

Urgent hip Hemiarthroplasty by Anterior Approach in 31b13 Fractures of the Femoral Neck

Horacio Tabares Neyra *, Horacio Tabares Sáez

Havana Medical University

*Corresponding Author: Horacio Tabares Neyra, Havana Medical University.

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Abstract

Introduction: The characteristics and possible complications related to intracapsular fractures of the upper femur require that the decision on surgical treatment be necessarily individualized. Hemiarthroplasty in patients with decreased relative activity and life expectancy of less than five years provides a period of four or five years of good function and little pain, which associated with its urgent performance using an anatomical approach enhances this result. The objective is to present our results at one, six months and one year of urgent hip hemiarthroplasties through an anterior approach.

Methodological design: Descriptive-prospective study, with patients undergoing emergency surgery for the diagnosis of displaced intracapsular fractures of the upper femur, classified 31B13 AO/OTA, who underwent urgent hip hemiarthroplasty, through an anterior approach.

Results: Females and ages between 70-79 years predominate; The BMI was 26 ± 3 Kg/m². Both the "Harris Hip Score", the Pain Scale and the possibility of carrying out activities of daily living improved in the periods analyzed. Few complications occurred.

Conclusion: Urgent hip hemiarthroplasty through an anterior approach offers good levels of satisfaction and early return to activities of daily living, with little pain and low incidence of complications.[1]

Keywords: urgent hemiarthroplasty; femoral neck fracture; anterior approach

Introduction

With the aging of the population increasing and the increase in average life expectancy, hip fractures are increasingly diagnosed in patients over 65 years of age for osteoporosis.

Hip fractures are actually defined as fractures of the upper end of the femur, which lead to serious physical and cognitive difficulties as the main sequelae. [2-5]

About one in every 1,000 inhabitants per year in developed countries is affected by fractures of the proximal femur. [4,6] Advanced age and associated diseases are responsible for high morbidity and mortality, which causes a high cost derived from its treatment. In the United States, spending is expected to increase from \$8.7 billion in 2009 to \$240 billion in 2040. The mortality rate after six months with adequate treatment ranges from 12% to 41% and is mainly due to clinical complications such as pneumonia, pulmonary thromboembolism, and sepsis.[5]

Within fractures of the upper end of the femur, intracapsular fractures have distinctive characteristics, which require that the decision of surgical treatment be necessarily individualized for each patient, not only because of the fracture line and interfragmentary displacement but also because of the

characteristics of the physical and mental state of each one.[6-8] The objective of the treatment of a displaced fracture of the femoral neck in these patients is to allow them to Ambulate as soon as possible on a stable, painless hip.[9-11]

The characteristics and possible complications related to intracapsular fractures of the upper femur require that the decision on surgical treatment be necessarily individualized. Hemiarthroplasty in patients with decreased relative activity and life expectancy of less than five years provides a period of four or five years of good function and Little pain, which associated with its urgent performance using an anatomical approach enhances this result.

The anterior direct approach to the hip is becoming increasingly popular for hemiarthroplasty and total hip arthroplasty in the treatment of displaced femoral neck fractures. Originally described by Hueter in 1881, the objective of this approach is to minimize aggression on soft tissues to facilitate an accelerated return to ambulation of patients and minimize postoperative pain. [12-15]

The best treatment of intracapsular fractures of the upper end of the femur in older adults is a scientific problem that has not been definitively and

universally resolved, where the initial objective is to eliminate the clinical manifestations that affect patients who suffer from it and to allow early mobility and thus the performance of daily life activities. The methods to achieve this initial goal, although they may also be non-surgical, seem to indicate that the surgical solution offers much greater advantages. [16-18]

Purpose

To evaluate the possible effect of surgical treatment by direct anterior approach when performing partial hip arthroplasty on the outcome of older adult patients diagnosed with intracapsular fractures of the upper end of the femur; and present our results at one, six months and one year of urgent hip hemiarthroplasties through an anterior approach.

