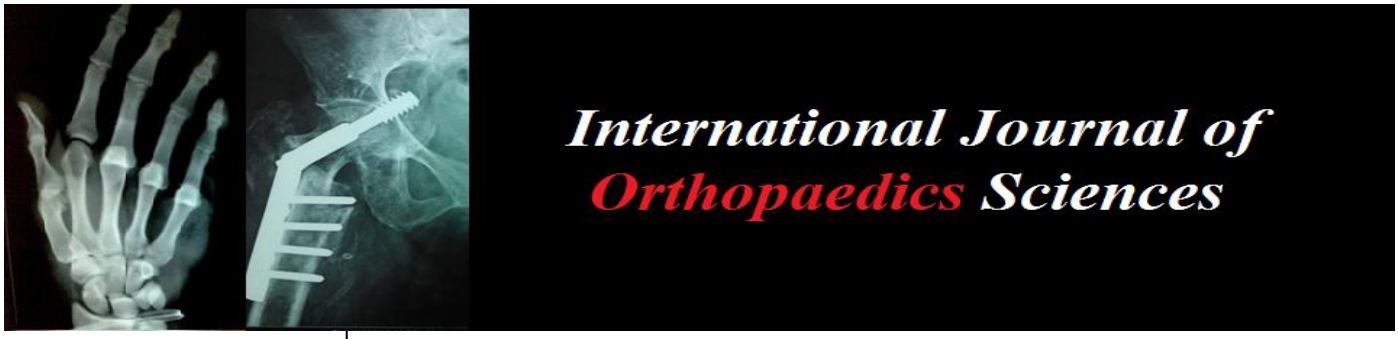

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Revision proximal femoral antibiotic nailing for non-union of neck and shaft of femur fracture with infected implant *in situ* and discharging sinuses: A case report

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Abstract
Introduction: Chronic osteomyelitis of femur with implant *in-situ* and discharging sinuses is conventionally treated stepwise, but our study is more economical and effective single step procedure of fracture fixation by using antibiotic intramedullary nails, and antibiotic beads done in same sitting.
Aim: To assess the duration of eradication of infections. and to determine duration of bony union for cases treated secondarily with antibiotic intramedullary nail.
Material and Methods: This is the case report of chronic osteomyelitis of femur with implant *in-situ* with discharging sinuses. The case was primarily treated immediately after trauma with plating and screw fixation now presented with infection and discharging sinuses. Culture and sensitivity were done, allergy for the sensitive antibiotics ruled out. Postoperatively it was followed up for 12 months.
Results: Infection was fully controlled and bony union was achieved.
Discussion: Antibiotic nailing is comparatively more economical and effective single stage procedure for management of infected femur fracture with non-union with implant *in-situ* with discharging sinuses. This method delivers high concentration of antibiotic at local site without any systemic toxicity. It has better compliance compared to the conventional way of management.

Keywords: chronic osteomyelitis, femur, implant *in-situ*, discharging sinuses, antibiotic nail

Introduction
The chronic infection of long bones with implants *in situ* and discharging sinuses represents a complex clinical challenge to control infection, to get bony union and to prevent sepsis. The incidence of such cases is increasing day by day due to the increasing use of intramedullary nailing or plating for the fixation of such fractures. Treatment is determined by the extent of the local bony and soft-tissue involvement, growth of organism and their sensitivity, the presence or absence of fixation and implants, the progression of healing of the sinus tract, fracture and comorbidities**.**
The known conventional method of management for chronic infected long bone with implant *in situ* and discharging sinuses is two staged, firstly control or eradication of infection and then treatment of bone deformity for non-union or delayed union or malunion along with supportive measures for general health and wellbeing of the individual.
In our case accurate microbiological diagnosis was made preoperatively through tissue/pus culture. Extensive debridement and irrigation, Reaming, together with thorough irrigation of the medullary canal, excision of the sinuses and debridement of the infected soft-tissue envelope was done. Lastly fracture fixation was achieved by antibiotic nailing and antibiotic beads were also used in the same sitting. Antibiotic used were vancomycin and gentamycin. the case was followed up for average time period of 12 months. Infection control was judged on basis of discharge through wound, wound condition, closure of any sinus, general condition of the individual, laboratory parameters and bony union was seen by progression of bone regeneration by serial x-rays.

History
A 73-year male presented to us with the complaint of pain and discharging sinuses over the left thigh from six months. The patient has alleged history of fall from height 8 months back

and sustained injuries over left hip and thigh, for which he underwent surgical procedures. Two months after the surgery he started developing pain followed by the discharge over the surgical site.

Local examination

Patient lying supine over the hard couch, parts were exposed. Lower limbs were in neutral position with shortening of left limb. Swelling and multiple discharging sinuses with bony deformity was seen at the left thigh. On palpation warmth and tenderness was observed along with multiple active discharging sinuses. He was unable to bear weight on the affected limb, movement around the left hip were painful.

Investigation-

X- ray pelvis with bilateral hip anteroposterior view
X-ray left femur full length anteroposterior and lateral views.
Sinogram.
Pus culture and sensitivity.

Diagnosis

Left neck of femur with 3 cancellus screws *in situ* and left non united infected shaft of femur fracture with plate *in situ* with multiple active discharging sinuses**.**

Treatment

Removal of the implants *in situ* with sinus tract excision with soft tissue debridement with revision proximal femoral antibiotic nailing with antibiotic beads using vancomycin and gentamycin. Followed by removal of antibiotic beads after 2 weeks

Follow-up

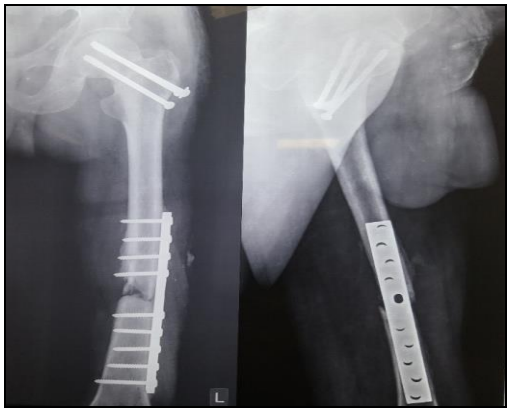
Antibiotic beads removal was done after 2 weeks and then he was followed up for the duration of 12 months and was examined for any discharge through wound, wound condition, closure of sinuses, general condition of the individual, laboratory parameters and bony union was seen by progression of bone regeneration by serial x-rays.

Results

infection was fully controlled and bony union was achieved.

Conclusion

Antibiotic nailing is economical and effective single stage procedure for management of infected long bones and antibiotic beads deliver high concentration of antibiotics at local site without any systemic toxicity. It has good compliance in compare to the conventional two stage management.



x-ray at the time of presentation

x-ray immediate post-op

Beads removal after 2 weeks

Removed beads string

x-ray follow -up (2months)

Patient limb at follow up

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