



REPLACEMENT ARTHROPLASTY FOR THE TREATMENT OF INTRA-CAPSULAR FRACTURE NECK FEMUR IN THE ELDERLY

Orthopaedics

Dr. Raveendra

**Babu. Rayalapeta
Veerappa***

Consultant orthopaedic surgeon, Pooja Hospital, Tirupati, A.P.*Corresponding author

ABSTRACT

Fracture neck of femur is commonly seen in elderly patients with trivial injury due to osteoporotic bones. If union of fracture is not likely to be achieved, the surgeon has to choose the alternate method suitable to the patients depending on their age, life style, profession and economical status. From September 2014 to October 2016, total 25 cases of intra-capsular fracture neck femur (IC#NF) were treated by total hip arthroplasty (THR)- 3 cases, bipolar hemi arthroplasty - 12 cases, Austin-moore's hemi arthroplasty (AMP)- 7 cases and Girdle-stone excision arthroplasty - 3 cases. Detailed personal, family history and patients personal requirements were considered to decide the suitable procedures for these patients. Harris hip score was followed to all the patients at final follow up which is ranging from 45 to 83 with mean 64. All the patients were ambulatory independently and performing their daily routine activities. There were no major complications.

KEYWORDS

Intra-capsular fracture neck femur, bipolar/ Austin-moore's hemi arthroplasty, total hip replacement.

INTRODUCTION:

IC#NF in the elderly patient is a frequent and becoming more common fracture as the proportion of elderly people in the population increases. Individuals in these groups usually have other co-morbidities like Diabetes, Hypertension, Chronic obstructive pulmonary disease, chronic kidney disease and Ischaemic heart disease. The impact of these diseases leads to rapid deterioration of the general condition, if these patients are kept bed-ridden and is associated with high rate of mortality as much as 20% during the first year after injury. The minimum goals of treatment for these patients are restore the pre fracture activity status, to allow early full weight bearing and to avoid revision surgeries. Ideally, surgeons should aim to preserve patients' own bones. In osteoporotic elderly patients, any form of fracture fixation method will not bring them back to their daily routine activities early. Weak purchase of the internal fixation devices, incidence of implant failure such as cutting out of the screws are reported (Ref 4,9). During the initial days of dynamic hip screw (DHS) introduction every surgeon thought that it is the better option to preserve the normal anatomy. But later on, the follow up of patients showed screw cut out, plate pull-off from the shaft, implant disassembly and fatigue failure in cases of delayed union. We cannot rely on internal fixation devices to allow early full weight bearing of patients with marked osteoporosis and comminution at fracture site. Partial weight bearing is very difficult to be followed by these patients. Thus they shift to full weight bearing on the operated limb causing mechanical failure. Arthroplasty procedures like Austin-Moore's, Bipolar and THR yield good clinical results with early post operative mobilization. This will have direct effect on the general condition and post-op rehabilitation.

PATIENTS AND METHODS:

From September 2014 to October 2016, 25 cases of IC#NF were selected among the patients attending our out-patient department. There were 18 males and 07 females, all were from middle class and below middle class family background. The age group was from 56 years to 72 years, average 64. The time interval from injury to presentation to the hospital varied from 02 days to 90 days. All the 25 patients were investigated with X-rays and other tests to assess the fitness for contemplated surgical procedure to be carried out. CT scan and MRI scan were not done. The anatomical site of fracture was sub-capital-08 cases, trans-cervical-15 cases, basal-02 cases. Replacement arthroplasty was done in 25 cases viz., bipolar in 12 cases, THR in 03 cases, Austin moore's hemi arthroplasty in 07 cases and Girdle stone excision arthroplasty was done in 03 patients. The selection of appropriate surgical procedure was depending upon patients' basic requirements, their life style and family members' support.

SURGICAL PROCEDURES:

All the surgical procedures were performed by the same surgeon and team. The general conditions of the patients were stabilized in 02 to 03 days after admission. Pre-operative blood transfusions were given in

needed and prophylactic low molecular heparin were given to all patients. In Bipolar cases, Pre-operative templating of radiographs of fractured side and contra-lateral side was performed to select the size and position of stem and approximate femoral neck offset. The operations were done under moore's posterior approach, the care taken to ream the femoral medullary canal and to determine the exact length that would provide the desired tension and tissue balancing of the abductor muscles and an equal leg length. Bone cement was used in 04 cases.

