

The Outcome of Primary Rigid Internal Fixation of Displaced Fracture Neck Of the Femur with Muscle Pedicle Bone Graft in Young Adult

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ABSTRACT

Objective: In this study our main aim to evaluate the outcome of primary rigid internal fixation of displaced fracture neck of the femur with muscle pedicle bone graft in young adult.

Methodology: This prospective observational study was conducted at National institute of traumatology and orthopaedic rehabilitation (NITOR), Dhaka from July 2003 to June 2005. During the study, recent neck femur fracture 12 cases, in between age 20-55 years irrespective of gender were taken as a sample.

Results: In the experiment, 75% were male patient and 25% were female patients. 66.67 % patients with type 1V fracture and 33.33% patients were with type III fracture. Also, after the treatment. 83.33 % patients obtained satisfactory result and 16.67% was unsatisfactory.

Conclusion: From our study we can conclude that this technique is especially applicable in early days of fracture to achieve union and revisualization of the proximal fracture fragment and prevent non-union or avascular necrosis. The

follow up period of this initial study is short, long-term follow up and evolution of the viability of this procedure should provide additional useful result.

Keywords: Primary Rigid Internal Fixation, Displaced Fracture, Muscle Pedicle Bone Graft.

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INTRODUCTION

Fractures of neck of the femur are one of the commonest fractures in orthopedic practice. It occurs predominantly in elderly women following a trivial trauma but it may occur at any age of either sex. In 1990, an estimated 1.3 million fracture of hip expected to be double by 2025 worldwide. This figure is to increase up to 4,5 million by 2050. Approximately half of this fracture will be intra capsular. The average age of this patient is 80 years and 75 percent are female.¹

The treatment of the neck of the femur depends upon the age of the patient. For those age years, the preservation of the femoral head is paramount because reconstructive procedure such as total hip replacement are more likely to fail in young patient's.² Incidence of non-union and avascular necrosis is much higher in this population. One study reported 21 cases of femoral neck fracture in this population that resulted in a 62percent non-union and 90 percent avascular necrosis.³

It was recommended that neck femur fracture in young adult where preservation of the femoral head is essential, open reduction possibly supplemented by a pedicle bone graft to neck or an osteotomy should be planed.⁴

In this study our main objective to evaluate the outcome of primary rigid internal fixation of displaced fracture neck of the femur with muscle pedicle bone graft in young adult.



Figure 1: Displaced fracture neck of the femur.⁵

OBJECTIVE

General Objective

- To assess the outcome of primary rigid internal fixation of displaced fracture neck of the femur with muscle pedicle bone graft in young adult.

Specific Objective

- To identify fracture type
- To detect clinical outcome of the treatment.

METHODOLOGY

Study Type

This was a prospective observational study.

Study Place and Period

National institute of traumatology and orthopaedic rehabilitation (NITOR), Dhaka from July 2003 to June 2005.

Study Population

Recent neck femur fracture cases, in between age 20-55 years irrespective of gender.

Sample Size

Purposive samples of 12 cases were taken for evaluation.

Sampling Technique

Non-probability convenience technique.

Inclusion Criteria

- Young and adult having 20-55 years age group
- Both sex.
- Irrespective of occupation and Socio economic status

- Displaced unilateral intracapsular fracture neck of the Femur garden type III and IV as diagnosed radiologically
- Age of the fracture is up to one month of accident

Exclusion Criteria

- Old fracture.
- Pathological fracture.
- Combined cervical fracture and trochanteric fracture.
- Fracture with polytrauma.
- Open fracture
- Fracture with major systemic diseases
- Non cooperative and psychologically unstable patient.

Method

Management of fracture neck of the femur is an unsolved problem. Incidence of non-union and avascular necrosis is much higher in neck of the femur fracture in young adult. Therefore, earlier treatment is the aim of management. Out of twelve patients of this series six through emergency dept. and remaining six patients throughout patient dept. After admission patients were put on the surface traction with 2 .5 to 3 kg weights to overcome muscle spasm, to relief pain, and to rest the limb in best functional position according to the methods described by one report. [2]

Data Collection and Analysis

Data were collected by following mechanism with the help of a checklist. Collected data were compiled and appropriate analysis was done by appropriate tables and using statistical software.

