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Assessment of quality of life of patients after hemiarthroplasty for proximal femoral fractures

Femur üst uç kırıkları nedeniyle hemiartroplasti ile tedavi edilen hastalarda yaşam kalitesinin değerlendirilmesi

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Amaç: Kalça kırığı nedeniyle hemiartroplasti uygulanan hastaların yaşam kalitelerindeki değişim Short Form-36 (SF-36) ile değerlendirildi.

Çalışma planı: Çalışmaya alınan 40 hasta kırık tiplerine göre iki gruba ayrıldı. Grup 1'de femur boyun kırığı nedeniyle düz saplı endoprotez uygulanan 24 hasta (21 kadın, 3 erkek; ort yaş 76; dağılım 64-94), grup 2'de intertrokanterik femur kırığı nedeniyle Leinbach tipi protez uygulanan 16 hasta (13 kadın, 3 erkek; ort yaş 81; dağılım 62-102) değerlendirildi. Olgulara ameliyat öncesinde ve ameliyattan en az altı ay sonra SF-36 formu uygulanarak, fonksiyonel düzeylerinde oluşan değişim belirlendi. Kırık tipinin, protez tipinin ve cinsiyetin SF-36 skorları üzerine olan etkisi araştırıldı.

Sonuçlar: Grup 1'deki hastaların ameliyat öncesi ve ameliyat sonrasındaki özet fiziksel skorları sırasıyla 53.4 ve 41.7, özet mental skorları ise 55.2 ve 48.5 bulundu. Grup 2'de ise özet fiziksel skorlar sırasıyla 52.8 ve 35.1, özet mental skorlar ise 55.2 ve 48.9 bulundu. Hastaların fiziksel ve mental özet skorlarının kırık öncesindeki değerlere göre anlamlı derecede düştüğü, hiçbirinde kırık öncesi yaşam kalitesi düzeyine ulaşmadığı görüldü ($p<0.05$). SF-36 altbaşlık skorlarında en fazla düşüş fiziksel rol (%56.8) skorunda idi, bunu fiziksel fonksiyon (%42.8) ve ruhsal rol (%42.9) skorları izlemekteydi. En az değişim mental sağlık skorunda (%10.3) görüldü. Özet skorlardaki değişimde cinsiyetin, kırık tipinin ve protez tipinin anlamlı etkisi bulunmadı ($p>0.05$).

Çıkarımlar: Kalça kırıklı yaşlı hastalarda hemiartroplasti sonrasında yaşam kalitesinde anlamlı düşüş meydana gelmektedir. Yine de, bu hastaların günlük yaşamlarını sürdürebilmeleri artroplasti uygulamalarıyla sağlanabilmektedir.

Anahtar sözcükler: Yaşlılık; sağlık durumu göstergeleri; sağlık anketi; kalça kırığı/cerrahi; kalça eklemi; yaşam kalitesi; anket.

Objectives: The quality of life of patients was assessed with the SF-36 Health Survey following hemiarthroplasty for hip fractures.

Methods: Forty patients were divided into two groups according to the type of hip fracture. Group 1 included femoral neck fractures (24 patients; 21 women, 3 men; mean age 76 years; range 64 to 94 years) treated with straight stem prostheses. Group 2 included intertrochanteric femoral fractures (16 patients; 13 women, 3 men; mean age 81 years; range 62 to 102 years) treated with calcar replacement prostheses (Leinbach). The SF-36 questionnaire was administered before and at least six months after surgery to assess changes in the quality of life. The effect of gender, fracture type, and the type of prosthesis on the SF-36 scores were examined.

