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Original Article

Results of total hip artroplasty in our clinic

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Abstract

Aim: Patients undergone total hip replacement, performed in our clinic were retrospectively reviewed and discussed in the light of the available literature. The aim of this study was to determine our clinical results.

Materials and Methods: The records of patients with total hip arthroplasty performed in our clinic between 2002 and 2008 were evaluated retrospectively. Laboratory values, Harris hip score and complications of these patients were examined.

Results: The mean preoperative VAS of the 72 patients with a mean follow-up of 28.9 months was 81.6 preoperatively and the mean VAS was 35.7 in the last control. Harris hip score was 36.7 before the operation and 70.3 in the last control. According to Harris hip score of the patients in the preoperative period, 30 patients were evaluated as moderate and 42 patients as poor. In the postoperative period, 10 patients (13.8%) were excellent, 19 (26.3%) were very good, 30 (41.6%) were good, 6 (8.3%) were moderate, 7 (10%) were poorly rated according to Harris hip score. Biochemical laboratory values measured from venous blood taken at the time of arrival of patients, mean HsCRP 11.67±15.4 mg / l, insulin 14.87±29.53 IU / ml, glucose level 139.11±74.3 mg / dl, CK 426 9±12x8.9 mg / dl and CK-MB were determined as 41.1±46.8 mg / dl.

Conclusion: As a result, we think that total hip arthroplasty is still an effective method in advanced hip arthrosis.

Keywords: Arthroplasty; hip pain; loosening; complication.

INTRODUCTION

Arthroplasty can be defined as surgical operation which provides painless movement and improves the function of the muscles, ligaments and other soft tissues that control the joint (1). Hip arthroplasty is a surgical procedure that is performed in case of pain due to the causes of hip arthritis, avascular necrosis, ankylosing spondylitis and femoral proximal end fractures. After all non-surgical methods are tried in these patients, arthroplasty is used as a last resort. It is seen that the success rates are over 90% in the patient groups whose results are followed for at least 10 years.

Total hip arthroplasty (Total Hip Prosthesis) is a surgical treatment method that is able to solve the problems of the hip which cannot be solved by conservative treatments, and is increasing its success all over the world and in our country. However, it should be kept in mind that this success of total hip arthroplasty depends on appropriate patient selection, appropriate preoperative preparation, appropriate implant selection, effective postoperative period and rehabilitation (2).

The progress of modern medicine and the stages recorded in prosthetic designs contribute to the results of total hip arthroplasty. The studies in this field in our country have made great progress in the last 20 years.

In our study; the cases of total hip arthroplasty performed in our clinic between 2002 and 2008 were examined retrospectively and discussed in the light of the available literature and it was aimed to determine our clinical results.

MATERIAL and METHODS

This study was carried out in the Orthopedics and Traumatology Department of the Fırat University Medical Faculty Hospital between 2002 and 2008 and 72 patients underwent total hip arthroplasty according to the approval dated 31.03.2006 and numbered 2005-2006 / 368 from the local ethics committee.

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The age distribution of the patients was between 26 and 88 (mean 64.3). 38 patients were female (52%) and 34 were male (48%). 40(55.7%) of the patients who underwent total hip replacement surgery were operated on the left side, 29 (40.3%) on the right side and 3 (4%) underwent bilateral operation (Figure 1).

Coxarthrosis in 39(54.1%) patients, femoral neck fracture in 18 patients (24.8%), operated PEP (partial endoprosthesis) in 6 patients (8.1%), intertrochanteric femur fracture in 3 patients (4%), operated THA in 2 patients (2.7%), protrusion acetabuli in 1(1.3%), DDH (developmental hip dysplasia) in 1 (1.3%), secondary osteoarthritis in 1 (1.3%), and subcapsular femoral neck fracture in 1(1.3%) was present (Table 1).

A total of 75 femoral components were placed in the patients. 10 (13.3%) of these components were placed in the femur without cement and 65 (86.7%) were cemented in the femur. The plug was placed on each patient with a cemented femoral stem. A total of 75 acetabular components were placed in the patients. Of these components, 66 (88%) were screwed acetabular component, 9 (12%) were non-screwed acetabular component (porous coated). No cemented acetabular component was applied to any patient. The diameter of the acetabular cup ranged from 46–58 mm and the mean diameter was 50 mm.

The follow-up period of the patients ranged between 10 -60 months (mean.32.3 months). Patients who underwent bilateral THA were operated in different sessions. General anesthesia was applied in 65 (90.2%) patients, spinal anesthesia in 5 (6.9%) and epidural anesthesia in 2 (2.9%) patients. The operation period of the patients ranged from 2 - 4.5 hours and the mean duration was 3.2 hours (Figure 2).

