A RARE CASE SCENARIO- ASSOCIATION OF POSTEROLATERAL OSTEOCHONDRAL INJURY WITH PCL AVULSION, ACL TEAR AND LATERAL MENISCUS INJURY

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Abstract:

Association of posterolateral osteochondral (OCD) injury with multi-ligamentous knee injury (MLKI) can be a devastating injury which often results in long-term knee instability, loss of function and early osteoarthritis. For such patients, paucity of literature persists on management of such injury for better outcome. This case critically demonstrates an attempt to manage the patient with such rare scenario with the best options for early recovery.

Introduction:

The osteochondral defects or injuries in knee dislocation are rare. Osteochondral defects are more commonly occurs in patellar dislocation rather than in knee dislocation. In patients with knee dislocation, multi-ligamentous injuries are most common without an evidence of osteochondral injury. However, there is paucity of literature available on occurrence of both- OCD and MLKI together.

OCD with multi-ligamentous knee injury (MLKI) with meniscus injury is a rare but serious injury of the knee. Mechanisms of injury often involve acute knee dislocation secondary to high velocity trauma (i.e., motor vehicle accident) (1). Early care management involves critical assessment of soft tissue integrity and patient neurovascular status as both peroneal nerve and popliteal artery are at risk (2).

Management of such patient includes pre-operative and operative management, and post-operative rehabilitation as to best restore function and articular mobility and strength. Operative timing and technique, staged surgeries with the aims of restoring patient function, knee range of motion, and stability are important factors to be taken under consideration.

Citation for this article: Shripad joshi, Aniruddha patil, Sachin saoji. A rare case scenario-association of posterolateral osteochondral injury with PCL avulsion, ACL tear and lateral meniscus injury. IAS Newsletter-14,2022;2(6):5-8.

Case Report:

A 19 years old female named Kaveri Aher came to our hospital with chief complaints of pain and swelling over her left knee for 6 days with a history of knee dislocation following a road traffic accident (RTA).

Surgical technique:

The patient was primarily managed in an outside hospital with closed knee reduction and an above-knee slab was given as told by the patient herself. No documentation and x-rays were available with the patient. On local examination extensive swelling with posterior sag was present; tenderness was present over the posterolateral joint line. Contused lacerated wound (CLW) of size 2X1 cm was on the medial aspect of the knee sutured at outside hospital. The patellar tap was positive. Distal pulses were well felt without any neurovascular deficit. Special tests were avoided due to pain. Post reduction x-ray suggested a posterolateral tibial bony fragment. MRI suggested of PCL avulsion with complete ACL tear with lateral meniscus avulsion with a displaced posterolateral osteochondral fragment(Fig 1).

Discussion:

The indications for non-operative management, in this case, are very few, as most patients will require surgical management. Early reduction, followed by rehabilitation focused on optimizing range of motion and muscle strength yields the best outcomes.
Most orthopaedic surgeons would recommend surgical treatment in absence of significant contraindications.
Ligamentous repair is usually performed during the acute injury phase, typically defined as <3 weeks after injury, since tissue planes are more easily identified and are of sufficient integrity to allow re-approximation without retraction and holding of sutures (3). Reconstruction is preferred after 6 weeks.

After routine blood investigations and anaesthesia fitness, Diagnostic Left Knee Arthroscopy was performed in supine hanging leg position. On diagnostic arthroscopy large posterolateral tibial osteochondral defect was confirmed with lateral meniscus avulsion from menisco-capsular junction. Lateral meniscus avulsion repair was done with outside-in-technique using Vicryl 1-0 and 18 G spinal needle.

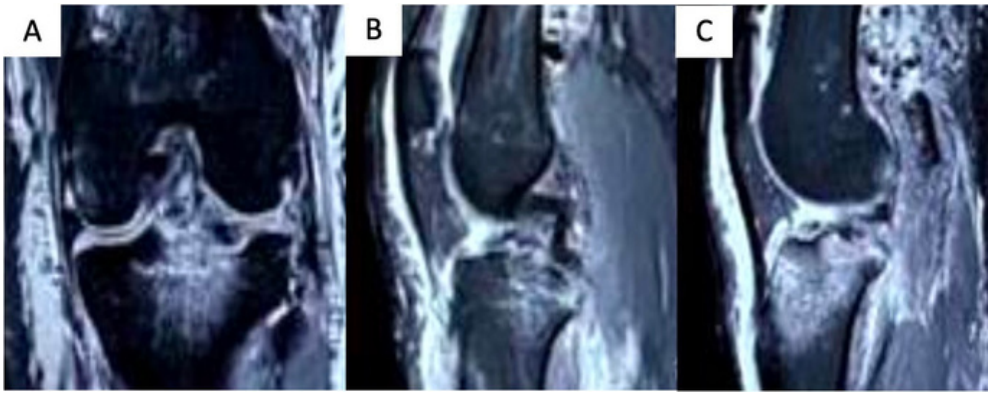

Fig 1: A: Avulsion of lateral meniscus posterior horn, B: ACL tear with PCL avulsion, C: Displaced large posterolateral osteochondral fragment in the gastrocnemius muscle

