

To Evaluate the Results of Internal Fixation and Posterior Muscle Pedicle Bone Grafting in Old Neck Femur Fracture: An Institutional Based Study

Surender Kumar

MBBS DNB (Orthopaedics), Junior Specialist, Government Medical College, Barmer, Rajasthan, India.

ABSTRACT

Background: Femoral neck fracture is a common fracture. The treatment of femoral neck fracture is still a matter of controversy even after so many recent advancements in orthopaedics. The present study was conducted to evaluate the results of internal fixation and posterior muscle pedicle bone grafting in old neck femur.

Materials and Methods: The study was conducted to evaluate the results of internal fixation and posterior muscle pedicle bone grafting in old neck femur. 40 patients were operated and included in the study. Evaluation parameter were union, Non-union, collapse of Neck, Coxavara, AVN of femoral head. In all the patient preoperative anteroposterior radiograph of the hip was taken. All the patients were operated upon a supine position on a fracture table. An anteriolateral approach was used to expose the fracture site. Reduction of the fracture was by leg traction and manipulation. A check X-ray of anteroposterior and lateral radiograph was taken to confirm reduction and the position of the implants. Fixation was done by compression hip screws with anterior muscle pedicle bone grafting. Supplementary autograft from anterosuperior iliac crest were taken.

Results: In the present study 40 patients were operated and included in the study. The hip rating system given by Salvatti and Wilson for evaluation of hip function was followed. The

results were excellent in 25 cases, good in 7 cases, fair in 5 cases and poor in 3 cases. The important complications noted were AVN in 12.5% cases, coxa-vara in 5% case, transient foot drop in 5% and temporary loss of scrotal sensation in 2.5%.

Conclusion: The present study concluded that results were excellent in 25 cases, good in 7 cases, fair in 5 cases and poor in 3 cases. The important complications noted were AVN in 12.5% cases, coxa-vara in 5% case, transient foot drop in 5% and temporary loss of scrotal sensation in 2.5%.

Keywords: Internal Fixation, Posterior Muscle Pedicle Bone Grafting, Femur.

*Correspondence to:

Dr. Surender Kumar,
MBBS DNB (Orthopaedics),
Junior Specialist,
Government Medical College, Barmer, Rajasthan, India.

Article History:

Received: 02-08-2019, Revised: 28-08-2019, Accepted: 22-09-2019

| Access this article online | |
|--|--|
| Website: www.ijmrp.com | Quick Response code  |
| DOI: 10.21276/ijmrp.2019.5.5.070 | |

INTRODUCTION

Femoral neck fractures account for nearly half of all hip fractures with the vast majority occurring in elderly patients after simple falls.¹ Cervico trochanteric fracture through base of femoral neck, second most common type of hip fracture, accounts for 25% to 30%.^{2,4} Femoral neck fracture treatment is typically classified into conservative and surgical treatments. Nevertheless, because conservative treatment requires long-term bedrest, the incidence of complications such as pulmonary infection and thrombosis is high. Therefore, most clinicians recommend surgical treatment as the first-line of treatment in old patients with femoral neck fracture.⁵ In 1962, the autogenous muscle pedicle graft based on the quadratus femoris muscle was used for the first time.⁶ Later, fresh autogenous cancellous iliac bone chips combined with muscle pedicle bone grafting have been reported to be good.⁷ The present study was conducted to evaluate the results of internal fixation and posterior muscle pedicle bone grafting in old neck femur.

MATERIALS AND METHODS

The study was conducted to evaluate the results of internal fixation and posterior muscle pedicle bone grafting in old neck femur. 40 patients were operated and included in the study. All patients of displaced femoral neck fractures were treated by Meyers' procedure. Patients with femoral neck fracture with an inability to walk due to reasons other than the femoral neck fracture, or with a life expectancy of less than five years, or with an inability to cooperate in the postoperative program were excluded from the study. All young patients with a displaced femoral neck fracture presenting late (more than 3 weeks old) or had unacceptable closed reduction of a fresh fracture were included in the study. Out of 40 patients, 29 were males and 11 were females. Their age ranged from 20 to 60 years. Evaluation parameter were union, Non-union, collapse of Neck, Coxavara, AVN of femoral head, pain, shortening. In all the patient preoperative anteroposterior radiograph of the hip was taken. All

the patients were operated upon a supine position on a fracture table. An anteriolateral approach was used to expose the fracture site. Reduction of the fracture was by leg traction and manipulation. A check X-ray of anteroposterior and lateral radiograph was taken to confirm reduction and the position of the implants. Fixation was done by compression hip screws with anterior muscle pedicle bone grafting. Supplementary autograft from anterosuperior iliac crest were taken.

RESULTS

In the present study 40 patients were operated and included in the study. The hip rating system given by Salvatti and Wilson⁸ for evaluation of hip function was followed. The results were excellent in 25 cases, good in 7 cases, fair in 5 cases and poor in 3 cases. The important complications noted were AVN in 12.5% cases, coxa-vara in 5% case, transient foot drop in 5% and temporary loss of scrotal sensation in 2.5%.