Metal femoral head and polyethylene acetabular insert was used in 38 (50.6%) patients, metal femoral head and metal acetabular insert in 28 (37.3%), ceramic femoral head and ceramic acetabular insert in 9 (12.1%).

The patients were evaluated according to subjective and objective findings preoperatively and postoperatively. Visual Analogue Scale (VAS) was used for this purpose. Harris Hip Evaluation Form was used in the clinical evaluation of the patients. The preoperative Harris hip score ranged from 14 to 53 with a mean of 32.4 (± 9.7).

The patients were admitted to the ward after diagnosis. Routine biochemistry, complete blood count, complete urinalysis, ESR and CRP values were required in all patients. After the anesthesia consultation, it was prepared for operation by considering the related departments in terms of other systems. All patients received AP and lateral radiographs of the opposite hips before the operation. Acetabulum, femur and femoral head were examined by radiographs. After all of these, the size of incision to be made and the size of the prosthesis to be used were determined preoperatively.

When anteroposterior and lateral radiographs for both hips which taken preoperatively and at follow-up were examined, radiographic criteria were taken in accordance with the recommendations of Tapadiya et al. And Rorebeck et al., Along with radiological criteria proposed by Callaghan et al. (3,4). Acetabular cup angle (Acetabular index): The normal limits are 40° -50°, and the values below these limits are considered to be bad placement of the cup. A more than 2 mm displacement of the acetabular cup during follow-up is considered as a migration. The wear of the acetabular component is determined according to the technique described by Livermore et al. (3). The linear wear rate is calculated as the shortest acetabular cup width between the femoral head and the cementum at the point where the center of the femoral head is in contact. The femoral component was divided into three positional categories. Neutral, valgus or varus position. Neutral femoral stem and the angle between the longitudinal axis of the shaft and the axle of the femoral stem less than 3 ° was considered significant. In the evaluation of adequate femoral cement lining, defined zones were used (4). The radiolucency between 2 mm and 5 mm in any of the 7 divided zones along with pain at the thigh during heavy activity is considered as loosening.

On the day of operation, patients were taken to the operating room after a fasting period of at least 6 hours. All patients were given 1 gr cefazolin sodium IV as antibiotic prophylaxis midnight and 30 minutes before the operation. Patients who were estimated to have an operation duration beyond 2 hours were also given an additional dose of 1 g cefazolin sodium to be administered intraoperatively.

After general or local anesthesia, patients were taken to the operating table in the lateral decubitus position on the unaffected side. The pelvis, the pubis and the sacrum were fixed and supported. Following the surgical cover, the incision area was covered with a Battikon drape. Modified-Gibson incision was made in 6 patients and Watson-Johnes incision was performed in 69 patients. The hip joint was reached with both incisions. After removing the femoral head from the acetabulum, the soft tissues in the acetabulum were removed and the tissues adjacent to the acetabular lip were removed. The osteophytes around the acetabulum were removed for the placement of the acetabular component. Ligamentum teres were excised and soft tissues were removed from the pulvinar region. Osteotomes and rongeurs were cleared of osteophytes on the medial wall. The acetabulum was carved with mira-type or bone-protecting reamers. Gradually, 1 or 2 mm incremental reamers were used. All the cartilage tissue is removed when the carving is complete. Thus, acetabulum was prepared by providing appropriate anteversion and inclination. The appropriate acetabular cup and insert were inserted.

After the acetabulum was prepared, the preparation of femur started. A wide and flat retractor was placed to see the proximal femur. To reveal the piriform fossa, the posterior edge of the gluteus medius and minimus was

retracted to prevent injury during the preparation and placement of the femoral component. All the tissues on the middle and lateral sides of the femoral neck were excised. A femoral neck was incised at a 45-degree angle 2 cm above the trochanter minor. Femur medulla was prepared by carving with meduller reamers, and metaphyseal region and medulla were brewed in the appropriate anteversion based on bi-condylar axes. The appropriate femoral stem was placed in the femur. The hip joint was reduced by placing the head in the femoral trial. After deciding that there was no problem in the reduction, the original femoral head was placed and the reduction was achieved. The hip flexion, extension, internal and external rotation was examined to see if the hip was dislocated. Both extremities were compared to determine whether the extremity was shortened or elongated. After insertion of a drain into the joint, it was tightly closed with a solid suture material. The subcutaneous 2/0 absorbable suture material and the skin properly closed with metal stapler. The abduction pad was placed between both hips and the patient was placed in supine position.

