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The Mid-Term Clinical Results of the Cases with Hip Prosthesis Under the Age of 55

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ABSTRACT:

The mid-term clinical results of the cases with hip prosthesis under the age of 55

Objective: We aimed to evaluate the mid-term results of the hip prostheses we implanted in relatively young patients under the age of 55.

Material and Method: Fifty-four hips of 38 patients (25 female, 13 male) who are 55 and under years of age (mean 40.8, distribution 21-55), and whom underwent Total Hip Arthroplasty (THA) due to coxarthrosis, with mid-term clinical and radiological follow-ups available to evaluate were involved in the study. The clinical evaluation was performed with Harris Hip Scores before and after surgery. The postoperative life qualities of our patients were measured by using Short Form - 36 (SF-36) evaluation survey. The obtained results were compared.

Results: The average age of our cases was 40.8 (distribution 21-55) years. The average Harris Hip Score of which was 36.62 before surgery was found 86.56 in the final check after surgery. Good and perfect results were obtained in 76.4% of our cases. It was concluded that the life quality of the patients got better due to their SF-36 scores of 50 points and above. When the patient satisfaction was questioned, except for 1 patient, all patients stated that they were satisfied and were better than before surgery. The one who has not been satisfied was the patient who had infection after surgery, required mulitple operations and developing permanent sciatic nerve paralysis after these operations.

Conclusion: We think that the hip arthroplasty surgery preferred for the treatment of young patients gave better results in the mid-term and increased the quality of life.

Keywords: Coxarthrosis, Hip arthroplasty, SF-36

ÖZET:

55 Yaş ve daha genç hastalarda uygulanan total kalça protezinin orta dönem klinik sonuçları

Amaç: 55 yaş altı hastalarda uyguladığımız kalça protezlerin orta dönem sonuçlarının değerlendirilmesini amaçladık.

Gereç ve Yöntem: Çalışmamıza koksartroz nedeni ile total kalça artroplastisi yapılan ve orta dönem klinik ve radyolojik takipleri değerlendirilebilen 55 yaş ve altı (ortalama 40.8, dağılım 21-55) 38 hastanın (25 kadın, 13 erkek) toplam 54 kalçası dahil edildi. Klinik değerlendirme ameliyat öncesi ve sonrasında Harris Kalça skorları ile yapıldı. Hastalarımızın ameliyat sonrası hayat kaliteleri short form - 36 (SF-36) değerlendirme anketi ile yapıldı. Bu sonuçlar karşılaştırıldı.

Bulgular: Olgularımızın yaş ortalaması 40.8 (dağılım 21 –55 yaş) idi. Ameliyat öncesi ortalama 36.62 olan Harris Kalça Skoru, ameliyat sonrası yapılan son kontrolde ortalama 86.56 olarak bulundu. Olgularımızın %76.4'ünde iyi ve mükemmel sonuç elde edildi. Olgularımızın ameliyat sonrası SF-36 skorları 50 puan ve üzerinde olduğu için hayat kalitesinin iyileştiği sonucuna varıldı. Ameliyat memnuniyeti sorgulandığında 1 hasta hariç diğer hastalar ameliyat öncesine göre daha iyi olduklarını ve ameliyattan memnun olduklarını vurguladılar. Memnun olmayan bir hasta ameliyat sonrası dönemde enfeksiyon gelişen, birden fazla ameliyat olması gereken ve bu ameliyatlar sonucunda kalıcı siyatik sinir paralizisi oluşan hastamız idi.

Sonuç: Genç hastalarda tedavi için tercih edilen kalça artroplastisi ameliyatının orta dönemde iyi sonuçlar verdiğini ve yaşam kalitesini arttırdığını düşünüyoruz.

Anahtar kelimeler: Kalça artroplastisi, koksartroz, SF-36

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INTRODUCTION

Osteoarthritis, also called as degenerative joint disease, is among common symptomatic diseases affecting generally intermediate and advanced, rarely the younger age goups. The purpose of total hip artroplasty (THA), is mainly to reduce the pain in patients with degenerative hip osteoarthritis, and to improve the function loss as much as possible (1). Charnley (2) stresses that there is not a golden rule in this regard. The pain of the patients with coxarthrosis limits their movement capacity and reduces the quality of life. Obtaining a painless hip joint with normal degrees is possible with a successful hip arthroplasty surgery. The main objective in total hip prosthesis implantation is to relieve pain. Although the total hip replacement procedure is the primary treatment for elderly patients in clinical practice, the implementation of the treatment choice is increasing in young patients nowadays.

