

Results of the Surgical Treatment of Hip Fractures. Hundred Fires, 2016-17

Horacio Suárez Monzón ^{1*}, Francisco José Lam González ², Ernesto Julio Bernal Valladares ³, and Raidel Valdes Suarez ⁴

¹ 2nd Degree Orthopedics and Traumatology Specialist. Satisfactory Longevity Master. Assistant Professor. Added researcher. General University Hospital "Dr. Gustavo Aldereguía Lima". Hundred fires. Vice Surgical Directorate. Orthopedics and Traumatology Service, Cuba.

² 2nd Degree Orthopedics and Traumatology Specialist. Assistant teacher. General University Hospital "Dr. Gustavo Aldereguía Lima". Hundred fires. Vice Surgical Directorate. Orthopedics and Traumatology Service, Cuba.

³ Graduate in Education. Master in New Computing and Communications Technologies for Education. General University Hospital "Dr. Gustavo Aldereguía Lima". Hundred fires. Information Management Center. Vice Teaching Directorate, Cuba.

⁴ Medical student. Orthopedics and Traumatology Assistant Student. "Dr. Osvaldo Dorticós Torrado" Medical University Cienfuegos, Cuba.

***Corresponding Author:** Horacio Suárez Monzón, 2nd Degree Orthopedics and Traumatology Specialist. Satisfactory Longevity Master. Assistant Professor. Added researcher. General University Hospital "Dr. Gustavo Aldereguía Lima". Hundred fires. Vice Surgical Directorate. Orthopedics and Traumatology Service, Cuba.

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Abstract

Background: The ability to walk around is the main expected result from the surgical treatment, which is translated into a better insertion in society and mainly, with healthy lifestyle.

Objective: To show the result of the surgical treatment of hip fractures. Cienfuegos, 2016-17.

Methods: It was carried out an observational, descriptive, longitudinal, prospective study, with the patients who admitted with hip fracture, from January, 2016 to December, 2017. The main variables were described, from the moment of the fracture until one year later.

Results: The 80-89 years old group showed 44.2%, the illnesses prevailed with 61.8%, 59.8% of them suffered from three or more associated illnesses, the extracapsular fractures prevailed with 111 patients, with 68.4%, 57.4% of patients was in the group 1-2 of the American Society of Anesthesiology, a surgical treatment was done on 33.9% of them in 48 hours. There was 13.3% of orthopedic complications, with sepsis as the most frequent one; 31% achieved good ambulation after surgery in the 3 months of treatment, and 16.6% of these patients died; the bronchopneumonias caused the highest number of deaths.

Conclusion: In the study a reincorporation was evidenced to its state pre he/she fractures from 82.7% to the year of the surgery. It is important to highlight the correlation between age, complications, and the surgical delay, which influenced the final outcome.

Keywords: hip fracture; hip surgery; frail elderly

Introduction

The bibliographic review reveals the existence of numerous publications that analyze the problem of hip fractures, retrospectively trying to identify predisposing factors to suffer this pathology, as well as those that modify its evolution, vital and functional prognosis.

In practice, very old people have the highest rates of utilization of health services, due to an increase in morbidity due to chronic non-communicable diseases (cardiovascular, neoplasia, neuropsychiatric,

etc.), which create serious limitations in the patients. Today in day, they die later and also more slowly, with more or less pain, but more alone, better technically assisted, but less well accompanied.^{1,2}

The percentage of this group, called by some the elderly, requires a multidimensional and multidisciplinary approach and area of care, in its various biological, psychological, socioeconomic and functional aspects.^{3,4}

Cuba presents a progressive population aging, with a marked increase in recent years. It is expected that by 2020 around 400,000 Cubans will have turned 80 years old. It is estimated that the percentage of elderly people will reach 25% by 2025, at which time Cuba will be the oldest country in Latin America and by 2050, one of the oldest in the world. Currently, more than 18,000 hip fractures occur throughout the country and around 350 in this province.^{5,6}

