Open Sesame: A Case Report on Open Tibia Osteotomy for Removal of Incarcerated Broken Reamer Tip

[1]Lee KJ; [1]Murthy S; [1]Toyat SS; [1]Rashdeen FMN
[1]Orthopaedic Department, Hospital Selayang, Selangor, Malaysia

INTRODUCTION:

Interlocking nail has become the standard mode of treatment for lower extremity long bone fracture. Sequential intramedullary reaming is a step during canal preparation to improve biomechanical stability, and in the case of osteomyelitis, is a form of internal bony debridement. However, one of the complications of serial reaming is instrument breakage, including breakage of the reamer within the intramedullary canal. We report the case of the successful retrieval of a broken reamer trip from the tibia diaphysis.

REPORT:

We performed removal of a 3-year-old intramedullary tibial nail in a patient diagnosed with chronic osteomyelitis. After removing the nail, reaming with a rigid reamer was done to debride the canal and to enable the harvesting of medullary tissue for cultures. However the rigid reamer tip broke during the process& was incarcerated at tibia midshaft level. After using image intensifier to determine and mark the exact location of the broken reamer tip, a medial tibial osteotomy window was made by making multiple drill-holes in a rectangular pattern over the surface of the tibia directly overlying the tip. The drill holes were subsequently connected using an osteotome to create a window to retrieve the broken reamer directly. This low-energy corticotomy method avoids unintended propagation of the break in the cortical wall, &risk of iatrogenic re-fractures. Intra-operative image intensifier images confirmed complete removal of the reamer tip with no new fractures. During follow up at 2 months, the patient is pain-free, ambulating well and plain radiographs showed a uniting osteotomy site.

Figure 1: Intraoperative image intensifier showing incarcerated broken reamer tip at level of midshaft tibia

Figure 2: Medial tibia osteotomy window with direct visualisation of broken reamer tip

Figure 3: Plain radiograph taken 2 months post-operation showing healing osteotomy site

CONCLUSION:

Reamer breakage is a serious and unpredictable complication during intramedullary nailing. Multiple methods of extraction have been discussed in literature. Open removal via creation of a cortical window is an effective means of removing a broken reamer tip, while minimizing bony damage.

REFERENCES:

Vatsya et al. 'Extended tibia osteotomy': a technical tip for removal of incarcerated reamer with broken guide wire bead during tibia nailing. BMJ Case Reports (2022).