All patients underwent LMWH for deep vein thrombosis prophylaxis. Again, 1 gr cefazolin sodium 2X1 IV was administered to all patients postoperatively for up to 3 days. For analgesia, tramadol infusion or IM / IV NSAID were administered. All patients were given proton pump inhibitors as a stomach protector.

All patients who were operated were daily dressed. Surgical drains were removed 24 hours following the surgery. During the dressings, the effluents from the wound site were checked for their quantity and characteristics. Wound culture was obtained from patients who were thought to have infection.

Passive and active ankle and quadriceps exercise movements were performed on the following day. Full weight bearing carried out with the help of a walker or crutch as much as the pain allowed.

Patients who did not have any problems related to wound site were discharged and called for a check-up visit on the day 15 following the operation.

The hospitalization period of the patients was 7-15 days with a mean of 9.3 days. After discharge, the patients were called to follow-up at the 6th week, 12th week, 6 months and 12 months. After the first year, annual checks were performed.

Results

The mean preoperative VAS of the 72 patients with a mean follow-up of 28.9 months was 81.6 preoperatively and the mean VAS was 35.7 in the last control. Harris hip score was 36.7 before the operation and 70.3 in the last control. According to Harris hip score of the patients in the preoperative period, 30 patients were evaluated as moderate and 42 patients as poor. In the postoperative period, 10 patients (13.8%) were excellent, 19 (26.3%) were very good, 30 (41.6%) were good, 6 (8.3%) were moderate, 7 (10%)) were poorly rated according to Harris hip score.

There was no significant difference between the genders in terms of mean age and duration of follow-up. There was no significant difference between preoperative and postoperative scores.

There was no significant difference between the results obtained in right and left hip operations (Table 2).

Preoperative Harris hip score was lower in patients with high preoperative VAS. This shows that patients with a lot of preoperative pain have lower functional capacity. A significant reduction in postoperative pain (postoperative VAS) was observed in patients with high preoperative pain (preoperative VAS). There was no significant difference between the follow-up periods, preoperative VAS and preoperative Harris hip scores when age groups were compared. Postoperative VAS was higher and postoperative Harris score was lower in elderly patients. Although patients with advanced deformity and the patients who were operated at advanced age benefited from surgery as percentage, postoperative VAS was higher and postoperative Harris score was lower than other age groups (Table 3).

Table 1. Patient Diagnosis and Numbers

Diagnosis	Number of Patients
Coxarthrosis	39
Femoral Neck Fracture	18
Intertrochanteric Femoral Fracture	3
Operated Pep (Partial Endoprosthesis)	6
Operated Tha	2
Protrusion Acetabuli	1
Secondary Osteoarthritis	1
Subcapsular Femoral Neck Fracture	1
DDH	1

Table 2. Patient Distribution by Harris Hip Score

	Preoperative Period	Postperative Period
Poor	42	7
Intermediate	30	6
Good	0	30
Very Good	0	19
Excellent	0	10

Table 3. Complications in patients underwent THA

Complications	Number of patients
Luxation	8
Loosening	2
Infection	2
Periprosthetic Femoral Fracture	2
Femoral Fissure	2
Dvt	1