During the last decade, different clinical guidelines have been appearing, with recommendations for the management of patients with hip fracture. This article presents a summary of the most important recommendations included in these guidelines, with a comparative perspective between them, with the aim of increasing their dissemination and facilitating decision-making for doctors who care for this type of patients.^{7, 8, 9}

Epidemiological studies show that the risk of dying increases in the 6 to 12 months after a hip fracture. In elderly patients, the mortality rate ranges between 14-36% one year after the fracture and is associated, according to different studies, with systemic disease not adequately controlled, with age and sex (women survive longer), and with institutionalization.^{10, 11}

The most frequent causes of death in elderly patients with a fracture of the proximal end of the femur are: pneumonia, electrolyte imbalance, stroke, heart failure, pulmonary thromboembolism, gastrointestinal bleeding, and any other general medical complication in the immediate postoperative period. a mortality factor.¹² However, many patients wait for more than 24 hours, after admission to the hospital, until their medical conditions are optimized before surgery or until the surgeon, geriatrician or anesthetist decides on the intervention. If the patient's medical condition is unstable, then operative action should be delayed until the patient is at his most stable possible level.

For most of these patients, optimal treatment requires good surgical management of the hip fracture. Several studies have shown that delays in it are reflected in increases in morbidity and mortality in these patients. On the other hand, the high mortality, particularly in the first 3, 6, and 24 months, is probably due to the combination of trauma, major surgery in older people with concurrent medical problems, and low physiological reserve.^{13, 14, fifteen}

The ability to walk is the main result expected from surgical treatment, which translates into better integration of these patients into their social environment, and above all with a validity that ensures a decent quality of life.^{16, 17}

The present study proposed to determine the result of surgical treatment after one year, of patients operated on for hip fracture in the General University Hospital "Dr. Gustavo Aldereguía Lima" from Cienfuegos, in the period January 2016-December 2017.

Goals

General: Determine the results of surgical treatment in patients operated on for hip fracture in the province of Cienfuegos from January 2016 to December 2017.

Specifics:

1-Characterize the patients admitted for hip fractures in 2016.

2- Evaluate the results of the processes applied in the pre- and post-operative phases of the surgical treatment.

Methods

Study carried out in the Orthopedics and Traumatology Service of the "Hospital Universitario Dr. Gustavo Aldereguía Lima" in the province of Cienfuegos, in the years 2016-17. It was classified as an observational, descriptive, longitudinal, prospective case series study. The universe consisted of 162 patients admitted in 2016, who attended a minimum of 3 scheduled consultations. The main study variables were: age, sex, type of fracture, comorbidity, treatment applied, complications and final results. A complete, conventional clinical history was prepared for all patients and in each case a form was applied, which reflected the necessary data to achieve the stated objectives (Annex 1).

The pre-fracture general condition was assessed using the American Society of Anesthesiology (ASA) scale that establishes a level of surgical risk (1-4). We preferred to use this vital risk scale instead of studying the different comorbidities because it provided a level severity objective with a direct influence on surgery, and validity according to the KATZ scale. (Annex 2) totally independent (A), partially independent (B, C, D, E) and totally dependent (F, G). The type of fracture was decided classify it into intracapsular and extracapsular to simplify the treatments applied to each of these injuries. The functional status was assessed based on the results of the patient's ambulation Good (ambulates without support), Fair (ambulates with some technical assistance) and Bad (does not wander).

The care of these patients was carried out directly by a work group previously trained in the program, with homogeneous criteria and that included specialists from Orthopedics and Traumatology, Geriatrics, Cardiology, Anesthesiology and Rehabilitation; as well as trained nursing staff. All cases were operated on by Orthopedics and Traumatology specialists or by residents under their guidance; spinal anesthesia was generally the most frequently used.

Techniques and procedures

For the study proposal, it was defined hip fracture as a fracture that occurs a few hours before admission, without taking into consideration any previous hip fracture. A secondary hip fracture was considered any fracture that occurred during the follow-up period.

Upon arrival at the emergency department, after a physical examination, an X-ray of the hip or bone pelvis was indicated for definitive diagnosis, and a preoperative study was indicated to be evaluated by the Geriatrics and Anesthesiology services, which decided fitness for surgical intervention.

