

Transtrochanteric Approach for Cemented Bipolar Hemiarthroplasty in Unstable Inter Trochanteric Fractures in Elderly Osteoporotic Patients –A Case Series

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Abstract: *Unstable Intertrochanteric Fractures in Elderly Osteoporotic Patients can be a difficult problem to manage. Various studies have established advantages of primary bipolar hemiarthroplasty over internal fixation in this subset of cases. We would like to share our experience of Transtrochanteric approach in the scenario of intertrochanteric fractures. Thirty six patients who met the inclusion criteria underwent cemented bipolar hemiarthroplasty by transtrochanteric approach. In our experience it is technically easy with less incidence of complication.*

Keywords: transtrochanteric, cemented bipolar, unstable, osteoporotic

1. Introduction

Standard treatment for trochanteric fracture is internal fixation. Unstable Inter-trochanteric fracture in elderly osteoporotic patients have high rate of complications when treated by internal fixation. Replacement either partial or total is an accepted alternative in these patients[1]-[6]. For bipolar hemiarthroplasty in intra capsular fractures either anterolateral or posterior approach is used routinely. Both these approaches have some disadvantages when it comes to unstable 3 or 4 part intertrochanteric fractures. In 2008 Bombaci described a transtrochanteric approach in intertrochanteric femur fractures to perform hemiarthroplasty which seem to have addressed the disadvantages of the standard approaches for hemiarthroplasty[7]. We have been performing cemented bipolar hemiarthroplasty by the transtrochanteric approach for the past 7 years. We would like to share our experience with our case series.

2. Patients and Methods

2.1 Surgical Technique

After general or spinal anesthesia the patient lies in a strict lateral decubitus position on a standard operating table. The skin incision is similar to Moore's posterior approach, centering the tip of greater trochanter extending proximally towards posterior superior iliac spine for 3 to 4cms and distally 5 to 6 cm. Fascia lata is incised in line with the skin incision and a Charnleys' retractor is placed to expose the lateral aspect of the proximal femur. Gluteus maximus tendon is identified and divided at its insertion to facilitate internal rotation of the shaft. Fracture line is palpated. Usually the major portion of the abductor will be attached to a postero superior fragment of the greater trochanter. And the minor portion will be attached to the antero inferior fragment which may be a separate fragment in a 4 part or a comminuted fracture or in continuous with the shaft in a 3 part fracture. Incision made along the fracture line in the

vastus lateralis extended proximally for 2 cm in the gluteus medius and distally the vastus lateralis is split for 4 to 5 cm [figure 1].



Figure 1: Incision made along the fracture line

Fracture fragments are separated to visualize the end on fracture surface of the head and neck fragment. Part of the trochanter in remaining with the neck can be nibbled to facilitate head extraction.



Figure 2: End-on view head and neck fragment

An extraction cork screw is inserted into this fragment, capsular attachment is released all around and the fragment is delivered.

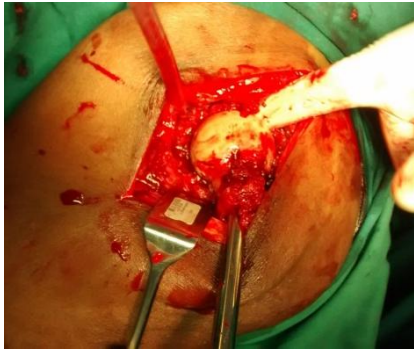


Figure 3: Femoral head being extracted with a cork screw

If delivering the head is difficult a radial incision is made in the capsule superiorly and /or part of the bone is nibbled. Now the femur is internally rotated with knee bent to 90 degrees. Femoral preparation is done with axis of the leg as guide for ante version. The length of the implant to be sunk is determined by judging the length of the postero superior fragment and the center of the prosthetic head. The gap is filled with bone cement or a piece of calcar removed from the excised head and neck fragment. Appropriate size bipolar prosthesis is inserted with bone cement taking care to avoid cement in the fracture surface in the lateral aspect of femur.

