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Research Article

Results of uncemented total hip replacement done in very young patients

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ABSTRACT

Background: Only few long term studies have evaluated the use of cement less Total Hip Arthroplasty (THA) in the younger population (<50 Years). Most long term studies performed with cement and have demonstrated inferior durability compared with THA in older patients.
Methods: We had total of 15 patients (20 hips) of hip arthritis, 5 cases were bilateral; 12 males and 3 females; mean age: 25 years (range 21-29 years). All patients underwent uncemented total hip arthroplasty using ceramic heads and highly cross-linked polyethylene cups.
Results: All the patients were available for follow-up. Average follow-up period was 2 years (range 1-3 years). The mean Harris hip score improved from 44 preoperatively to 90 postoperatively. No complications were seen in any patients. Mean time to return to work was 16 weeks.
Conclusions: This study shows that uncemented total hip replacement in the very young patient can provide good functional improvement and relief of symptoms at short term.

Keywords: Uncemented total hip arthroplasty, Young adults

INTRODUCTION

Only few long term studies have evaluated the use of cement less Total Hip Arthroplasty (THA) in the younger population (<50 Years). Most long term studies performed with cement and have demonstrated inferior durability compared with THA in older patients.[1]

According Gee et al., young adult is one with age less than 50 years and very young adults is one with age less than 30 years.[2]

The purpose of this study is to assess the results of uncemented total hip replacement done in very young patients aged less than 30 years.

METHODS

The present study was conducted at KLES Dr. Prabhakar Kore hospital and medical research centre, Belgaum during the period of January 2011 to December 2012. It was a prospective study. We had total of 15 patients (20 hips), 5 cases were bilateral; 12 males and 3 females; mean age: 25 years (range 21-29 years). All patients were prospectively followed for a minimum 1 year and maximum 3 years (till now).

Selection criteria

All clinically and radiologically confirmed cases of arthritis of hip patients with age less than 30 years of either sex were included in the study. Hip arthritis

patients aged more than 30 years were excluded from the study.

Informed consent

Patients fulfilling the selection criteria were briefed about the nature of the study and a written informed consent was obtained from the selected patients.

Investigations

Investigations such as X-ray pelvis AP and lateral hip view, haemoglobin %, serum creatinine, random blood sugar, HIV & HBsAg, Chest X-Ray, ECG, bleeding time and clotting time were done.

Data collection

After obtaining written informed consent from the selected patients, demographic data, chief complaints at presentation and history was taken and clinical examination was done for all patients and findings were recorded on predesigned and pretested proforma. All surgeries were performed by same team of surgeons.

General anaesthesia + epidural anesthesia was used in all patients.

Procedure

All patients underwent uncemented total hip arthropasty using ceramic heads and highly cross-linked polyethylene cups; that is, cementless femoral stem and cementless acetabular components. Posterior approach was used for all the cases. Lateral decubitus position was given. Intravenous 1.5 gm cefuroxime injection was given half an hour before the procedure.

Hip joint was dislocated, osteotomy of neck of femur done. Acetabulum was reamed to proper sizes, cup trialling was done and final cup size selected and press fitting done. In some patients screw fixation was done where bone was osteoporotic. Cup liner was put. Proximal femur broached to proper size, trialling done and hip reduced. Hip stability was checked. Final implantation was done with uncemented stem and ceramic head. Wound was closed over drain.

Postoperative protocol

Antibiotics were given intravenously for 3 days. Epidural analgesia was given for 2 days. Weight bearing as tolerated was started after 2 days. Staples removed on 11th day and patient was discharged on 12th day.

All patients received low molecular weight heparin injections. Results were assessed using Harris hip scoring system.

Figure 1: X-ray of pelvis showing arthritis of both hips secondary to AVN.