All admitted patients received antibiotic prophylaxis before, during and after (if it lasted >1 hour) the intervention: Cefazolin 1 g IV and Vancomycin 1 g. iv in those allergic to β -lactams. They were also administered antithrombotics such as Fraxiheparins. In addition, non-opioid analgesics were prescribed during their pre- and post-operative stay.

To collect the information, a questionnaire created for this purpose was developed, in which information about the variables prior to the moment the fracture occurred, as well as after it, was collected. It was

carried out within a period of 24 hours after admission to the hospital. It was obtained through direct interviews with the patient himself whenever his mental faculties permitted it, otherwise the collaboration of family members or staff of the institutions where they were found was used (Annex 3).

In cases that survived the hospital stay, survival follow-up periods were established. The relatives or companions of each patient were instructed in a series of verbal and written recommendations about all the care that should be followed at home with these patients. These included a first review 15 days after the fracture occurred, one month, 3 months, 6 months and one year. Therefore, each patient was followed for a maximum period of one year and for any reason they could not bringing the patient to said consultation, family members and/or caregivers came to report their evolution. In cases in which a torpid evolution was detected, it was immediately reassessed by the group to determine new therapeutic behaviors.

Statistical analysis

Frequencies and percentages and the arithmetic mean were used as the main statistical measures. The results were analyzed in Microsoft Excel and SPSS 21 and represented in tables.

Results

During the year 2016, 162 hip fractures were admitted, whose study variables are reflected in Table 1, in Table 2, it was observed that age was more represented in the age group of 80-89 years with 48.8% of the total patients (minimum 60 and maximum 102 years), the male sex predominated (61.8%) of the cases. 59.8% of these patients had more than one major pathological history (97/162). 54.9% of these regularly consumed more than one drug and 10 of these had a previous contralateral fracture. 57.4% of them corresponded to an ASA physical fitness rating 1-2. 58.2% of the cases showed a functional validity A according to KATZ classification.

Table 1: Variables studied

1.	VARIABLES OF THE PRE-INJURY SITUATION.
1.1	Age and sex.
1.2	History (illnesses, drugs, previous fractures).
1.3	Pre-fracture general condition (ASA).
1.4	Validism (KATZ)
2.	FRACTURE VARIABLES AND ITS TREATMENT.
2.1	Type of fracture (intracapsular/extracapsular)
2.2	Surgical delay
2.3	Surgical time.
2.4	Anti-thrombotic and antibiotic prophylaxis.
2.5	Type of treatment.
3.	MONITORING VARIABLES.
3.1	Early and late clinical complications.
3.2	Orthopedic complications.
3.3	Mortality.
4	RESULTS
4.1	Type of treatment/Ambulation time.
5	Final score.

Table 2: Result of variables from the situation prior to the injury.

AGE. (60-102)	Patients	%
60-69 years.	15	9.2
70-79 years.	54	33.3
80-89 years.	71	44.2
90 and + years.	22	13.3
SEX		
Women.	63	38.2
Men.	99	61.8
PERSONAL HISTORY		
More than one major pathological history.	97	59.8
Drug consumption. (More than 1 drug usually)	89	54.9
Previous contralateral fracture	10	6.7
GENERAL CONDITION PRE-FRACTURE.		
HANDLE.		
1-2	93	57.4
3-4	69	42.6
VALIDISM (KATZ)		
TO	94	58.2
B, C, D, E.	63	38.8
F, G	5	3

Source: Data form.

In Table 3 it was possible appreciate that in 111 cases (68.4%) these presented an extracapsular fracture. 66.1% of the patients received the surgical intervention within 48 hours with a surgical timex=1 hour. 98% received antithrombotic prophylaxis and antibiotic 97%. The

most used surgical treatment was osteosynthesis and within this the placement of AO sheets and screws in 63.9% of patients. Partial arthroplasties were performed in 58.8% of patients with intracapsular fractures.

