T-TYPE ACETABULAR FRACTURE WITH POSTERIOR WALL FRACTURE, LETOURNEL CLASSIFICATION DEFIED: CASE REPORT

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ABSTRACT

More than 50 years ago Letournel and Judet, came up with a classification for acetabular fractures that remain the gold standard and means of communication between surgeons. A 71 years old man, presented after being involved in road traffic accident. Judet and pelvic CT-scans showed complex acetabular fracture characterized by free fragments of posterior wall, posterior column, anterior column fractures with an associated acetabula protrusio and obturator foramen fracture. Computed Topography(CT) of the chest showed pleural effusion from which he recovered five days later. Kocher-Langenbeck incision was used to access the fractures. Acetabular comminution noted. Reduction and fixation obtained with the help of two 3.5mm reconstruction plates and screws. Closure done in standard fashion. Follow-up was done in week 4 and 8. Letournel divides acetabular fractures into five elementary and five associated types. Surgical planning i.e Surgery timing, patient positioning, surgical approach, type of implants and reduction tools are largely determined by accurate diagnosis. Technical expertise on the part of the surgeon and the team is also of utmost importance in order to obtain favorable results. Such unique fractures may be undiagnosed due to lack of thorough description under the present Letournel system. In view of the fact that this classification is usually used in the surgical planning for approaches, such lack of thorough description and classification impacts on optimal fixation of complex acetabular fractures. This therefore, probably calls for a re-look of acetabular fracture classification and more reporting by surgeons.

Key words: Acetabular, T-Type, Posterior wall, Letournel classification, Fracture

INTRODUCTION

More than 50 years ago Letournel (1), came up with a classification for acetabular fractures that has since, been the gold standard and means of communication between surgeons. The classification divided acetabular fractures into two (2) main groups being elementary and associated types, this classification system is based on the anterior and posterior columns and walls involvement. We present a patient with an unusual acetabular fracture which does not fit into the existing Letournel acetabular fracture classification system.

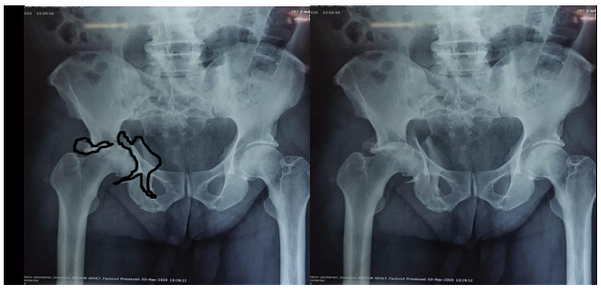
CASE REPORT

The patient was a 71 year old man, who presented to the hospital after being involved in a road traffic accident, complaining of chest pains and right hip pain. The patient was communicating, with no associated loss of consciousness, vomiting or convulsions.

Accident and Emergency department primary survey revealed a haemodynamically stable patient, with the right lower limb shortened, with no obvious deformity or open wounds. The underlying suspicion of a fracture dislocation of the right hip led to pelvic radiograph, which revealed right acetabulum fracture with a T-Type with posterior wall fracture pattern (Figure 1).

