ORIGINAL RESEARCH
Long Term Results of Delayed Fixation of Displaced Femoral Neck Fractures in Young Adults.

Naseemul Gani1, Hayat Ahmad Khan2, Munir Farooq3, Mohammad Ashraf Khan4, Hina Jeelani5, Nazia Hassan6

ABSTRACT

Introduction: Femoral neck fractures are among the most debatable topics round the globe. The reason being the precarious blood supply of the femoral head which leads to non-union and avascular necrosis. However the delay in presentation or surgery owing to the non-availability of specialised trauma centres or delayed referral in the developing world is expected to affect the outcome in terms of non-union and AVN. The aim of this study is to present the longer follow up of patients who were treated with internal fixation for displaced femoral neck fractures. Material and Methods: 120 patients who had displaced fracture neck of femur during the interval of 2001-2007. Mean age group of patients was 40 years (range 20-57). 67% (N=80) were males and 33% (N=40) were females. Patients were referred to our institute from various district hospitals within 2-5 days of trauma or had gone to bone setters or quacks for the same, causing delay of up to 7 days. Results: Final follow up was possible in 120 patients.10 patients had non-union (clinical and radiological) while as 35 patients developed avascular necrosis during the follow up time. For the first four years, only 12 cases had avascular necrosis out of which 4 were advised total hip arthroplasty. Subsequently the other 23 patients developed stage 4 disease and were managed with THA or otherwise. Conclusion: Displaced Femoral neck fractures in young adults should be internally fixed and primary replacements should be reserved for elderly populations. Patients should be followed up regularly to look for AVN in such hips. Satisfactory results are achieved even when the displaced neck is internally fixed in delayed presentations.

Keywords: Fracture neck of femur, Gardens classification, Delayed fixation for fracture NOF.


Corresponding author: Dr Naseemul Gani, Bone and Joint Hospital, GMC Srinagar, Kashmir India

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INTRODUCTION

Femoral neck fractures are among the most debatable topics round the globe. The reason being the precarious blood supply of the femoral head which leads to non-union and avascular necrosis.1,2 The recent advances in the hip arthroplasty has solved many problems but the younger age group is still in focus as early reduction and internal fixation is considered to be the standard option.3,4 However the delay in presentation or surgery owing to the non-availability of specialised trauma centres or delayed referral in the developing world is expected to affect the outcome in terms of non-union and AVN. The aim of this study is to present the longer follow up of patients who were treated with internal fixation for displaced femoral neck fractures and to look for AVN, non-union or any other complications thereof. In 2008 we presented Fifty five cases and then followed them over the period of minimum seven years.5

MATERIAL AND METHODS

A prospective study was carried out on 120 patients who had displaced fracture neck of femur during the interval of 2001-2007. Mean age group of patients was 40 years (range 20-57). 67% (N=80) were males and 33% (N=40) were females. Patients were referred to our institute from various district hospitals within 2-5 days of trauma or had gone to bone setters or quacks for the same, causing delay of up to 7 days. Left side was involved in 73 patients and Right in 47 patients. Cause of trauma was fall from height in 70% patients. RTA in 28% patients. All fractures were classified using Gardens system into Type III and Type IV. There were 70 patients in the first group and 50 in the latter group. Associated injury was found in 32 patients. The patients were operated at the mean of 6 days after the trauma episode under spinal anaesthesia or epidural anaesthesia. Whitman’s method was

1Assistant Professor, 2Registrar Orthopaedics, 3Orthopaedics. Professor, 4PG Student, Department of Orthopaedics, B & J Hospital, 5Demonstrator, Department of Orthopaedics, GMC, 6Intern, SKIMS, Srinagar, Kashmir J&K, India
used for reduction under image intensifier by one of the authors. The acceptable reduction (i.e. <2.5mm displacement; AP < 5° varus to ≤ 25° valgus and lateral 10° - 20 from anatomic as described by Lindquist) was set as the goal. Fixation was done with three 6.5mm/7mm AO or ASIS cannulated screws placed in an inverted triangle pattern. Washers were used as per the surgeon’s choice. The IV antibiotics were given for one day and the standard rehabilitation protocol was followed, i.e., encouraging patients to sit on first postop. day and touch down weight bearing at 2 weeks with walker and partial weight bearing at 6 weeks. Patients were allowed full weight bearing at clinical and radiological union. Non-union and avascular necrosis were the main complications seen and looked for during first 6 months. Failure of fixation with implant breakage, loss of reduction or persistent fracture line at 6 months were the signs of non-union. Avascular necrosis was classified radiologically as per Ficat and Arlet Classification system.

RESULTS

135 patients were initially treated with this method and 15 were lost to follow up. Final follow up was possible in 120 patients. 10 patients had non-union (clinical and radiological) while as 35 patients developed avascular necrosis during the follow up time. All 10 non-union patients were managed as per the merit (age and time) while as 35 patients who developed avascular necrosis were further treated as per the symptoms. For the first four years the avascular necrosis had only 12 cases out of which 4 were advised total hip arthroplasty. Subsequently the other 23 patients developed stage 4 disease and were managed with THA. The mean pain grade at final follow up was 4.9 (range 4-6) and only 5% patients needed analgesics for pain relief. All but 10 patients returned to pre-injury job and few had to modify their activities. As per Judet’s point system (table 2a and 2b) 87 patients achieved good to excellent results.

DISCUSSION

The bone quality and the healing potential in young patients makes the fracture neck of femur still the debatable topic. In the era of arthroplasty, the delayed fixation of displaced femoral neck fractures may not have many takers around the globe. But the wear of arthroplasty components and life of implant makes the surgeon think twice, before offering the THA to the patient. Internal fixation of fracture neck of femur (even if delayed) has a high rate of fracture union as is demonstrated in various studies.8-10 The delay in the presentation in the developing world is mainly due to delayed referral or the mismanagement by quacks as depicted in the literature from the rest of the world.11 Further lack of trauma support and administrative issues may cause delay in fracture management owing to huge rush of...
patients at government hospitals with limited resources. So the study of this type was inevitable from the orthopaedic hospital catering a population of 5 million in a hilly region. The scoring system used was the Judet system as it is simple and has been used by other authors. The final scoring was done at minimum 7 years and the complications like non-union and AVN were noted. The non-union noted by our team during the follow up is 10% and is comparable to other studies. Surgical error was the most important factor in 7 cases followed by patient compliance (n=5). Similar observation was made by Upaday et al. Delay in the fixation as noted by other studies was important factor for non-union was not noted in our study as all fractures were fixed at an average 6 days after injury. Bray and Zeterbay have suggested less than 6 hrs as critical time for surgery (golden hour) but even delayed fixation has yielded good results in our study. AVN is reported to be 16% -27%. Among Several factors, time of reduction was only factor for AVN. Patient age, fracture displacement and type of fixation was not significant. Manning et al reported 20% AVN in 27 cases in fractures fixed within 6 hrs. The detailed description of final assessment is given in table 3.

CONCLUSION

Displaced Femoral neck fractures in young adults should be internally fixed and primary replacements should be reserved for elderly populations. Patients should be followed up regularly to look for AVN in such hips. Satisfactory results are achieved even when the displaced neck is internally fixed in delayed presentations.

REFERENCES