ABSTRACT
Chronic osteomyelitis in adults is a rare disease. It is usually seen in patients with transient or chronic immune deficiency. Chronic osteomyelitis develops as a result of inadequate or improper treatment of acute osteomyelitis. Sometimes large sequestrum develops with massive destruction of bone. Such a big sequestrum removal puts bone in real danger of pathological fracture. In such cases ipsilateral fibular transposition can be done by Huntington’s procedure. Here we are presenting a case of chronic osteomyelitis with massive sequestrum formation, that was removed and saucerization done and after controlling infection ipsilateral fibular transposition by Huntington’s procedure was done. Patient was kept in above knee POP cast and following that a patellar tendon bearing (PTB) cast was put. When fibula was united above knee walking caliper was given, which was continued for 2 years for proper consolidation and incorporation of graft. Screws removed after 2 years. After 2 years, consolidation and integration of fibula was complete without any complication. Range of motion was full. Finally in our patient ipsilateral fibular transfer to fill tibial gap gave good result but required long follow-up.

CASE REPORT
Here we present a case of a 25 years old female who came to RIMS Orthopedics OPD with chief complaints of pain with discharging sinus in right leg for 1 year. Pain was constant nagging in nature, not felt in any other areas, increases while walking and relieved after taking rest. It was constant at night, which was disturbing her sleep. She complained of white smelly discharge from inner side of her mid leg for same duration. She was apparently alright one and half year back when she suffered a brief period of flu, following which she started having pain in her left leg which was severe in nature and associated with high fever. She consulted a local doctor and was prescribed a course of oral antibiotic and pain killers, which gave her initial relief. But she was having off and on pain while walking and also at rest. She took analgesics for a period of 6 to 8 weeks. After that pain became constant. After that she felt irregular thickening in her leg bone. After few months, she noticed a small opening over inner side of middle leg which was small (5mm×5mm in diameter), present on the middle leg and was discharging white colored smelly pus. For the last 4 months she was often suffering from fever and then she came to RIMS OPD. She was non-vegetarian, non-alcoholic and occasional betel leaf chewer. Components used with betel leaf usually contain nicotine that might have further reduced the blood supply in the affected leg. She was off average local built and average nutrition. All other family members were apparently healthy. On examination she was well oriented to time, place and person. She had pallor but there was no icterus or cyanosis or edema. On local examination tibia was of irregular contour, tender on deep palpation and one discharging sinus was seen over medial aspect of left middle leg with purulent smelly discharge. Radiographic examination showed big sequestrum in mid tibia with patchy bone resorption over proximal and middle third. Based on radiographic examination it was diagnosed a case of type IV Cierny and Mader chronic osteomyelitis as it had diffuse involvement [1]. CT scan was done for proper definition of sequestrum and MRI to know soft tissue status and sinus tract. Sinogram was done to see the extent of the sinus tract. Routine investigations revealed raised ESR and WBC count. CRP was positive. Other parameters were within normal limit. She was given intravenous 3rd generation cephalosporin. Pus was sent for culture and sensitivity and TB PCR, which showed staphylococcal growth. TB PCR was negative. After getting anesthetic clearance sequestrectomy and saucerization done to remove all the infected necrotic bone and soft tissue with sinus tract. A drain was kept which was removed after 5 days when there was no discharge. Above knee slab was applied.

