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Functional analysis of patients who underwent treatment for periprosthetic fractures following hip arthroplasty: A retrospective study

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Abstract
Periprosthetic fractures of the femur after hip arthroplasty represent a difficult treatment challenge. The results of management of periprosthetic fractures have varied greatly due to factors such as bone quality, fracture pattern and method of treatment including non-operative measures, reduction fixation, or revision surgery. These treatments have historically been fraught with high incidence of complications, treatment failures and compromised outcomes. Despite these problems, surgical treatment has become the standard in treating the majority of periprosthetic femur fracture. This study was to assess the functional outcome of patient who underwent treatment for periprosthetic fracture following hip arthroplasty. It is a retrospective study of 20 patients, 12 male and 8 female, with average follow up was minimum of 8 months and maximum of 24 months. Patient who underwent treatment for periprosthetic fracture following hip arthroplasty and intraoperative periprosthetic fracture were included in this study. Medically unfit patients were excluded from this study. Revision long stem, locking plate, ss wire and cable graft. Outcome was analyzed functionally by harris hip score. Our study demonstrates good functional outcome in periprosthetic fracture with few complications. Keywords: periprosthetic fracture hip, harris hip score.

Keywords: periprosthetic fractures, hip arthroplasty

Introduction
Periprosthetic fractures of the femur after hip arthroplasty represent a difficult treatment challenge.

The results of management of periprosthetic fractures have varied greatly due to factors such as bone quality, fracture pattern and method of treatment including non-operative measures, reduction fixation, or revision surgery.

These treatments have historically been fraught with high incidence of complications, treatment failures and compromised outcomes.

Despite these problems, surgical treatment has become the standard in treating the majority of periprosthetic femur fracture

Aim of the study
To assess the functional outcome of patient who underwent treatment for periprosthetic fracture following hip arthroplasty.

Materials and Methods
Our study was a retrospective study of 20 patients who underwent treatment for periprosthetic fracture following hip arthroplasty. These patients were operated in Government Kilpauk Medical College Hospital. These patients were analyzed by preoperative X-rays and clinical examination. All patients were evaluated for associated medical problems and injuries and treated simultaneously. These patients were operated as per Vancouver treatment algorithm and functional outcome was analysed by Harris hip score. These patients were followed up for 12 months {8-16 months}. 2 patients died during follow up and 3 patients were lost in follow

up. Post operatively patients were followed up at monthly interval. Patients were included in this study after satisfying inclusion and exclusion criteria made for this study.

Preoperative evaluation
- Done using Vancouver classification system
- X ray pelvis with both hip anteroposterior view and X ray affected hip with femur anteroposterior view

Inclusion criteria
- Patient who underwent treatment for periprosthetic fracture following primary and revision hip arthroplasty.
- Intraoperative periprosthetic fracture.

Exclusion criteria
- Medically unfit patients

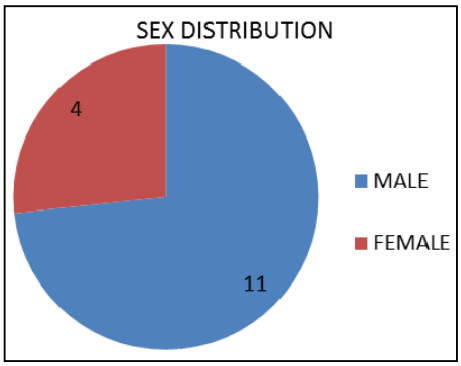
Operative techniques
All patients were operated through posterior approach for long stem revision and lateral approach for plate osteosynthesis.