Total hip replacement was done in 03 cases with standard antero-lateral approach. All technical aspects were followed during acetabular cup fixation and femoral stem insertion. Austin moore's hemi arthroplasty was done in 07 cases. This is relatively simple procedure with short operating time. Moore's posterior approach was advocated. All the patients were mobilized from second post-op day. Follow up was done at 03 weeks, 06 weeks, 03 months, 06 months and 12 months. Radiographs were studied for position of the prosthesis, subsidence and loosening. Harris hip score was followed for evaluation of final results. Girdle stone surgical group of patients were kept in skin-traction for 03 weeks with active range of movement at frequent intervals. They were mobilized with walker support for 03 to 06 weeks and with walking stick after 02 months.

RESULTS:

All the patients were evaluated for range of movement, pain, limp, necessity of using support, limb length discrepancy and functional status. Among the study group of 25 patients, bipolar was done for 12 patients of which male are 10 and female were 02 cases. The clinico-radiological analysis done at final follow up at 12 months showed 10 patients were walking without support, performing all daily routine activities independently and earning their livelihood. Remaining 02 patients were walking with the support of walking stick. Harris hip score at final follow up was 70 to 80.

All the 03 cases of THR were ambulatory with the support of stick and doing routine normal daily activities. Harris hip score was ranging from 70 to 83.

Among the 07 patients of moore's hemi arthroplasty all were ambulatory without support at final follow up of 01 year. They were not having pain and attending their normal activities. The Harris hip score was 60 to 75.

The 03 female patients with girdle stone excision arthroplasty were ambulatory with support of stick with little pain and taking pain medication occasionally. The Harris hip score is ranging from 40 to 60 in these patients. They are allowed to squat, sit cross legged, using Indian lavatories and attending daily routine activities.

All the patients except, girdle stone groups were not allowed to squat

and sit cross legged and using western toilets only. All the patients were thoroughly counseled and explained about these limitations of activities after surgery. Hence, all are well prepared for the minor disadvantages and very happy for their pain free ambulation. In our study there were no major complications like infection, deep vein thrombosis, implant failure and dislocations.

DISCUSSION:

The treatment of fracture neck femur has been changing from stages of immobilization in POP hip-spica, internal fixation with Smith-Peterson nail, nail plate, low angle nail before 1970. McMurry's osteotomy (Ref no-5), excision hip (Girdle stone and bachelor) procedures were very popular as salvage procedures before the advent of replacement of arthroplasty. After 1980 DHS was introduced and advocated universally to all fresh cases fracture neck femur (Ref no-4,22). After one decade of follow up, surgeons found DHS was not the final solution to all the patients and THR became popular and advantageous for active, lucid patients with a relatively long life expectancy. Moore's hemi arthroplasty and bipolar hemi arthroplasty are also considered in older patients with limited activities are yielding long term satisfactory results. The advantages of arthroplasty compared with internal fixation are supported by several studies (Ref no-9,22). Many studies were published to find the best treatment options like THR, hemi arthroplasty. The advantages of Bi-polar and Moore's compared to THR include shorter operation time quick mobilization (Ref no-8,22). Uncemented implants which rely on metaphyseal fixation have a high risk of periprosthetic fractures, where as the insertion of bone cement is associated with embolisation of fat and bone marrow contents leading to sometimes intra-operative death. There are contradictive findings between cemented and non-cemented procedures in the literature. hydroxyapatite coated implants are used in affordable patients to avoid complications with cementing.

CONCLUSIONS:

- Replacement arthroplasty surgeries like THR, bipolar and moore's hemi-arthroplasty are very useful procedures in elderly people who has to stand on their feet without loss of time.
- These procedures are advocated when it is not possible to achieve union of fractures.
- These artificial joints lost for longer time in patients who can modify their life style.
- Bipolar and Austin Moore replacement should be reserved for patients above 65 yrs age and less active.

