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Dr. K Raj Kumar
Associate Professor, Department
of Orthopedics, Shadan Institute
of Medical Sciences, Hyderabad,
Telangana, India

A study on functional outcome of cemented total hip arthroplasty by Moore's approach

Dr. K Raj Kumar

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Abstract

Background and Objectives: Pain in the hip joint is one of the most important causes in disabling human locomotion. Total hip arthroplasty represents the greatest single advance in modern orthopaedic surgery. Replacement of damaged cartilage surfaces with various artificial bearing materials has enabled surgeons to improve function and relieve pain in vast majority of patients. The present study was conducted to study functional outcome and the complications associated with cemented total hip replacement using modular prosthesis. All the cases are operated by Moore's approach which is routinely used in our institution.

Methods: In this study 30 patients with diseased hips, aged above 40 years, with pathological hip joints were treated with cemented total hip replacement using modular prosthesis by Moore's approach in our institution and followed up for a period of 1-24 months.

Results: Patients were evaluated both functionally and radiologically. Functional evaluation with Modified Harris hip score showed excellent results in 22 hips, good in 6 hips, fair in 2 hips. No poor results were noted. Radiological evaluation at the latest follow up of all cases showed no signs of aseptic loosening or implants failure.

Conclusion: This study shows that cemented total hip replacement using modular prosthesis is a rewarding procedure with absolute prevention of limb length discrepancies as a common complication of the total hip arthroplasty. With proper patient selection, adequate planning, armamentarium and meticulous surgical technique, we have achieved results comparable to other authors. In a nutshell, in our institute, this procedure done with utmost technical precision has provided us with very good clinical results. Functional results are excellent and complications are minimal if done with utmost care and precision. Long term studies are necessary to study the late complications and to prove the efficacy of the implants and procedure.

Keywords: Hip, arthroplasty, cemented, Moore's approach

Introduction

Osteoarthritis of the hip, may it primary or secondary, has been troublesome problem since long. No race has been exempted from the disease and the aetiology of the condition has been subject of controversy and speculation [1]. Almost all patients who consult the surgeon do so because of intractable pain. Many patients also have limitation of the motion but the primary goal of operative treatment is to relieve pain [2].

Total hip replacement was introduced as a panacea to relieve the intractable pain of hip arthritis. Additional objectives of deformity correction and restoration of hip mobility and stability were achieved later. It has provided millions with the ability to lead a normal life [1, 3]. The prosthesis used for THR is often grouped into cemented, cement-less and hybrid ones. There has been increasing trends in use of cement-less components citing more number of complications namely loosening, increased infection rate etc. however with additional cost factors as well [4]. The crux of cemented THR surgery lies in the use of cement. By means of cement the load of the body weight is distributed over a large area of bone [5]. The beauty of the acrylic-fixed hip replacement is in the almost uniform early absence of pain. The immediate pain relief, stable fixation, rapid rehabilitation has proved to be doing wonders for patients with hip disorders requiring replacement surgeries [6]. Since it has been proved that the best time to use acrylic cement is the "First time", the surgery should be done with utmost technical precision for long term results [1, 4, 5].

Corresponding Author:
Dr. K Raj Kumar
Associate Professor, Department
of Orthopedics, Shadan Institute
of Medical Sciences, Hyderabad,
Telangana, India

We at our institute have been using cemented THR since long and have not come across such complications in general pertaining cemented implant. In a developing country like us shall we really switch over to costlier un-cemented dreading such complications or can we still use cemented prosthesis with equally good if not better results.

Aims and Objectives

The present study was conducted to study functional outcome and the complications associated with cemented total hip replacement using modular prosthesis. All the cases are operated by Moore's approach which is routinely used in our institution.

Materials and Methods

In this study 30 patients with 30 hips, aged above 40 years, with diseased and destroyed hips were treated with cemented total hip replacement. The follow up ranged from 1 month to 2 years.

Inclusion criteria

1. AGE-Above 40 years.
2. SEX-Male and Female.
3. CRP-Negative.

Exclusion criteria

1. Active infection.
2. Patients unfit for surgery.

Patients were admitted in the wards. A detailed history of the illness was extracted including age, sex, occupation, complaints and any other medical illnesses. A thorough clinical examination was performed.

Later patients were subjected to investigations. These included routine blood counts, ESR, CRP and AP & lateral X-ray views of pelvis with both hips.

Analgesics, antibiotics, tetanus toxoid and blood transfusions were given as needed before surgery. Aspirin, anticoagulants and other anti-inflammatory drugs were stopped 7 to 10 days before surgery.