Table 3: Result of fracture variables and their treatment

TYPE OF FRACTURE	Patients	%
Intracapsular Type	51	6.7
Extracapsular Type	111	93.3
SURGICAL DELAY.		
Operated in the first 24 hours	51	31.4
25-48 hours.	56	34.7
49-+hours.	55	33.9
Average surgical time		
Less 1 hour.	128	79
1-2 hours.	28	17.3
More than 2 hours	6	3.7
PROPHYLAXIS.		
Antithrombotic.	158	98
Antibiotic.	157	97
TYPE OF FRACTURE AND TREATMENT		
Intracapsular fractures	51/162	31.6
Partial hip arthroplasty	30	58.8
Nail plate AO screws	11	21.5
3 AO screws	8	15.6
DHS	1	1.9
Others	1	1.9
Extracapsular fractures	111/162	68.4
Nail plate AO screws	71	63.9
DHS	25	22.5
NFP	11	9.9
Others	4	3.6

Source: Data form

Table 4 highlighted the incidence of (medical) complications, where early complications reached 18.5% and late complications reached 6.7% of total cases.13.3% of the patients presented some local (orthopedic) complication, including surgical wound sepsis (4.9%)

during the course of the study..A mortality of 16.6% was recorded, with the highest number occurring in the first 3 months (44.7%) after the intervention. In relation to their ambulatory capacity, 45.6% of the patients obtained a regular result since they needed some type of technical help to move around.

Table 4: Results of follow-up variables

General complications		Patients	%
Precocious	Hemodynamics, Cardiorespiratory, Arterial hypertension, Diabetes Mellitus	30	18.5
late	Hemodynamics, Cardiopulmonary, Respiratory infections	10	6.7
Total		40	25.2
Local complications			
Surgical wound sepsis		8	4.9
Loss of fixation		5	3
Screw breakage		3	1.8
Excessive screw migration		4	2.4
Partial arthroplasty dislocation		2	1.2
Total		22	13.3
Mortality after data collection			
Mortality			
In the first 7 days.		4	14.5
In the first 3 months		12	44.7
Between 3 months and the end of the study		11	40.8
Total		27	16.6

Ambulatory capacity		
Good (no support)	54	37.2
Regular (with some technical help)	74	45.6
Bad (does not wander)	20	17.2
Total	162	100

Source: Data form

Table 5 shows the different techniques used to fix the fractures and the average time to ambulate. The PFN and DHS systems stand out with

100% and 88.4% respectively in the first 3 months after their implementation.

Table 5: Results of variables according to surgical technique used and time elapsed to ambulate

Type of treatment	AO system		DHS System		PFN system		Partial Arthroplasties		Others		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
Wandering												
>3 months	8	8.9	23	88.4	11	100	8	26.7	0	0	50	31
4-6 months	41	45.6	3	11.6	0	0	10	33.3	0	0	54	29
7-9 months	25	27.8	0	0	0	0	8	26.7	3	60	36	31.1
>10 months	1	1.1	0	0	0	0	0	0	1	20	2	0.8
Does not wander	15	16.6	0	0	0	0	4	13.3	1	20	20	8.1
Total	90	100	26	100	11	100	30	100	5	100	162	100

Source: Data form

Discussion

Hip fracture is one of the most frequent traumatic injuries faced by the orthopedic surgeon, since it can cause devastating consequences and is associated with high morbidity and mortality, which causes a reduction in the quality of life for patients who suffer from it. Therefore, in the course of history, several surgeons were responsible for researching and introducing various treatment methods or techniques with the purpose of improving said quality of life.

The main objective of this study was know the result of the surgical treatment, with the different techniques at our disposal one year after surgery. Since it has not been managed to determine through bibliographic reviews what is the optimal percentage of patients who should recover the level of walking after the fracture. All of this because other studies include different population groups and methods to measure this capacity.

