

Original Research Article

Clinical treatment of femoral head using Thompson hip prosthesis

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ABSTRACT

Background: Hip prosthesis is a successful surgical technique the treatment of hip joint fracture. Thompson hip prosthesis is commonly used treatment of femoral head fracture. It is designed for non-union of fracture neck of femur when there is no neck available.

Methods: In this retrospective study, examined the results of patients with Thompson hip prosthesis (cemented and uncemented). This examination has been done from August 2014 to February 2016. 50 Patients were enrolled in this study with mean age of 70 years in which the ratio of number of females more than the number of males. AO classification was used to categorize the hip fracture type. Patient physical fitness was obtained through visual analog scale. Thompson hip prosthesis has been used to treatment of femoral head fracture, manufactured at Auxein Medical Pvt. Ltd., Sonipat, Haryana, India.

Results: Patients were follow-up on six week and three-month after discharge from hospital. 90% patients have excellent or pain-free results. There is no implant related complication has been found such as Loosening, prosthesis related size. The overall performance of hip prosthesis was very good.

Conclusions: Present guideline strongly favor of hip prosthesis. After clinical study, we can conclude that the Thompson hip prosthesis is the best technique to treatment of femoral head fracture. Thompson is also a quick, simple, palliative solution to early mobility.

Keywords: Clinical outcomes, Unipolar, Cemented hip prosthesis, Thompson hip hemiarthroplasty

INTRODUCTION

Hip fracture is the most widely recognized reason for admission to an intense orthopedic ward, with more than 70,000 cases seen per year in the UK.¹ In a maturing populace, the frequency of hip fracture is probably going to ascend, with the yearly necessity for medical procedure anticipated to arrive at 100,000 by 2033, costing £3.6 to £5.6 billion in all out care.² Intracapsular fracture represent 58% of every single hip fracture; 80% are dislocated.³ The National Institute for Health and Clinical Excellence (pleasant) at present suggest Orthopedic Data Evaluation Board (ODEP)- appraised cemented arthroplasty for the treatment of displaced intracapsular fractures.⁴ However,

until the ongoing past, most specialists have utilized either the Austin Moore or the Thompson's prosthesis. There doesn't give off an impression of being any contradiction about head manufacturing quality or structure, it is the stem or femur interface that remaining parts controversial.

Fractures of the neck of the femur are one of the common fractures encountered by an orthopedic surgeon. The incidence of these fractures and the problems subsequent to them seems to be increasing; the cause of this is mainly the increase in elderly population in whom osteoporosis is prevalent.⁵ Thus, this study is aimed primarily to evaluate the results obtained after a hemiarthroplasty in elderly patients with fracture neck of femur using Thompson

prosthesis studying the associated complications in these cases.

The Thompson's hemiarthroplasty was first detailed in the orthopedic writing in 1954.⁶ This prosthesis has stayed a popular implant in managing dislocated intracapsular hip fractures with a long and wide surgical experience of more than 60 years. The prosthesis was intended to be uncemented; it preceded the utilization of poly-methyl-methacrylate in hip medical procedure.⁷

The aim of this study is the successful treatment of femoral head fracture using the Thompson hip prosthesis that is manufactured at Auxein Medical Pvt. Ltd.

METHODS

All the patients with femoral head fractures who experienced cemented and uncemented Thompson hip prosthesis. These patients were operated in the hospital from August 2014 to February 2016. In this retrospective study, 50 patients have been selected with mean age of 70 years. Mostly elderly patients have been selected with the age range from 57 to 80 years. Proper care has been provided to the patient; the average hospitalization duration was 14 days with the operative time range (46–58 mints). Vital of the patients were stable throughout the observation period. 17 patients had left side of femur fracture and rest 33 had the right side. Thompson hip prosthesis (cemented and uncemented) (Auxein Medical Private Limited, Sonapat, Haryana, India) were used for replacement of hip joint. Patient demography, American Society of Anesthesiologists (ASA) grade and operative time were taken down for all Thompson's procedures. The patient who experienced cemented and uncemented Thompson hip prosthesis were taken from the subsequent data collection. Implant or prosthesis survival rate was deliberated from the initial day after surgery to either patient death or primary implant revision. Pain scale statement was record from the patient using visual analog scale (VAS). Follow up of the patient were taken on six week and three-month.



Figure 1: Thompson hip prosthesis.

Stainless steel material was used to manufacture this Thompson hip prosthesis at Auxein Medical Pvt. Ltd as shown in (Figure 1). Patients started walking with slight precaution after 1-month of assessments. General anesthesia-based performance was observed of the surgery. Clinical outcomes were obtained using VAS score. The performance of implant was evaluated through radiography (X-ray). X-ray data were used for inspected bony union, non-union, implant failure and plate migration.

