ABSTRACT

Background: Aim of the study was to evaluate the results of operative procedures for fixation of acetabular fractures and the complications and functional outcomes related to them.

Material and Methods: Total of 20 patients who presented at DMC, Ludhiana and who presented with acetabular fractures between 2002 to 2005 were included in the study and were analyzed prospectively for maximum of 15 years to assess their functional outcomes after operation. Data of patients related to duration of hospital stay, mode of injury, injury surgery interval, associated injuries, surgical approach, amount of blood loss during surgery, post operative complications and functional scores were recorded.

Results: Out of 20 patients evaluated in the study, functional outcome was assessed according to Harris Hip Score. Excellent results were obtained in 13 patients, good results in 2 patients, fair results in 2 patients and 3 patients had poor results.

Conclusion: As compared to patients treated by conservative means, operative fixation of acetabular fractures provides stable fixation and better results.

KEYWORDS: Acetabular fracture, operative treatment

INTRODUCTION

Acetabular fractures are usually the result of high energy trauma in road accidents and sometimes during a fall from height. The conservative treatment of these fractures has shown to give inferior results compared to operative treatment (ref7). Incidence of these fractures is increasing in India due to increase in number of vehicles on the road and consequently resulting in increased number of traffic accidents and also affecting younger age group (ref10). Open reduction and internal fixation of displaced acetabular fractures, as for any intra-articular fractures, is a widely accepted mode of treatment (ref5,10 17). Principally this would include anatomical reduction to allow early range of motion, patient mobilization and return of joint function and prevent secondary hip arthritis. While working on this article I would also like to pay tribute to Judet and Letournel whose pioneering work on operative fixation of acetabular fractures has resulted in advancement of orthopedic surgery.

We present here the long term outcome of the operative fixation of acetabular fractures (treated at Dayanand Medical College and hospital, Ludhiana), in 20 patients followed for a maximum of 15 years.

MATERIAL AND METHODS

All cases of comminuted acetabular fractures, both anterior and posterior pillars who presented in the institution mentioned between 2002 and 2005 were included in the study. Patients of all ages were included. Patients who underwent major neuro surgical procedures were excluded.

Indications for surgery were-
1. Unstable fracture dislocation of hip
2. Fractures involving weight bearing area
3. An acetabular fracture with intra-articular loose fragments
4. A non concentric reduction after dislocation of the hip
5. Persisting sciatic nerve palsy despite closed reduction.

20 patients were reviewed prospectively. Records available in form of admission notes, operative notes and progress notes were reviewed.

The pre-operative and post-operative x-rays and CT scans were assessed and OPD records of the patients were checked at follow up. Patients were followed up at 1 month intervals in first 6 months and subsequently at 1 year, 2 years, 5 years, 7 years, 10 years and 15 years.

All technical problems and complications related to the procedure and the final functional outcome were recorded.

After managing life threatening emergencies i.e. head injury, chest and abdominal injuries patients were stabilized before taking them up for elective Acetabular fixation. Kocher-Langenbeck approach for posterior column and Triradiate approach for both column fractures were used. Standard AO/ Locally made 3.5 mm reconstruction plates and 4mm partially threaded screws were used for the fixation. Broad spectrum antibiotics were given for 5 days. Bed side physiotherapy started 6 hours after the surgery and increased as tolerated. Patients had an initial Harris Hip scoring at discharge at 2 weeks. Then at first follow up of 6 weeks, then at subsequent follow ups. All the complications were assessed and recorded.

OBSERVATIONS AND RESULTS

20 patients (male 18 & female 2) with average age of 32.9 years (range 21 to 52 years) were operated for acetabular fracture. 19 patients suffered injury in road traffic accidents and 1 patient sustained injury due to fall from height.

Average injury-surgery interval was 6 days with range of 2 to 23 days. 18 patients were operated within 2 weeks of injury. 2 patients were operated 18 and 22 days after injury because of head injury and blunt trauma abdomen respectively.

16 patients had posterior column fractures. Bicolumnar fractures were present in 4 patients. 9 patients had posterior dislocation of hip in which closed reduction was done and skeletal traction applied. 2 patients had sciatic nerve injury preoperatively which were explored at time of surgery. Chemical prophylaxis against DVT was given to all patients (24 hours prior to surgery) except 2 patients who had head injury. 1 patient had deep wound infection, controlled with debridement, anti septic dressing and antibiotics.

Radiological reduction was evaluated by criteria given by Matta et al. It measured residual post operative displacement on AP and two 45 degrees oblique Judets views where maximum displacement (in mm) of any of normal radiographic lines or Innominate bone was measured and categorized into anatomical (0 to 1mm displacement), imperfect (2 to 3 mm displacement), poor (>3mm displacement) or surgical secondary congruence. (Table 2,3)

20 patients received pre-operative antibiotic prophylaxis. Subcutaneous LMW heparin was used for deep vein prophylaxis prevention in 18 patients starting one day preoperatively and continued for 2 weeks. Range of movement exercises were started on 2nd post-operative day and allowed non weight bearing mobilization at 7 days. Weight bearing was allowed once radiographic signs of fracture healing were evident. (Table 1,2)
Follow up period was maximum of 15 years. Functional and radiological outcome are tabulated into table 2. Heterotopic ossification of Brooker class 3 was found in 2 patients but gradually size of the heterotopic mass decreased allowing good range of movements at hip. One patient subsequently developed avascular necrosis of hip and later underwent total hip replacement. There were no hardware related complications. There were no iatrogenic sciatic nerve injuries. Preoperative sciatic nerve injuries of 2 cases were explored. All of them recovered in 3 months . Duration of surgery and blood loss are tabulated.

DISCUSSION

Acetabular fracture is an intra-articular fracture. Anatomical reduction and stable fixation are two important variables which affect final outcome. Till 1960, acetabular fractures were treated conservatively but with development of columnar concept as described by Judet and letournel and availability of better imaging modalities, surgical treatment is increasingly being performed with better results(4,5,6). Open reduction and internal fixation of acetabular fractures is technically challenging and only selective centres offer such treatments to patients.
There were no cases of femoral artery injury in our study. Quality of reduction in acetabular fracture is an independent variable in terms of lessening severity of complications and improving outcome. The incidence of femoral artery injury in our study was 0.5%. Both cases of sciatic nerve injury occurred in patients who underwent wound debridement and completely recovered subsequently. There was 1 patient in our series who developed avascular necrosis and had to undergo total hip replacement subsequently.

In conclusion, acetabular fracture, which is mainly due to high velocity injury involving young adults, can be effectively managed with open reduction and internal fixation and have predictable and comparable functional and radiographic outcomes. Team of trained orthopaedic and general surgeon and support of anaesthetist are necessary to deal with any possible complications and associated other injuries. The surgeons should prepare well for problems such as prolonged operative time and increased blood loss especially in the learning curve phase and in the patients operated after a delay of more than 2 weeks.

REFERENCES