Original Research Paper

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Orthopaedics

MANAGEMENT OF INFECTED GRADE III COMPOUND COMMUNITED SHAFT FEMUR FRACTURE - A CASE REPORT

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ABSTRACT Open grade III Compound femur fractures are a challenging therapeutic problem as they are associated with other injuries. Method used should limit further soft tissue damage, spread of infection and morbidity and providing mechanical support and should restore normal alignment. We report a case of 28 year old male patient who had history of Road traffic accident leading to Gustilo-Anderson III B compound comminuted shaft femur fracture which was operated within 12 hours of trauma with femur interlocking nailing with debridement of wound ,split skin grafting was done over the healthy wound . Patient came back with complaints of pus discharge from proximal screw site after 75 days, which was managed by implant removal with antibiotic impregnated cemented k nail followed by physiotherapy. After 1 year follow up patient is having radiologic and clinical union of fracture with painless mobilization and walking without support.

KEYWORDS : open grade III compound fracture , Interlock nailing, femur fracture, antibiotic cemented k nail

Introduction:

Open grade III fracture of femur are a big challenge to the orthopaedic surgeon in their management. Open fractures are usually associated with other injuries and they are result of high energy trauma. Hence, we should follow the guidelines of advanced trauma life support system [1]. Fracture stabilisation should be done first and should restore alignment of limb, eliminate movement at the site of fracture, limit soft tissue damage, decreases the risk of infection [2]. The basic objectives in the management of these fractures are to prevent infection, reconstruct soft tissue defects and achieve bony union. Adequate debridement and early assessment of soft tissue defect is essential so that appropriate soft tissue coverage can be provided. Intramedullary nailing is treatment of choice in closed femur shaft fracture and open grade III compound fracture are problematic due to risk of infection and difficulty in management of soft tissue [3]. External fixation have been used for open grade III compound fracture. [4-8]

External fixation are associated with high risk of pin tract infection, malunion, non union, long recovery period, poor patient compliance and need for reoperation [4,5,9].

Case Report:

A 28 year old male patient came to casualty with History of Road traffic accident complaining of pain and wound over left thigh .He was conscious oriented . Patient was stabilised first according to Advance trauma Life Support and evaluated for any life threatening injury. After stabilizing the patient hemodynamically secondary survey was conducted, patient had wound of size 10x8x4 cm (bone deep) over posterior aspect of left distal thigh. No neurovascular damage was observed on left lower extremity . Proper wound wash was given with sterile normal saline , h2o2 and betadine. Proper antiseptic dressing was done and affected limb was splinted using Thomas splint and after splinting patient was shifted for radiologic assessment .X-ray of fractured limb were taken in proper antero-posterior and lateral view joint above and below. Patient was operated within 12 hours of arrival. Debridement and irrigation of wound was done in operation theatre all dead tissue were excised and antegrade femoral nailing with antibiotic impregnated cement beads was done on fracture table with aid of image intensifier.The antegrade femoral nailing was done in fracture table. Reaming of proximal medullary canal was done. Nail was locked both proximally and distally. One distal locking was done with free hand under image intensifier with poller screw in situ. Both static and dynamic proximal locking was done. Proper wound wash given and antibiotic impregnated cement beads instilled in wound , staysuture taken over the wound. Post operative broad spectrum antibiotic was started with daily wound wash . Patient was posted again for cement beads removal with debridement of wound with removal of devitalised tissue after 3 days .Again same protocol of broad spectrum IV antibiotics for 5 days and then oral antibiotics started and suture removed cleanly after 14 days . Proper wound wash was given with saline ,h202,betadine and VAC dressing was done continuously for 5-7 times, each VAC dressing kept for 5 days , when healthy granulation tissue achieved then split skin grafting was done after 45 days of trauma and was discharged after confirming that skin graft has been accepted. Patient came back 1 month later with complaint of pus discharge from proximal locking site, pus culture was sent and antibiotics started according to pus culture sensitivity report. Patient follow up accordingly but pus discharge did not stopped so patient was again posted for implant removal and intramedullary fixation with antibiotic impregnated cemented k -nail .

