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Comparison treatment of fracture neck femur with fibular grafting and cancellous hip screws

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Abstract

Background: A fracture of the neck of the femur, commonly referred to as a hip fracture, is a break that occurs in the proximal (upper) part of the femur, close to the hip joint. The present study was conducted to compare treatment of fracture neck femur with fibular grafting and cancellous hip screws.

Materials and Methods: 94 cases of fracture neck femur of both genders were divided into 2 groups. Each group had 47 patients. Group I patients were treated with fibular grafting and group II patients with cancellous hip screws. Routine blood and urine examinations were carried out. AP and lateral radiographs of the involved hip were taken.

Results: In group I, males were 27 and females were 20 and in group II, males were 22 and females were 25. The side was right in 25 and 23 and left in 22 and 24 patients in group I and group II respectively. Duration between trauma & surgery was < 1 week in 13 and 20, > 1 week - < 1 month in 15 and 13 and > 1 month in 19 and 14 patients in group I and group II respectively. The mode of trauma was fall in 7 and 6, RTA in 15 and 14 and violence in 5 and 7 patients in group I and group II respectively. Outcome was excellent in 11 and 8, good in 9 and 12, fair in 7 and 5 and poor in 0 and 2 patients in group I and group II respectively. Complications were shortening in 3 and 1, Coxa vara in 1 and 2, Coxa valga in 2 and 4 and infection in 1 and 2 patients in group I and group II respectively. The difference was significant ($p < 0.05$).

Conclusion: Procedures for fibular grafting in intracapsular fractures of the neck and femur have good outcomes when carried out with great technical proficiency. When a femur fracture occurs in the neck with posterior comminution, it provides good stability.

Keywords: Fracture, femur, neck

Introduction

A fracture of the neck of the femur, commonly referred to as a hip fracture, is a break that occurs in the proximal (upper) part of the femur, close to the hip joint. This type of fracture is particularly common in older adults and can have significant implications for mobility and overall health ^[1].

Young persons who sustain femur neck fractures are often victims of high-energy trauma, and because AVN (avascular necrosis) of the femoral head and non-union of the fracture are so common, treating these injuries is still a surgical challenge for doctors. The femoral head's unstable blood supply is the reason behind the 0%–67% incidence of AVN. Up to 43% of patients and up to 59% in one series have been documented to suffer non-union in femoral neck fractures ^[2]. Since these fractures are intracapsular, non-union is thought to be caused by the absence of the cambium layer and the presence of angiogenesis-inhibiting substances in the synovial fluid. Using the Harris hip score, numerous studies have found that 70% of patients had satisfactory results, compared to 39% with vascularized and non-vascularized fibular grafts ^[3].

In spite of advancements in biomechanical and technical aspects of orthopaedics, as well as an abundance of implants with varying levels of stability and inertness, the search for the perfect fixation device that offers early mobility and sound union persists ^[4]. Even if an implant is inert, it is still a foreign body, and implant failure frequently results from loosening at the implant-bone contact, contributing to the myriad problems associated with treating these fractures ^[5]. The present study was conducted to compare treatment of fracture neck femur with fibular grafting and cancellous hip screws.

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Materials and Methods

The present study was conducted on 94 cases of fracture neck femur of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups. Each group had 47 patients. Group I patients were treated with fibular grafting and group II patients with cancellous hip screws. Routine blood and urine examinations was carried out. AP and lateral radiographs of the involved hip was taken. Data thus obtained were subjected to

statistical analysis. P value < 0.05 was considered significant.