Preoperative Assessment

The patients were evaluated according to the modified Harris hip scoring system [7]. The scores taken into account were of pain, function, range of motion, and deformities. Also a mention of the limb length discrepancy and flexion contracture is made. Physical examination included examination of spine and both lower extremities including opposite hip, both knees and foot. Any occult infections like skin lesions, dental caries and urinary tract infections were identified and treated preoperatively. Routine blood investigations were done for all the patients. Special attention was paid to CRP and ESR and if these were abnormal, surgery was deferred.

Roentgenographic Evaluation

The goal of preoperative radiographic assessment is to confirm the diagnosis, to determine anatomic relationship of the femur and pelvis to allow for accurate restoration of joint anatomy and biomechanics. Standard pelvic roentgenogram anteroposterior view of both hips in 15 degrees of internal rotation and lateral X-ray of hip were taken. X-Rays of spine and knees were also taken to know their status. Following features were noted.

Femur

Bone stock, medullary cavity, limb length discrepancy and neck length.

Acetabulum

Bone stock, floor, migration, protrusion, osteophytes and approximate cup size. Templating was done with the use of plastic overlay templates supplied by the prosthesis manufacturer both for femoral and acetabular components to aid in selection of the type of implant that will provide the best fit, implant size and neck length required to restore equal limb lengths and medial offset.

The posterior Moore's approach [8, 9] was followed for all the cases. Forty grams of bone cement was used for each of femoral and acetabular component. Post-operative Management: Limb was kept in abduction with abduction pillow in between the lower limbs. Vitals were monitored carefully for 48 hours. Intra venous antibiotics are continued for 2 days. Drain removed and tip sent for culture and sensitivity after 48 hours and check X-rays performed. Patient was allowed to ambulate the next day of surgery with weight bearing as per pain tolerance.

Follow-up: In our study, patients on discharge were advised to report after 1st month, 2nd month, 3rd month and 6th month and every 6 months thereafter. At the follow-up a detailed clinical examination was done and patient was assessed subjectively for symptoms like pain, swelling and restriction of joint motion. Modified Harris hip scoring system⁷ was used for evaluation. On clinical examination, examination for tenderness, range of movements of the joint and limb length discrepancy was noted. Check X-rays were taken to study for any signs of complications of the procedure.

Results

This study consisted of 30 patients with 30 diseased hips treated at our institution with Cemented Total Hip Replacement. All the patients were followed-up for a period ranging from 1 month to 2 years. Results were analyzed both clinically and radiographically, with series of X-rays of pelvis with both hips.

Age distribution

Out of 30 patients, 21 patients (70%) fell in the age group of 45-55 yrs. 6 patients (20%) belonged to 56-65 years age group. And 3 patients (10%) were in 66-75 age group.

Table 1: Age distribution

Age (years)	No. of patients	Percentage
45-55	21	70%
56-65	6	20%
66-75	3	10%

Side affected

In this study, there was equal distribution regarding the side of affected.

Sex distribution

There were 20 male and 10 female patients in this series. Statistics show male preponderance.

Indications

Secondary Osteoarthritis affecting 13 patients (43.3%) was the most common indication for surgery in this study. The causes for secondary osteoarthritis were Rheumatoid arthritis

(6 patients), Old trauma (4 patients) and advanced stages of AVN (3 patients).

- Implant failure/loosening was the indicator in 3 patients (10%).
- Nonunion Fracture Neck of Femur consisted of 12 patients (40%).
- Initial stages of AVN was the indication in 2 patients (6.6%).

Table 2: Indications for surgery

Indications	No. of Patients	Percentage
Secondary OA	13	43.3%
Non-union Fracture	12	40%
Implant failure	3	10%
AVN of Femur head	2	6.6%

Size of implants

- Acetabular cups used were of 28mm inner diameter and the outer diameter varied from 44mm to 60mm.
- 46mm cup was most used, the number of patients being 12 (40%), 10 patients (30%) were put with 44mm cup and the remaining 9 patients (30%) were operated with 48mm cup.
- Femur stems ranged from small to extra-large sizes. The necks were of small (- 4), medium (0), large (+4) and extra-large (+8) sizes.
- Small femur stems were used the most. 10 patients (33%) were operated with small stem, 10 patients (33%) with medium stem and 1 patient (3%) with large stem.
- Metal head sized medium (0) was used in 15 patients (50%). Small and large metal heads were used in 8 patients (25%) each.