The etiology of coxarthrosis in young patients include diseases that already affect the quality of life, such as trauma, avascular necrosis of the femoral head, developmental hip dysplasia, and Perthes disease. So, the young patients on which are not performed arthroplasty relatively in the early period, have to stand for years to pain that doesn't respond to analgesics. This situation adversely affects the terms such as the patient's social life, psychological status, ability to move independently, and causes an increasing restriction in the quality of life. A relatively early treatment in which the quality of life is incorporated, would oppositely allow the patient to have a more active role in life, increases the patients's ability and improves the patient's ability to move independently.

Hip arthroplasty in young patients with 1st generation prostheses has led to implant loosening and bad results. However, with the advances in biomaterial technology, developing surface alternatives and new implant designs, successful results in young patients have begun to be obtained (3-5). In this study we evaluated the results of THA of young patients (under 55 years of age) and their quality of life.

MATERIAL AND METHOD

A total of 54 hips of 38 patients (25 female, 13 male) at 55 years old or below (average:40.8, distribution:21-55) with mid-term clinical and radiological follow-ups available, which were treated with THA due to coxarthrosis were included in the study. All the patients that would be treated with THA were evaluated for systemic examination and in detail, preoperatively, and the coxarthrosis causes were classified etiologically.

For radiological evaluation, the pelvic anterior-posterior and hip anterior-posterior and lateral radiograms captured preoperatively, immediately after the surgery and at the last control, were compared.

At the radiograms obtained in the last controls, the positions of acetabular and femoral components and the presence of loosening were determined. The complications that occurred during the surgery and the follow-up and how they were treated were explored and recorded.

The clinical evaluation was performed with Harris Hip values (6) preoperatively and postoperatively, and recor-ded (Table-6). The postoperative quality of life of our patients were evaluated by using Short Form-36 (SF-36), with the 8 scales of quality of life that the form predicts (Table 1). Because the patients were not assessed preoperatively with SF-36, the study of Sinici et al. was taken as a reference in comparing the postoperative results (7) (Table-7).

Table-1: The subscales of quality of life that are evaluated with SF-36

The Subscales That Are Evaluated with SF - 36
Physical Functioning
Physical Role
General Health
Vitality
Social Functioning
Emotional Role
Mental Health
Pain

The scoring is between 0-100 for each domain

RESULTS

Of the patients, 25 was female (65.8%), and 13 was male (34.2%). The mean age was calculated as

40.8 (21-55). The mean follow-up time was 55.7 (11-156) months, the mean length of stay in the hospital was 21.6 (8-32) days. The distribution of our cases by age and gender, the laterality and the etiologies are given in the tables below (Table-2,3,4).

Table-2: Age and gender distribution

Age	Female (F)	Male (M)	Total
20-29	5	3	8 (21%)
30-39	8	0	8 (21%)
40-49	9	6	15 (39.5%)
50-55	3	4	7 (18.5%)
Total	**25**	**13**	**38 (100%)**

Table-3: Laterality

Laterality	n	F/M
Right	12	8 / 4
Left	11	6 / 5
Bilateral	15	11 / 4
Total	**38**	**25/13**

n: Number of Patients

Table-4: Etiology of Coxarthrosis

Etiology	%	n
Idiopatic	29	11
Developmental Hip Dysplasia	29	11
Avacular Necrosis	18	7
Femoral Neck Fracture	8	3
Tuberculosis Arthritis	8	3
Perthes Sequelae	8	3
Total	**100**	**38**

n: Number of Patients

Steroid use is important in the etiology of avascular necrosis of the femoral head, and the findings are given in Table-5.

Table-5: Avacular Necrosis of the Femoral Head (AVN)

AVN etiology	n	History of Steroid Use
Ankylosing spondylitis	3	+
Still's Disease	1	+
Romatoid Arthritis	1	+
Acute Rheumatic Fever	1	+
Familial Mediterranean Fever	1	-
Total	**7**	

n: Number of Patients

Complications during the surgery included metaphyseal fissure in 2 hips and acetabular fissure in 1 patient. In cases occuring metaphyseal fissure, stabilization was performed with cable. No additional osteosynthesis material was used in the patient who developed acetabular fissure. During the follow-up of a patient postoperatively at our clinic, a superficial infection at the wound has occured. Enterococcus faecalis increase occured in the tissue cultures. Superficial wound debridement and appropriate antibiotic therapy according to the culture antibiogram were performed. Infection has been eradicated in this patient and no infection has been detected in the follow-up. Septic loosening has been detected in 2 patients. In patients with septic loosening, methicillin-sensitive S.aureus growth has been observed as the microrganism responsible for the infection. Following appropriate antibiotherapy, debridement, replacement of prosthetic material with spacer containing antibiotics, and with the improvement of the infection parameters, revision surgery was performed after 9 and 36 months, respectively.

