevent complications like deep vein thrombosis and aids in recovery.
- Physiotherapy aimed at improving strength and range of motion began with bedside exercises for the chest, upper limb, unaffected hip, and both knees and ankles, progressing from non-weight bearing to toe-touch at 6 weeks, and full weight-bearing at 8 weeks.
- Weight-bearing was gradually started based on the patient's tolerance and fracture stability.

Follow-Up

The patient was followed up at regular intervals:

- 3 months: The patient demonstrated good functional recovery with no signs of infection or implant failure.
- 6 months: Continued improvement in mobility and strength, with radiographs showing satisfactory fracture healing.
- 12 months: Full recovery with no postoperative complications, and the patient resumed normal activities.

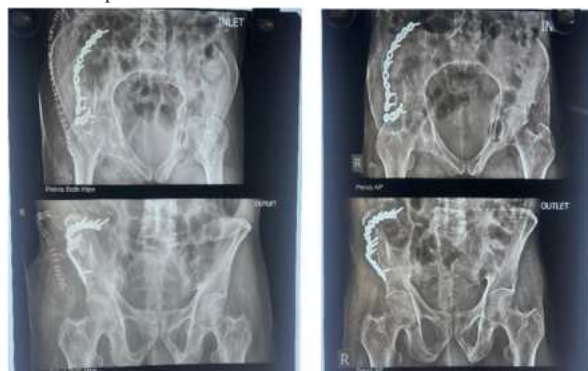


Figure 1 : Immediate Post-op

Figure 2 : 6 months after surgery



Figure 3 : 1 year after surgery

DISCUSSION

In contrary to fractures that are displaced as a result of high-energy trauma, nondisplaced or partially displaced injuries involving the pelvic ring in older patients can also arise from low-energy trauma or falls^{4,5}. Managing pelvic fractures in elderly patients requires a multidisciplinary approach due to the potential for comorbidities and reduced bone quality. The ilioinguinal approach provides excellent exposure for the fixation of complex iliac wing and acetabulum fractures^{8,9}. Biomechanically, both screws and plates are equally effective for stabilizing unstable iliac fractures, provided that both the crest and brim fracture sites are secured¹². The use of a contoured reconstruction plate and dynamic compression plate ensures stable fixation, allowing for early mobilization and rehabilitation. It is essential to operate such fractures in order to achieve superior functional outcomes as compared to conservative treatment. Early, unrestricted mobilization and full weight-bearing with adaptive physiotherapy enhances postoperative prognosis¹³.



Figure 4



Figure 5 : Both images show achieved range of movements after 1 year

Challenges and Considerations

- **Elderly Patients:** Increased risk of osteoporosis and comorbid conditions may complicate surgical management.
- **Surgical Approach:** The ilioinguinal approach requires precise anatomical knowledge and surgical expertise to avoid complications.
- **Rehabilitation:** Early and staged physiotherapy is crucial for optimal recovery and preventing long-term disability¹⁴.

CONCLUSION

This case report demonstrates the successful surgical management of a displaced comminuted right iliac wing fracture with an associated undisplaced acetabulum fracture in an elderly patient. The ilioinguinal approach provided effective exposure and stabilization, facilitating an uneventful recovery. Regular follow-ups confirmed satisfactory outcomes, highlighting the importance of comprehensive management in such cases.

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Conflict-of-Interest

The authors declared no conflict of interest.

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