Results

Table 1: Distribution of patients

Groups	Group I	Group II
M:F	27:20	22:25

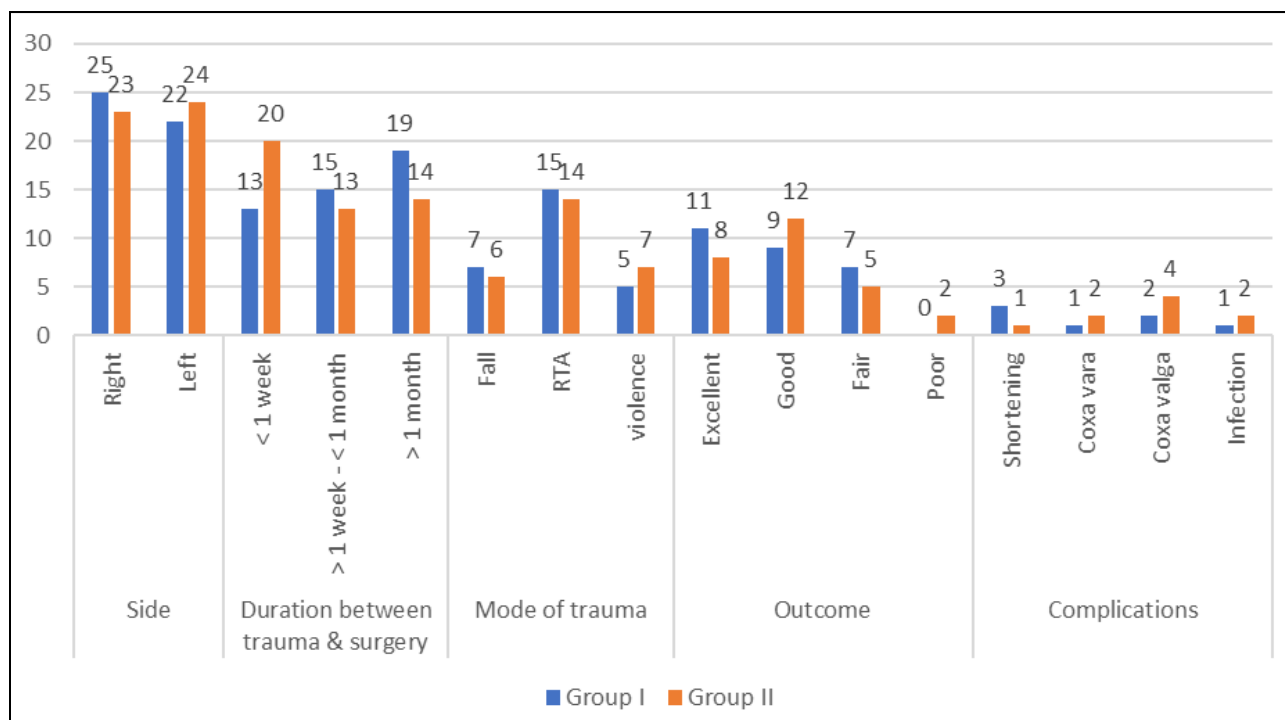
Table I shows that in group I, males were 27 and females were 20 and in group II, males were 22 and females were 25.

Table 2: Assessment of parameters

Parameters	Variables	Group I	Group II	P value
Side	Right	25	23	0.91
	Left	22	24	
Duration between trauma & surgery	< 1 week	13	20	0.76
	> 1 week - < 1 month	15	13	
	> 1 month	19	14	
Mode of trauma	Fall	7	6	0.62
	RTA	15	14	
	violence	5	7	
Outcome	Excellent	11	8	0.05
	Good	9	12	
	Fair	7	5	
	Poor	0	2	
Complications	Shortening	3	1	0.05
	Coxa vara	1	2	
	Coxa valga	2	4	
	Infection	1	2	

Table II shows that side was right in 25 and 23 and left in 22 and 24 patients in group I and group II respectively. Duration between trauma & surgery was < 1 week in 13 and 20, > 1 week - < 1 month in 15 and 13 and > 1 month in 19 and 14 patients in group I and group II respectively. The mode of trauma was fall in 7 and 6, RTA in 15 and 14 and violence in 5 and 7 patients in

group I and group II respectively. Outcome was excellent in 11 and 8, good in 9 and 12, fair in 7 and 5 and poor in 0 and 2 patients in group I and group II respectively. Complications were shortening in 3 and 1, Coxa vara in 1 and 2, Coxa valga in 2 and 4 and infection in 1 and 2 patients in group I and group II respectively. The difference was significant ($p < 0.05$).



