



Original article

Evaluation of the quality of life of patients undergoing hemiarthroplasty of the hip[☆]



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ABSTRACT

Objective: This was a comparative analysis on the quality of life of patients who underwent hemiarthroplasty of the hip, assessed before the operation and 3 and 6 months after the operation, by means of the SF-36 questionnaire (Medical Outcomes Study 36-Item Short Form health survey).

Methods: A prospective study was conducted on 12 patients with femoral neck fractures who underwent partial hip arthroplasty between June 2013 and July 2014. Female patients predominated (58.3%). The mean age was 83 years and, in 91.7%, the fracture was due to falling from a standing position. The SF-36 questionnaire was applied before the operation and 3 and 6 months after the operation.

Results: With regard to physical health, the patients presented low scores for functional capacity and physical aspects. They had good scores for the subitem of general state and high scores regarding pain. Vitality, social aspect and mental health had moderate scores and emotional aspects had a low score.

Conclusion: With the sample analyzed here, we can say that the hip hemiarthroplasty procedure for cases of unstable femoral neck fractures, in patients with low functional demands analyzed over a postoperative period of 6 months, does indeed allow quality of life to be maintained.

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Avaliação da qualidade de vida dos pacientes submetidos à hemiarthroplastia do quadril

RESUMO

Objetivo: Análise comparativa da qualidade de vida dos pacientes submetidos à hemiarthroplastia do quadril, no pré-operatório, com três e seis meses de operados, por meio do questionário SF-36 (Medical Outcomes Study 36-Item short form health survey).

Métodos: Estudo prospectivo em 12 pacientes com fratura do colo do fêmur, submetidos à artroplastia parcial do quadril, de junho de 2013 a julho de 2014. Houve predomínio do sexo

Palavras-chave:

Qualidade de vida

Artroplastia de quadril

Fratura do colo femoral

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feminino, com 58,3%. A média de idade foi de 83 anos e em 91,7% foi decorrente de queda da própria altura. Foram aplicados os questionários SF-36 no pré-operatório e três e seis meses do pós-operatório.

Resultados: Com relação à saúde física, os pacientes apresentaram baixa pontuação na capacidade funcional e nos aspectos físicos. Boa pontuação no subitem estado geral e alta pontuação no quesito dor. A vitalidade, os aspectos sociais e a saúde mental tiveram pontuações moderada e baixa no que diz respeito aos aspectos emocionais.

Conclusão: Com a amostra analisada, podemos dizer que o procedimento de hemiartroroplastia do quadril, nas fraturas do colo do fêmur instáveis, em pacientes com baixa demanda funcional analisados no período pós-operatório de seis meses, permite, sim, a manutenção da qualidade de vida.

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Introduction

The advance of medicine, with regard to controlling silent diseases, particularly cardiopulmonary, endocrine and vascular disorders, has led to improvements in patients' conditions and quality of life, thus also improving the population's mean life expectancy. According to the Brazilian Institute for Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE), one in every 10 individuals is 60 years of age or over and it has been estimated that, by 2050, this ratio will have risen to one in five worldwide. In Brazil, elderly individuals corresponded to 8.6% of the population in 2000 and by 2020 they are expected to correspond to 14%, i.e. around 31 million people.¹

This increase in the population's life expectancy brings along the problems of this age group, such as fractures of the proximal femur, and particularly of the femoral neck.² Hungria Neto et al.¹ observed their prevalence in individuals with one or more associated comorbidities. Female patients predominated (2:1), with a mean age of 78.2 years. However, greater risk was associated especially with the age group of 81-85 years, and this applied to both men and women. Men presented slightly lower prevalence (75.5 years).

The energy of this trauma is typically low and is related to factors such as osteoporosis, malnutrition, decreased activities of daily living, diminished visual acuity, decreased reflexes and weakened musculature.³⁻⁵

Porter et al.⁶ demonstrated that the main factor that leads to an increase in the incidence of these fractures above the age of 60 years is the presence of osteoporosis, as well as greater incidence of falls. Approximately one third of Caucasian women above the age of 65 years have osteoporosis⁷ and 30% of elderly women fall at least once a year.⁸ It has been estimated that six million individuals worldwide will suffer fractures of the proximal femur every year by 2050.⁶

Treatment options include percutaneous fixation, open reduction, internal fixation and partial or total hip arthroplasty.⁹