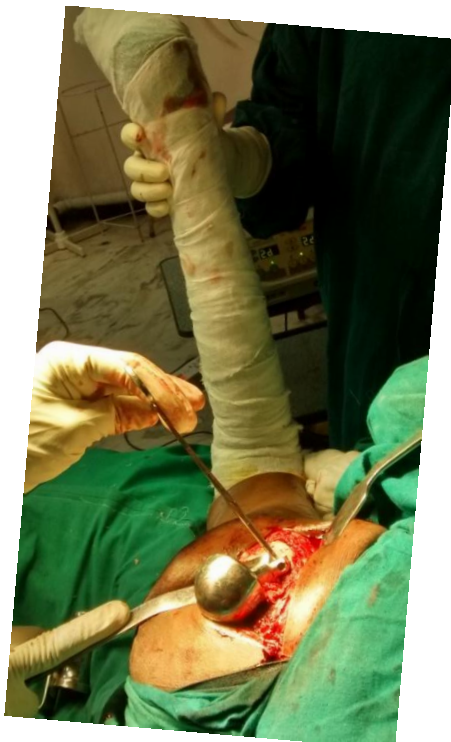


Figure 4: Bipolar prosthesis inserted with axis of leg as guide for version

Joint is reduced with a help of a Murphy's skid. Radial incision in the capsule is sutured if it was done.



Figure 5: Bipolar prosthesis reduced

Now the posterosuperior fragment is reattached with either number 2 ethibond or stainless steel wires. Split vastus lateralis and gluteus maximus tendons are sutured.



Figure 6: Fracture fragments are being reattached

Fascia lata and skin sutured. Patients are encouraged to do active hip mobilization as soon as possible. Patient is allowed to walk with walker from 2nd postoperative day with weight bearing as tolerated. There is no strict partial weight bearing protocol.

2.2 Patients

2.2a Inclusion criteria

Age- More than 75 years

Unstable inter-trochanteric fractures AO/ OTA type 31 A2.2 and 2.3

Fractures less than 3 weeks old

2.2b Exclusion criteria

Age – less than 75 years

Stable inter-trochanteric fractures and intra capsular fractures

Thirty six patients who met the inclusion criteria underwent Cemented Bipolar hemiarthroplasty between 2007 and 2012 were included in the study. Among 36 patients included in our study with 24 female and 12 male patients, 35 patients had suffered the injury due to trivial trauma like fall from chair/bed, slip in bathroom or in house on floor. One patient sustained the fracture following a road traffic accident. Patients were followed up regularly at 2 weeks, 4 weeks, and 3 months post-operatively and then yearly once.



Figure 7 a&b: pre op and post op Xrays of one of the cases.

3. Results

Patients were evaluated 3 months post-operatively and then at 2 years follow up using Harris Hip score. We have also measured the operating time, blood loss and post op stay in the hospital.

Table 1: Variables Analyzed

	Mean	Standard deviation	Median
Age (years)	69.7	7.8	76.0
Harris hip Score:3 months post-op	69.6	5.9	70.0
Harris hip score: 2 years follow up	80.8	4.7	80.0
Follow-up (years)	2.9	1.3	2.50
Operative time (min)	60.5	11.7	60.0
Blood Loss (ml)	310.0	110.2	300.0
Post op stay in hospital (days)	4.5	1.2	5.00

In our study we had 3 patients with immediate complications (2 cases of limb length discrepancy, 1 case of superficial infection) and 1 with delayed complication (dislocation at 1.5 years follow up following an attempt to sit on the floor).

