CASE REPORT

A rare case of bilateral non-weight bearing posterior aspect of lateral femoral condyle osteochondral fracture and its management

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SUMMARY

Osteochondral fracture of the lateral femoral condyle can be a real challenging injury to diagnose on initial presentation. The authors report a rare case of bilateral involvement of posterior aspect of lateral femoral condyle osteochondral fracture in a young 15-year-old boy. This was managed with excision of these osteochondral fragments, as the site involved was on the posterior non-weight bearing area of the femur along with chronicity of the injury dictating excision as a reasonable choice of management. Good outcome for such injury is based on an early diagnosis and prompt treatment along with an early rehabilitation for such cases. Our patient has an excellent 2 years outcome with a Knee Society score of 95 after undergoing excision of these osteochondral fragments in both knees in succession.

BACKGROUND

Osteochondral abnormalities around the knee joint are not so uncommon. This may also represent a poorly understood entity called osteochondritis dissecans with its multiple proposed causes, including repetitive microtrauma, ischaemia and genetic causes.¹ This condition normally affects lateral aspect of the medial femoral condyle, followed by weight bearing surface of the lateral femoral condyle (LFC) and less commonly may involve inferomedial pole of patella and trochlear fossa. On the other hand, osteochondral fracture within the knee joint may be caused by impaction,

avulsion or sheering forces.² Lateral patellar dislocation can also lead to osteochondral injury to anteriolateral non-weight bearing (NWB) part of the LFC.³ There are large numbers of published reports on osteochondral fractures of the weight bearing articular surface of the LFC and their management,⁴ while the posterior NWB aspect of LFC is a relatively rare site of injury as it involves hyperflexion of the knee at the time of direct or indirect contact injury mechanism. We report a rare chronic case of bilateral NWB posterior aspect of the LFC fracture in a 15-year-old boy and its management. To the best of our knowledge, this is also the first case report signifying its size and position involving NWB posterior aspect of the LFC of femur.

CASE PRESENTATION

A 15-year-old boy was referred through the emergency department with severe right knee pain only (9 of 10 on visual analogue scale) and locking of the knee joint with associated swelling. He narrated a chronic 6 months history of right knee pain and swelling with limited mobility. The boy was active in sports and he used to jump from height landing on his feet with flexed knees. X-rays of his right knee revealed osteochondral fracture, which was confirmed on MRI involving posterior aspect of his LFC (figure 1). He underwent knee arthroscopy showing normal ligamentous knee anatomy except a large osteochondral defect at the posterior aspect of LFC and two large loose bodies believed to be

Figure 1 MRI of the right knee showing significant osteochondral defect at the posterior aspect of the lateral femoral condyle: (A) coronal view and (B) sagittal view.

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Figure 2 Two large osteochondral fragments measuring 6 and 2.25 cm² from the non-weight bearing posterior aspect of the lateral femoral condyle were excised as loose bodies and reviewed in vitro with heaped cartilaginous margins signifying the chronic nature of the injury.

the reason for his knee locking. They were retrieved through lateral side mini-arthrotomy incision. The retrieved specimen showed heaped up margins signifying chronicity. These fragments measured 6 and 2.25 cm² in two dimensions (figure 2). He was discharged with knee brace which he stopped wearing himself within 2 weeks of recovery. Later he presented with similar type pain and swelling of his left knee within 6 weeks of his right knee surgery. He was investigated and was identified with similar nature of osteochondral fracture measuring 3.5×3 cm size involving same site on the posterior aspect of LFC. He therefore underwent knee arthroscopy and mini-arthrotomy of his left knee along with excision of the large osteochondral fragment. Histology of his excised fragments from both knees showed normal bone and cartilage tissue with cystic changes at the margins signifying chronic nature of the problem.

DIFFERENTIAL DIAGNOSIS

Primary diagnosis: osteochondral injury at variable sites.

Secondary diagnosis: loose body, meniscal tear including possibility of bucket handle tear of menisci.

OUTCOME AND FOLLOW-UP

The patient is followed up to 24 months after his right knee surgery and 18 months after left knee surgery leading to complete satisfaction with a Knee Society score⁵ of 95 and a range of motion of 0–130° in both knees. He is walking without support and has returned fully to his daily life activity.

DISCUSSION

Different position of the knee joint at the time of axial loading or shearing forces may lead to different areas of osteochondral injuries. It is very uncommon to have them when the knee is hyperflexed at the time of impact of these forces. Certainly, this case report of bilateral injuries at this posterior part of LFC reflects its happening in these circumstances. Morscher⁶ has identified difficulty in early diagnosis in these injuries due to multiple reasons including late presentation and subtle findings on clinical examination including reluctance of requesting an X-ray. Unless the patient presents with significant pain, swelling or locking of the knee joint like our case.

Treatment option for osteochondral fractures is based on location, size and timing of diagnosis. When diagnosed within 2 weeks of onset then they should best be treated by open reduction and internal fixation, (ORIF) with the use of adequate implant for fixation like bioabsorbable screws^{3 4} or rods, etc. On the other hand, excision seems to be the best outcome of

choice for chronic fragments or fractures^{2 7} as there is propensity for non-union and loose body formation.

After any form of treatment whether it is ORIF of osteochondral fragment or excision of these fragments, an early mobilisation of the knee joint is essential to encourage healing and for better rehabilitation.² Further, weight bearing status should be individualised during the healing progress in patients after ORIF. Excision of a part of the posterior condyle of femur does not mandate strict NWB mobility status. Our patient maintained partial weight bearing mobilisation with crutches for 3 weeks.

The most important factor in preventing the development of degenerative arthritis and problems of loose bodies in these young people is an early diagnosis. So efforts should be made for an early diagnosis of these subtle injuries by paying meticulous attention to the mechanism of injury and careful physical examination and ordering investigation where needed.

CONCLUSION

Our patient is the first and a rare case report of bilateral osteochondral fractures involving posterior NWB part of the LFC of femur. We excised these chronic multiosteochondral fragments with excellent⁸ 2 years outcome for our patient. We recommend for paying meticulous attention leading to an early diagnosis of such subtle injuries including a detailed clinical examination of both knees and ordering a plain X-ray of knees, where necessary, to arrive at a diagnosis. This may help in reducing development of an early-onset degenerative arthritis or problems that can arise from loose bodies.

Learning points

- An early diagnosis of subtle injuries of the knee is very essential. This may be achievable by paying full attention to the mechanism of injury.
- These osteochondral injuries may be managed according to their timing since injury, size and position of the damage on the knee surface. An early management may thus save development of secondary arthritis of the knee joint while preserving good function of the knee joint.
- Investigation should be used wherever needed to arrive at an early diagnosis.

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Contributors AHS prepared the manuscript. JS also provided proofreading of the manuscript. All the authors were involved in the surgical care and after care in the recovery process leading to the happy outcome for our patient.

Competing interests None.

Patient consent Obtained.

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