Implants used
- Revision long stem
- Locking plate
- SS wire
- Cable graft

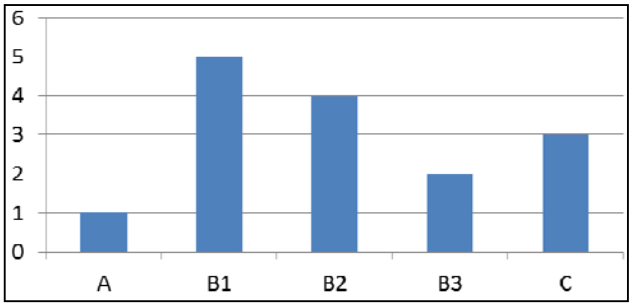
Postoperative protocol
- IV Antibiotics till 5th POD
- IV Analgesics till 2nd POD
- Drain removal on 2ND POD
- Suture removal on 12TH POD
- Injection TERIPARATIDE 20µg sc for 6 month for medically fit patients after ruling out renal pathology
- STATIC QUADRICEPS STRENGHENING /KNEE MOBILISATION/ANKLE PUMP EXERCISES were started on immediate post-operative period
- NON WEIGHT BEARING WALKING from 2ND post-operative day
- PARTIAL/FULL WEIGHT BEARING after radiological evidence of union

Post Op Evaluation
- Done using Harris Hip score
- Xray operated hip anteroposterior view and lateral view

Results
- Total number of patients-15

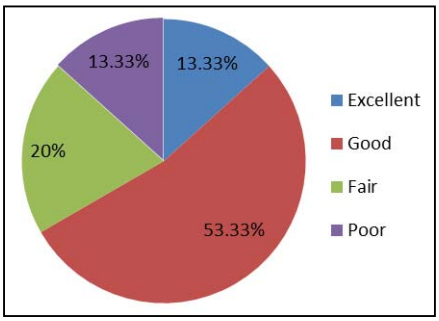


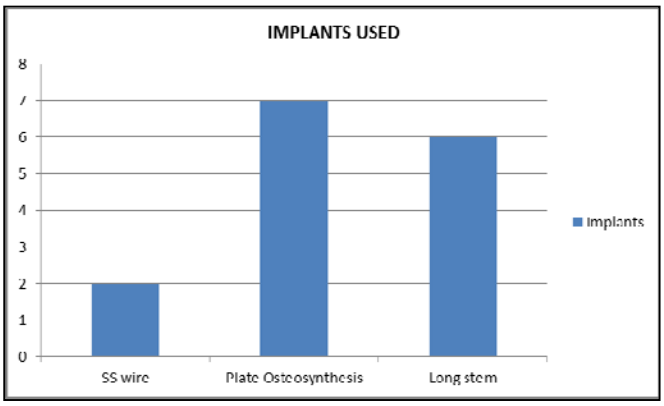
- Number of patient in each category



Harris Hip Score- Results

Excellent	2 cases	13.33%
Good	8 cases	53.33%
Fair	3 cases	20%
Poor	2 case	13.33%





Complication
- Infection
- Hardware failure
- Refracture
- Nonunion

Discussion
The overall rate of periprosthetic fractures associated with hip arthroplasty is unknown, it appears to be increasing. Estimates in the literature range from 0.1 – 2.1% for postoperative fractures and from 0.3 – 5.4% for intraoperative fractures. Postoperative fracture rates are generally higher for revision THA compared to primary THA, whereas intraoperative rates are generally higher for uncemented THA compared to cemented THA. In this study, totally 20 patients operated of which 5 lost follow up. Out of 15, there were 11 males and 4 females and 12 post-operative fractures and 3 intra operative fractures.

Goals of surgical treatment are to achieve

- Early union
- Restore anatomical length and alignment
- Early mobilization
- Stable prosthesis

These fractures are fixed with SS wire, revision long stem with or without cementation and plate osteosynthesis.

Fractures were classified according to Vancouver classification and results were assessed by Harris hip score.

Case example

- Name: Mr. A
- Age:44
- Diagnosis: Vancouver type B1 periprosthetic fracture RT hip
- Surgery: Plate osteosynthesis with ss wire
- HHS -90(excellent)

Fig 1: Clinical outcome at 1 year follow up

Fig 2: Harris hip score - excellent

Conclusion

In our study we have excellent to good results while treating periprosthetic fracture of hip. Use of plate if prosthesis is stable. Use of long stem if the prosthesis is unstable. Need good preoperative planning with vancouver classification and armamentorium of instruments and prosthesis. Use of injection teriparatide helps in good functional outcome.

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