4. Discussion

In inter trochanteric fractures treated with internal fixation, maintenance of fracture reduction which should be anatomical or near anatomical, proper positioning of the implant and monitored weight bearing are the pre-requisites to achieve good functional outcomes. But In osteoporotic elderly patients with Inter-trochanteric comminuted fracture femur the bone quality is poor, cut-out rates of implant is high, loss of reduction is a known fact which leads to poor functional results. Also Ambulation is prevented in elderly patients with fear of such complications, which in elderly patients causes other complications like Aspiration Pneumonitis, Bed sores , Deep vein thrombosis, atelectasis etc which gets further complicated with existing comorbidities. Cemented bipolar hemiarthroplasty has given constant good results in terms of early ambulation and good mid-term survival rates in comminuted unstable inter-trochanteric fractures when compared to variable results given by osteosynthesis[1]-[6]. Even our results were synchronous to the above studies in terms of early mobilization, less implant related complications and faster over-all rehabilitation. Traditionally posterior or anterolateral approaches are used for bipolar hemiarthroplasty. In trochanteric fractures, the issue with anterolateral approach is placing the implant in proper ante version in the absence of calcar and lesser trochanter and with posterior approach cutting the external rotators results in further insult to the soft tissue resulting in increased possibility of dislocation. Transtrochanteric approach for total hip arthroplasty was described initially by Charnley for THA in degenerative hip disease and has been used for more than 50 years with very good results. But the first published transtrochanteric approach in the scenario of trochanteric fracture was by Bombaci in 2008 [7]. Later in 2013, AtulPatil et al described similar approach and named it as Sion hospital modified transtrochanteric approach [8]. Steffon et al modified Bombaci technique with a coronal osteotomy of the greater trochanter and did uncemented total hip replacement for trochanteric fractures [9]. In our

experience it is technically easy, less operative time with minimal blood loss.

5. Conclusion

Transtrochanteric approach had addressed the issues related to other two common approaches. So it could offer an added armamentarium for replacement surgery in trochanteric fracture.

6. Future Scope

However further randomized control studies are needed to establish the advantage of transtrochanteric approach over others. Large number multicentric trails could be done with a longer follow up period.

References

- [1] Kim WH, Han CH, Park JI, Kim JY- Failure of Inter-trochanteric fracture fixation with dynamic hip screw in relation to fracture stability and osteoporosis. *IntOrthopaedics*. 2001; 25;360-2.
- [2] Rodop O, Kiral A, Kaplan H, Akmaz I- Primary Bipolar hemirosthesis for unstable inter-trochanteric fracture. *Int Orthop*2002;26,233-7.
- [3] Grimsrud C, Monzon RJ, Richman J, Ries MD - Cemented Hip Arthroplasty with a novel cerclage cable technique for treatment of unstable Inter-trochanteric fracture. *J Arthroplasty*. 2005, 20;337-43.
- [4] Kesmezacar H, Ogut T, Bilgili MG, Gokay S , Tenekesioglu Y - Treatment of inter-trochanteric fractures in elderly patients; Internal fixation vs Hemiarthroplasty. *ActaOrthopTraumatol Turc*;2005, 39;287-94.
- [5] F. Geiger, M. Zimmermann-stenzel, C. Heisel, B. Lehner, W. Daecke trochanteric fractures in the elderly: the influence of primary hip arthroplasty on 1-year mortality *Arch Orthop Trauma Surg* (2007) 127:959-966.
- [6] Parker MJ, Handol HH- Replacement arthroplasty vs Internal Fixation For extracapsular hip fractures. *Cochrane Database Syst Rev*;2006;2; CD 000086.
- [7] Bombaci H, Transtrochanteric approach in intertrochanteric femur fractures. *J Trauma* 65, 2008, 1171-1173.
- [8] A Patil et al, Role of cemented bipolar hemiarthroplasty for comminuted inter trochanteric femur fracture in elderly osteoporotic patients through a modified transtrochanteric approach. *IOSR-JDMS*. 9, 4: (2013), PP 40-47
- [9] F. Steffann et al. Trans trochanteric approach for unstable extra-capsular trochanteric fracture patients treated by total hip arthroplasty in elderly: *SICOT J* 2015, 1, 7

Authors Profile



Mugundhan Moongilpatti Sengodan received his M.S in orthopedics in 2008 from Kilpauk Medical College, Chennai, with gold medal from The Tamilnadu Dr.MGR Medical University. Since 2008 he is working as a post graduate teacher at Coimbatore Medical College, Coimbatore, India.