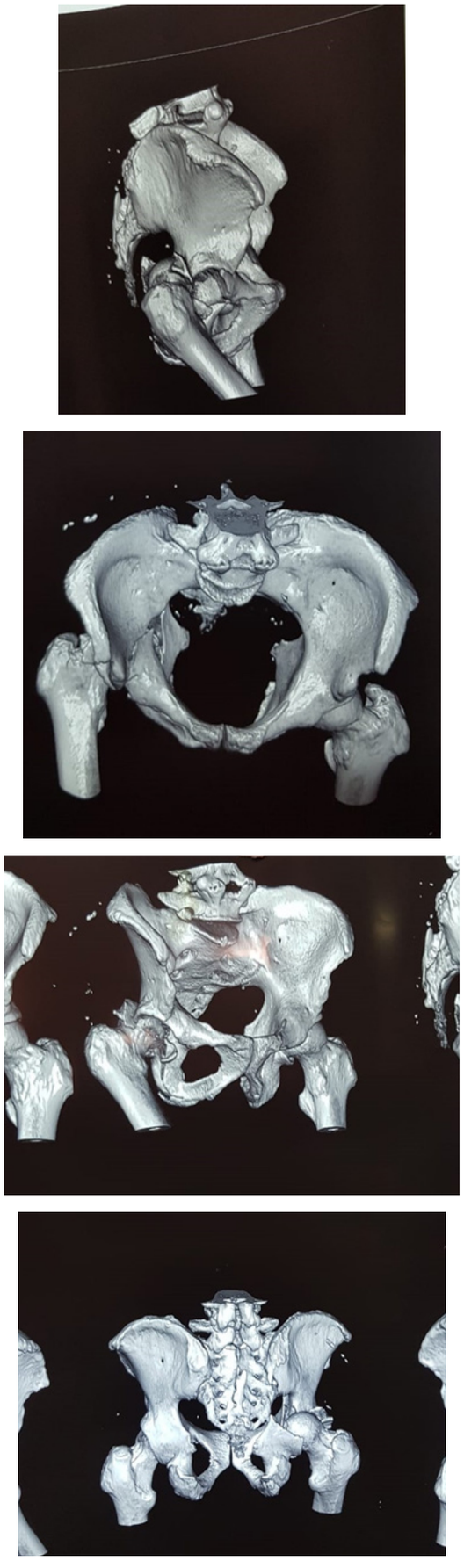
Figure 1

Antero-posterior pelvis radiograph, showing fracture of right acetabulum with a notable posterior wall and column fracture, anterior column fracture with an associated acetabular protrusio and obturator foramen fracture



Secondary survey revealed, the patient to be a diabetic who was hyperglycemic at 28mmol/l on Metformin 500mg OD and Glibenglamide 5mg OD, with no associated hypertension or chronic kidney disease. Both the sensory and motor branches of the sciatic nerve of the right lower limb were clinically intact. The injury severity score was calculated to be 17.

Figure 2
Reconstructive CT image showing T-Type with posterior wall fracture



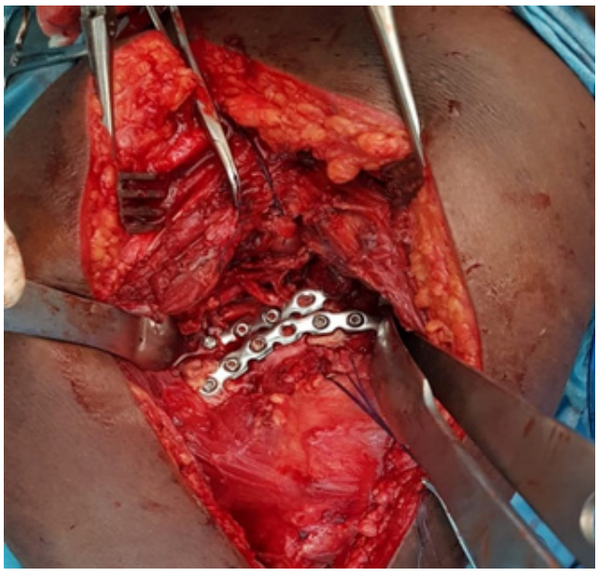
The antero-posterior radiograph view together with CT-scan 3D reconstruction images confirmed the right acetabulum unstable T-Type with posterior wall fracture pattern. The fracture was temporarily stabilized with a distal femur skeletal traction pin, complete blood count was done which revealed the patient had an anaemia of 6.4g/dl for which he was transfused 4 units. ECG and ECHO were unremarkable. The physicians were called in, to review the patient for the diabetes, for which they switched the patient to soluble insulin. Chest X-ray done was unremarkable. Patient was put on DVT prophylactic dose. Definitive plan was to take the patient for open reduction and internal fixation of the right acetabulum fracture with reconstruction plates and screws. After all this pre-operative work up and optimization, patient was cleared for operation by the anaesthesia team.

The patient however desaturated during perioperative period and the operation cancelled. CT chest was ordered and revealed bilateral minimal pleural effusion with atelectasis which was managed conservatively with nebulization and oxygen therapy, with chest physiotherapy. He improved and was take for operation 5 days later.

Operation

The patient was placed on left lateral position, right Kocher-Langenbeck incision was used to enable access for surgical fixation of the acetabulum. The external rotators of the hip were divided and retracted. Sciatic nerve visualized and gently retracted. A comminuted posterior column and wall fractures were found, with a dislocated head. Curettage of the fracture margins was done, then reduction of the posterior column fracture and fixation with 8 Hole 3.5mm reconstruction plate and cortical screws was done. The posterior wall fracture was then reduced and fixed with a 6 Hole 3.5 mm reconstruction plate and cortical screws (Figure 3). Indirect reduction of the anterior column was achieved by an excellent direct reduction and fixation of the posterior column fracture from the Kocher-Langenbeck incision. Intraoperatively, fluoroscopy was used to confirm the quality of the reduction. The range of motion of the hip was noted to be smooth and stable post fixation. Irrigation was done before final closure in layers of the wound. Antibiotics were continued for 72 hours post operatively.