Age

The results showed that the age group of 80-89 years obtained an incidence of 44.2% followed by those of 70-79 with 33.3%, Roberts KC.18 reports an agex=80 years in their 2015 study, consistent with what was reported by other authors.5, 11, 19

Sex

The male sex predominated with 61.1% of the total patients not coinciding with other references consulted, with a sex ratio of 2/1 to the female.20, 21, 22

Comorbidity

Most authors agree that the previous general condition of patients with hip fracture is the main risk factor for mortality. The best assessment of the chronic general condition is obtained by accounting for medical diagnoses. Although to a lesser extent, in this study they had a role in the final result, 59.8% of these patients had more than one major pathological history and 54.9% of them regularly consumed more than one drug. 18, 19

Pre-fracture functional status

This study showed a higher incidence in groups 1-2 of the ASA classification; values obtained through the Katz index were available as a parameter to measure the independence of patients who attended the service while in A (58.2%) the largest number of patients, that is, they were independent in walking and after one year of evolution, 46.5% of this parameter was reached, data that agree with some works consulted.23, 24, 25

Fracture type

Publications referring to this topic were found, which show significant differences between intra-extracapsular fractures, although not always in relation to the same variables or type of these. It is stated that intracapsular fractures have a better prognosis, a possible explanation for this would be that they have lower mortality because they occur in younger patients and that pertrochanteric and subtrochanteric fractures produce a significantly greater decrease in hematocrit levels than subcapital fractures,26, 27 In the present study, the type of fracture with the highest incidence was extracapsular with 68.4% of the total, being related by some authors to the elderly age group and sex.

Preoperative delay

The delay in surgery once the patient is admitted to the hospital is one of the most controversial terms today. Patients who are clinically stable should undergo operative repair as soon as possible.

In published articles, patients who underwent early surgery (<48 hours) had lower complication rates and better long-term functional status than those who underwent delayed surgery.14, 28, 29 In contrast to previous studies recently in In the literature, articles have been published that do not observe an increase in mortality at the expense of delay in intervention when adjusted with other predictive variables, especially age and comorbidity,30 reflected in this study.

Prophylaxis

In reviewed articles, patients who would receive hip fracture surgery are recommended to use low molecular weight heparins routinely, since this is associated with a high incidence of venous thrombotic disease, in the present study received antithrombotic prophylaxis in 98% of those operated on [31-33].

Complications

The complication rate in hip fracture surgery is generally high and reinterventions are frequently necessary,³⁴ like Christopher P.³⁵ they considered post-fracture complications as the most powerful predictive parameter of mortality.

The present study was only limited to the description of the most frequent medical-orthopedic complications, which turned out to be high blood pressure, respiratory infections and surgical wound sepsis.

Mortality

The cumulative survival function for patients who have suffered a hip fracture it falls precipitously after the fracture but around 6 months and approaches that of the reference population to practically equalize around one year.^{36, 37}

Miller³⁸ indicated a decrease in survival in the first 8 months after the fracture. Analyzing mortality with the type of fracture and the effects of the time of surgery, Grimes et al.³⁹ report that they are predictive factors of mortality. However, in the present study the most frequent cause of mortality was bronchopneumonia, and thromboembolism. pulmonary.

Ambulatory capacity

According to studies carried out, it is shown that the increase in the percentage of patients who recover the ability to walk at 3 and 6 months has been achieved with early surgical treatment accompanied by immediate pre- and post-operative rehabilitation. With a shorter hospital stay, these patients are referred to specialized rehabilitation centers accompanied by training for family and caregivers. This study found that 45.6% of the patients in relation to their ambulatory capacity obtained a regular result since they needed some type of external help to walk. An important group of authors agree that throughout the treatment of hip fractures it is vital to minimize the patient's bed rest, being a strategy to share with family and companions so that the patient recovers the functional state or the most close prior to the fracture, in the short and medium term [17, 40, 41].

Conclusions

The study showed that age, delay in starting surgical treatment and complications in general influenced the final result of surgical treatment, which showed a return of 82.8% of the total number of those operated on to their previous or close validity. to pre-fracture, in agreement with those reported by other authors.

Sponsoring Institution: General University Hospital "Dr. Gustavo Aldereguía Lima" Cienfuegos.

