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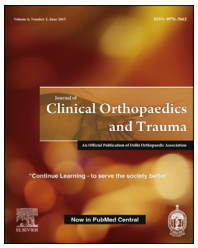

Original Article

Acetabular fractures labelled poor surgical choices: Analysis of operative outcome

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ABSTRACT

Purpose: We report the surgical outcome in 52 patients with acetabular otherwise considered as poor surgical choices.
Methods: 43 male and 9 female patients were operated at a mean age of 43 years and followed up for a mean duration of 60.3 months. There were 22 elementary fractures and 31 associated ones according to Letournal and Judet classification. Osteosynthesis was attempted in 48 patients whereas a primary total hip arthroplasty was performed in 4 patients. Outcome was assessed radiologically and functionally employing Harris Hip Score (HHS).
Results: Average HHS in osteosynthesis group was 82.56 ± 12.4 with excellent to good results in 59.6% of the cases. Symptomatic osteoarthritis occurred in 13.5% of cases, avascular necrosis and severe heterotopic ossification in 7.7% each, infection and nerve palsy in 11.5% each.
Conclusion: Although the complication rates in this series is marginally more than that reported in literature, we recommend that the indications of surgical fixation in acetabular fractures need to be extended to those which were considered poor surgical choices.

1. Brief introduction

Fractures of acetabulum are considered as a surgical problem unless criteria for non operative treatment are fulfilled.[1] However considering the complexity of surgical reconstruction, the decisions should be wisely chosen and carefully reviewed. A judicious approach would be identifying cases where surgical course would yield a more favourable result than a conservative management plan.

It has been well recognised that surgical results are dependent highly on the quality of postoperative reduction achieved and its maintenance thereof. A study by Matta revealed that the fractures reduced to within 1 mm of

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anatomical reduction had far better results than fractures which had a sub optimal (>2 mm) reduction post-operatively.[2,3] Achievement of a good reduction depends on many factors both controllable and uncontrollable.[4] While the former may include timing of surgery, surgical technique and surgeon experience; age, fracture type and femoral head damage constitute the latter. Based on these factors, groups have been identified where outcome might not justify pursuing a surgical course of management. In addition to such cases, a subgroup of patients with poor skin condition also have been described to have a poorer outcome by virtue of increased risk of infection.[1,5]

Murphy et al found out that the majority of poor prognostic factors in acetabular fractures play their role through an inter-relationship with imperfect quality of reduction.[6] Amongst our surgically managed cases of acetabular injuries, we identified relative indications where a conservative approach may be indicated due to shear surgical difficulty or a high risk of complications after surgery.

The objective of this research was to analyse critically the results of operative management in acetabular fractures which have been conventionally labelled as poor choices for surgical treatment and hence formed relative indications for conservative management.

2. Patients and methods

Over a period of 12 years (December' 2001 to January' 2013), 223 cases of acetabular fractures were treated surgically by the senior author. Out of these, 64 cases were identified as fulfilling the criteria for being labelled as poor surgical choices; the inclusion criteria were neglected fractures (delay in presentation of more than 3 weeks), osteoporosis (t score > 2.5), highly comminuted fracture (>3 fragments identifiable on radiographs that won't hold any internal fixation device) or poor local skin conditions (Morel-Lavallée lesion, bed sores, suprapubic catheter in situ, open fractures). 52 of the 64 cases have completed a minimum of 24 months follow up and were evaluated in the present study. The medical records, imaging, complications and functional outcome of these cases were reviewed.

There were 43 male and 9 female patients. Mean age of patients was 43 years (20–72 years). All except one case had unilateral acetabular injury.

For objective analysis of results, the patients were divided into four groups; group A constituting neglected injuries, Group B cases presenting with acute osteoporotic or comminuted fractures or both (the main surgical difficulty was poor hold of the internal fixation), Group C containing patients with neglected injuries associated with osteoporosis or comminution or both and Group D was constituted by patients with an increased risk of infection by virtue of poor skin condition irrespective of the other indications. Group A had 24 patients, Group B had 13 patients, Group C had 11 patients and Group D had 8 patients (4/8 patients were also included in other groups) (Table 1).

The patients were evaluated pre-operatively with standard anteroposterior and Judet views of the pelvis in addition to computerized tomographic scans. The fracture classification was done according to Letournal and Judet.[7] There were 22 elementary and 31 associated fractures. Femoral head fracture was part of the injury in 2 patients while femoral head impaction was seen in 3 patients. Persistent dislocation was present in 12 cases out of which posterior type occurred in 9 and one each of anterior, superior and central types.

Patients were counselled about pros and cons of internal fixation versus primary hip replacement. An osteosynthesis was attempted in 48 patients whereas a primary total hip arthroplasty was performed in 4 patients. A column/wall specific approach was undertaken for osteosynthesis. An isolated Kocher Langenbeck or an ilioinguinal approach was used in 20 cases each, a combination of both was done in 8 patients and the triradiate approach was used in 1 patient. Moore's approach was taken in all patients where a primary total hip replacement was done.

Mechanical calf pumps were used in all cases to prevent deep venous thrombosis; however no agents for thromboprophylaxis were used. Indomethacin 75 mg twice a day was used for 4 weeks in the later half of the study for neglected cases.

Postoperatively patients with osteosynthesis were kept in-bed for 3 weeks followed by non weight bearing mobilisation for 3 months. However, in bed mobilisation was encouraged for all patients. Patients were followed initially at 6, 10 and 14 weeks and subsequently at 3 months for initial 1 year. Later on they were called for follow up biannually. Patients who underwent primary arthroplasty were mobilised from first post operative day and were followed up 3 monthly for a year then biannually.

At every follow up, radiographs were taken and functional evaluation was done using Harris Hip Score (HHS).[8] Radiologically the cases were assessed for maintenance of reduction and appearance of secondary osteoarthritic changes, if any. Functionally, a score of 91–100 was labelled as excellent, 81-90 good, 71–80 fair and 70 or less HHS was regarded as a poor outcome. Any complication arising perioperatively or during the course of follow up was separately noted.

Statistical analysis: Statistical analysis was carried out using SPSS version 19 (SPSS Inc., Chicago, Illinois); statistical significance was set with a p-value of 0.05.

3. Results

All patients except one (who had perioperative mortality) were available for follow up. Mean duration of follow up ranged from 26 to 136 months (mean 60.3 months).

3.1. *Functional outcome*

In osteosynthesis group, 47 patients (includes two patients which were subsequently converted into total hip replacement) were available for follow up. Mean HHS in this group was 82.56 ± 12.4 (range 55–100). Excellent results were seen in 11 (23.4%) patients, good results in 17 (36.2%) patients, fair results in 9 (19.1%) patients and poor results in 10 (21.3%) patients. Mean HHS of 4 patients with hip replacement was 86.75 (range = 75–97). A typically good clinical result of osteosynthesis in a neglected injury is shown in Fig. 1a–d.