

## Management of Contralateral chronic knee dislocation in above knee amputee: Case report.

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**Abstract:** A chronic knee dislocation is extremely rare and difficult problem that adds to the complexity of treatment. Due to paucity of literature, treatment protocols for these dislocations are not clearly outlined. We report a case of posttraumatic inadequately treated antero-medial knee dislocation of 18 months duration, managed with double stage procedure (Illizarov's reconstruction followed by arthroscopic arthrolysis) without ligamentous reconstruction in a contralateral above knee amputee with acceptable outcome. The apparent rarity and a challenging therapeutic problem in this case would be of significant value for an orthopaedic surgeon dealing with a similar case scenario.

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### I. Introduction

Knee dislocations are rare injuries and it is unlikely that a single orthopaedic surgeon personally encounters for more than a few knee dislocations in his practice [1]. A chronic knee dislocation is extremely rare and difficult problem that adds to the complexity of treatment. Due to paucity of literature, treatment protocols for these dislocations are not clearly outlined [2]. We report an unusual case of 18 months old antero-medial dislocation of knee in a contralateral above knee amputee treated by two stage knee preserving surgery, hinged Illizarov's reconstruction followed by arthroscopic arthrolysis with an acceptable outcome. The apparent rarity and a challenging therapeutic problem in this case would be of significant value for an orthopaedic surgeon dealing with a similar case scenario.

### II. Case report

A 27 years old male presented in outpatient department following a high velocity motor vehicle accident 18 months back with traumatic amputation of left lower limb and inability to flex his right knee joint and unable to bear weight on right lower limb due to pain. On reviewing the discharge summary from the primary treating hospital, it was found that he has sustained severe crushing injury to left leg and knee joint and had liver laceration for which emergent above knee amputation of left limb and open laparotomy was performed. He also had dislocation of right knee joint along with ipsilateral fracture shaft of tibia for which closed reduction of joint was done in emergency and above knee posterior slab was applied which continued for 1.5 months. Interlock nailing for right tibia was done after 2 weeks of injury. Amputation stump was healthy at the time of presentation.

Examination of right knee joint showed that it was fixed in 30° of flexion with only jog of movement present without any varus/valgus or anterior/posterior instability. Distal neuro-vascular status was intact. On radiological evaluation, he was diagnosed with antero-medial dislocation of right knee with intramedullary nail in tibia (Fig. 1). MRI of knee was not done due to presence of implant in right tibia. Patient was not able to afford total knee arthroplasty and denied for knee arthrodesis. So, we planned for open reduction of knee joint and application of hinged across knee Illizarov's frame. Patient consent was taken before starting the treatment and was thoroughly explained about the pros and cons of the procedure.

The patient underwent anteromedialparapatellararthrotomy with complete lysis of adhesions and scar tissue and subsequent reduction of knee joint under spinal anaesthesia. After achieving adequate reduction, it was maintained with across knee schanz screw and hinged across knee Illizarov's frame was applied (Fig. 2).

Operative wound healed uneventfully. The schanz screw was removed 2 weeks postoperatively and knee range of motion exercises were started. Even after extensive physiotherapy, only 0-50° range of motion was achieved (Fig. 3&4). 3 months after initial surgery, Illizarov's frame was removed and physiotherapy was continued. At 6 months post-operatively, there was hardly any improvement in range of motion and patient was not happy with that much knee movements. In view of adhesions and scar tissue, arthroscopic arthrolysis was performed and 0-80° flexion was achieved intraoperatively. He was put on aggressive physiotherapy with continuous passive motion (CPM) machine and at the end of 1 year his final knee range of motion was 0-80°, which was pain free and he was able to walk with support of stick with above knee prosthesis in opposite limb and was satisfied with his knee movements.

### III. Discussion

Chronic irreducible or neglected knee dislocation is a very rare clinical entity, sometimes associated with secondary abnormalities, that adds to the complexity of the situation leading to therapeutic dilemma. The case reported here is unique because of prolong duration (18 months) of improperly treated atypical anteromedial knee dislocation in a contralateral above knee amputee that was treated successfully with two stage procedure without ligamentous reconstruction with satisfactory outcome. In view of our case, main aim of our treatment was to achieve a painless, mobile and stable knee joint without much functional limitations to improve the gait which was already compromised by above knee amputation of contralateral limb. Considering his daily activities, open reduction without ligament reconstruction was done and stabilized hinged illizarov's reconstruction followed by arthroscopic arthrolysis.

There are only few case reports available on delayed treatment of knee dislocation with time interval varying from 16 weeks to 8 months in literature [1-10]. Various treatment modalities are been described like open reduction with or without ligamentous reconstruction, extensive open reconstruction using the Ilizarov technique[10], Steinmann pin fixation[2], hinged external fixation[8], arthrodesis or arthroplasty [2,7]. Sisto and Warren [4] point out that stiffness and loss of motion pose a more serious problem than instability in knee dislocation patients. They recommend an operative ligament reconstruction in young, active patients only but ligamentous reconstruction was not attempted in our case because, prolonged duration of stiffness was major concern rather than instability.

Extensive release of scar tissue and capsule needed for reduction of joint necessitates application of skeletal hinge across the knee. By using skeletal fixation to fix the hinge, the mismatch between the knee and the single-axis hinge motion could be minimized, protecting the reconstruction and also prevent post-operative stiffness [3]. Authors have general consensus that placement of an external hinge at the most isometric point of the joint must be accurate to allow good anatomic knee motion but, it is not possible with a simple hinge.

To conclude, this double stage procedure of open reduction of joint and stabilization with hinged Ilizarov's reconstruction followed by arthroscopic arthrolysis could be a reasonable option for management of chronic knee dislocations of prolonged duration in those who cannot undergo for total knee arthroplasty or arthrodesis.

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**Ethical standard** This study was approved by ethical committee and was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

#### Caption and Legends



Fig. 1: Lateral and anterior radiograph showing antero-medial dislocation of right knee with intramedullary nail in tibia



Fig. 2: Post-operative radiograph showing good reduction of knee joint maintained with across knee schanz screw and hinged across knee Illizarov's frame



Fig. 3: Clinical photograph showing across knee Illizarov's frame with 50° flexion range of movement.



Fig. 4: Clinical photograph showing across knee Illizarov's frame with full extension of knee joint

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