Results: In group 1, the mean preoperative and postoperative physical health scores were 53.4 and 41.7, the mean mental health scores were 55.2 and 48.5, respectively. The mean corresponding scores were 52.8 and 35.1 for physical health, and 55.2 and 48.9 for mental health in group 2, respectively. Significant decreases were found in physical health and mental health scores postoperatively ($p<0.05$), with all the patients having decreased quality of life compared to the preoperative levels. The highest decrease was observed in physical role (56.8%), followed by physical function (42.8%) and mental role (42.9%) scores. The least affected were mental health (10.3%) scores. Gender, fracture type, and the type of prosthesis were not found to have a significant effect on the summary scores ($p>0.05$).

Conclusion: Health related quality of life significantly decreases following hemiarthroplasty in elderly patients with hip fractures. Nonetheless, arthroplasty procedures enable these patients to maintain basic activities of daily living.

Key words: Aged; health status indicators; health surveys; hip fractures/surgery; hip joint; quality of life; questionnaires.

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Hip fractures are common in advanced ages in which the bone density frequently is reduced. Such fractures have varying degrees of impacts on the physical and social lives of patients. Although patient care and surgical techniques showed improvements compared to the past in recent years, treatment of patients with hip fractures may result in worse than it is expected.[1-3] While it is known that the hip fractures have varying degrees of impacts on the physical, psychological and social functions of the patients, their impact on the post-operative quality of life has not been demonstrated well. The treatment outcome is assessed whether the patient is recovered to his/her daily activities before the fracture or not.

In the present study, the changes in the quality of life of patients who underwent hemiarthoplasty due to hip fracture were assessed by the Short Form-36 (SF-36), and the factors that may be associated with the quality of life were reviewed.

Patients and method

The study included 40 patients who were followed up until the final evaluations, out of 57 patients who underwent hemiarthroplasty due to hip fracture at the Orthopedics and Traumatology Department of the Medical Faculty of Celal Bayar University between January 1997 and May 2003. Seventeen patients were only assessed for mortality as they died before the final evaluations. All patients received standard medical care following the operation. They were divided into two groups according to the type of their fractures.

Group 1 included 24 patients with femoral neck fractures (21 women, 3 men; mean age 76 years; range 64 to 94 years) treated with straight stem prostheses. The mean age was 74 years (range 64 to 94 years) in women, and 78 years (range 72 to 84 years) in men. According to the Garden classification[4] there were two Type I, two Type II, twelve Type III and eight Type IV fractures.

Group 2 included 16 patients with intertrochanteric femoral fractures (13 women, 3 men; mean age 81 years; range 62 to 102 years) treated with calcar replacement prostheses (Leinbach). The mean age was 76 years (range 62 to 85 years) in women, and 82 years (range 80 to 102 years) in men. According to the Boyd-Griffin classification[4] there were one Type I, six Type II and nine Type IV fractures.

For assessment of the quality of life, all patients completed the SF-36 questionnaire. The first assessment for the pre-fracture functional levels of the patients was performed within the first week of hospitalization. Patients were re-evaluated at least six months after the operation by interview in person, and only four patients were interviewed by phone as they were mobile only at home.

All fractures were closed; and they were caused by mild trauma (fall at home) in 39 cases, and out-of-vehicle accident in one case.

SF-36 is a generic measure form used for evaluating the overall health status of the specific age, condition or treatment groups.[5,6] Efficacy of several treatments for various conditions has been evaluated by comparing the outcomes with general or specific groups or pre-operative values. It includes 36 items and eight domains, which evaluate physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health status. Two overall scores, i.e. physical health and mental health, are obtained providing an overall summary of all items evaluated as well as scoring system for domains. The assessment is performed on a 0-100 scoring.

The post-operative mental and physical scores were compared with preoperative mental and physical scores. The effect of the type of fracture and prosthesis on these scores was evaluated. Overall death rate was calculated, evaluating whether there was any difference between the death rates in terms of type of fracture or not. Data was assessed using the matched t-test by SPSS 10.0 statistics program. The mean follow-up period was 31.9 months (range 6 to 50 months).