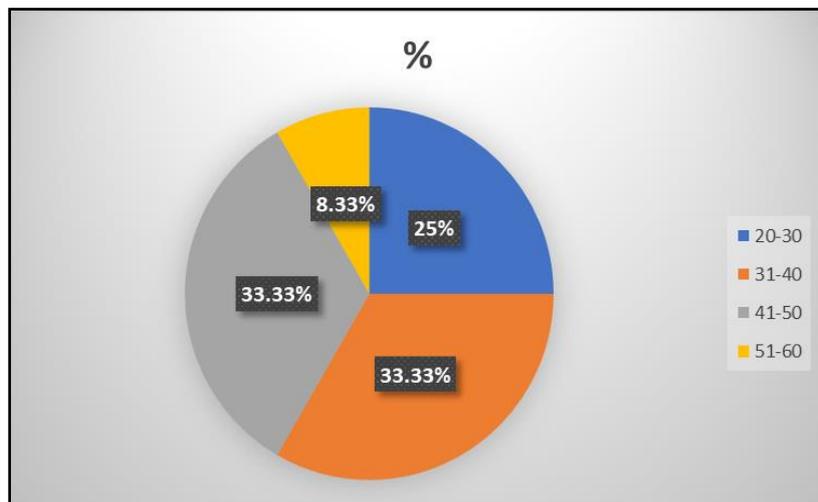


Figure 2: Age distribution of the patients.

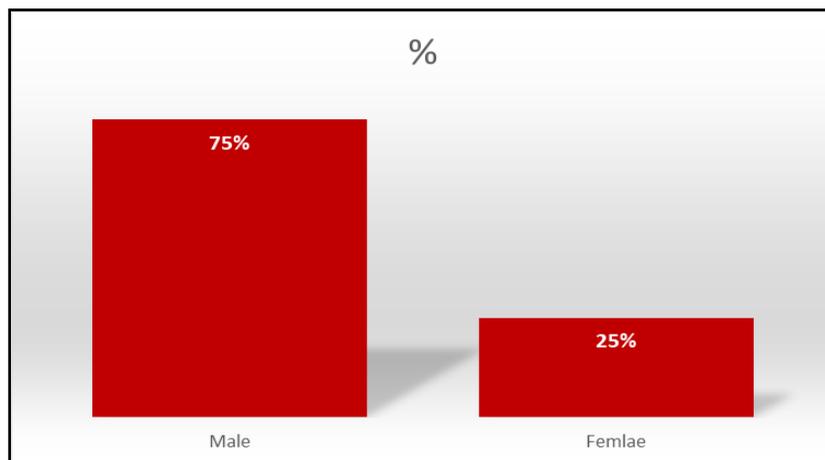


Figure-3: Gender distribution of the patients.