Decisions regarding treatment for femoral neck fractures are commonly based on two factors. The first is the patient's clinical condition, which includes age, level of activity, mental state and comorbidities that may interfere in the surgical procedure and/or rehabilitation. The second is the type of fracture

and, more specifically, whether it is stable or unstable. Physiologically elderly patients with unstable femoral neck fractures, who place low demand on these structures, are treated by means of hip hemiarthroplasty.¹⁰

Some studies have correlated the results from treating femoral neck fracture with the surgical technique used.^{9,11} However, little has been described regarding the quality of life after surgery of patients who underwent surgical treatment.¹²

The present study had the main objective of comparing the quality of life of patients who underwent hip hemiarthroplasty, by means of the SF-36 questionnaire applied before surgery and 3 and 6 months after the procedure.

Materials and methods

The present study was submitted to the Ethics Committee for Research Involving Human Beings and was approved under CAAE No. 04298712.2.0000.0007.

The population studied was composed of 12 patients who had suffered femoral neck fracture and then underwent partial hip arthroplasty, between June 2013 and July 2014.

Their ages ranged from 72 to 93 years, with a mean of 83 years. Five patients (41.7%) were male and seven (58.3%) female.

The inclusion criteria among these elderly patients were that they needed to have a radiographic diagnosis of femoral neck fracture, underwent hip hemiarthroplasty and voluntarily agreed to participate in the study by signing a free and informed consent statement.

Patients who were not elderly and elderly patients who did not accept participation in the study were excluded, along with patients who underwent treatment with methods other than hip hemiarthroplasty.

On admission to the hospital, the patients underwent radiographic examinations of the hip in anteroposterior (AP) view, and were categorized in accordance with the classification proposed by Garden.¹³ The radiographic analysis and clinical evaluation were handed over to the patients, along with the consent statement, for them to authorize application of the SF-36 questionnaire. After authorization had been given by either the patient or the guardian, the evaluations began.

In the walking capacity evaluation, the patients were classified into four groups: community walker (patient able to walk within and outside of their home, but may require a walking aid); home walker (patient able to walk only within their home, usually requiring a walking aid); non-functional walker (patient who only walks during physiotherapy sessions); and non-walker (patient unable to walk).¹⁴

To evaluate quality of life, the SF-36 questionnaire (a generic questionnaire that is easily administered and comprehended) was applied before surgery and 3 and 6 months after the procedure. It is composed of 36 items that are encompassed in eight scales or components with non-specific concepts for a given age, disease or treatment group, and it allows comparisons between different disorders and between different treatments.¹⁵ It needs to be emphasized that in the present study, the questionnaire was applied with the purpose of ascertaining the changes (positive or negative) from the beginning to the end of the program.

Regarding the surgical technique, patients were positioned in lateral decubitus, and the procedure was carried out through the access route of Kocher and Langenbeck apud Letournel.¹⁶ After resection of the head of the femur, the whole femoral neck also underwent resection with the proper instruments and, then, the cemented unipolar prosthesis was installed.

Regarding pain, the Sikorski and Barrington scale was used,¹⁷ which is a questionnaire that has been validated for the Portuguese language. This scale was chosen because it is easy to apply and can be answered by the patient and by their companions. This scale evaluates the presence of pain and whether there is need for analgesics and the frequency of their use.

All the patients were referred to the Hip Group outpatient service for periodic follow-up and radiographs of the pelvis were obtained in AP view.

The variables were tabulated in the Excel software. The data were analyzed descriptively and organized in tables and graphs. The quality-of-life evaluation was performed in accordance with the SF-36 methodology. Comparison of the SF-36 results from before and after the operation (3 months afterwards) was done by means of the Mann-Whitney non-parametric test, since the results from the SF-36 domains were not considered to have normal distribution. The significance level was taken to be 5% for all comparisons.

Results

Sample characterization

The sample was composed of 12 patients: five men (41.7%) and seven women (58.3%) (Fig. 1).

The ages of the patients evaluated ranged from 72 years (minimum) to 93 years (maximum), with a mean of 83 ± 6 years (Fig. 2).