Table 3: Acetabular cups sizes

Acetabular cup	No. of patients	Percentage
44mm	12	40
46mm	10	30
48mm	8	30

Complications

Dislocation

Out of 30 cases we had 1 case of posterior dislocation that occurred on 7th postoperative day while the patient was walking. The case was managed by closed reduction and a Thomas splint was put for a period of 4 weeks. There was no episodes of re-dislocation in that patient.

No other complications were noted in other patients in this study.

Table 4: Complications

Complications	No. of Patients	Percentage
Vascular injuries	—	—
Nerve injuries	—	—
Hemorrhage	—	—
Bladder injury	—	—
Limb length discrepancy	—	—
Thromboembolism	—	—
Infection	—	—
Dislocation	1	3%
Loosening	—	—
Stem failure	—	—
Heterotrophic calcification	—	—

Table 5: Harris hip score (modified)

Results	No. of Patients	Percentage
Excellent	22	73.3%
Good	6	20%
Fair	2	6.6%
Poor	0	0

Discussion

Total hip replacement is somewhat a permanent method of relieving pain in the hip due to various conditions. The aim of the surgery was to relieve pain, at the same time to preserve motion and stability of the joint. Cemented total hip replacement has some limitations like the long term complications associated with the cementing technique mainly aseptic loosening and difficult revision surgeries.¹⁰ The challenge comes when patients of younger age group are to be operated because, then every technical detail must be used and followed so that the patient has a reasonable chance of 20 or more years of trouble free activity and survival. A number of series have proved the clinical efficacy of cemented total hip replacement and several published series have proved that it can provide satisfactory durability for most patients even at intervals of 20 years or more after surgery^[11, 12].

The strength of our study is that all hips were primary arthroplasties; all were done using a uniform technique, done by same surgeon and no patient lost for follow - up. The limitation of the study is that the sample size is less and the follow-up duration is not very long so as to demonstrate the long term complications of this procedure. In our study, the only complication we had were 2 cases (10%) of posterior dislocations noted. One case got dislocated on the 5th post-operative day while the patient was trying to sleep on the lateral position in the bed and the other occurred after the patient was discharged from our institution. Amstutz^[13] *et al.* in their study have reported a 3% incidence of dislocation of hip in first week. In our study, 1 of the 2 cases (5%) had dislocation in the 1st week. Fackler CD^[14] *et al.* in their study have reported a 2% incidence of dislocation after primary hip arthroplasty. The incidence of dislocation in this study is comparable to the rate of dislocation (8.9%) noted in the study conducted by Turner^[15]. These dislocations of hip cannot be associated with cemented implant only.

In this study, we have noted excellent outcome in 14 operated hips (67%), good in 4 hips (19%) and fair results in 3 hips (14%). No poor results were noted. Hence excellent or good results were noted in 18 hips (86%) whereas fair or poor results were noted in 3 hips (14%). The outcome noted in this series is comparable to other studies which had a long follow up period. Kavanagh^[11] *et al.* (1989) conducted a study in 170 out of the 333 operated cases of Charnley THR over 15 years. It was noted that excellent or good results were noted in 78% of the hips. In study conducted by Schulte^[12] *et al.* in 322 hips out of 330 operated hips in a 2 year period had 86% excellent or good results and 14% fair or poor results. This outcome is comparable with the long term studies conducted by Kavanagh¹¹ *et al.* and Schulte^[12] *et al.* although long term follow up is required in our study for assessment of late complications. The excellent results in this series and also in other studies suggest that early complete abandonment of the cemented implant by some surgeons (especially in the older and less active patient) might have been premature. 4 The

issue of which prosthesis to use for which patient is a complicated one and the training of the surgeon in cementing technique as well as cost must be taken into account along with long-term results. The assessment of clinical results of cemented total hip replacement has shown that there is definitive improvement with regard to pain, function and range of motion post-operatively. Based on our experience and results, we conclude that cemented total hip replacement is an excellent procedure in the management of diseased and destroyed hips with chronic and incapacitating pain and is the procedure of choice in elderly patients. Cemented total hip replacement is a cost-effective procedure. With proper patient selection, adequate planning, armamentarium, meticulous surgical technique, we have achieved results comparable to other authors. In a nutshell, in our institute, this procedure done with utmost technical precision has provided us very good clinical results. Long term studies are necessary to study the late complications and to prove the efficacy of the implants.

The results obtained in this study had 90% excellent or good results and 10% fair results. This outcome is comparable with the long term studies conducted by Kavanagh *et al.* and Schulte *et al.* although long term follow up is required in our study for assessment of late complications.