Graph I: Assessment of parameters

Discussion

In terms of outcome and treatment, femur neck fractures are

infamously referred to as the "unsolved fracture [6]." These fractures occur in an environment that inhibits the healing of

fractures due to osteoporosis with severe trabecular atrophy of the femoral neck, strong muscle forces across the hip-joint, an intracapsular location of the fracture, a limited and unprotected blood supply to the femoral head, and flow of synovial fluid. The two main consequences of this fracture are non-union and osteonecrosis of the femoral head, particularly if the patient presents later than expected [7]. Due to poverty, illiteracy, and a lack of access to healthcare, these fractures are frequently discovered after a delay and inadequate treatment in underdeveloped nations. Numerous research have been conducted on the treatment of young individuals with untreated neck fractures. The majority seek to preserve the native femoral head, saving reconstructive techniques like arthroplasty for backup or salvage operations [8]. The present study was conducted to compare treatment of fracture neck femur with fibular grafting and cancellous hip screws.

We found that in group I, males were 27 and females were 20 and in group II, males were 22 and females were 25. The side was right in 25 and 23 and left in 22 and 24 patients in group I and group II respectively. In a study by Gupta et al. [9], 36 patients of fracture neck femur treated by fibular grafting and cancellous hip screws. A satisfactory result was in 13 cases of group I and 9 cases of group II. In 2 cases of group I, the fracture united in malposition with appreciable restriction of joint motion or early avascular necrosis resulted in pain on exertion. While in 4 cases of group II fracture united in malposition with appreciable restriction of joint motion or early avascular necrosis resulted in pain on exertion. Two fractures failed to unite and in one case extensive avascular necrosis of the head resulted in severe rest pain and gross restriction of function in Group I. This figure was approximately double in group II (Five cases went in non-union and three cases showed avascular necrosis of the femoral head with gross restriction of movement and severe pain).

We observed that duration between trauma & surgery was < 1 week in 13 and 20, > 1 week - < 1 month in 15 and 13 and > 1 month in 19 and 14 patients in group I and group II respectively. The mode of trauma was fall in 7 and 6, RTA in 15 and 14 and violence in 5 and 7 patients in group I and group II respectively. Outcome was excellent in 11 and 8, good in 9 and 12, fair in 7 and 5 and poor in 0 and 2 patients in group I and group II respectively. Complications were shortening in 3 and 1, Coxa vara in 1 and 2, Coxa valga in 2 and 4 and infection in 1 and 2 patients in group I and group II respectively. Jaiswal et al. [10] conducted a study in which twenty-eight patients in age group 18–50 years were operated having fracture neck femur by dual fibular bone grafting and divided into two groups. Group A: comprised of 8 patients treated by dual fibular bone grafting alone and Group B: comprised of 18 patients treated by dual fibular bone grafting with single cancellous hip screw. All the patients of the present series were having neglected intracapsular fracture, neck femur which were treated by dual fibular bone grafting with or without cancellous hip screw fixation. Majority of the patients had well to fair result according to Larson method with average time of union 16 weeks. All patients had useful range of movement at hip. Satisfactory union was achieved in all patients except two.

Kumar et al [11], 72 patients involving the treatment of femoral neck fractures using fibular grafts and cancellous hip screws were studied. Results yielded satisfactory outcomes, with 26 cases in group I and 18 cases in group II showing positive results. However, in 4 cases of group I, the fractures united in malposition, leading to noticeable joint motion restrictions or early avascular necrosis, causing pain during exertion. Similarly, in 8 cases of group II, fractures united in malposition, resulting in appreciable joint motion restrictions or early avascular necrosis leading to exertion-related pain. Additionally, 4

fractures in group I failed to unite, and in 2 cases, extensive avascular necrosis of the head caused severe rest pain and significant impairment of function.

The shortcoming of the study is small sample size.

Conclusion

Authors found that procedures for fibular grafting in intracapsular fractures of the neck and femur have good outcomes when carried out with great technical proficiency. When a femur fracture occurs in the neck with posterior comminution, it provides good stability.

Conflict of Interest

Not available

Financial Support

Not available

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