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Simultaneous fixation of both column of acetabulum in a single sitting

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Abstract
Aim: Acetabular fractures have been one of the most complex and producing enormous morbidity for the patient. We intend to reduce the morbidity in patients with complex acetabular fractures involving both the anterior and posterior column, fixing both anterior and posterior column with plating and screw fixation depending upon the fracture pattern and analyse the post-operative outcome.
Cases: We have operated upon 3 patients, with anterior column fracture with posterior hemi-transverse fracture pattern being most common.
Conclusion: Single sitting fixation of both column fracture markedly improved the post-operative pain and rehabilitation in patients and should be undertaken whenever possible.

Keywords: fixation, single sitting, post-operative, patients

Introduction

A double-column acetabular fracture refers to the simultaneous fracture of the anterior and posterior columns of the acetabulum. The fracture piece is separated from the posterior sacroiliac joint, and the joint surface of the acetabulum loses connection with the axial bone of the body, forming a "floating acetabulum" fracture type. It is considered as the most complex acetabular fracture type. Since the fracture involves both columns, the anterior and posterior columns need to be reduced and fixed separately. The exposure of the fracture site during the operation is significantly higher than that of other types of acetabular fractures. Appropriate surgical approach is the most critical factor in determining the anatomical reduction of fracture. However, features like pelvic anatomy, acetabular irregular surface morphology, surrounding important blood vessels and nerves, and also the acetabulam itself is deep with extensive soft tissue. So double column acetabular fracture approach has clinical difficulties, as there is no uniform selection criteria. Anatomical reduction and firm internal fixation are the main actions required to achieve a good outcome for acetabular fracture. Although great progress has been achieved for both-column fractures, the choice of surgical approach is still controversial. Some experts believed that ilioinguinal (IL) and Kocher-Langenbeck (KL) approaches were indispensable because neither the IL nor KL approach alone was capable of exposing and managing all of the fragments.

Study

We had 3 patients – one of whom had transverse fracture and two patients presented with anterior column fracture with posterior hemi-transverse fracture. All 3 patients were stabilised and operated within 2 days of trauma and both columns were fixed simultaneously in a single sitting.

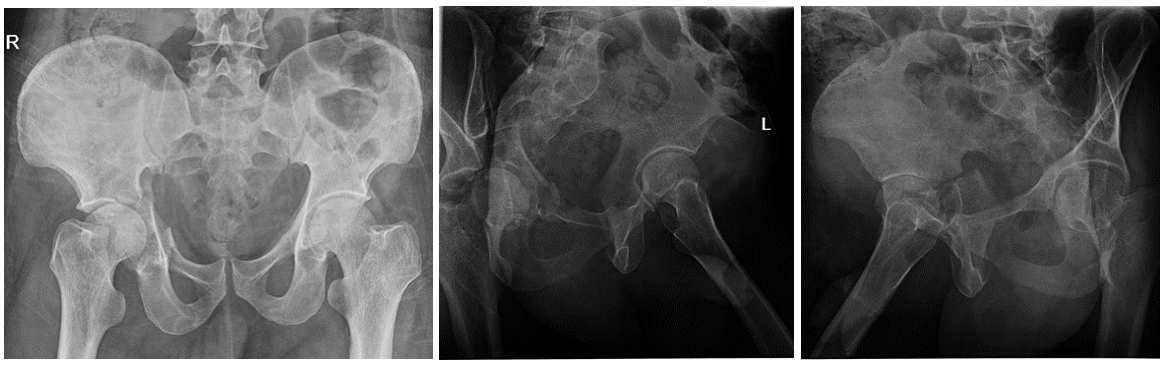

Fig 1

Fig 2

Anterior Column Plating along with Posterior Column Plating was done in two patients using Stoppa's approach Anteriorly and Kocher and Langenback Approach Posteriorly. One Patient underwent Anterior Column Plating using Stoppa's Approach and Posterior Column Percutaneous Screw Fixation with entry point at the Ischial Tuberosity.