Methodological design

Descriptive-prospective study, with patients undergoing emergency surgery for the diagnosis of displaced intracapsular fractures of the upper femur, classified 31B13 AO/OTA, who underwent urgent hip hemiarthroplasty, through an anterior approach. The sample consisted of 113 patients, 46 men and 67 women.

Results

According to what was stated, the sample of this study consisted of 113 patients (Table 1), 46 men and 67 women, all over 65 years of age, with a high predominance in both sexes (more than 50%) of patients in the age group between 70-79 years of age and a mean of 74 ± 3 years. Females and ages between 70-79 years predominate.

Age groups in years	SEX				Total	
	Male		Female		No	%
	No	%	No	%		
65-69	6	5,7	16	14,3	22	20,0
70-79	30	26,6	32	28,4	62	55,0
80-89	9	8,5	13	11,5	22	20,0
90 & more	1	0,9	6	4,1	7	5,0
Total	46	41,0	67	59,0	113	100,0
Mean age	70,6 years		75,1 years		74 ± 3 years	

Table 1. Distribución by age and sex.

Source: Data collection form.

Note: % of the total of each sex.

ANOVA Kruskal Wallis $H = 5.732$; $1 \text{ gl } p=0.017$

It is reiterated to find in the specialized publications on this subject, the approach that the anterior approach to the hip should be used in patients with low body mass index (BMI), motivated by the difficulty in working the femur canal. That is why we decided to determine this index in our patients, which showed an average of $26 \pm 3 \text{ kg/m}^2$ (table 2).

The functional status of the patients was collected according to the classical parameters established by Charnley in 1972 in three groups (A, B, C). It is

visible in Table 2 that most of our patients were in group A, unilateral mobility limitation, which is consistent with the other data collected: ambulation, which, as can be seen in this same table, reflects that the 20 patients were able to do so: nine of them without the need for support and the remaining 11 with the help of some type of aid. Similarly, nine patients had an independent lifestyle before their traumatic injury and 11 reported having family dependence in their daily activities.

Sex	No	%
Male	No=46	41%
Female	No=67	59%
Age (mean)		74 ± 3
Body mass index (Kg/m ²)		26 ± 3
Functional classification (Charnley)		
A	No=101	90%
B	No=12	10%
C	-	-
Life characteristics		
Independent	No= 51	45%
Dependent	No=62	55%
Wander		
Free	No= 51	45%
With support	No=62	55%
Surgical data		
Operating time (min)		70 ± 18
Blood loss (ml)		340 ± 150

Source: Data collection form.

* Average values are displayed.

Table 2: General dates.

Finally, Table 3 shows two pieces of data referring to the surgical act: surgical time with an average of 70 ± 18 minutes, which we consider to be very consistent with the type of intervention performed, and blood loss with an average of 340 ± 150 milliliters, which is also related to the type of surgical intervention and the technique used in it.

Quirurgic Data Kg/m2	BMI	Quirurgic time (mean in min.)	Blood loss (mean in ml.)	No patients
20 a 24,9		31 ± 10	130 ± 15	40
25 a 29,9		55 ± 7	250 ± 20	45
30 & more		85 ± 10	380 ± 10	28
Total		70 ± 18	340 ± 150	113

Source: Data collection form.

* Average values are displayed.

Table 3. Relation body mass index/surgical data.

The evaluation of the results of any treatment is not complete if the complications that occurred related to both the fracture and the method used are not taken into account. For this reason, Table 4 shows the adverse events and/or complications found, divided into hip-related and general.

As can be seen in this table, only one sepsis considered superficial as a hip-related complication occurred, which was resolved with the administration of antibiotics and local dressings; which was considered a good result.

In complications considered as general, it is shown that two complications occurred: one patient presented an immediate event of venous thrombosis in the affected limb, which was treated with anticoagulants and resolved in a short period of time without sequelae. Another patient developed renal sepsis, associated with the use of a transoperative bladder catheter, which required oral antibiotic treatment for ten days and which was also achieved remission and left no sequelae.

With Hip relations	
Surgical site infection	N=8
General complications	
Thromboembolism & VT	N= 4
Kidney sepsis	N= 5

Source: Data collection form.