Results

The overall preoperative and postoperative physical and mental scores of 40 patients are shown at Table 1. Compared to preoperative period, there was a reduction of 27% in physical scores and 11.5% in

Table 1. Mean preoperative and postoperative values of overall physical and mental scores

	Physical score	Mental score
Preoperative period	53.9	55.3
Postoperative period	38.8	48.9

Table 2. Mean overall scores according to the type of fracture

	Physical score		Mental score	
	Preoperative	Postoperative	Preoperative	Postoperative
Grup 1	53.4	41.7	55.2	48.5
Grup 2	52.8	35.1	55.2	48.9

Group 1: Femoral neck fracture; Group 2: intertrochanteric femoral fracture

mental scores. It has been observed that overall physical and mental scores were significantly decreased compared to the preoperative period, and none of the patients reached to their level of the quality of life and daily activities before the fracture ($p<0.05$).

Out of 40 patients, 24 patients with femoral neck fracture underwent straight stem prostheses (Figure 1), and 16 patients with intertrochanteric fracture underwent calcar replacement prostheses (Leinbach) (Figure 2). Comparison of overall postoperative mental and physical scores with preoperative values revealed that there was no significant difference between type of fractures and prostheses (Table 2). In both types of fractures, postoperative levels for quality of life were similar ($p=0.98$ and $p=0.18$, respectively).

Table 3. Mean scores for SF-36 domains

	Preoperative	Postoperative
Physical functioning	76.3	43.6
Role physical	91.3	39.4
Bodily pain	95.1	67.6
General health status	81.9	65.4
Vitality	84.8	60.4
Social functioning	98.1	75.1
Role emotional	95.0	54.2
Mental health status	72.8	65.3

The mean scores for eight domains of SF-36 are individually summarized at Table 3. A significant decrease was observed in postoperative scores compared to the preoperative values ($p<0.05$); The highest decrease was observed in physical role (56.8%), followed by physical functioning (42.8%) and mental role (42.9%) scores. The least change was observed in the mental health (10.3%) scores.

Of 57 cases operated, 12 were men and 45 were women. Fifty percent of male patients (6 patients), and 24.4% of female patients (11 patients) died following the operation. At the end of first year, death