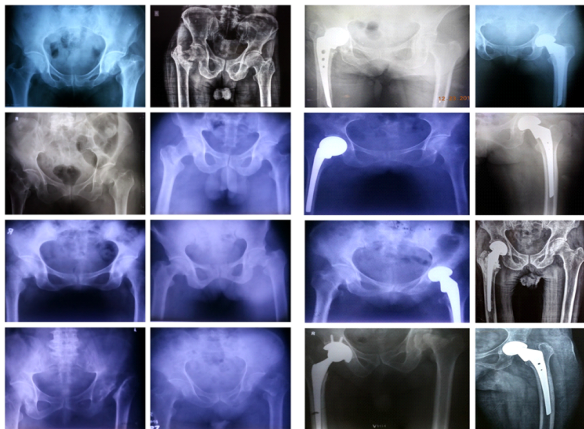


Figure 1: Pre-operative Radiographs

Figure 2: Post-operative Radiographs

REFERENCES:

1. Results of Austin Moore replacement. AP Jadhav et al, jpgmonline.com,1996;vol;42;2;33-8.
2. Garden RS. Stability and union in subcapital fractures of the femur. J Bone Joint Surg (Br). 1964; 46:630-47
3. Stewart MJ, Well RE. Osteotomy and osteotomy combined with bone grafting for non union following fracture of femoral neck. J Bone Joint Surg (Am). 1956 ; 38 : 33-49.
4. Sandhu HS, Sandhu PS, Kapoor A. Neglected fractured neck of femur. A predictive classification and treatment by osteosynthesis. Clin Orthop. 2005; 431: 14-20.
5. McMurray TP. Ununited fracture of the neck of femur. J Bone Joint Surg. 1936; 18 : 318-327.
6. Dickson JA. The unsolved fracture of protest against defeatism. J Bone Joint Surg (Am). 1953.805-822.
7. Charnley John. Low Friction Principle, and Clean Air Operating - Theory. In Low Friction Arthroplasty of the Hip. Theory and Practice. New York: Springer; 1979. pp. 3-15.
8. Macaulay W, Pagnotto MR, Iorio R, Mont MA, Saleh KJ: Displaced femoral neck

- fractures in the elderly: hemiarthroplasty versus total hip arthroplasty. J Am Acad Orthop Surg 2006, 14:287-293.
9. Dai Z, Li Y, Jiang D: Meta-Analysis Comparing Arthroplasty with Internal Fixation for Displaced Femoral Neck Fracture in the Elderly. J Surg Res 2009.
10. Bezwada HP, Shah AR, Harding SH, Baker J, Johanson NA, Mont MA: Cementless bipolar hemiarthroplasty for displaced femoral neck fractures in the elderly. J Arthroplasty 2004, 19(Suppl 2):73-77.
11. Bochner RM, Pellicci PM, Lyden JP: Bipolar hemiarthroplasty for fracture of the femoral neck. Clinical review with special emphasis on prosthetic motion. J Bone Joint Surg Am 1988, 70:1001-1010.
12. Giliberty RP: Hemiarthroplasty of the hip using a low-friction bipolar endoprosthesis. Clin Orthop Relat Res 1983, 175:86-92.
13. Saxena PS, Saraf JK. Moore prosthesis in fracture neck of femur. Ind J of Orthop 1978; 12:138
14. Kumar R, Singh T. Early results of prosthetic replacement in old neglected cases of fracture neck femur Ind J Orthop 1980; 14:1.
15. Goldhill VB, Lyden JP, Cornell CN, Bochner RM: Bipolar hemiarthroplasty for fracture of the femoral neck. J Orthop Trauma 1991, 5:318-324.
16. Lausten GS, Vedel P, Nielsen PM: Fractures of the femoral neck treated with a bipolar endoprosthesis. Clin Orthop Relat Res 1987, 218:63-67.
17. Overgaard S, Jensen TT, Bonde G, Mousing NB: The uncemented bipolar hemiarthroplasty for displaced femoral neck fractures. 6-year follow-up of 171 cases. Acta Orthop Scand 1991, 62:115-120.
18. Moore AT: The self-locking metal hip prosthesis. J Bone Joint Surg Am 1957, 39:811-827.
19. Thompson FR: Vitallium intramedullary hip prosthesis, preliminary report. NY State J Med 1952, 52:3011-3020.
20. Bhattacharyya T, Koval KJ: Unipolar versus bipolar hemiarthroplasty for femoral neck fractures: is there a difference? J Orthop Trauma 2009, 23:426-427.
21. Cornell CN, Levine D, O'Doherty J, Lyden J: Unipolar versus bipolar hemiarthroplasty for the treatment of femoral neck fractures in the elderly. Clin Orthop Relat Res 1998, 348:67-74.
22. Keating JF, Grant A, Masson M, Scott NW, Forbes JF: Displaced intracapsular hip fractures in fit, older people: a randomised comparison of reduction and fixation, bipolar hemiarthroplasty and total hip arthroplasty. Health Technol Assess 2005, 9:1-65.