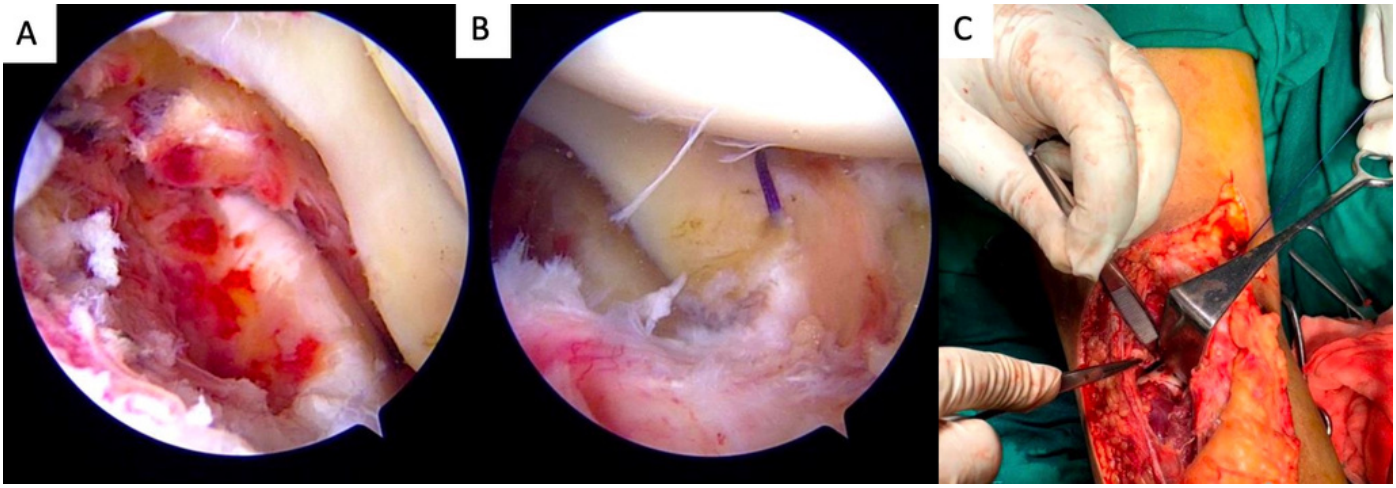

Figure 2: A: Posterolateral tibial osteochondral defect, B: Meniscal repair using Outside in technique, C: Open fixation of the posterolateral fragment.

Later, patient was made prone for open reduction internal fixation of posterolateral osteochondral defect using two cortical screws of size 2.5 and PCL avulsion repair using 5mm double loaded anchor suture via posterolateral approach. The patient was advised extensive physiotherapy for 6 weeks. Operative treatment and physiotherapy yielded higher Lysholm score (80)(Fig 2).

After 6 weeks, patient was re-evaluated. Patient was able to walk with complete weight bearing without pain. Patient was having flexion upto 110-120 degrees and complete extension and she was able to sit with cross legs. But still she had instability on rapid walking. Now second staged Arthroscopic ACL reconstruction was performed. Physiotherapy was initiated immediately

Patient had complete extension, cross leg sitting and ability to squat without support. Second stage surgery and physiotherapy yielded excellent Lysholm score (90)(Fig 3 & Fig 4).

In our case, there was a rare association of posterolateral osteochondral tibial defect with PCL avulsion with complete ACL tear with Lateral Meniscus tear in knee dislocation. In literature, thorough data is available on multi-ligamentous injury in a knee dislocation but without osteochondral injuries. In literature, data on posteromedial osteochondral injury of medial plateau with PCL tear is available but we have not come across a case posterolateral osteochondral injury of lateral tibial plateau with PCL avulsion with ACL tear with Lateral Meniscus tear .
Most of the techniques of open PCL avulsion fixation are based on screw fixation and suture pull out techniques with good outcome.

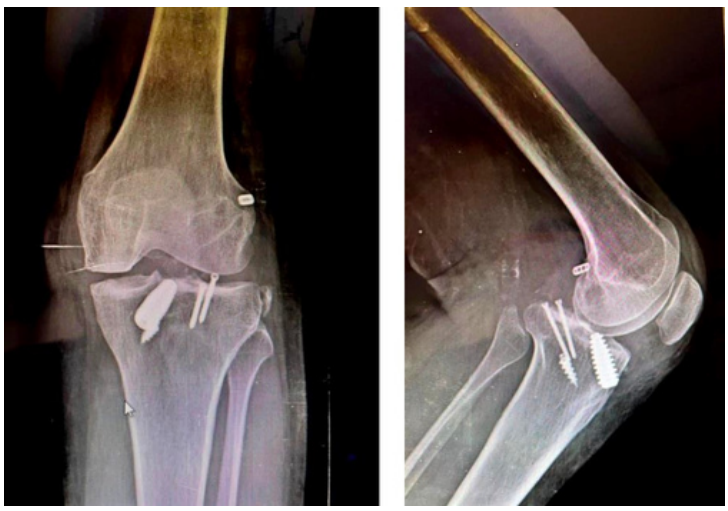

Figure 3: Post Operative Radiographs after two stage surgery

Figure 4: Post operative Range of movement at 3 months after two stage surgery

In our case we performed open PCL avulsion fixation using 5mm double loaded suture anchor. The outcome was equivalent to conventional techniques with an advantage of avoiding intra op complication such as crushing of avulsed PCL fragment in screw fixation, difficult and time consuming procedure of suture pull out technique. In our case, ACL femoral tunnel was more posterior than ideal position but patient did not have any major complication. In second staged arthroscopy, we found lateral meniscus was completely healed and stable with synovialization of vicryl suture.

Conclusion:

The most confident conclusion that can be made after careful analysis of our case is that optimal operative strategy is most likely closely dependent on injury characteristics. It appears that acute repair of PCL avulsion fracture and rigid fixation of osteochondral defect with staged ACL reconstruction has given stable, pain-free and mobile knee joint.

Optimal operative timing also depends on injury characteristics however it is not clear. There appear to be more evidences which support early and staged intervention. This may reflect the fact that the surgeon has more flexibility in the techniques he can use if an acute and staged intervention is incorporated.

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