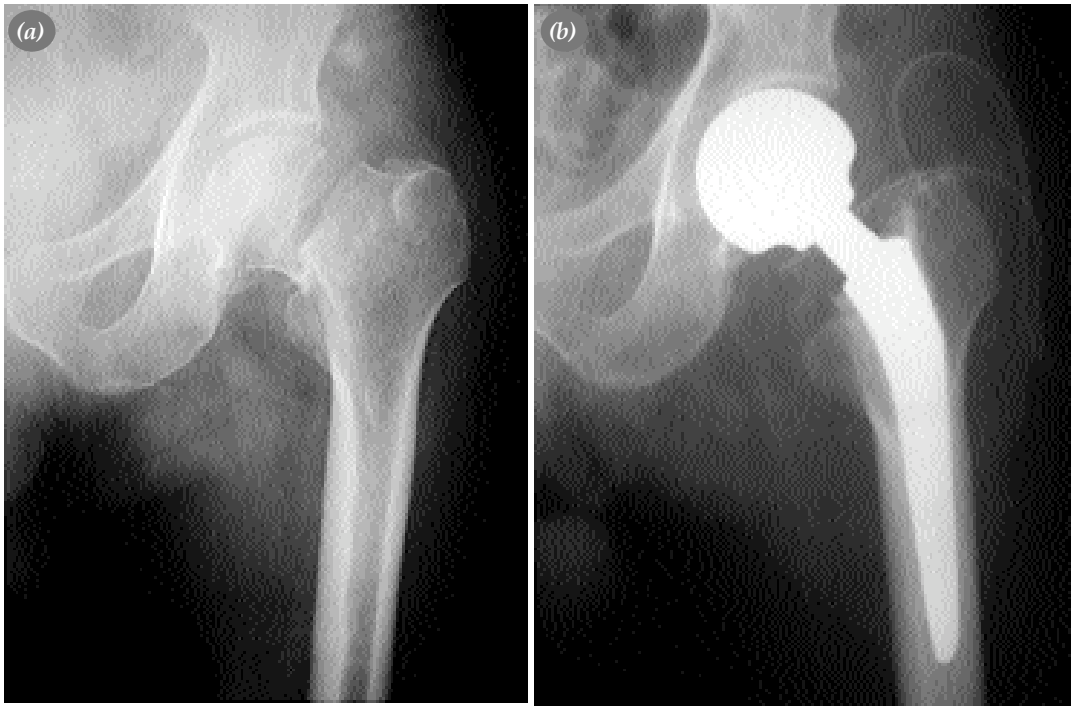

Figure 1. A 82 years old female patient who had a left femoral neck fracture due to fall at home underwent straight stem prosthesis and hemiarthroplasty with a 53 mm modular head. **(a)** Preoperative **(b)** postoperative views of the patient.

rate was 26.3% (15 patients), and overall death rate was 29.8% (17 patients), including 38.5% (10/26) in cases with intertrochanteric fracture, and 22.6% (7/31) in cases with femoral neck fractures. The mean death age was 82 years in intertrochanteric fractures, and 82.5 years in femoral neck fractures.

Discussion

Hip fractures are the most frequent cause of morbidity in elderly people. Such fractures have remarkable impact on the health, psychological, social and economical status of the patients. Although patient care and surgical techniques have improved compared to the past in recent years, treatment of patients with hip fractures may result in worse than it is expected.[1] The treatment outcome is assessed whether the patient is recovered to his/her daily activities before the fracture or not.

Studies have shown that functional improvement is completed at postoperative month six to a greater extent following the hip fracture surgery.[2,7-9] Therefore, we included patients who were followed up at least for a period of six months. Number of concomitant internal diseases was £ 3; the effect of these additional diseases on the quality of life was disregarded in accordance with the suggestions by Eisler et al.[3] and Kenzora et al.[10]

Peterson et al.[7] found that both mental and physical scores were significantly reduced in patients with hip fracture one year after the fracture compared to the preoperative period and control group based on an assessment by SF-36. In a study carried out with female patients who suffered hip fractures, Kirke et al.[11] demonstrated that hip fracture had a remarkable negative impact particularly on the range of movement and daily activities of the patients.

In our study, there was a significant decrease in all scores for each patient compared to the preoperative period. In a study by Randell et al.[12] no decrease was observed in pain and vitality scores whereas we had decrease in all scores. The highest decrease was observed in role-physical and physical functioning scores while the least decrease was in the mental function scores. These findings which are consistent with the results of Kirke et al.[11] indicate that ability to move is the one which