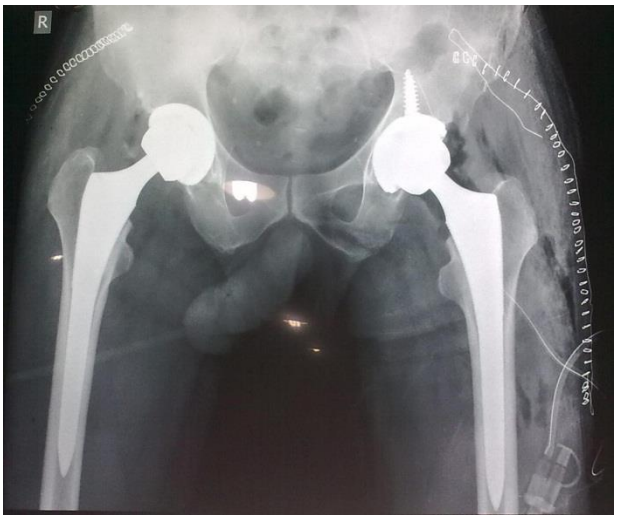

Figure 2: Post-op X-ray showing bilateral total hip replacement.

Figure 3: Clinical photographs at 2 year follow-up.

Figure 4: Clinical photographs at 2 year follow-up.

RESULTS

Procedure was done in 15 patients (20 hips) under the present study. Patients were clinically and radiologically evaluated. A Harris hip scoring was recorded. After the procedure patients were asked to follow up at 6 weeks, 3months, 6 months, one year and every year.

Out of the 15 patients, 12 were males and 03 were females. Mean age was 25 years (range 21-29 years). The diagnosis was ankylosing spondylitis in 3 patients and arthritis secondary to osteonecrosis (AVN = Avascular Necrosis) in 12 patients. Radiographic evaluation was done to see bone in growth, stable/unstable fibrous fixation, alignment, loosening, stem subsidence, osteolysis etc. All the patients were available for follow-up. Average follow-up period was 2 years (range 1-3 years). The mean Harris hip score improved from 44 preoperatively to 90 postoperatively. No complications were seen in any patients. Mean time to return to work was 16 weeks. Post-operative change of occupation was seen in one patient, as the patient was lorry driver. 2 points blood for each hip was reserved and transfused.

DISCUSSION

Good surgical technique and choice of implant are crucial for younger patients undergoing Total Hip Arthroplasty (THA) because of their high physical demands and the need for long-term survival of the implant. High revision rates have been reported for cemented implants.[3] Long-term outcomes of first-generation cemented THAs for younger patient were unfavourable with revision rates being 10 to 39% after 5 to 12 years.[4-8] Outcomes improved with the use of new cementing techniques; as a result, only 8% of stems were revised after 20 years, and only 5% had radiographic signs of aseptic loosening. Nonetheless, the rate of cup loosening remained high (36 to 50% at 10 years).[9]

The survival rates for uncemented femoral and acetabular components at 10 years were 95% and 98%, respectively.[10]

In Gee MJ et al study of Systematic review of total hip arthroplasty in patients under 30 years old, 450 THA procedures were performed. All patients showed an improvement in functional score and symptom relief. Uncemented stems showed good integration with no signs of loosening. Cemented implants showed high rates of loosening. This study shows that THA in the very young patient can provide good functional improvement and relief of symptoms and that the more modern uncemented implant designs used with hard-on-hard bearings can be associated with improved implant survival.[11]

According to study of Eskelinen A et al. based on Finnish arthroplasty register: 92,083 primary THAs were entered in the register, 5607 of which were performed for primary OA in patients under 55 years of age. Survival rate of all uncemented stems was more than 90% at 10 years and survival rate of all uncemented cups was less than 90% at 10 years.[12]

According to study of Eskelinen A et al. based on Finnish arthroplasty register: modern second-generation uncemented stems, with proximal circumferential porous- or HA-coating, seem to be a good choice for young patients with primary OA. Similarly, modern press-fit porous- and HA-coated cups appear to have good endurance against aseptic loosening in these young patients.[12] However, liner revisions were common; thus, survival rates of uncemented cups were unsatisfactorily low. Polyethylene wear and unfavourable locking mechanisms between the metal shell and the polyethylene liner and their sequelae remain matters of concern in this young and active group of patients.[12]

In the present study we had good to excellent results in all patients at latest follow-up.

CONCLUSION

This study shows that uncemented total hip replacement in the very young patient can provide good functional improvement and relief of symptoms at short term. Long-term studies are necessary to confirm the superiority and improved survivorship of these newer implants.

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