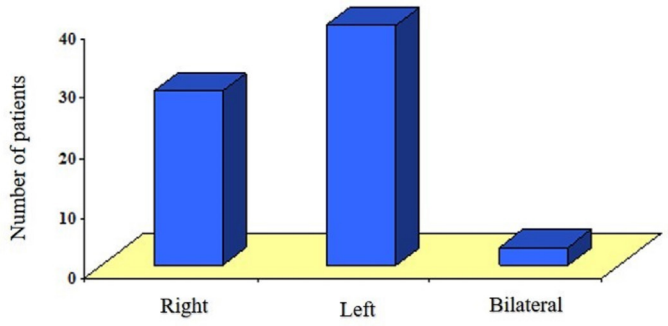

Figure 1. The sides of the operated hips

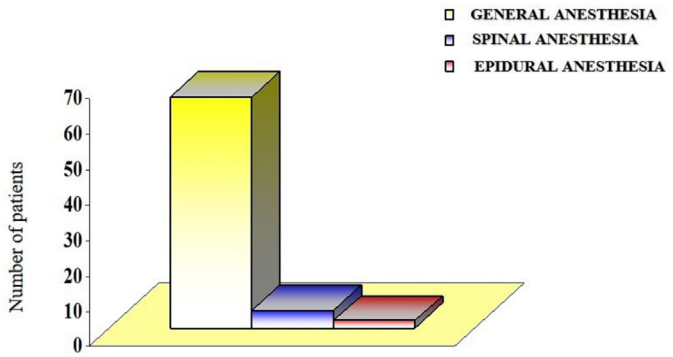

Figure 2. Type of anesthesia applied to patients

DISCUSSION

Because of its large functional role and active body weight during active life, the risk of wear and deformation of the hip joint is high (5,6). Congenital hip dislocation, Perthes disease, avascular necrosis, ankylosing spondylitis, infections and fractures due to various traumas prepare the ground for degeneration of the joint and thus degenerative arthritis is formed. Although many factors play a role in the etiology, the arthritic pathological process begins with the deterioration of the existing balance between cartilage resistance and bone tissue (7-9). When it is found out that it is not possible to revert this destroyed cartilage structure to its former structure by medically or surgically, the applications to relieve the pain come to the agenda. The most important of these applications is total hip arthroplasty (10).

Coxarthrosis is the leading cause of total hip arthroplasty (11). In a study conducted by Bulut et al. In 51 hips of 47 patients who underwent CAP, 26 (51%) patients had coxarthrosis, 10 (19%) had partial endoprosthesis failure due to collum femoris fracture, 4 (8%) had ankylosing spondylitis, 4 (8%) had intertrochanteric femur fracture, acetabular dysplasia in 2 (4%) cases, Perthes sequela in 2 (4%) cases, traumatic hip dislocation in 1 (2%) case, collum femoris fracture in 1 (2%) and in 1 (2%) case secondary coxarthrosis after traumatic event around the hip joint they were operated (88). In the study conducted by Capello et al., coxarthrosis is the first with 65% (12). In our series, coxarthrosis is the first with 54%.

In the postoperative evaluation of patients with total hip arthroplasty, many evaluation scales have been used in the literature (13). D'Aubigne score, McMaster University osteoarthritis index, McMaster Toronto arthritis patients' preferential index, disease effect profile, Mayo hip scale and so on. In D'Aubigne -Postel clinical evaluation was graded according to pain, mobility and walking ability. Charnley's rating scale is a modification of D'Aubigne -Postel. In the US, Harris and Larson (Iowa) and in Europe D'Aubigne-Postel and Charnley scales are used (7,14).

The patients in our study were evaluated using the preoperative and postoperative Harris Hip Scale (8,15). Even though the score of the Harris Hips Scale gives 5 points to the hip movements and it may be a disadvantage that a patient with decreased ROM may lead to a poor clinical evaluation, but giving a separate score to each finding in the evaluation makes the system more objective and useful.

There are different applications in the literature on the age limit in cemented and non-cemented total hip prosthesis applications. In the study performed by D'Lima et al, the mean age was 71 (16). In the study conducted by Nizard et al. ceramic head used in 2 different studies, the average age was found to be 66.5 and 62.6 (17). In a study conducted by Rorabeck et al., The mean age was 68 and 64 years (10). Torchia et al. In the Mayo clinic reviewed 63 patients underwent THA with an average age of 19 patients (18).

Mulroy et al. applied a cemented total hip prosthesis in their study between 1976 and 1979 for 44 patients younger than 50 years (12). Maric et al applied a cemented prosthesis for 13 patients with juvenile rheumatoid arthritis with a mean age of 18 (13). In a study by Kawamura et al., 279 patients were completely implanted with porous coated femoral stem. The mean age of the patients in this study was 52.2 years (14). In our study, the mean age of patients who had cemented femoral stem was found to be 66.5, and the average age of patients who had non-cemented femoral stem was 56.4 years (14-16).

These results show that the total hip arthroplasty is being applied at a very wide age range. When age is discussed in cement placement in one patient; In patients aged 50 and below, cement less prosthesis is generally recommended while cemented prosthesis usually recommended in patients over 70 years of age. Although age has an important role in the placement criteria of cemented and non-cemented stems, the patient's gender, Singh index and morphological cortical index should be evaluated.

Preoperative life styles, long life of the prosthesis, and expectations are important for patient candidates who will undergo total hip replacement. For this purpose, Gustilo and Burnham's classifications were taken into consideration (17-18). In literature, there is more concentration in type I and II (19).

In our series, patients with type I was 41% and type II was 46%. Patients classified as type III were 13% and we don't have type IV patients. In the light of this classification,

total hip prostheses are seen as a hope of salvation for the patients with poor lifestyle and those who have been sentenced to home (20,21).

CONCLUSION

In conclusion, we conclude that total hip arthroplasty is still an effective and effective method in advanced height arthrosis.

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