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Annexes

Annex 1

CLINICAL SURGICAL UNIVERSITY HOSPITAL “DR. “GUSTAVO ALDEREGIA LIMA”

ORTHOPEDIC SERVICE

Name of patient: _____ Age: _____
 Municipality of Origin: Health area: _____
 Etiology: _____ Place of fall: _____ Sex: _____
 Date of Admission: Time of Admission: Medical History: _____
 Egress date _____ Exit Time _____ Civil status _____
 Diagnosis: _____ Tax Treatment: _____
 Operation Date: Start Time IQ Type of Anesthesia: _____
 Preoperative TA: _____ Surgical Time _____ Blood Cell Transfusion: _____
 Lounge: _____
 Laboratory: Coag: _____ Blood: _____ Hb: _____ Hct: _____ Blood glucose: -----
 ECG: _____ Chest X-ray: _____
 Associated Chronic Diseases: _____
 Functional Evaluation: ADL (Katz) _____ Asa-----Frazer-----
 Complications: _____
 Use of Antibiotics: Use of Fraxiheparins: _____ Physiot Preop. _____

Ambulatory Capacity according to quarter of evolution:

Ambulatory Capacity	3 months	6 months	9 months	12 months
Walk with support				
Wander without support				
Wandering with claudication of the affected limb				
Does not wander				

Deaths less than 3 months: ____ 3 to 6 months: ____ 6 to 1 year ____

Preoperative Stay: ____ Postoperative Stay: ____ Total Stay ____

Cause of death according to closing of medical history and/or autopsy protocol or medical death certificate

Observations:

Annex 2**Anexo 2****ÍNDICE DE INDEPENDENCIA EN LAS ACTIVIDADES DE LA VIDA DIARIA.
(ÍNDICE DE KATZ):**

Total de índice (número de respuestas positivas).

De acuerdo a estas actividades podemos clasificarlos así:

- A. Independiente en todas las funciones.
- B. Independiente en todo, menos una de las funciones.
- C. Independiente en todo, menos baño y una función adicional.
- D. Independiente en todo, menos baño, vestirse y una función adicional.
- E. Independiente en todo, menos baño, vestirse, ir al retrete y una función adicional.
- F. Independiente en todo, menos baño, vestirse, ir al retrete, trasladarse y una función adicional.
- G. Dependiente en todas las funciones.

ACTIVIDADES INDEPENDIENTE Sí NO

- 1. Bañarse
- 2. Vestirse
- 3. Ir al retrete.
- 4. Traslادarse
- 5. Continencia de esfínteres
- 6. Alimentarse

Un puntaje de 6 indica pleno funcionamiento, 4 indica deterioro moderado y 2 o menos indica deterioro funcional severo.

Annex 3

Ministry of Public Health
CLINICAL SURGICAL UNIVERSITY HOSPITAL
“DR. “GUSTAVO ALDEREGIA LIMA”

Informed consent and authorization for medical procedures. Diagnostics and Surgical.

Article 49 of the Constitution of the Republic establishes the right of citizens of the country to have their health treated and protected and the obligation of the state to guarantee this right with the provision of free medical care. through the network of medical services facilities.

The law does not. 41.Public health law, establishes that medical, diagnostic, therapeutic and surgical procedures for patients will be carried out with their approval, with the exception of minors or mentally incapacitated patients, for whom the authorization of the father, mother, guardian or legal representative.

In accordance with what was expressed above, it is stated that:

Name and surname: _____

No, HC: _____

Diagnosis: _____

After being explained by the attending physicians the characteristics of my condition and the medical, diagnostic and/or surgical procedure, as well as the complications described that may be real, possible and not attributable to good medical practices: I authorize the performance of the procedure. as long as the institution guarantees all means of competence and performance and the interest of avoiding foreseeable complications. I record that I have been given the opportunity to ask all my questions and that they have been satisfactorily answered, so in the full exercise of my powers, I consciously request and authorize the previously informed procedure.

Patient or authorized person family member to consent (guardian)

Witness assistance doctor (if there is no family member)



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