REV BRAS ORTOP. 2017;xxx(xx):xxx–xxx

SOCIEDADE BRASILEIRA DE ORTOPEDIA E TRAUMATOLOGIA

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Original Article

Outcome of surgical treatment for displaced acetabular fractures: a prospective study☆

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ARTICLE INFO

Article history:
Received 3 June 2017
Accepted 3 July 2017
Available online xxx

Keywords:
Acetabulum
Arthroplasty, replacement, hip
Fractures, bone
Hip joint

ABSTRACT

Objective: The aim of this study was to evaluate the functional outcome of surgically treated acetabular fractures.
Methods: A prospective longitudinal study was undertaken in this hospital during the period from December 2010 to December 2014. A total number of 46 patients with the diagnosis of acetabular fracture were included in the study. The main cause of the acetabular injury was a road traffic accident. All the patients were treated surgically with plates and screws. Outcome was assessed radiologically and functionally, employing the Harris Hip Score. The mean follow-up period of the patients in the postoperative period was 30 months (24–36 months).
Results: The results were excellent in 60.86%, good in 21.73%, fair in 8.69%, and poor in 8.69%. Post-operative complications of acetabular fracture such as heterotopic ossification were found in 2.17%, osteoarthritis in 6.52%, skin infections in 4.34%, nerve lesions in 2.17%, and vascular necrosis in 4.34% of patients. More than 80% of patients were satisfied with the results of acetabular surgeries.
Conclusion: These results show that internal fixation of acetabular fractures leads to a good outcome in the majority of patients.

Resultado do tratamento cirúrgico de fraturas acetabulares deslocadas: estudo prospectivo

Palavras-chave:
Acetábulo
Artroplastia, substituição, quadril
Fraturas, osso
Articulação do quadril

RESUMO

Objetivo: Avaliar o resultado funcional das fraturas acetabulares tratadas cirurgicamente.
Métodos: Um estudo longitudinal prospectivo foi realizado neste hospital entre dezembro de 2010 e dezembro de 2014. Foram incluídos 46 pacientes com diagnóstico de fratura acetabular. A principal causa da lesão acetabular foi acidente de trânsito. Todos os pacientes foram tratados cirurgicamente com placas e parafusos. O resultado foi avaliado radiologicamente e funcionalmente pelo *Harris Hip Score*. O período médio de seguimento dos pacientes no pós-operatório foi de 30 meses (24-36 meses).

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https://doi.org/10.1016/j.rboe.2017.12.007

Please cite this article in press as: Lal SR. Outcome of surgical treatment for displaced acetabular fractures: a prospective study. Rev Bras Ortop. 2017. https://doi.org/10.1016/j.rboe.2017.12.007

Resultados: Os resultados foram excelentes em 60,86%, bons em 21,73%, razoáveis em 8,69% e ruins em 8,69% dos casos. Complicações pós-operatórias da fratura acetabular, tais como ossificação heterotópica, foram encontradas em 2,17% dos casos; osteoartrite, em 6,52%; infecções da pele, em 4,34%; lesões nervosas, em 2,17% e necrose vascular, em 4,34% dos pacientes. Mais de 80% dos pacientes estavam satisfeitos com os resultados da cirurgia.
Conclusão: Os presentes resultados indicam que a fixação interna das fraturas acetabulares conduz a um bom resultado na maioria dos pacientes.

Introduction

Acetabular fractures are among the most serious injuries treated by orthopedic surgeons. Unfortunately, patients with fractures of the pelvis and/or acetabulum, almost always also experience serious injury to surrounding soft tissue (skin and muscles) and neurovascular structures (nerves, arteries and veins).[1] High-energy trauma is the main cause in younger patients and generally associated with other fractures. Over the age of 35, fractures occur with minimal trauma because of osteoporosis.[1]

Majority of acetabular fractures are associated with lower limb fractures due to falls, particularly in older individuals.[1,2] Incident of posterior wall fractures are 24% of acetabular fractures.[3] Aetabular fractures generally occur in conjunction with other fractures which influence management options, surgical approach and clinical outcomes.[4] There are other factors which may influence treatment options like patient's age, fracture stability, osteoporosis, co morbidity and surgeon's experience. Treatment options are conservative methods (skeletal traction, partial weight bearing), percutaneous fixation, total hip arthroplasty.[1,2] Surgical fixation is the main treatment.[1,2] There are certain surgical approaches used for operative management are Ilioinguinal, Kocher–Langenbeck, extended iliofemoral and triradiate approaches or combination of them.[1,4]

The aim of this study was to evaluate the functional outcome of surgically treated acetabular fractures.

Methods

This prospective study was carried out at Orthopedics department from December 2010 to December 2014. It was approved by institutional medical ethics committee. A total of 46 patients (30 males and 16 females) with acetabulum fracture admitted to our institute were included in the present study. Thirty patients (65.21%) were male and sixteen patients (34.78%) were female (Table 1). 28 cases of acetabular fracture were found on the right side and eighteen cases were seen on the left side. The mean age of patients was 44 years (range: 20–80 years). A written informed consent was obtained from all the patients. Complications were discussed with the patients. They were treated with open reduction and internal fixation with reconstruction plate and screws under general anesthesia. All patients were followed for thirty months.

Table 1 – Age and sex variations in study group (*n* = 46).

Age (years)	Male	R	L	Female	R	L	Total
20–40	4	2	2	2	1	1	6
41–60	8	5	3	4	3	1	12
>61	18	11	7	10	6	4	28
Total	30	18	12	16	10	6	46

Inclusion criteria

- Age more than 20 years and less than 80 years
- Close fractures
- Posterior wall fractures
- Posterior column fractures
- Anterior column fractures
- Transverse fractures
- Both column fractures

Exclusion criteria

- Simple fractures
- Open fractures
- Fracture older than 3 weeks.

Following hemodynamic stabilization of the patients, a detailed clinical examination and radiological assessment was done. Patients were kept on upper tibial skeletal pin traction. Patients were operated between three to seven days based on principles of Damage Control Orthopedics. Demographic profiles were recorded. Radiographs (pelvic AP and Judet views) and CT scan with 3D reconstruction were carried out according to the clinical findings. Fractures were classified according to Judet-letournel.[5] Traumatic hip dislocation was found in 28 patients in total and central dislocation in four. Closed reduction was carried out in patients with posterior dislocation in the emergency room, and then skeletal traction was applied till the operation with a Steinman screw passing through the supracondylar area of the femur. Reduction was performed under general anesthesia in one patient with central dislocation, and then skeletal traction was applied till the operation. The surgical approach was determined according to the fracture type. Ilioinguinal incision was used in 12 patients, iliofemoral incision was used in two patients, and Kocher–Langenbeck was used in 32 patients. Ilioinguinal incision was preferred in anterior column, two-column, and posterior hemi transverse + anterior column fractures. The indirect method was used to reduce the posterior column in

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