

The Dynamic Condylar Screw: Post-operative Complications when used in Distal Femoral Fracture among Adults

Naeem ul Haq Shaikh, Sunil Kumar, Syed Salman Adil, M. Pervaiz Anjum

ABSTRACT

OBJECTIVE: To determine the post operative complications when distal femoral fractures in adults is fixed using dynamic condylar screw.

STUDY DESIGN: Observational study.

PLACE AND DURATION OF STUDY: Study conducted in Orthopedics department, Dow OJHA Hospital and Civil Hospital Karachi, from July 2014 to December 2015.

METHODOLOGY: Although patients' with simple and closed supracondylar fractures of the femur were treated by dynamic condylar screw system, however for this study inclusion criteria was patients having closed supracondylar fracture of the femur of either gender aged between 20 to 65 years and presented earlier. Follow up of all these patients was done. Data was analyzed by using SPSS statistical package version 20.

RESULTS: Out of 46 patients, 41(89.13%) patients were males and 5(10.86%) were females. Mean age of the patient in this study was 31.1±3.5 years. 33(71.73%) patients sustained injury following Road Traffic Accident (RTA), 7(15.21%) presented with history of assault and 6 (13.04%) patients sustained injury following fall. The post operative complications observed in this study was infection in 4(8.69%), shortening in 3(6.52%), deformities in 3(6.52%) cases, non-union in 1(2.17%) case and implant failure in 2(4.34%) cases.

CONCLUSION: Dynamic condylar screw may confidently be used in the management of supracondylar fractures. The procedure is technically manageable with minimum post operative complications.

KEYWORDS: Post operative complications, Dynamic Condylar screw, Distal femoral fractures.

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INTRODUCTION

Fractures of the distal femur whether supracondylar or intercondylar have been historically difficult to manage because fracture nature is unstable and depends upon the degree of comminution¹. Distal femoral fractures are more likely in patients who have osteoporosis and in patients who have had prior artificial knee replacement surgery. Successful treatment of intra-articular fractures especially in weight bearing joint requires restoration and maintenance of the congruity of the two articular surfaces. Proper anatomic reduction to avoid post traumatic arthritis in articular surface involvement^{2,3}.

Worldwide distal side femoral fractures are reported less as compare to hip fractures and approximately for 7 to 9% of femoral fractures⁴. Anatomical reduction of the articular surface, restoration of limb alignment and early mobilization has shown to be effective ways of managing most distal femoral fractures. Worldwide distal side femoral fracture still challengeable even technically advanced and availability of surgical

implants⁵.

Various implants using in different orthopedic procedure consists of Angle blade plate, Rush pins, Ender's nail, Zickel device and Interlocking nails have been used. These are technically demanding and none combine interfragmentary compression and good purchase in osteoporotic bone. Thin cortices, comminution, osteopenic and a wide medullary canal make secure internal fixation difficult to achieve^{6,7}. Dynamic condylar screw provides freedom in the plane of flexion and extension, hence is technically less demanding than fixed angle device.

MATERIAL & METHODS

This study was carried out in Orthopaedics department, Dow OJHA Hospital and civil hospital Karachi, from July 2014 to December 2015. 46 patients admitted through the outpatient department as well as from casualty department of orthopaedic.

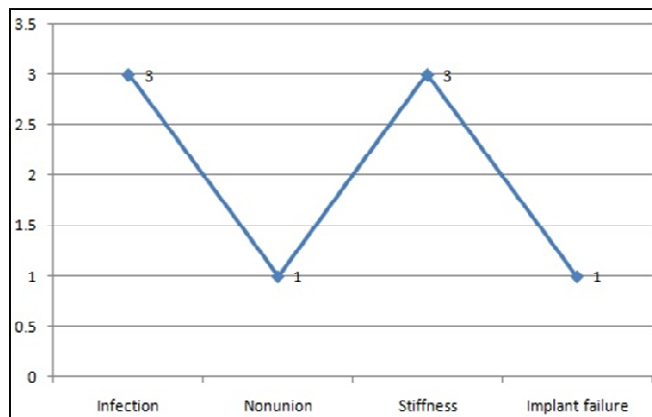
This is observational study of supracondylar fractures of the femur which were treated by dynamic condylar

screw system. All patients underwent for base line investigation. Inclusion criteria were distal femoral fractures which are of closed type, age 20 to 65 years, both gender and fresh fracture. Exclusion criteria was age below 20 years patients not willing for surgery, patients not medically fit for surgery and associated with severe chest or abdominal injuries. Follow up of all these patients was done. Data was analyzed by using SPSS statistical package version 20.