RESULTS

In this study, 50 patients (22 male and 28 female) operated with Thompson hip prosthesis with mean age of 68.88 years. Female patients were more entertained in this study. The age range of patients were 57 to 80 years as shown in demographic data (Table 1). In our retrospective study, fracture classification has been recorded by categorizing according to AO Classification into 31-B1, 31-B2 and 31-B3, where 19 patients had 31-B1 type fracture while 15 patients had 31-B2 type fracture and 16 patients had 31-B3 type fracture in the femur neck as shown in (Table 2). All the patients were assessed according to ASA Grade before the surgical process, in which 48% of patients fell under the grade of III and II, while 4% of the patients fell under grade I. 24% of patients were treated with Cemented hemiarthroplasty and rest 76% were treated with the uncemented hemiarthroplasty. After surgery, all patients were mobilized as soon without any restrictions being placed on hip movements or weight bearing. During this period, walker or crutches were instructed to the patient. Patients were discharged home as soon as able from hospital. The length of hospital stays including the total stays on hospital ward and rehabilitation wards till discharge home was recorded average 14 days.

Table 1: Demographic data.

Characteristics	Values
Average age (range)	68.88 (57-80 years)
Gender	N (%)
Male	22 (44)
Female	28 (56)

Table 2: Fracture classification.

Fracture type (AO classification)	N (%)
31-B1	19 (38)
31-B2	15 (30)
31-B3	16 (32)

Patients were follow-up on 6 week and 3 months after the discharge. All patients by the time of follow up of 6 week started mobilization with support or with any supporting aids properly without any kind of implant related complication. After 3 months of assessments the rate of good mobilization was 52% in 26 patients rest 46% that

means 23 patients need supporting. 1 patient's condition was not improved, mostly bedridden, moved with the support of the other for doing personal routine work due to age related factors and comorbid. The prevalence of comorbidities like hypertension, diabetes, dementia, cardiac diseases etc. Causes variation in the healing time as well as in the mobility factor of the elderly patients. General patient under these categories were found comorbid which directly or indirectly affect patient overall health. In respect to the complication rate, total 14% of complication has been recorded out of which 8% of the patient population had pressure sore, 6% of the patient population had wound hematoma and 2% of the patient population have superficial infection.

Table 3: Patient satisfaction data (n=50).

Evaluation parameter	Number of patients	
	Satisfied N (%)	Not satisfied N (%)
Pain	45 (90)	5 (10)
Aesthetics	46 (92)	4 (8)

No implant related complications have been found like implant loosening, prosthesis related size issue, etc. Limitation of this study was that long follow up has not been recorded due to which mortality rate was not tracked.

DISCUSSION

Oho et al observed that females were more susceptible (84.3%) with mean age of 83.1 years (ranging from 70 to 95).⁸ The present study confirmed these data with female predominated (56%) and mean age of 70 years (ranging from 63 to 79 years). The American Society of Anesthesiology has a framework for arranging anesthesia risks. In this framework, grade I shows healthy patients; grade II, mild systemic disease, without functional risks ; grade III, moderate systemic disease, with functional risks; grade IV, serious fundamental disease that speaks to a steady hazard to life; and grade V, hopeless patient with the possibility of death inside 24 hours, with or without surgery.⁹

White et al considered that the ASA characterization was the best indicator of mortality for hip fracture patients. In their investigation, patients categorized grade I or II displayed a mortality rate following one year of 8%, while patients with grade III or IV exhibited a rate of 49%.¹⁰ In the present study, out of 50 patients, there was no patient with death rate. Many examinations have demonstrated that postponement in performing the surgery is one of the principle factors associated with a higher death rate. However, there is no characterized threshold time. Patients right off the bat need to be evaluated to learn whether they present any intense therapeutic comorbidity, for instance: cardiovascular breakdown, weakness, cardiovascular arrhythmia, pneumonia and coagulation issue, among others. For patients without intense comorbidities, clinical

examinations have demonstrated that medical procedure ought to be performed inside the initial 24 to 48h, and not more than four days after the injury, with the point of decreasing the dangers of complications.¹⁰⁻¹²

More recent publications have reports results in patients where established Thompson's have been used, with regards to present day NICE rules that suggest the utilization of cemented. Kassam et al followed up 430 patients who got an established Thompson's for a long time.¹³ Their outcomes distributed in 2014 uncovered a dislocation rate of 1.4% and revision rate of 1.2%. Khan et al. detailed their aftereffects of cemented Thompson's in 2015.¹⁴ They followed up 1670 patients with a mean period of 82.7 years for a long time postoperatively. Their outcomes uncovered a 5-year prosthesis survival of 95.4% and a revision rate of 2.2%. Their signs for revision included infection (2.1%), dislocation (1.1%) and aseptic loosening (0.5%). The increased rates of implant loosening and early periprosthetic fracture previously reported with cemented and uncemented implants have not been observed in our series. This may relate to our use of a technique to ensure a good press fit.

CONCLUSION

The main principal of this study is females. All patients had suffered with low energy trauma. The average time in between the admission and surgical procedure was 14 days. There were no case of dislocation of implant and also no need for revision due to loosening or pain, for any of the patients.

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Ethical approval: The study was approved by the institutional ethics committee

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