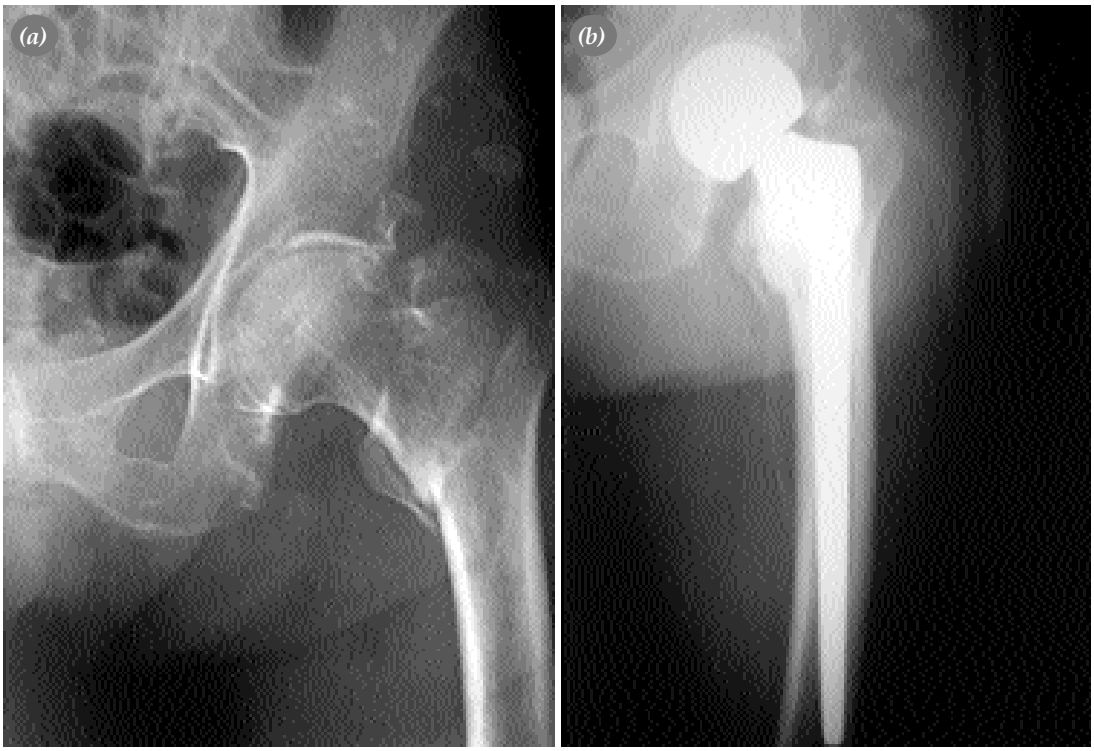

Figure 2. A 74 year-old woman who had a left intertrochanteric femoral fracture due to fall at home underwent Leinbach type of prosthesis and hemiarthroplasty with a 47 mm modular head. **(a)** Preoperative, and **(b)** postoperative views of the patient.

is mostly affected in patients who suffered hip fracture. Deterioration in social relations and psychological status of the patients can be related with restrictions observed in physical functioning. It has been observed that type of fracture had no significant contribution on the change in SF-36 scores. No studies were found during the literature screening, comparing the quality of life achieved in neck and intertrochanteric fractures.

Local publications mainly focus on the clinical outcomes of hip fractures;[13,14] No study is available except the one by Atilla et al.[15] performed with SF-12 for evaluating the quality of life. Atilla et al.[15] evaluated the quality of life achieved in patients who underwent internal fixation and hemiarthroplasty for femoral intertrochanteric fractures. In the same study, it was found that patients who underwent internal fixation achieved a better quality of life; this was associated with the fact that the patients who underwent internal fixation were younger than the patients who underwent hemiarthroplasty.

In our study, 24.1% of the patients with neck fractures and 40% of the patients with intertrochanteric fractures died. The death rate at the end of one year was 26.3%, and overall death rate was 29.8%, which are consistent with the rates of 14-36% reported in the literature.[2] As stated by Fransen et al.[16] , deaths are higher in cases with intertrochanteric fractures.

When studies which aim to determine the change in the quality of life are considered, it appears that evaluations were performed usually in the same population by comparison with the healthy subjects of the same age group.[17] However, such an evaluation is not allowed as the Turkish standards for SF-36 scores have not been described yet.

During the preoperative interviews, we found that none of the patients had a continuous treatment for osteoporosis except for some who irregularly receive calcium preparations. This situation, which was overlooked during the first years of the study was improved by the addition of a standard antiresorbtive to the treatment in a later period.

Patients with hip fractures are usually osteoporotic elderly patients with a high rate of mortality and morbidity. Therefore, such patients must immediately recover to their previous functional status. Although patients with hip fractures who were treated with hemiarthroplasty can not recover to their preoperative physical and mental levels, their self-care abilities (feeding and cleaning) and self-efficiency can be achieved by administration of prostheses. Futhermore, as it is known that these patients are osteoporotic, it would be beneficial to add the antiresorptive treatment into the postoperative care regimen in order to minimize the risk of a new fracture in the future.

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