



Treatment of a neglected adult knee dislocation by open reduction and internal fixation with k-wire and external fixator

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Abstract

Introduction: Knee dislocation, especially, if neglected could result in loss of limb and is usually attributed to high-velocity trauma. In an emergency setting or in acute dislocations, closed reduction and immobilization is the most common procedure. However, a neglected dislocation of the knee will result in complex problems in management.

Case Presentation: We present a case report of a 35 year old male patient with complaints of pain and swelling of left knee following RTA, 41 days post trauma. On

clinical examination the patient had restricted range of motion and moderate swelling over left knee. Left knee ROM was painful and restricted. Patient was diagnosed with chronic dislocation of left knee and a maluniting fracture of superior pole of right patella. Open reduction and internal fixation was planned under general anesthesia. Post operatively, physiotherapy was done in the form of ankle toe movements and non-weight bearing walking. On follow up at 6 weeks after removal of implants, he was walking full weight bearing, with the brace he was able to do full knee ROM. He was able to

carry out his daily activities without any significant discomfort. On examination, anterior and posterior drawer and Lachmann tests were positive (1+ grade). His follow up x-rays showed maintained joint line.

Conclusion: The purpose of this case report is to highlight the importance of open reduction and internal fixation in cases of neglected dislocation of knee joint as it leads to fibrosis around the knee joint which helps to keep the knee partially stable giving a better quality of life than knee arthrodesis.

Keywords: Orthopaedic trauma, neglected knee dislocation, knee dislocation, external fixation, internal fixation, open reduction

Introduction

Knee dislocations are considered rare and comprise 0.2% of all the orthopaedic injuries.¹ The most common mode of injury is recorded to be high velocity trauma in 14%–44% of cases, thereby may cause complication during management.² In an emergency setting or in acute dislocations, closed reduction and immobilization is the most sought-after procedure. However, a neglected dislocation of the knee could result in complexity in management. For deciding on a definitive management, it is of prime importance to rapidly identify the injury and plan an appropriate management. Neglected dislocation is a rare event and because of paucity in the literature, appropriate treatment options are also not clearly described.³ We present a case report of a neglected knee dislocation treated by open reduction and fixation with K wires with application of an external fixator followed by physiotherapy.

Case presentation

A 35 year old male patient presented to the Department of Orthopaedics at our college with complaints of pain and swelling in relation to left knee following road traffic

accident, 41 days ago. Patient gave history of trauma (RTA) - skid and fall from 2 wheeler and inability to bear weight for past one month. Patient had no comorbidities and no previous surgical history. Clinical examination revealed that patient was unable to bear weight and had restricted range of motion of left knee with moderate swelling. (Figure 1)



Figure 1: Pre operative clinical photo of the knee.

During the immediate post trauma period, radiographic investigation was done at a local hospital which revealed left knee dislocation for which reduction was attempted under anaesthesia and above knee cast was applied. However, no post procedure radiograph was taken.

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Patient had the cast removed after 30 days and presented to us with the above said complaints. Plain radiographs were taken and MRI of the left knee was done. Patient was diagnosed with chronic dislocation of left knee and a maluniting fracture of superior pole of right patella. (Figure 2)



Figure 2: Xray at first presentation.

Open reduction internal fixation with options of K wires, Stienmann pins and external fixation was planned under general anesthesia. Under aseptic conditions, a 15 cm incision over anterior aspect of left knee. Soft tissues dissected, fibrous tissue removed by blunt and sharp dissection as needed. The findings of ACL showed detached from its femoral attachment, PCL showed detached from its tibial attachment; MCL was detached from its femoral attachment; LCL was detached from its femoral attachment; medial meniscus tear was noted; medial and lateral patellar retinaculæ disruption.

Joint was reduced and fixed with cross K-wires. (Figure 3) A joint spanning external fixator was applied for increased stability; closure done in layers. Post operatively, physiotherapy was started which included ankle toe movements, non-weight bearing walking started and patient discharged and asked to follow up after 4 weeks for removal of external fixator and application of a Hinged external fixator.



Figure 3: Post operative X-Ray.

But the patient did not follow up for the next 9 weeks as he became COVID positive.

When he presented, we removed external fixator and checked for stability of joint, the joint was not getting dislocated. Gradual physiotherapy was started: Graded passive and active knee ROM under observation of an expert physiotherapist in ward. Physiotherapy was done for 2 weeks under observation and patient reached active knee rom of upto 60 degrees flexion. Patient was given anterior and posterior stabilising Knee ROM brace and asked to follow up with physiotherapist after discharge. Patient returned for follow up: at 6 weeks after removal of implants: he was walking full weight bearing, with the brace he was able to do knee range of motion till 100°. He was able to carry out his daily activities without any significant discomfort. Anterior and posterior drawer and Lachemann tests were positive (1+ grade).

His follow up x-rays showed maintained joint line. (Figure 4) Patient was advised anterior cruciate ligament reconstruction surgery as a secondary procedure.



Figure 4: Follow up x ray.

Discussion

Knee dislocations are have low incidence rates and thus considered rare.³ In an emergency setting or in acute dislocations, closed reduction and immobilization is the most sought after procedure.⁴ Few case reports exist in the literature that report neglected knee dislocation from a period between 1 month to 14 years.⁵ Treatment commonly involves open reduction and internal fixation, arthrodesis, hinged external fixators and total knee arthroplasty.

In a report published by Vincente-Guillen et al in 1998, a 15 year old knee dislocation was managed by open reduction and progressive fixation, finally joint arthrodesis.⁵ Whereas, Petrie et al reported two cases of 4-month old knee dislocations managed successfully by TKA.⁶

This case report highlights the advantages of open reduction and fixation resulting in a functional and a painless, stable knee joint. Our patients injury was only 5 weeks old, hence, we open reduced the joint and maintained with external fixator followed by gradual increase in weight bearing and range of motion. Therefore, avoiding complex procedures like total knee arthroplasty or arthrodesis.

Conclusion

The purpose of this case report to highlight the importance of open reduction and internal fixation in cases of neglected dislocation of knee joint as it leads to fibrosis around the knee joint which helps to keep the knee partially stable giving a better quality of life than knee arthrodesis. Through our experience, we can conclude that this procedure resulted in a good functional outcome.

Clinical message

Open reduction and fixation with K wire followed by gradual weight bearing with hinged knee brace is one of the options to be considered in cases of chronic neglected knee dislocation in order to avoid more complex surgeries such as TKA or arthrodesis in future.

Abbreviation

- K-wire: Kirschner wire
- TKA- Total knee arthroplasty
- RTA- Road traffic accident
- ACL- anterior cruciate ligament
- PCL- Posterior cruciate ligament
- MCL- medial cruciate ligament
- LCL- lateral cruciate ligament

Consent

The patient has given their informed consent for the case report to be published.

Authors' contributions

PY analyzed and interpreted the patient data regarding the knee dislocation. AS performed the surgical procedure and was a major contributor in writing the manuscript. BS, TC, SG, SP read and approved the final manuscript was involved in drafting the manuscript or revising it critically for important intellectual content.

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