Clinical factors

Among the patients evaluated, falling from a standing position was the most frequent trauma mechanism observed: 11 of the

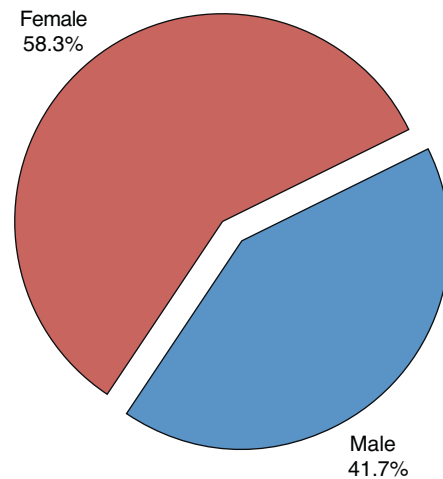


Fig. 1 – Distribution of the patients evaluated according to sex.

12 patients (91.7%) presented this characteristic. Seven of the patients (58.3%) were affected on their right-hand side. Seven (58.3%) also presented a level II surgical risk (Goldman) and six (50%) presented a level IV Garden classification. Regarding classification of walking abilities, six (50%) were classified as community walkers and six (50%) as home walkers (Table 1).

Regarding the pain analysis, in accordance with the scale proposed by Sikorski and Barrington,¹⁷ seven patients (58.3%) were at grade 2, meaning that they felt moderate occasional pain, which did not require analgesic (Fig. 3).

A total of 16 comorbidities were observed among the patients. The most frequent were hypertension (50%) and diabetes mellitus (18.8%) (Fig. 4).

Quality of life of the patients – SF 36

This factor was assessed at three times: before surgery (pre-operatively) and 3 and 6 months after surgery.

In comparing the pre and postoperative analyses, the highest means (medians) among the components evaluated were observed for pain and for physical, social and emotional aspects. These aspects were most affected among the patients who underwent hip hemiarthroplasty (Table 2).

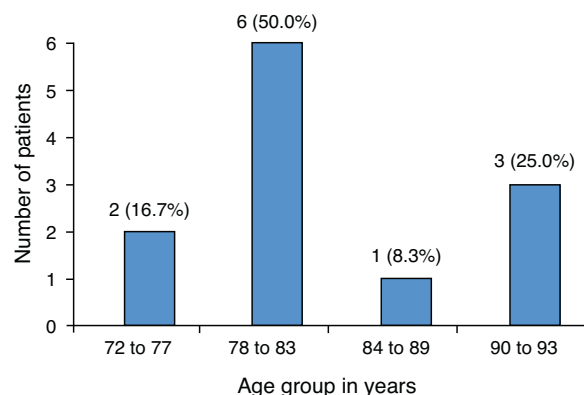


Fig. 2 – Distribution of the patients evaluated according to age group.

Table 1 – Clinical characteristics of the patients evaluated.

Characteristics	Frequency n = 12	%
Trauma mechanism		
Falling from standing position	11	91.7
Falling from 1 meter height	1	8.3
Side affected		
Right	7	58.3
Left	5	41.7
Goldman (surgical risk)		
I	1	8.3
II	7	58.3
III	4	33.3
Garden (classification)		
I	1	8.3
III	5	41.7
IV	6	50.0
Walking classification		
Community walker	6	50.0
Home walker	6	50.0

Source: Present author (2014).

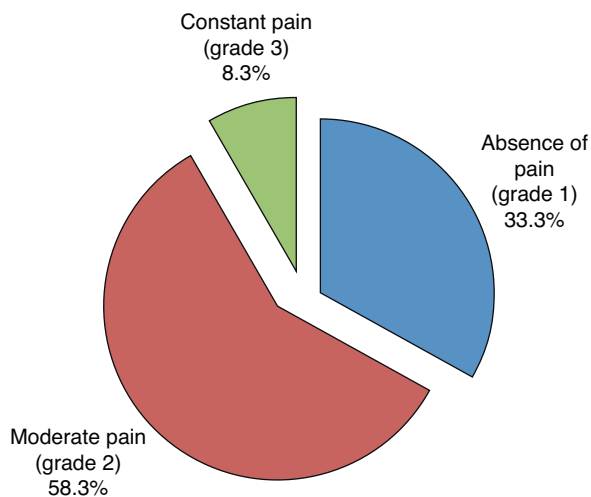


Fig. 3 – Pain evaluation among the patients.