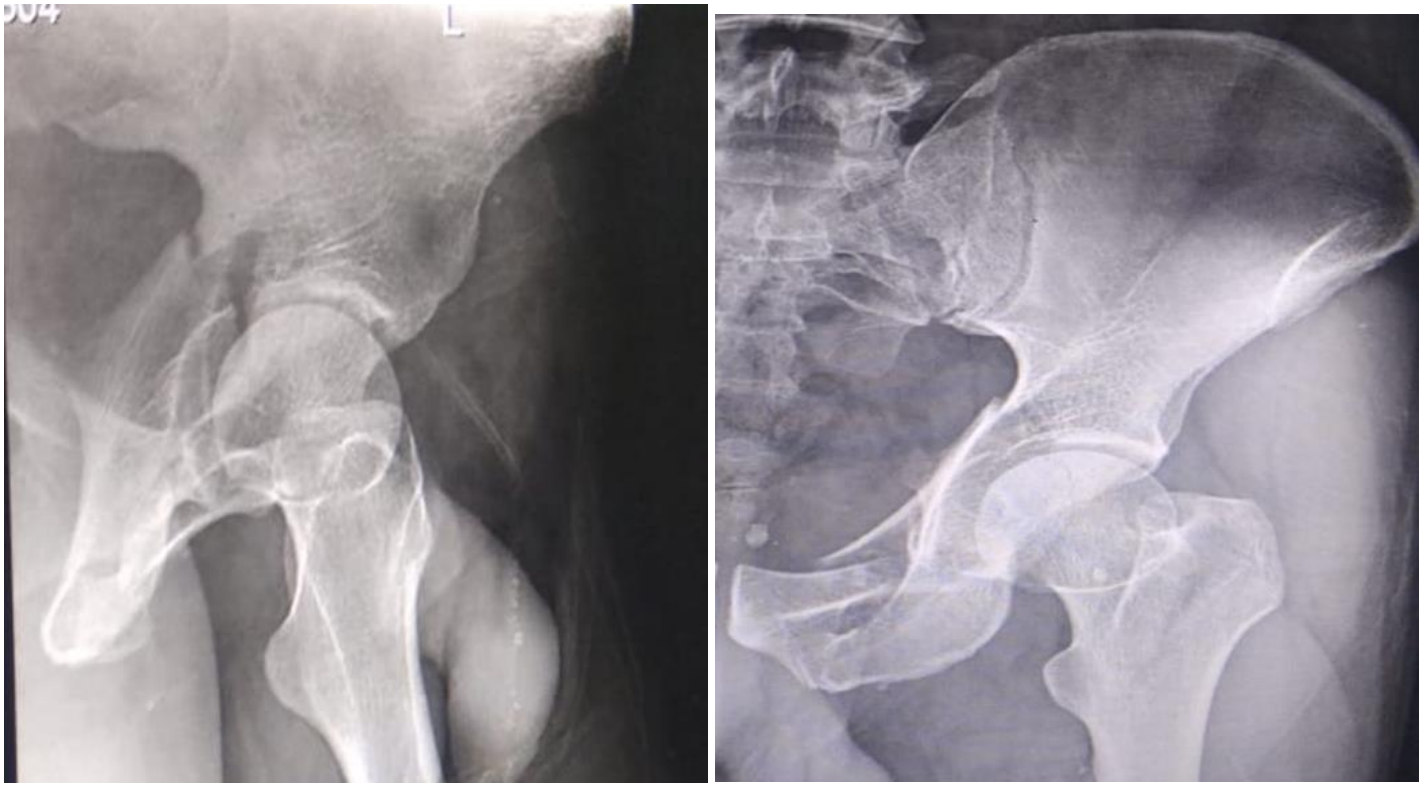

Fig 3

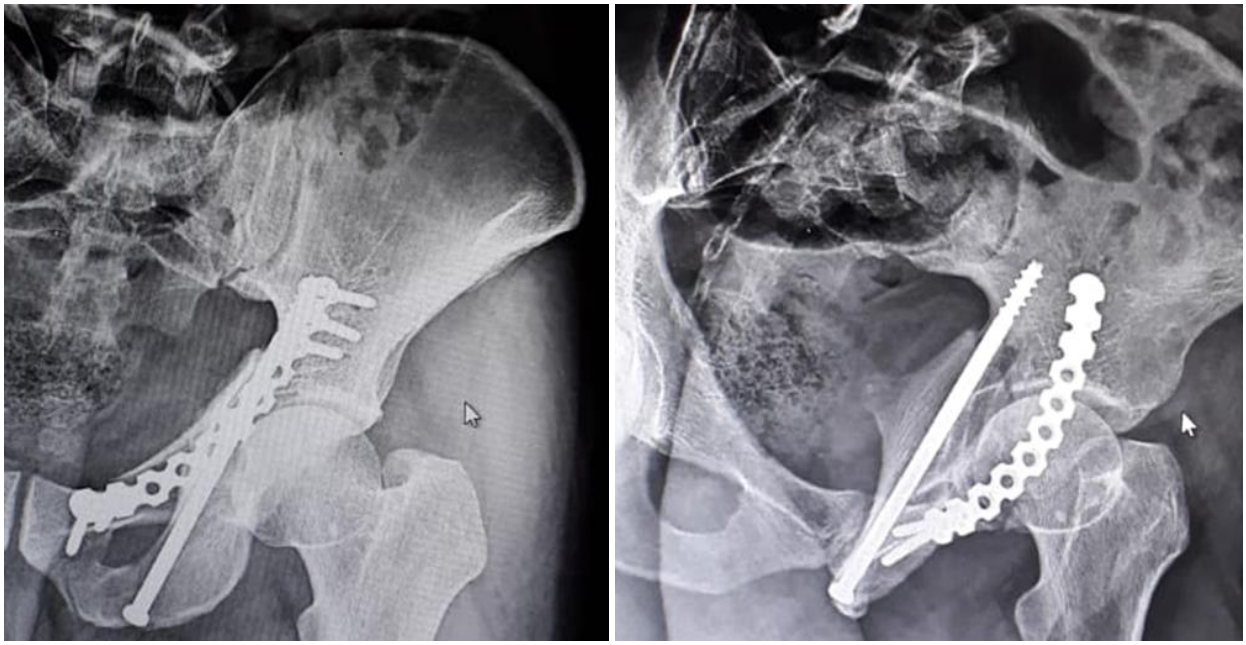

Fig 4

Fig 5

Fig 6

Fig 7

Fig 8

Post-Operative Period

Postoperatively all 3 patients were not given DVT prophylaxis. Since the patients were stabilised and operated early, none of

them developed any DVT related problems. Early mobilisation (Non-Weight Bearing Walking) using walker prevented complications. All the three patients were not given Indomethacin for prevention of Heterotrophic Ossification. There is no incidence of Heterotrophic ossification with the patients in follow up for more than 18 months.

Discussion

All patients post-operatively were assessed using Postal Modified Merle D' Aubigne Score periodically at 2 months, 6 months, 12 months and 18 months interval for Functional status of the patient and post-operative complications. All patients developed good functional outcome (Score > 15) at the end of 6 months and there was no incidence of arthritis post-operatively.

The combined fixation of both columns in a single sitting is very useful for transverse type of fractures and also in anterior column with posterior hemi-transverse type, both of which together account for about 60% of the associated type of fractures in acetabulum classification. All patient were able to weight bear with support at 6 weeks. The stoppas approach is less invasive when compared to ilio-inguinal approach and results in significant less morbidity to the patient postoperatively. The fixation of both the columns simultaneously is associated with better rehabilitation and early return to activity.