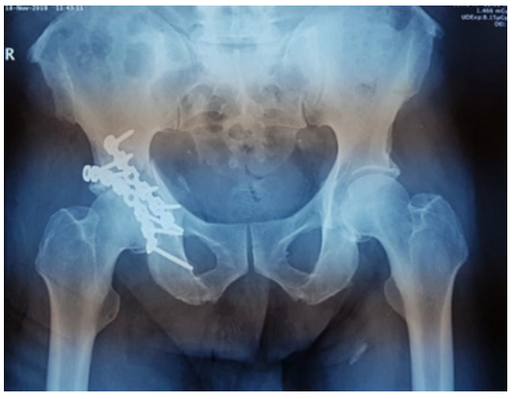
Figure 3
Intra-operative image showing reconstruction plate positioning



Early postoperatively, patient was well with minimal pain on sitting. Check X-ray (Figure 4) showed acetabular fracture well fixed with implants appropriately placed. Figure 4(b): The obturator oblique of the right confirmed acceptable reduction and fixation of the anterior column.

Figure 4
Post op radiographs a) Anterior-posterior radiograph b) Obturator oblique view of the right

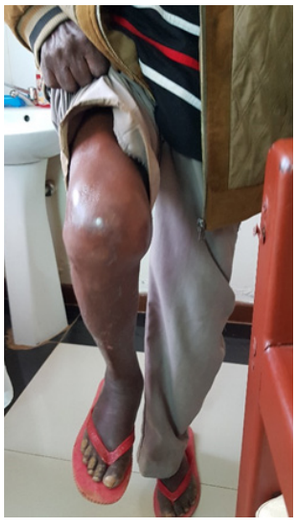
a



b

Figure 5
Patient ambulating with crutches 4 weeks post surgery

Figure 6
a,b ,c – 8 weeks post surgery



DISCUSSION

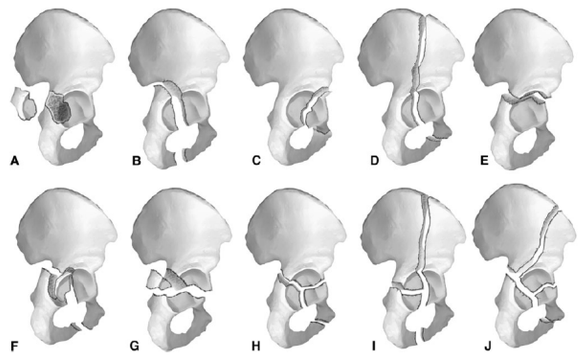
Letournel's acetabular fracture classification system divides acetabular fractures into 10 patterns, five elementary and five associated, based on surgical findings and plain radiograph characteristics. This is very imperative, as it guides in the surgical approach planning of the fracture as no single approach allows for suitable access to both column fractures with excellent outcomes in severely comminuted fractures such as this case that did not have a classic fit to the popular classification methods.

Surgical planning is of absolute importance in addressing such cases as it will inform patient positioning, surgical approach, type of implants needed and reduction tools.

Technical expertise on the part of the surgeon and the team is also of utmost importance in order to obtain favorable results.

Figure 6

Acetabular fractures as described by Letournel. A: Posterior wall, B: Posterior column, C: Anterior wall, D: Anterior Column, E: Transverse, F: Posterior Column/ Posterior wall, G: Transverse/ posterior wall, H: T-Type, I: Anterior Column Posterior Hemi-transverse, J: Associated Both Column (2)



A 40 year meta-analysis to evaluate the classification, the incidence of complications and the functional outcome of patients who had undergone operative treatment of acetabular injuries found that a total of 3670 fractures were classifiable by Letournel classification (3). The T-Type pelvic fracture which is part of the associated group is defined as a transverse acetabulum fracture in combination with a vertical fracture that divides the posterior column from the anterior column. Although the T-type fracture affects both columns, it differs by definition from a fracture of both columns in that part of the acetabulum articular surface still remains stably attached to the iliac pelvic ring (4). T-Type fracture exists in isolation, in the Letournel classification. This case however, is unique as the patient presented with right sided T-Type acetabular fracture with posterior wall fracture, this fracture pattern does not exist in the present Letournel classification.

CONCLUSION

Such fractures may be under reported due to lack of thorough description and classification under the present Letournel classification system. In view of the fact this classification is usually used in the surgical planning for approaches, such lack of thorough description and classification can have a direct impact on the planning of some acetabular surgeries leading to an incomplete fracture fixation. This therefore, probably calls for slight modification of the Judet–Letournel classification.

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