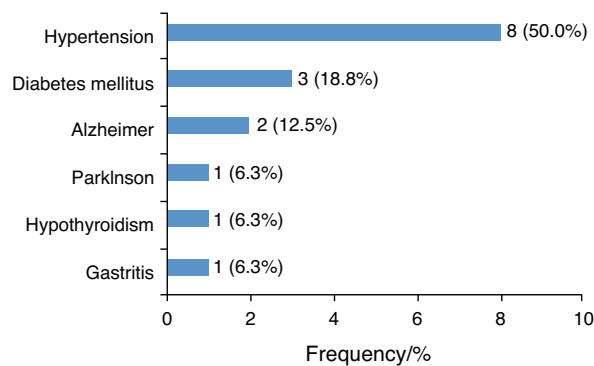


Fig. 4 – Frequency of comorbidities found among the patients.

Three months after the surgery, the median level of pain was 74, which amounted to a 17.8% decrease in relation to the preoperative period. However, the physical aspects were severely affected (median = 2.5). The same occurred with the social aspects (median = 69.7) and emotional aspects (median = 22.5). The most positive component was the decrease in pain (Table 3).

Over 6 months, the patients' quality-of-life standard hardly underwent any alterations. However, the components of vitality (median = 57.6) and physical aspects (median = 12.5) grew, respectively, by 15% and 400% from 3 to 6 months (Table 4).

In comparing each component of the SF-36, significant changes were only observed regarding functional capacity, physical aspects, pain and emotional aspects, with regard to changes from before the operation to 3 months after surgery (Table 5).

The functional capacity of the patients before surgery was significantly different from their capacity 3 months afterwards ($p = 0.0464$). Moreover, before surgery this capacity was significantly greater than at 3 months afterwards ($p = 0.0232$).

Regarding physical aspects, there was strong evidence that, 3 months after surgery this component was greatly compromised, given its significant decrease after surgery ($p = 0.0083$).

There was a reasonable decrease in pain, meaning that there was evidence that surgery was what caused it ($p = 0.0499$).

Table 2 – Values obtained for each component of the SF-36 questionnaire from the patients evaluated, before the operation.

Components	Mean	Standard deviation	Minimum	Median	Maximum
Functional capacity	50.4	27.3	5.0	52.5	90.0
Physical aspects	81.3	38.6	0.0	100.0	100.0
Pain	87.5	8.7	60.0	90.0	90.0
General state of health	71.1	20.1	30.0	72.0	100.0
Vitality	68.3	25.7	15.0	75.0	95.0
Social aspects	78.1	29.7	25.0	93.8	100.0
Emotional aspects	83.3	38.9	0.0	100.0	100.0
Mental health	71.3	22.7	20.0	76.0	96.0

Source: Present author (2014).

Table 3 – Values obtained for each component of the SF-36 questionnaire from the patients evaluated, 3 months after surgery.

Components	Mean	Standard deviation	Minimum	Median	Maximum
Functional capacity	26.8	28.2	0.0	20.7	85.0
Physical aspects	34.1	41.7	0.0	2.5	100.0
Pain	71.9	24.4	31.0	74.0	100.0
General state of health	56.0	33.4	0.0	61.0	97.0
Vitality	58.3	27.6	20.0	50.1	95.0
Social aspects	56.4	39.4	0.0	69.7	100.0
Emotional aspects	45.4	49.8	0.0	22.5	100.0
Mental health	63.6	20.0	28.0	63.8	88.0

Source: Present author (2014).

Table 4 – Values obtained for each component of the SF-36 questionnaire from the patients evaluated, 6 months after surgery.

Components	Mean	Standard deviation	Minimum	Median	Maximum
Functional capacity	26.8	28.2	0.0	20.7	85.0
Physical aspects	34.1	41.7	0.0	12.5	100.0
Pain	71.1	24.9	31.0	74.0	100.0
General state of health	56.4	35.5	0.0	56.0	97.0
Vitality	60.0	27.0	20.0	57.6	95.0
Social aspects	56.4	39.4	0.0	69.7	100.0
Emotional aspects	45.4	49.8	0.0	22.5	100.0
Mental health	63.6	20.0	28.0	63.8	88.0

Source: Present author (2014).

Table 5 – Comparison between the SF-36 results from before the operation and 3 months after surgery.

Components	Median		p value ^a	p value ^b
	Before operation	Three months afterwards		
Functional capacity	52.50	20.70	0.0464*	0.0232*
Physical aspects	100.00	12.50	0.0166*	0.0083*
Pain	90.00	74.00	0.0999	0.0499*
General state of health	72.00	61.00	0.2145	0.1072
Vitality	75.00	50.05	0.4357	0.2179
Social aspects	93.75	69.70	0.119	0.0595
Emotional aspects	100.00	22.50	0.0999	0.0499*
Mental health	76.00	63.80	0.2366	0.1183

^a The p value of the data in the preoperative period.