RESULTS

Out of 46 patients, 41(89.13%) patients were male and 5(10.86%) patients were female showing male preponderance because of traveling and working in fields and factories. Minimum age of the patient was 20 years and the maximum age was 65 years. Mean age of the patient in the study was 31.1 (\pm SD3.5) years. In our study, 33(71.73%) of patients sustained injury following Road Traffic Accident (RTA), 7 (15.21%) history of assault cases and 6(13.04%) patients sustained injury following fall. The fractures were classified according to Muller's classification for distal femoral fractures. The complications seen in this study were infection in 3(6.52%), Stiffness in 3(6.52%) cases, nonunion in 1(2.17%) case and implant failure in 1(2.17%) case (Chart I).

CHART I: COMPLICATIONS



DISCUSSION

Fractures of the distal femur whether supracondylar or intercondylar have been historically difficult to manage. The proximity of these fractures to knee joint further makes full range of motion and function difficult⁸. The goal of treatment in such cases is to achieve a painless and stable joint with good range of motion. This can be achieved by open reduction and internal fixation with such technique that allow rigid fixation of articular surfaces, is easier to use, gives respect to soft tissues and allows early weight bearing⁹. The dynamic condylar screw is a technique which makes accurate reduction and fixation easy. Other benefits

include the ability to use compression of the femoral condyles interfragmentary, while in osteoporotic bone need to adjust alignment only in two planes^{8,10}.

The higher rate of fracture in male clearly correlated with the life style of male, especially in our part of world. Males are more involved in outdoor activities and the young male are more enthusiastic about life and careless drivers. Female usually have sedentary life style and less involved in driving which is a common cause. In our study we observed male to female ratio was 8.2:1. While in the study of Sanjay Yadav¹¹ reported 78% of patients were male and 22% were female with the mean age of 37.53 years. In our study mean age is 31.1(\pm SD3.5) years.

Increase in road traffic accidents and associated high velocity trauma is an ever growing problem. There is accompanying increase in number and severity of fractures and the distal femur is not an exception. There will be an increased risk of knee injuries in a car accident. Traveling at high speed at the position of the lower extremities flexed knee with the leading edge will be the first to enter into force during the collision. The injured pedestrian alternatively known as bumper fractures around the knee vehicle bumper to knees. In our study 33(71.73%) of patients sustained injury was following road traffic accident (RTA), 7(15.21%) history of assault cases and 6(13.04%) patients sustained injury following fall. However in the study Syed AA also reported the high numbers in RTA cases¹².

Control of infection in open fracture needs very careful management because infections impair the healing process of fracture and causes of grave suffering to patients. Proper management should be done to control or prevent infection. There are numerous predisposing or risk factors of infection. In this series there were 3(6.52%) cases of deep infection which was not controlled even after appropriate antibiotics. In one the infection was controlled after implant removal. The study by Siliski JM, Mahring M and Hofer HP 1989 noticed compound fracture associated deep infection had poor outcome results of three patients, which is almost similar to our study¹³. Nonunion will occur due to not properly acute fractures management then the strategies of each complication to be much more complex. In addition, the final results can be disappointing. Therefore if there is a fracture it needs careful treatment of the first stage. In our study nonunion and implant failure were observed one case in each because of deep infection occurred post operatively. However in the study of Hakeem A¹⁴ reported similar results. Another study conducted by Sidhu AS¹⁵ reported that out of 30, 2(6.6%) cases were observed non-union with implant failure due to postoperative infection, while in our study results are similar to Sidhu AS study.

All joints are susceptible to stiffness after injury but some of the joints more susceptible than others. Knee, shoulder and elbow are the most vulnerable to stiffness of large joints after injury. In our study we observed post operative stiffness of knee joint was in 3 (6.52%) cases. While in 2010 study conducted in Peshawar had reported similar results regarding developing stiffness of the knee joint was in 2(6.4%) cases¹⁴.

CONCLUSION

Dynamic condylar screw is nowadays commonly used in the management of supracondylar fractures, technically managed easily and with fewer complications reported like infection, stiffness, even the excellent result in the situation of bridge plate in comminuted supracondylar fracture of femur.

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