The excellent results in this series and also in other studies suggest that early complete abandonment of the cemented implant by some surgeons (especially in the older and less active patient) might have been premature. Moore's approach was proved to be an excellent approach for cemented total hip arthroplasty.

Conclusion

This study done on 30 patients where Moore's approach was practiced in performing Cemented Total Hip Replacement gave us a good experience and results. Based on these results, we were able to arrive at a conclusion that Cemented Total Hip Replacement by Moore's approach is a rewarding procedure in the management of diseased and destroyed hips with chronic and incapacitating pain in patients. Cemented total hip arthroplasty is a rewarding procedure for a diseased and destroyed hip in elderly patients. Moore's approach is a time tested and trusted approach for exposing acetabulum and femur while performing arthroplasty. It is a safe and effective approach for total hip arthroplasty. Secondary Osteoarthritis of the hip joint due to avascular necrosis of femur head is the most common etiological factor for chronic hip pathology. Cemented total hip arthroplasty is an affordable choice for patients with diseased and destroyed hip. Conservative management is not the choice of management in late stages of osteoarthritis of hip. Cemented total hip arthroplasty can give a painless, stable and mobile hip post operatively. We achieved excellent and good results in this study with proper selection of patients, proper planning, adequate implants and meticulous surgical technique. We were able to achieve these results in our institution by this procedure and approach with utmost technical precision and our results are comparable to other authors. Study sample and follow-up period was not so adequate to analyze the long term complications of this procedure and to prove the efficacy of the implants, procedure and the approach.

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References

1. Finerman GAM, Dorey FJ, Grigoris P, *et al.* Commentary. Total hip arthroplasty outcomes. New York: Churchill Livingstone, 1998, 3-12.
2. Nicoll EA, Holden NT. Displacement osteotomy in the treatment of osteoarthritis of the hip. *J Bone Joint Surg. Br.* 1961;43B:50-60.
3. Pachore JA, Jhunjhunwala HR. Total hip arthroplasty. In: GS Kulkarni, editor. *Textbook of Orthopaedics and Trauma*, New Delhi: Jaypee. 2008;2:3675-3738.
4. Pennington M, Grieve R, Sekhon JS, *et al.* Cemented, cementless, and hybrid prostheses for total hip replacement: cost effectiveness analysis. *BMJ*, 2013, 346.
5. Charnley J. Total hip replacement by low friction arthroplasty. *Clin Orthop.* 1970;72:7-21.
6. Wroblewski BM, Siney PD, Fleming PA. The Charnley LFA: The wrightington hospital. In: Finerman GAM, Dorey FJ, Grigoris P, *et al.* editors. *Total hip arthroplasty outcomes*. New York: Churchill livingstone, 1998, 15-29.
7. Harkess JW, Crockarell JR Jr. Arthroplasty of the hip. In: Canale ST, Beaty JH, editors.
8. *Campbell's operative orthopaedics*. Philadelphia: Mosby, 2008;11:312-482.
9. Cameron HU. Intraoperative alignment, instrumentation, and surgical approaches. In: *The technique of total hip arthroplasty*. St Louis: Mosby, 1992, 107-162.
10. Hoppenfeld S, deBoer P, Buckley R. The hip. In: *surgical exposures in orthopaedics. The anatomic approach*. Philadelphia: Lipincott Williams & Wilkins, 2009;4:403-462.
11. Krause WR, Krug W, Eng B, *et al.* Strength of cement bone interface. *Clin Orthop.* 1982;163:290-299.
12. Kavanagh BF, Dewitz MA, Ilstrup DM, *et al.* Charnley total hip arthroplasty with cement. Fifteen-year results. *J Bone Joint Surg Am.* 1989;71:1496-1503.
13. Schulte KR, Callaghan JJ, Kelley SS, *et al.* The outcome of Charnley total hip arthroplasty with cement after a minimum twenty-year follow-up. The results of one surgeon. *J Bone Joint Surg Am.* 1993;75:961-975.
14. Amstutz H, Dorey FJ, Finerman GAM. The cemented T-28/TR-28 prosthesis. In: Finerman GAM, Dorey FJ, Grigoris P, *et al.* editors. *Total hip arthroplasty outcomes*, New York: Churchill Livingstone, 1998, 55-63.
15. Fackler CD, Poss R. Dislocation in total hip arthroplasties. *Clin Orthop.* 1980;151:169-178.
16. Turner RS. Postoperative total hip prosthetic femoral head dislocations. Incidence, etiologic factors and management. *Clin Orthop.* 1994;301:196-204