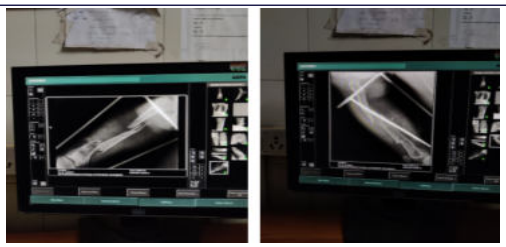
Nail removal was done in lateral position and in same sitting intramedullary fixation with antibiotic impregnated k -nail was done after 4 month. Post operative antibiotics was given according to pus culture report.

Suture removal was done on 14 post operative day. Knee and hip mobilization and quadriceps exercise were started as soon as the patient was comfortable. Patient was mobilised after suture removal. Partial weight bearing was started 2 months which was slowly progressed to full weight bearing as patient became comfortable .

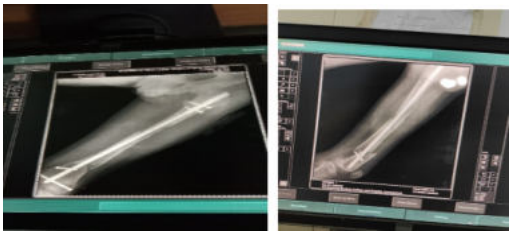
At 1 year of follow up patient had no complaints of pain over fracture site with good radiologic union on X-ray. He had a shortening of 1.5 cm shortening over the involved limb with 100 of external rotation malunion. He was able to mobilize with no supports with shoe raise over involved limb.

CLINICAL WOUND

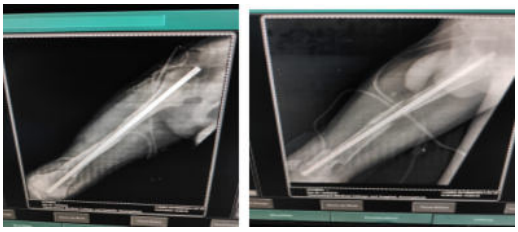
PRE -OP



AP LATERAL
POST OP X RAY AFTER INTERLOCK NAILING



AP LATERAL
POST OP X RAY AFTER ANTIBIOTIC IMPREGNATED K-NAIL



AP LATERAL
FOLLOW UP XRAY AFTER 9 MONTH

Discussion:

Lhowe DW and Hansen [7] performed immediate intramedullary nailing in 47 open femoral shaft fractures included 8 open grade III B compound fracture. All the fractures healed within 4 months of injury. No infection in open grade III injuries. The other complications included loss of fixation in four patients (10%), a wound seroma in two patients (5%) and .Late complications were , limb length discrepancy in three (7%), external rotation malunion in one (2%). Lhowe and Hansen concluded that immediate intramedullary nailing can be accomplished safely in open fractures of the femur with an acceptable rate of complications, given thorough debridement of the wound, proper equipment and experienced surgical team is available. Williams MM et al. [11] did a prospective study to evaluate the relative merits of primary versus delayed reamed intramedullary nailing in 42 open femoral shaft fractures. The study included 14 open grade III fractures. Average time to union was 3.8 months. The infection and non-union rate was 2.4%. The data suggested that primary reamed intramedullary nailing is an effective treatment alternative for the patients with multiple injuries, regardless of soft tissue injury, including grade .Baixauli F Sr et al. [12] performed interlocked nailing in 28 open femoral shaft fractures including five grade IIIA fractures. None of the patients developed infection or non-union. Apart from this, their average time of union was 20 weeks. They concluded that reamed intramedullary nailing is safe and excellent treatment option for open femoral shaft fractures.

In our patient of grade III compound fracture fixed with intramedullary nailing which was complicated by infection which in turn was managed by implant removal and antibiotic impregnated K -nail.

CONCLUSION:

In conclusion, fixation of open grade III fractures of femoral shaft with early intramedullary nailing has a high risk of complication especially infection, but it can be managed with antibiotic impregnated nailing good results with proper alignment, good range of motion, short rehabilitation period and acceptable infection and non-union rates.

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