



UTILITIES OF BIPOLAR PROSTHESIS IN INTRACAPSULAR FRACTURE NECK OF FEMUR

¹ DR M.VINODKUMAR AND ² *DR.P.RAMACHANDRA RAO

¹ Resident in orthopaedics;

² Professor of Orthopaedics

ABSTRACT

Hip fractures are devastating injuries that commonly affects the elderly and have a tremendous impact on both the health care system and society in general. Hemi arthroplasty with bipolar prosthesis offers advantages of rapid return to function with pain free hip. In addition; it is cheaper and easier to perform than total hip arthroplasty and also preserves the original acetabulum and reduces the complications of uni polar arthroplasties and better joint function. It is also used as a salvage for failed total hip and unipolar arthroplasties where earlier alternative was excision arthroplasty. In this study of 25 cases of displaced intracapsular fracture of the neck of femur, neglected intracapsular fractures of more than 3-4 weeks old and patients less than 60 yrs of age, non union of intracapsular fractures of neck of femur and intracapsular fractures of neck of femur with early avascular necrosis. In our study of 25 patients, 18 had excellent results with Harris hip scores more than 90, 6 patients had good result with Harris hip score between 80 and 90 and 1 patient had a fair result. Elderly patients and physiologically younger patients with displaced intracapsular fractures of the neck of femur, treated with bipolar hip prosthesis offer excellent, painless mobility, with low rate of complications, component survival is long and pre injury functional status restored

KEY WORDS: Displaced intracapsular fractures, neglected neck of femur fractures in younger patients, bipolar hemiarthroplasty



DR.P.RAMACHANDRA RAO
Professor of Orthopaedics

INTRODUCTION

Hip fractures are devastating injuries that commonly affect the elderly, the problems of hip joint due to trauma need considerable skill and judgement as patient in many instances may require multiple surgical procedures and prolonged rehabilitation in order to preserve his joint Bateman in 1974 introduced prosthesis which had mobile head element & additional head surface to allow movement with acetabulum Bipolar hip replacement offers a durable and versatile solution for many problems of the hip in which replacement of the head and neck of the femur in a hemiarthroplasty offer advantages of rapid return to function with a pain free hip. In addition, it is cheaper and easier to perform than a total hip arthroplasty and therefore safer. the bipolar hip prosthesis offers the advantage of preserving the original acetabulum and thus acting as a bridge to total hip replacement. Also, in the face of the complications of Unipolar arthroplasties, the bipolar offers a reduction in those complications and also better joint functions. The bipolar hip prosthesis offers an additional advantage that of salvage of failed total hip and unipolar arthroplasties. In most instances of failure of these arthroplasties the alternative was previously an excision arthroplasty

MATERIALS & METHODS

All the patients were selected from amongst the admissions in the Department of Orthopaedics, ASRAM Hospital. Upon admission all patients were investigated. In our study of 25 cases, patients were selected on criteria, Displaced Intracapsular fracture of the neck of the femur with adequate calcar, Grade 3 or more of Avascular Necrosis of the head of femur, Neglected intracapsular fractures of the neck of femur more than 3-4 weeks old in patients less than 60 years of age, Non union of intracapsular fractures of the neck of femur, Intracapsular features of the neck of femur with changes of early avascular necrosis, Primary or secondary Osteoarthritis of the hip. All surgeries were performed in the elective theatre using standard aseptic precautions.

Approach

Moore's approach, which has been facetiously labeled "The Southern Exposure". In some patients a modification of the postero lateral approach of Gibson was used.

Implant

Talwalkar's Bipolar Prosthesis is a device that meets the most demanding requirements in the management of femoral neck fractures. It may be used for cement or cementless arthroplasty. The large contact surface area and the two planes of rotation reduce the wear at acetabular surface and preserve the native acetabulum/acetabular cartilage.

Self-centering action

The positive eccentricity of the rotation corrects alignment.

Self-locking action

The fenestrations in the prosthesis permit ingrowth of bone over time, which enhances fixation.

Biomechanical fixation

The biological component is the self-locking action while the mechanical component is represented by 3 point fixation in the femoral shaft.

Fully congruous PE insert

Firmly fixed in the metal shell, to prevent micromotion and PE wear debris production.

Easy insertion

Means short surgical times.

Highly polished metal surface

To minimize friction between the implant and the acetabulum for use in combination with ceramic heads and metal heads.

The range comprises

Sizes (dia. 39-53mm, in 2mm increments)
Outer shell made of stainless steel 3.16L
Insert made of UHMWPE To accept metal or ceramic femoral heads Sterilized by Gamma irradiation All patients were followed up at first month, sixth month and first year with the longest interval being one and half years.