Keywords: Consolidation, Integration, Huntington’s procedure, PTB, Saucerization, Sequestrum
Post-operatively she was given intravenous cephalosporin for 5 days and then oral cephalosporin given (according to sensitivity report). She was discharged with proper advice and oral antibiotics. After 2 weeks slab was changed to cast and continued for 3 more weeks and then PTB cast applied. Oral antibiotic was continued. Serial radiographic monitoring was done. Her ESR came within normal limit and CRP came negative. She was followed up in OPD for next 4 months with advice of non weight bearing because of weakening of tibia following massive sequestrum removal. In serial radiography gap following removal of sequestrum was still persisting and not showing any sign of resolution. By the end of 6 months all her routine blood investigation reports came within normal limit. CRP was negative and she was not having any pain or fever, indicating controlled infection. We planned for Huntington’s procedure. Postero-lateral approach was used. Fibula was osteotomized in two levels corresponding to tibial defect and the osteotomized segment of fibula with attached muscles was transferred to the tibial shaft where bone was lacking (middle third) and was fixed to remaining cortex of tibia with 2 cortical screws. Cancellous bone graft from iliac crest put in the gaps. The tibial segment proximal to osteotomy was loose and encirclage was done with stainless steel wire encircling proximal tibia and fibula. Distal fibula was kept intact to maintain ankle syndesmosis [Table/Fig-1, 2]. Postoperatively POP slab given and changed to POP and was kept for 12 weeks. Then we changed the POP cast to PTB cast, which was kept for another 6 weeks. By this time bone was united and we gave a walking above knee caliper which was continued for 2 years. By 2.5 years fibula was completely incorporated and integrated. After proper radiological evaluation when consolidation was certain, we removed the screws but encircling wire kept in situ [Table/Fig-3]. After removal of screws PTB was kept for 4 weeks. Patient was allowed full weight bearing. Final external look of the affected leg was distorted but it did not hamper her functional capabilities [Table/Fig-4, 5].

**DISCUSSION**

As relatively avascular dead bone (sequestrum) with surrounded thick periosteum with scarred soft tissue covers infection focus, systemic antibiotics cannot act effectively. Usually surgery is only answer. But it might weaken the involved bone, especially following large sequestrum removal. Many a times over all general condition of the patient is not good, as in adults chronic osteomyelitis develops when patient’s immune system is jeopardized. Diabetes, chronic alcoholism, immunosuppressive disease and much other chronic disease puts patient in a risk zone of developing chronic osteomyelitis. Over all treatment of chronic osteomyelitis is a matter of concern. It needs multidisciplinary approach [1]. Treatment consists of spells of bed rest, antibiotics and a waiting policy to monitor whether can be treated conservatively or not.
advantages of this method are technically less demanding, integration and consolidation takes almost 2 years. Finally, it should be protected by PTB or suitable braces. Complete with time due to normal weighting stress, but during this time is always there. After transfer of fibula it gets hypertrophied this aspect and takes a bit shorter time, but risk of infection should be introduced early. Single stage operation is better in condition, so active and passive joint mobilizing exercises. But 2 stage operations keep patient in long non-weight bracing and as same sided fibula we are mobilizing volume of leg is hospital with minimal infrastructure. Disease site is not opened mortise. This is a simple procedure and can be easily done in muscle attachment. Distal end is not cut it to preserve ankle. Failure is very rare, because fibula is transported with intact muscle attachment. Distal end is not cut it to preserve ankle mortise. This is a simple procedure and can be easily done in hospital with minimal infrastructure. Disease site is not opened and as same sided fibula we are mobilizing volume of leg is reduced aiding in proper closure, especially in presence of scarred tissues. In our case we did this operation in 2 stages. But 2 stage operations keep patient in long non-weight bracing condition, so active and passive joint mobilizing exercises should be introduced early. Single stage operation is better in this aspect and takes a bit shorter time, but risk of infection is always there. After transfer of fibula it gets hypertrophied with time due to normal weighting stress, but during this time it should be protected by PTB or suitable braces. Complete integration and consolidation takes almost 2 years. Finally, advantages of this method are technically less demanding, wound closure is better, union rate is good and requires minimal instrumentation. Some drawbacks of this procedure are like limb shortening, deformity, long duration of treatment and patient can’t get involved in heavy sporting activities. In our case final outcome was good in terms of union, strength and range of motion.

**CONCLUSION**

Treatment of chronic osteomyelitis with large sequestrum is a real problem for both the patient and the orthopedic surgeon concerned. If sequestrum is large enough it will weaken already weaken bone and put bone in real danger of pathological fracture. Much method is already described in many literature and study. Among them Huntington’s procedure is easy to perform, requires less surgical expertise and relatively cheaper. Integration of fibular graft is almost certain as its vascular attachments are kept intact. As we a using same sided fibula wound closure also good in spite of scarred tissue, as it reduced the volume. But only Huntington’s method is not answer to all the cases, many other methods may be necessary depending on the case. In our case we did operation in two stages, though single operation reduces time and cost of treatment. Our result is good in terms of union, consolidation and functional outcome, but it required a long period of non weight bearing. Finally we can say that this operation is very easy to perform, gives good union rate and solid consolidation with full range of motion usually achieved.

**REFERENCES**


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