^b The p value of the data of three-month postoperative.

* Mann-Whitney test: the values are significant for $p < 0.05$.

Regarding emotional aspects 3 months after surgery, there was a significant decrease in this component ($p = 0.0499$).

Discussion

The World Health Organization classifies quality of life as the individual perception of complete physical, mental and social wellbeing. However, there is now increasing interest among doctors and researchers toward transforming quality of life into a quantitative measurement that can be used in clinical trials. Results thus obtained could be compared among different populations and even among different diseases. In an environment with limited resources, questionnaire results are particularly important for comparing the cost-benefit relationships of medical interventions.¹⁸

The rapid growth of the elderly population has resulted in a proportional increase in the number of elderly individuals with chronic incapacity during this phase of life. Falls are a serious public health issue among the elderly, because of their frequency, morbidity and high socioeconomic impact.¹⁹ The most frequent trauma mechanism observed among this sample of patients was falling from a standing position, which affected 91.7% of the cases.

Female patients were more prevalent in the present study, in proportions of 1.4:1. These data are in agreement with several other studies in which there was predominance of female patients ranging from two to eight women per man.^{1,10,12,20} These proportions of 1.4:1 were also found in a study carried out by Rocha et al.²¹ The difference found between the sexes is partly explained by

the lower bone mineral density among females after the menopause.²²

In a study conducted in the city of São Paulo, Ono et al.¹⁰ observed that the mean age of patients with fractures of the femoral neck who underwent partial hip arthroplasty was 83.1 years (range: 58–99). Like in the present study, Chikude et al.¹² reported a mean age of 83 years in an analysis on patients with fractures of the femoral neck.

The functional capacity evaluation scale identifies both the presence and the extent of limitations regarding physical capacity. The evaluation scales relating to physical and emotional aspects address not only the limitations of the type and amount of work, but also how much these limitations make the patient's work and activities of daily living harder. In the present study, from the perspective of physical health, low functional capacity was observed among the patients after 6 months of follow-up, with a mean value of 26.8, although it is known that functional capacity among the elderly is usually low. The fear of a new fall was seen to be directly related to restrictions on daily activities, as previously observed by Luukinen et al.²³ Regarding physical aspects, there was an increase of 15% between 3 and 6 months after surgery. Although functional capacity and physical aspects were low, the patients were satisfied with the surgical treatment. This finding was confirmed by the vitality component, which showed a 400% increase from 3 to 6 months after surgery. Thus, performing hemiarthroplasty on fractures of the femoral neck was justified for patients with low functional demand, which was also observed in the study by Chikude et al.¹²

In the present study, pain during the postoperative period was infrequent among most of the patients evaluated and did not limit individuals regarding their daily activities. According to the scale of Sikorski and Barrington,¹⁷ one patient (8.3%) presented intense pain and needed analgesics, while 91.6% either did not present pain or presented only moderate pain and did not need analgesics, which was confirmed through the SF-36 analysis (median of 74) and was also observed in other studies.^{10,12,24} Low presence of pain is an important factor for good postoperative quality of life.

Furthermore, in the item of physical health, the general state presented a satisfactory median, of close to 61, which demonstrates that the partial hip arthroplasty procedure contributed toward increasing the patients' chances of survival, as well as allowing better quality of life.

Social aspects are considered to be a subitem of mental health and presented high scores, reaching a median of 69.70. This demonstrated that during the postoperative period, the patients were aided by their relatives, which shows that support and living together with family and friends is important for these patients' recovery.

Regarding the item of emotional aspects, the patients of the present study presented low scores, with a median of 22.50. This reflects that either depression or anxiety occurred at some moment during the postoperative period. However, within mental health aspects, the patients were seen to present good conditions, with a median of 63.80. This is an important item, because it directly interferes with patients' self-esteem. It demonstrates that in addition to support

from relatives, multidisciplinary follow-up is of fundamental importance.

The data show that the surgical procedure should not be the only concern. Comprehension among relatives and the attention from a multidisciplinary team are necessary for patients to have good quality of life.

One limitation of the present study was the short follow-up time, as well as the small sample size. This was due to loss of patients who could not be located later or who died during the study period.

Conflicts of interest

The authors declare no conflicts of interest.

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