The aim of every treatment concept in acetabular fractures is an anatomical joint restoration which leads to best clinical and radiographical results. Acetabular fractures despite anatomic or near-anatomic reduction can potentially lead to altered stress distribution with the potential post-traumatic arthritis. The indications for surgical treatment are similar to the decision-making for simple fractures. Significant displacement of fractures extending to the weight-bearing dome of the acetabulum, incongruity of the hip joint, and hip instability generally require operative management. The majority of both column fractures are treated operatively; only one-fourth of these fractures "must" be treated conservatively due to polytrauma situation, additional comorbidities, additional soft-tissue injuries, or expected stable fracture situation

If the type of anterior column fracture is complicated or combined with anterior wall fracture, but the type of posterior column fracture is simple, the fracture is stable and there is no obvious displacement, the anterior column plate combined with the posterior column lag screw can be fixed by the iliac-groin approach.

With the advancement of medicine and the development of internal fixation devices, acetabular double-column fractures are developing towards small incisions and minimally invasiveness. The surgical approach is closely related to the development of internal fixation devices to a certain extent. The treatment of acetabular double-column fractures will achieve better long-term prognosis and higher clinical satisfaction.

Conclusion

Early operative treatment with simultaneous fixation of both the columns of acetabulum will provide a more favourable post operative outcome with least to no complications. In addition to the reduced risk of anaesthetic exposure due to a staged procedure. In our study, the patients did not require the use of DVT prophylaxis and also the use of Indomethacin to prevent Heterotrophic ossification. Further studies in this regard will greatly throw light on managing complex acetabular trauma.

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