In 2 patients, aseptic loosening was detected at 9th and 16th months postoperatively. Trauma was present in the history of patients. The patients admitted to our outpatient clinic with increasing pain following falling. In patients especially with the acetabular loosening in their examinations, revision surgery was performed. In one of these patients, prosthesis dislocation occurred 8 weeks after the revision surgery. This patient was treated with closed reduction, no additional complication has been seen during the follow-up. In the other patient, first acetabulum, then 3 months later, femoral revision surgeries were performed. No problem has occurred in the postoperative follow-up.

In a total of 3 patients, prosthesis dislocation developed at 15th day, 3rd week and 8th week, postoperatively. Closed reduction was performed in all cases.

In clinical evaluation of the patients, mean postoperative Harris hip scores was 36.62, and at the last control pos-toperatively, it was found as 86.56. In 76.4% of our patients, good and excellent results were gained (Table-6).

Table-6: Postoperative Harris Hip Score Distribution

% (n)	RESULT
34.2% (13)	Excellent (90 - 100 points)
42.2% (16)	Good (80 - 89 points)
15.8% (6)	Fair (70 - 79 points)
7.8% (3)	Poor (0 - 70 points)

n: Number of Patients

Table-7: SF-36 scoring results

SF-36 Subscales	Preoperative Values (7)	Average Values (Postoperative)
Physical functioning	24.50±3.30	60.90±20.84
Physical role	18.20±35.80	64.13±22.23
General health	40.20±25.10	60.21±21.30
Vitality	36.00±27.10	56.21±17.50
Social functioning	44.60±32.70	69.70±27.25
Emotional role	22.30±38.90	50.67±23.00
Mental health	48.00±19.90	64.00±18.28
Pain	23.70±25.70	63.48±2.00

Postoperative SF-36 values of our patients brought out results over 50 points in all subscales (Table-7). When the surgery satisfaction was questioned, all patients except one stated that they were better than the preoperative period, and were satisfied with the surgery. The unsatisfied patient was the patient who developed infection postoperatively, who had to have more than one surgeries and who developed persistent sciatic nerve paralysis at the end of the surgeries.

DISCUSSION

Today, THA is performed 200 thousand cases annually in the United States of America (USA), and among the most common surgical procedures. The total nuber of THA in US in 1990 was 119 thousand, whereas in 2002, it was reported to be 193 thousand, with an increase of 46% (8).

Age was accepted as an important factor in hip arthroplasty. The possibility of revision surgery after THA in young patients is high (1). For this reason, in the past years, THA was preferred generally in elderly patients. The progress of science and technology, the increase of experiences, the gradual recovery are promising. We believe that with appropriate indications and with appropriate timing, good results may be obtained.

Various reasons come forward in coxarthrosis etiology in young patients. In our study, idioparhic osteoarthritis received the largest share in the etiology. In a study held in South Korea, avascular necrosis of the femoral head ratio has been given as 47% (3). A study from our country specified the avascular necrosis rate as 3.7% (9). In the literature, the rate of aseptic loosening in theyoung patients who had hip replacement with avascular necrosis etiology was reported to be relatively higher (3,4).

The mean follow-up time of our patients was 55.7 (distribution 11-156 months) months. In the literature, the 18-20 year of follow-up results of the application

Figure-1: S.Ç. 50 years old, E. Left Primary Coxarthrosis

Figure-2: R.Ç., 47 years old, E. Left hip Perthes sequelae

Figure-3: Ş.D., 47 years old, E. Left hip avascular necrosis

Figure-4: SA. 43 years old, K. Left hip Tbc Arthritis sequelae

of cementless hip arthroplasty are also available (5,10,11). It shows that follow-up time of less than 5 years are short-term follow-up time (5). In a study from our country, average follow-up time was reported as 47.6 months (12). Although our follow-up time was shorter than the foreign publications, it was found compatible with the domestic studies. We believe that the follow-up time would increase with the development of patient series of our clinic over the years.

There are many studies, performing their clinical evaluation with Harris hip scoring. The average preoperative Harris scores reported in the literature are between 32-55, and postoperative scores are between 92-95 (3,11). Our evaluation scores are consistent with the results in the literature. In Bryant et al.'s (13) study, 13 different methods were examined that evaluate the hip after THA. At the end of this study, it was found that 3 parameters should be evaluated for a scoring system to be successful: Pain, walking distance and the flexion range of the hip (13). Harris scoring system allows the comparison of the sum of the results of pain, function, and range of motion detected by examination preoperatively and postoperatively, and we think that it is appropriate for the postoperative evaluation. The significance is given to pain and daily life activities at the scoring. The range of motion constitutes 5% of the scoring. The resolving of the patient's pain, and to make them do their own work means success. In our cases, significant improvement in pain, function, examination scores and the total Harris scores were observed.

