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CEMENTED BIPOLAR HEMIARTHROPLASTY IN MANAGEMENT OF COMMINUTED INTERTROCHANTERIC FRACTURE OF FEMUR IN ELDERLY

Surgery

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ABSTRACT

(Context) Intertrochanteric fractures with comminution are highly unstable and difficult to treat. Conservative treatment with traction and prolonged immobilization lands up with many complications like pulmonary embolism, deep vein thrombosis, malunion, orthostatic pneumonia and decubitus ulcer. Rate of failure with dynamic hip screw-barrel plate has been found to be high. Revision procedures are technically demanding and it leads to complications.

(Aim) The aim of this study was to assess the efficacy of cemented bipolar hemiarthroplasty in the management of comminuted intertrochanteric fractures.

(Settings & Design) A case series of 20 cases

(Materials & Methods) 20 patients with comminuted intertrochanteric fractures were treated with primary cemented bipolar hemiarthroplasty. There were 14 females and 6 males with a mean age of 76.65 years.

(Results)The average surgery time was 103.5 minutes with an average intra-operative blood loss of 227.5 ml. Two patients needed blood transfusion postoperatively. The patients walked on an average 4 days after surgery. One patient had superficial skin infection and one had bed sore with no other significant postoperative complications. A total of 18 out of 20 patients had excellent to fair functional results and 2 had poor result with respect to Harris hip score.

(Conclusion)Cemented bipolar hemiarthroplasty for comminuted intertrochanteric fractures in elderly results in early ambulation and good functional results although further prospective randomized trials are required before reaching to conclusion.

KEYWORDS

Cemented bipolar, Elderly, Hemiarthroplasty, Comminuted, Unstable Intertrochanteric fracture

Introduction:

Intertrochanteric fracture is one of the most common fractures of the femur especially in the elderly with osteoporotic bones, usually due to low-energy trauma like simple falls. The incidence of intertrochanteric fracture is rising because of increasing number of senior citizens with osteoporosis. By 2040 the incidence of intertrochanteric fractures is estimated to be doubled. In India the figures may be much more1.

As a general rule, preservation of the patient's own bone is the ideal aim for the surgeons, but, In osteoporotic elderly patients with unstable/comminuted intertrochanteric fracture of femur usual management of internal fixation will confine patient to bed for longer duration and one has to wait until bony union for ambulation. There is greater chance of failure of internal fixation in osteoporotic bone or in presence of comminution such as cutting out the screws and displacement of the bone fragments2.We cannot rely on internal fixation devices to allow early full weight bearing of patient in presence of severe osteoporosis and marked comminution at the fracture site, full weight bearing on the operated limb causing mechanical failure3.Thus cemented bipolar hemiarthroplasty in comminuted intertrochanteric fractures in elderly may work out as a good alternate option.4

Elderly patients are more prone to bed sores, deep vein thrombosis5 and respiratory complications such as pneumonia and pulmonary emboli when subjected to long periods of bed rest. Hence early mobilization is preferable in elderly to avoid complications.

Materials & Methods:

- **Category of Research:**
- Orthopaedics: Arthroplasty

- **Aims & Objectives:**
- The aim of this study is to achieve early mobilization following cemented bipolar hemiarthroplasty in the management of comminuted intertrochanteric fracture of femur.
- The objective of this study is to analyze the effect of intervention in minimizing the complications of prolonged bed rest in elderly

- **Inclusion criteria:**
- Patients above 65 years of age
- Both sexes
- Intertrochanteric fractures of femur which are unstable/ comminuted according to Evan's classification of trochanteric fractures- Type 3, 4 and 5.6 (Figure 1)
- Significant osteoporosis (Singh index from 4, 3, 2 & 1).

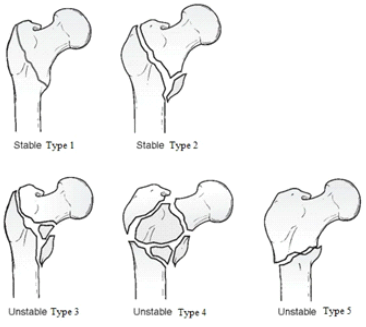

Figure 1: Evan's classification[6]

- **Exclusion criteria:**
- Patients having simple stable I.T. fracture.
- Specific uncontrolled co-morbid conditions like diabetes, cardiac conditions4 and local skin conditions etc.
- Coagulopathies e.g.: bleeding disorders and clotting disorders.