Table 1: Grading score of cases

| Grading | N (%) |
|-----------|-----------|
| Excellent | 25(62.5%) |
| Good | 7(17.5%) |
| Fair | 5(12.5%) |
| Poor | 3(7.5%) |
| Total | 40(100%) |

Table 2: Complications

| Complications | N (%) |
|-------------------------------------|----------|
| AVN | 5(12.5%) |
| coxa-vara | 2(5%) |
| transient foot drop | 2(5%) |
| temporary loss of scrotal sensation | 1(2.5%) |

DISCUSSION

Anatomical reduction, impaction and rigid internal fixation are essential in treating femoral neck fractures. Muscle pedicle bone grafting has been advocated by many investigators along with rigid internal fixation to prevent NU and AVN of the femoral head. This provides an additional source of blood supply for the femoral head which may have been rendered ischemic by the fracture and also allows reduction and impaction of the fracture under direct vision.^{7,9,10}

In the present study 40 patients were operated and included in the study. The hip rating system given by Salvatti and Wilson⁵ for evaluation of hip function was followed. The results were excellent in 25 cases, good in 7 cases, fair in 5 cases and poor in 3 cases. The important complications noted were AVN in 12.5% cases, coxa-vara in 5% case, transient foot drop in 5% and temporary loss of scrotal sensation in 2.5%. Meyers muscle pedicle graft has been a well recommended procedure for fracture neck non-union and delayed presentation in adults with union rates of 95%.¹¹

AK Gupta et al., in a clinical study of 32 patient, age of the patient varied from 14-62 years treated with open reduction and internal fixation with Meyers muscle pedicle bone grafting reported union

which was achieved in 89.5% cases, was followed-up for an average period of 3.4 years, with good functional results and had the ability to squatt and sit cross legged. Results were based on hip rating system given by Salvatti and Wilson. The results were excellent in 15 cases, good in 4 cases, fair in 4 cases and poor in 6 cases. Complications like avascular necrosis (n=2), transient foot drop (n=2), coxa- vara (n=1) and temporary loss of scrotal sensation (n=1) were noted in the study.¹²

Dasgupta S et al conducted a study among 10 cases of old fracture neck femur was treated by internal fixation and posterior muscle pedicle bone grafting of quadratus femoris and quadratus tubercle bone block. Evaluation parameter were union, non-union collapse of neck, osteonecrosis of femoral head, pain, range of movement and functional activities and overall satisfaction of patient. The results of fracture healing rate were good (7), fair (2) and poor (1).¹³

Khalil MI et al conducted a study among Sixteen cases of old fracture neck femur were treated by internal fixation and anterior muscle pedicle bone grafting of rectus femoris, sartorius bone block from anterior superior iliac spine. The results of fracture healing rate were good (9), fair (4) and poor (3).¹⁴

CONCLUSION

The present study concluded that results were excellent in 25 cases, good in 7 cases, fair in 5 cases and poor in 3 cases. The important complications noted were AVN in 12.5% cases, coxa-vara in 5% case, transient foot drop in 5% and temporary loss of scrotal sensation in 2.5%.

REFERENCES

1. Karagas MR, Lu-Yao GL, Barrett JA, Beach ML, Baron JA. Heterogeneity of hip fracture: age, race, sex, and geographic patterns of femoral neck and trochanteric fractures among the US elderly. *Am J Epidemiol.* 1996;143:677-682.
2. Hughes LO, Beatty JH. Current concepts review: fractures of the head and neck of the femur in children. *J Bone Joint Surg Am.* 1994;76:283-92.
3. Canale ST, Bourland WL. Fracture of the neck and intertrochanteric region of the femur in children; *J Bone Joint Surg Am.* 1977;59:431.
4. Ingram AJ, Bachynski B. Fractures of the hip in children; treatment and results. *J Bone Joint Surg Am.* 1953;35:867.
5. Bray TJ, et al. The displaced femoral neck fracture. Internal fixation versus bipolar endoprosthesis. Results of a prospective, randomized comparison. *Clin Orthop Relat Res.* 1988; 230: 127-40.
6. Judet R. Traitement des fractures du col du femur par greffe pediculaire. *Acta Orthop Scand.* 1962;32:421-7.
7. Meyers MH, Harvey JP, Jr, Moore TM. Treatment of displaced subcapital and transcervical fractures of the femoral neck by muscle pedicle bone graft and internal fixation, a preliminary report on one hundred and fifty cases. *J Bone Joint Surg Am.* 1973;55:257-74.
8. Salvati EA, Wilson PD., Jr Long term results of femoral head replacement. *J Bone Joint Surg Am* 1973; 55: 516-24.
9. Baksi DP. Internal fixation of un-united femoral neck fractures combined with muscle pedicle bone grafting. *J Bone Joint Surg Br.* 1986;68:239-45.

10. Koval, Zuckerman. Hip fractures: A practical guide to management. New York: Springer Verlag Inc; 2005.
11. Meyers MH, Harvey JP, Moore TM. The muscle pedicle bone graft in the treatment of displaced fractures of the femoral neck: indications, operative technique and results. *Orthop Clin North Am.* 1974;5:779–92.
12. Gupta AK, Rastogi S, Nath R. Internal fixation and muscle pedicle bone grafting in femoral neck fractures. *Indian Journal of Orthopaedics.* 2008;42(1):39–42.
13. Dasgupta S, Banerjee S, Biswas R, Dey S, Barman A, Moinuddin SK. Result of Internal Fixation and Posterior Muscle Pedicle Bone Grafting in Old Fracture Neck Femur. *Annals of International Medical and Dental Research* 2018 Nov.
14. Khalil MI, Rahman A. Results of internal fixation and anterior muscle pedicle bone grafting in old femoral neck fracture. *Bangladesh Medical Journal Khulna.* 2010;43(1-2):10-1.

Source of Support: Nil. **Conflict of Interest:** None Declared.

Copyright: © the author(s) and publisher. IJMRP is an official publication of Ibn Sina Academy of Medieval Medicine & Sciences, registered in 2001 under Indian Trusts Act, 1882.

This is an open access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Surender Kumar. To Evaluate the Results of Internal Fixation and Posterior Muscle Pedicle Bone Grafting in Old Neck Femur Fracture: An Institutional Based Study. *Int J Med Res Prof.* 2019 Sept; 5(5): 304-06.

DOI:10.21276/ijmrp.2019.5.5.070