According to the Mayo Clinic Registration Department's data, the intraoperative fracture rate in primary cemented femoral implants is 0.3%, while in primary cementless femoral implants, it is 5.4%. As the reason, it is pointed out that to be able to use the press-fit technique at the first fixation of cementless implants, one size bigger implant was being used (14). In our study, intraoperative femoral fracture rate was found as 3.7%, and acetabuler fracture rate as 1.8%. Femoral fracture rate seemed compatible with the literature, but acetabular fracture rate seemed to be higher than the literature.

In the clinical trials, the dislocation rate varies between 0.4% and 7%. Most of the dislocations are dislocated posteriorly. In a study including 36.000 hips, the incidence was found as 2.24%, and in another study, as 4.24% (3,14). The 60-70% of the dislocations were reported to happen in the first 6 weeks after the surgery. In another study including 19680 patients, the dislocation rates in 5 years was reported as 32%. This higher rate was due to the study including the early dislocations and the dislocations which happened after the revision surgeries (15). It can be said that the improving surgery techniques and the experience of the surgeon reduce the dislocation rates. The insufficient healing of the soft tissue around the hip postoperatively is another reason for early dislocation. In our study also, all dislocations were observed in the first 8 weeks postoperatively.

The effect of the surgical approach on dislocation has been investigated. In a study including 10500 patients, the dislocation rate in posterior approach was found as 5.8%, and 2.3% with the anterior approach. More than 60% of all dislocations occurred in patients who were operated with posterior approach (14). Because we had high dislocation rates in our cases, we didn't use the posteior approach. We preferred the anterolateral modified Hardinge approach in all our cases (16). Although there are various surgical approaches present for the hip surgery, we believe that the most appropriate approach should be actually the surgeon's surgical approach which he is most experienced in (12).

The infection is one of the most feared complications after THA. In the first series in the literature, a ratio of 9-12% infection was reported. Today, about 0.2% of the patients are hospitalized, whereas about 1.1% may be infected in 5 years postoperatively (17). The deep infections are generally Staphylococcus sourced. However, factors such as Streptococci and Enterococci may cause infections. In Davis et al.'s (18) study, causes of intraoperati-ve contamination in THA operations was evaluated. It was seen that the surgeon's gloves were contaminated with a rate of 28.7%, the tip of the aspirator with 11.4%, the sterile lamp handles with 14.5% and even the scal-pel with 9.4% (18). It was seen that in 26 samples of 402, taken from 67

patients intraoperatively, 28 different types of microorganisms grew (19). Prevention is more crucial than the treatment in the infection. Today, we believe that with the production of more effective antibiotics against the pathogens, the better understanding of the prophylaxis term, the improvement of the environment of the operation room and the conditions, compliance with the asepsis and antisepsis rules, we face less with the infections (14).

According to the World Health Organization, "health" was described as the mental and social complete well-being, not with the presence or absence of an illness and disability. Therefore, we believe that when evaluating the results of THA, the description of WHO should be incorporated. Quality of life (QOL) is described as, in the context of the systems of culture and the values of a person, the perception of the position in life related with the goals, expectations, standards and the interests. The QOL is actually a subjective condition (7). Health-related quality of life (HRQOL) is a component of the general quality of life that is determined mainly by the person's health, and can be affected by clinical interventions (20). It is about the perception of the person, of the disease and the effectiveness and the impacts of the treatment.

Of the quality of life surveys, The SF-36, which has a generic measurement charcteristic and provides a broad spectral range measurement, was developed by Rand Corporation in 1992. The QOL of our patients was assessed by SF-36 survey, which is widely used and based on pain. The questions in the SF-36 survey were evaluated according to Turkish and adapted, and this particular adaptation trial was conducted on patients with osteoarthritis (21). The subscales here, evaluate the health between 0-100 points; '0' shows the poor health status, '100' shows the perfect health status. In a study performed in our country, in the quality of life measurements performed with SF-36 preoperatively and postoperatively, a significant improvement has been determined in the QOL of the patients postoperatively (7). Because no preoperative assessment had been done with SF-36 in our restrospective study, no comparison could be made with the preoperative results. We believe that this is the weak aspect of our study. Sinici et al.'s study was taken as the reference in terms of preopeative values. In the scale, the results over 50 points were accepted as significant. In our study, in all parameters, results at 50 points or more were obtained (Table-7). We believe that comparative, randomized studies with longer follow-up terms should be performed.

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