

# Instrument fails, but surgeon should not. Easy approaches for retrieval of broken intramedullary reamer from the tibia

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## Abstract

Intramedullary interlocking nail has become standard mode of treatment for fracture of long bones of leg. Where instrumentations, like flexible reamers, are restraint it can be sufficed with serial reaming with straight reamer. However, straight reamer makes the surgery difficult at times because it has a tendency to break. We encountered a similar situation and would like to share how we retrieved the broken piece of straight reamer from the medullary canal.

## INTRODUCTION

Intramedullary nailing is an admitted and patronized method of treating long-bone fractures. Fractures of both bones of leg are stabilized with intramedullary interlocking nails in most of the centers even where the flexible reamer and electrical or pneumatic guns are not available. Making an entry site is similar in both the procedures but difficulty uprises with straight reamer in initial reaming and it is started with the smallest diameter reamer and invariably it hits the posterior cortex of proximal tibia. Only way to prevent hitting posterior cortex is to give reamer a little bend. And this bend can be a pre-bend or bend it with the support of posterior cortex with application of little force. Once a track is made serial reaming becomes easier. Hence, the initial reamer is the one to undergo maximum stress and has fair chances of breakage. Situation becomes difficult when such initial size reamer breaks intramedullary. We present a case where we successfully and easily retrieved the intramedullary broken piece of reamer with the help of grasper which general surgeon use to grasp gall bladder during laparoscopic surgery. The aim of this paper is to highlight the easy possible ways to tackle similar difficulties.

## CASE REPORT

A 25 years male sustained road traffic accident and was necessitated for elective intramedullary interlocking nail for fracture of mid shaft of tibia where fibula was intact. We work in the place where flexible intramedullary reaming device is not available. After making an entry site under image guidance, initial reaming was started with number 6 straight reamer. Unfortunately reamer broke and the 6 cm. of

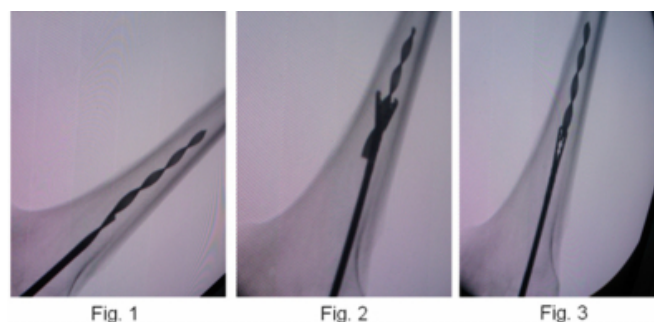
tip of reamer remained inside the medullary canal. After several unsubstantial methods of retrieval we could do it with the help of a grasper which laparoscopic surgeon enforce for holding gall bladder. The procedure was accomplished with serial reaming and interlocking nail of 9X320 mm was inserted.

Fig. 1: Broken intramedullary reamer.

Fig 2: Laparoscopic grasper opened to grasp reamer.

Fig 3: End of reamer grasped with laparoscopic grasper.

## Figure 1



## DISCUSSION

Implant breakage is a well known complication of intramedullary nailing and various methods of broken distal piece of nail removal are described<sup>1-6</sup>. However, instrument breakage during nailing is not everydayness and literature is tacit for removal of broken intramedullary reamer. Major problem with such unwanted accidents are unobtrusive struggle, incremental stress level of operating surgeon and

drawn out surgical time and protracted anesthesia consumption which sometimes adversely affect the post operative course of recovery of patient. Such unexpected events are once in a life time for most of the surgeons. And many surgeons find difficulty to tackle these operating theater accidents. We would like to share our experience with one of such unusual case of instrument breakage.

After making an entry hole, the initial straight reamer of no. 6 size was bore on with a slight bending force to prevent posterior cortex from reaming. As a result it wore out inside with audible sound to the operating surgeon LR. Image intensifier registered the 6 cm length of the reamer lying inside the intramedullary canal 11 cm from the entry hole. Initially we thought the broken reamer will advance with serial reaming with bigger size reamer and it can be forked out opening the fracture site. We assumed difficulty in our case because our case was an isolated tibia fracture and simply opening the fracture site we would not be able to translate tibia much to deliver the broken reamer from fracture site. Had it been a case of fracture both bone leg this idea would have worked at a cost of exposing a fracture site. But our attempt failed much earlier than we could make it happen because bigger size reamer just left behind reamer tip at its place and erred by its side shewing a new track. At this point we raised the whole lower limb and thudded at heel thinking it may dislodge the broken reamer and may descend. But the bigger reamer would have cornered it hard not to dislodge so easily.

We trialed with the long artery forceps and even sinus

forceps under image intensifier to grasp it but happened difficult to open the artery tip because of the tight space for it to open. At that point we thought we will make a window right above the tip of the broken reamer and retrieve it under vision. Before that we set about one more trail with the grasper that surgeon's use in laparoscopic surgery to grasp gall bladder. Under image intensifier with continuous shot the tip of grasper was opened up and the end of the reamer was grasped. Which was retrieved easily thereafter.

Had this been unsuccessful we would have opted for invasive method making a window and removal of broken reamer under vision. Our aim to present this case is to share the various easy and possible less invasive approaches for intramedullary broken instruments. Same can be tried with broken locking bolts, if they are lying inside medullary canal.

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