*Complications up to six months post-surgical are shown.

Table 4. Postoperative complications.

The evaluation of the results, according to the responses of the patients in the periods of time declared (Table 4), showed that the "Harris Hip Score" at one month was 72 ± 12 , which progressively improved to 81 ± 11 at three months and 85 ± 10 six months after the surgical intervention. It should also be noted that this "Score" in our work increased over time, which reflects a higher level of patient satisfaction.

Regarding pain, the results according to the Visual Analog Scale showed a significant decrease in this important symptom/clinical sign with the passage of the postoperative time. The value of this result is determined by the patient's own reported perception of his or her condition in the face of a surgical intervention such as hip hemiarthroplasty (Figure 5).

Harris Hip Score (points)	EVA (dolor)	"Activities of daily living"
1 month 72 ± 12	4 ± 2	50%
3 month 81 ± 11	2 ± 1	65%
6 month 85 ± 10	1 ± 1	83%

Source: Data collection form.

* Average and average values are shown.

Table 5. Results of functional tests by time.

Logically, this improvement in their physical condition and the pain of the patients, related to time, reflected according to their responses to the "Harris Hip Score" and the Visual Pain Scale and shown in Table 5, determines the

increasing increase shown in the percentages of possibilities of performing the activities of daily living, also in relation to the periods of postoperative time determined and that was contributed by the patients.



Figure 1: Hip hemiarthroplasty with Austin-Moore type prosthesis, by anterior approach.

Source: Patient medical history.

Discussion

The findings about age and sex coincide with the vast majority of the studies consulted on this topic about the morphological characteristics of each sex and the higher incidence of intracapsular fractures of the upper femoral end in the female sex; it is also in accordance with the life expectancy of our country (78 years) which, as we know, is slightly higher in women than in men.

The body mass index of the patients in this study (26 ± 3 kg/m²) was lower than the 30 kg/m² established as a limit by most of the studies consulted.[19]

Several recent studies show that hemiarthroplasty is statistically associated with shorter surgical time relative to total hip arthroplasty procedures in cases of femoral neck fractures, although this difference in recent years has decreased to less than 20 minutes. [20-22]

Perhaps this is why some recommend initial total arthroplasty in these fractures. Our criteria are based on the correct and individualized assessment of each patient, in accordance with the criteria already described by the Orthopedics and Traumatology Service of the "Calixto García" Hospital.

It is established that displaced fractures of the femoral neck in older adult patients require an arthroplasty procedure for their treatment. The choice between hemiarthroplasty and total hip arthroplasty is controversial; Hemiarthroplasty is considered to be a more expeditious procedure, requiring less surgical time, less surgical aggression and less blood loss, which could be related to fewer postoperative complications. However, the subsequent erosion of acetabular cartilage is related to pain and limitation of mobility and the possibilities of performing activities of daily living. [23-26]

Total arthroplasty is associated with greater mobility and functional recovery of patients, but nevertheless the greater surgical complexity that requires more surgical time and greater blood loss negate the possible clinical benefits of this procedure, mainly when it comes to elderly patients with reduced life expectancy. Another issue involved is the incidence of prosthetic dislocation, which has a higher incidence in total arthroplasties.[27]

Recent randomized controlled studies show that total arthroplasty provides better clinical outcomes without an increase in adverse events. Other studies show no significant differences in short- and medium-term outcomes.[28]

The most recent prospective randomized study, called HEALTH (Hip Fracture Evaluation with Alternatives of Total Hip Arthroplasty versus Hemi-Arthroplasty) found equal rates of reoperation in the first two years and higher rates of dislocation in total arthroplasties. Based on the current literature, there seems to be evidence that supports the use of total hip arthroplasty in more active patients with a longer life expectancy. For those

with lower activity levels and shorter life expectancy, hemiarthroplasty is the procedure of choice.[29-31]

Conclusion

Urgent hip hemiarthroplasty through an anterior approach offers good levels of satisfaction and early return to activities of daily living, with little pain and low incidence of complications.

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