- **Plan of research:**
- It was a prospective longitudinal observational study
- **Methodology:**
- Study period: 12 months
- No. of cases: 20 cases meeting inclusion and exclusion criteria
- Ethical issue: Written, informed valid consent was taken
- Pre-operative evaluation is done including X-ray pelvis with both hips taken in THR view
- Clinical parameters of evaluation include pain, limb length discrepancy, infection and Harris Hip Score
- Operative procedure was conducted under full aseptic precautions, with antibiotic coverage and by taking the postero-lateral approach to the hip joint. The bipolar prosthesis used was a

standard non-modular prosthesis. (Figure 2)
- Greater trochanter reconstruction is done using TBW. (Figure 3: A and B)
- Post-operative physiotherapy is started promptly, and suture removal done on fourteen days.
- Follow-up done on 1st, 3rd and 6th, 12th month with clinical and radiological assessment. (Figure 4)

Figure 2: Cemented Bipolar Prosthesis

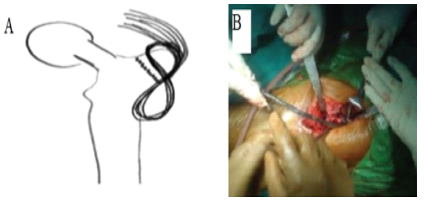

Figure 3: Tension band wiring of greater trochanter
A: Schematic diagram, B: Clinical photograph

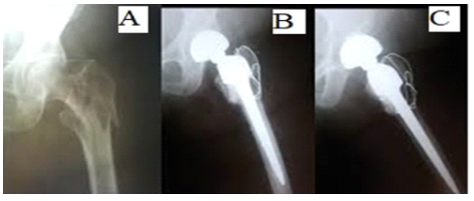

Figure 4: Radiographs of left hip
A: Pre-operative with I.T. fracture
B: Operated bipolar hemiarthroplasty: Immediate post-op
C: 3-months post-op

Results:
Age: The average age of the patient was 76.65 years, with the youngest being 68 and the oldest 89 years of age.
Gender: Of the 20 patients 6 were male and 14 were female.
Side affected: 12 cases had right sided fracture while 8 had left sided.
Mode of Injury: 17 patients suffered fracture as a result of domestic fall while three were cases of road traffic accident.
Time to full weight bearing: The patient walked on an average 4 days post-operatively (Range: 2-14 days). (Figure 5)

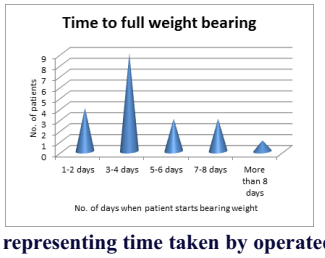

Figure 5: Graph representing time taken by operated patients to resume full weight-bearing

Harris Hip Score: Functional results obtained with the help of Harris Hip Score: Excellent to fair results were obtained at follow-up in 18 patients (90 %) and in 2 (10%) results were poor. (Figure 6)

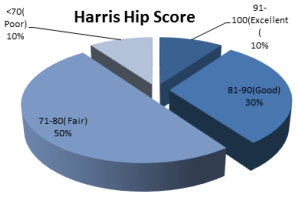

Figure 6: Functional results as per Harris Hip score

Hospital Stay: The average stay in hospital was 12.5 days, with shortest being 12 days and longest of 21 days.

Co-morbidities: 12 patients had controlled co-morbid conditions.

Complications: 1 patient had superficial skin infection and 1 had bed sore.

Conclusions:
The Intertrochanteric femur fractures should be classified as stable and unstable-comminuted (Evan's Classification). Unstable osteoporotic Intertrochanteric femur fractures in elderly are better treated with cemented hemiarthroplasty.

The treatment of these fractures with cemented hemiarthroplasty has the advantage of early ambulation and less hospital stay.

The cemented hemiarthroplasty also provides stable and mobile painless hip, and revision surgery is hardly needed in these elderly patients.

The weight bearing can be started earlier than in other methods of treatment.

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