RESULTS

All 25 patients in the study returned for clinical and radiological examination at regular intervals. They were reviewed at 6 weeks, 3 months, 6 months and one year after the surgery. The patients in our study consisted of 10 males and 15 females. Their age distributions were 2 in the age group of 30 to 40 years, 4 between 41 and 50 years, 12 between 51 and 60 years, 6 between 61 and 70 years and 1 patient over 70 years. 23 patients had intracapsular fractures of the neck of the femur. One patient had grade 3 avascular necrosis of the head of the femur, and one patient had secondary osteoarthritis. The patients with intracapsular fractures of the neck of the femur had an average duration of complaints of 16.28 weeks. 15 Patients had the duration of the fracture as more than 3 weeks. The average follow up in our study was 28.76 weeks (range 3 weeks to 70 weeks). In our study out

of 25 patients 18 (72%) had excellent results with Harris Hip Scores more than 90. 6 patients had good results with Harris Hip Score 80 to 90 (24%) and only 1 patient had a fair result with Harris Hip score 70 to 80. The average Harris Hip Score for all the patients in the study was 90.36. The average postoperative range of mobility amongst all our patients after surgery was 208.40. The preoperative Harris Hip Score for the patient with AVN was 40. After the replacement, the score improved to 86. There was one with superficial infection, which subsided with oral antibiotics. There were no deep infections. There were no dislocations/dissociations. There was no case, which had protrusion of the acetabulum. One patient had a limb length discrepancy of 2cm, with the operated limb longer. He also developed a slight limp in his gait. However, the limp was corrected with a shoe raise for the opposite limb. None of the patients had persistent thigh pain after the surgery.

Range of Mobility in Degrees	No. of Patients
Less than 200	1
200-210	18
More than 210	6

Follow – up	No. of Patients
Upto 6 w	2
Between 6 & 12 w	1
Between 12 & 24 w	4
Between 24 & 52 w	14
52 weeks and above	4

Harris Hip Score	Outcome	No. of Patients
Above 90	Excellent	18
80 to 90	Good	6
70 to 80	Fair	1
60 to 70	Poor	0

The Average Harris Hip Score : 90.36
 Maximum Harris Hip Score in our Study : 220
 Minimum Harris Hip Score in our Study : 190

DISCUSSION

This study concludes that Talwalkar's Bipolar Hip Prosthesis offer a long term solution in patients with Intracapsular fractures of the neck of the femur, Avascular necrosis of the head of the femur and Osteoarthritis of the hip.

CONCLUSION

The procedure has the following advantages

- 1) It offers excellent, painless mobility and ease of rehabilitation and return to function
- 2) These achievements surpass the results of other methods of treatment for Intracapsular fracture of the neck of the femur in the elderly and in neglected cases in physiologically younger patients.
- 3) The surgery is relatively easy to perform, takes less operating time has less blood loss and hence safer.
- 4) The results in Osteonecrosis and secondary Osteoarthritis indicate that this procedure can be definitive one for these patients, or at least delay the insertion of total hip prosthesis.
- 5) The Bipolar hip prosthesis in our study has a rating of good to excellent results of 96% when standard techniques are used. This speaks of the superiority of the procedure.
- 6) The durability of the implant and potential for preservation of acetabular cartilage allow this prosthesis to be used in physiologically younger, more active patients.
- 7) The low rate of complications when compared to unipolar prosthesis indicates the superiority of the implant.
- 8) The potential for its use in varied indications and in different age groups shows the versatility of the implant.

REFERENCES

- 1) The Bipolar hip Endo prosthesis in femoral neck fractures. Mark F. Smiontkoshi et Al. Current concepts review of intracapsular fracture of hip. JBJS 1994; 76A:129-135
- 2) Clin-orthop, 1988 May(230):127-40 Bray-TJ; Smith-Goefer-E, et al
- 3) JBJS-Am-1988 Aug. 70(7)1001-10 Bochner-RM; Pellicci PM; Lyden. JP
- 4) Clin-orthop. 1990 Feb(251):38-43 Nottage-WM; McMaster-Wc
- 5) Clin-orthop. 1990 Feb(251):20-5, La Bella-LW; Colwill JC; Swanson AB
- 6) Brown J.T. and Abrami G. Transcervical femoral fractures. JBJS 1964; 46B: 648-663
- 7) Badgley C. Treatment of displaced subcapital fractures of the femoral neck fractures. Arch Surg 1975; 110:27-29
- 8) Carnesale P.G., and Anderson L.D. Primary prosthetic replacement for femoral neck fractures. Arch. Surg 1975; 110:27-29
- 9) Chandler S.B. and Kreuzer P.M. A study of the blood supply of the ligamentum teres and its relation to the circulation of the head of femur. JBJS 1932; 14:834-846.
- 10) Boyd H.B. and Salvatore J.E. Acute fractures of the femoral neck: Internal fixation or Prosthesis? JBJS 1964; 46A: 1066-1068.
- 11) R.S. Garden, Pratson. The structure and function of the proximal end of femur. JBJS 1961; 43B: 577-582.
- 12) Scheck M. The significance of posterior comminution in femoral neck fractures. Clin. Orthop 1980; 152:138-142.