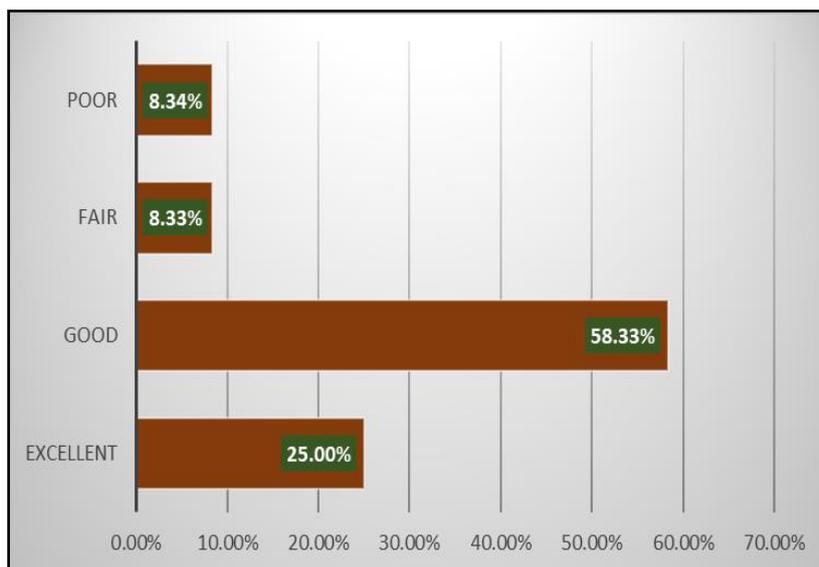


Figure-4: Final clinical outcome of the treatment.

Table 1: Distribution of fracture type

Type of Fracture	%
III	66.67%
IV	33.33%

Table 2: Shows time for union (in weeks)

Variable	Time of union (in weeks)
Minimum	28
Maximum	40
Average (Mean)	31.27

Table 3: Distribution of the patients by outcome the procedure.

Out come	n	%
Satisfactory (Excellent + Good)	10	83.33%
Unsatisfactory (Fair + poor)	2	16.67%
Total	12	100%

RESULTS

In figure-2 shows age distribution of the patients where most of the patients belongs to age group 31-50 (66.66%). The mean age of the total study population was 38 years (n=12).

In figure-3 shows gender distribution of the patients where 75% were male patient and 25% were female patients.

In table-1 shows distribution of fracture type where 66.67 % patients with type IV fracture and 33.33% patients were with type III fracture.

In table-2 shows time for radiological union after operation where the minimum time of union was 28 weeks & maximum time of union was 40 weeks. S.D, +-3.42.

In figure-4 shows final clinical outcome of the treatment. Most of the patients obtained good results, followed by excellent, fair and poor. Overall, 83.33 percent patients obtained satisfactory (excellent + good) result and 16.67percent unsatisfactory (fair poor).

In table-3 shows outcome the procedure after the treatment. 83.33 % patients obtained satisfactory result and 16.67% was unsatisfactory.

DISCUSSION

The displaced intracapsular fracture has been termed as unsolved problem.⁶ Management is more difficult in Young adult. ^[4]. More cortical bone in adult neck of the femur prevents reduction and compression.¹ Reconstructive Procedure such as total hip replacement is more likely to fail in young.² Moreover it may require revision surgery afterwards. So, for the management of such group of patients. Main aim should be to preserve the natural head of the femur to ensure, stable painless mobile hip.⁷

In 1973 one study reported that femoral neck fracture treated by internal fixation with quadrates femoris muscle pedicle bone graft. His result showed that that union rate of fresh fracture was 97%.¹ In 1982, another study said that, union time of femoral neck fracture treated by quadrates femoris muscle pedicle bone graft with internal fixation was six months.²

With existing clinical and radiological evidence this study showed a satisfactory result of 83.33% though in this study. In this type of operation minimum 2 years' time is required to make a comment regarding outcome of surgery. This short period of follow up gives an idea regarding possible outcome.

This result is comparable with similar result of study reported by one article.⁸ A total 89 patient of displaced transcervical fracture of the neck of the femur were treated by screw Fixation with muscle pedicle bone graft and obtained 84% satisfactory result.

In 1989one study reported that, a series of 16 patients of transcervical fracture neck of the femur by open reduction and internal fixation along with quadratus femories muscle pellicle bone graft and showed 87.05% satisfactory results.⁹

Among the total twelve cases garden type IV comprises eight (33.33%). There is no literature found for the incidence of neck femur fracture regarding its type (garden) in young age group.

CONCLUSION

From our study we can conclude that this technique is especially applicable in early days of fracture to achieve union and revascularization of the proximal fracture fragment and prevent non-union or avascular necrosis. The follow up period of this initial study is short, long-term follow up and evolution of the viability of this procedure should provide additional useful result.

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