CASE REPORT

Proximal tibiofibular joint dislocation: a rare entity

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SUMMARY

A 37-year-old woman was diagnosed with an isolated proximal tibiofibular joint dislocation (PTJD) after an accident during gymnastic exercise. The dislocation has a low incidence rate and is often missed in the emergency department as physical and radiology signs are subtle. Treatment consists of closed or open reduction and immobilisation. When it is not recognised it is associated with significant peroneal nerve injury.

BACKGROUND

Proximal tibiofibular joint dislocation (PTJD) is a rare entity. It accounts to less than 1% of all knee injuries. As many physicians are unfamiliar with the injury, it is among the most missed diagnosis in the emergency department.¹ Untreated PTJD could lead to persistent localised pain and peroneal nerve injury.²

CASE PRESENTATION

A 37-year-old woman was brought to the emergency department by ambulance. The patient slipped and fell during a gymnastic exercise. She jumped over a bench and while landing on the ground her right knee flexed and endorotated.

INVESTIGATIONS

Clinical examination revealed a prominent caput of the proximal fibula and minimal tenderness around the area of fibula head (figure 1). There were no hematomas and there was no evidence of distal neurovascular injury. On the X-ray of the right knee, the fibular head was more lateral than normal and there was no evidence of a fracture (figure 2).

Figure 1 Prominent proximal caput fibula of the right knee.

Figure 2 X-ray of the knee showing a reduced fibula on the right side.

As a PTJD was suspected, a CT was performed of both lower extremities (figure 3), which showed the anterolateral dislocation of the right proximal fibula.

DIFFERENTIAL DIAGNOSIS

Anterolateral dislocation of the proximal tibiofibular joint.

TREATMENT

After spinal anaesthesia the knee was flexed to 90 degrees and the foot was inverted. Gentle pressure was applied to the proximal fibula head with the thumbs of the surgeon. This reduction technique resulted in a clear 'plop' and stable joint afterwards. The X-ray of the right knee showed a normal anatomical alignment of the right proximal tibiofibular joint (figure 4). No postoperative CT was made to keep the radiation exposure as low as possible, considering the fertile life stage of the patient.

OUTCOME AND FOLLOW-UP

The post-reduction treatment consisted of immobilisation with a lower leg cast for six weeks. After three months of follow-up the patient had no complaints and gained full function of her knee.

DISCUSSION

PTJD is a rare traumatic knee injury.² As the physical and radiologic signs are very subtle, it is a frequently missed diagnosis.¹ Usually, patients with a PTJD present after a sport activity.^{3,4} The proximal tibiofibular joint is a naturally stable joint due to sufficient and rigid ligamentous support, in particular when the knee is in extension. Most

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Figure 3 CT scan of both knees. Both the coronal plane (A) and the axial plane (B) show more lateral proximal fibular head compared with the left knee.

authors equivocally attribute this unique injury to flexion of the knee and rotation and plantar flexion of the foot.^{5 6}

According to the classification of Ogden, PTJD can be subdivided into four groups.⁷

Figure 4 A normal anatomical alignment of the right proximal tibiofibular joint.

Type I is a subluxation of the proximal tibiofibular joint, type II is an anterior dislocation and with 85% of the dislocations and it is the most common type, type III is a posteromedial dislocation and type IV is superior dislocation and often occurs with a fracture of tibia shaft. Peroneal nerve injury due to neuropraxia is most common in type III and type IV.^{7 8}

PTJD is for a major part a clinical diagnosis. These patients often present with lateral knee pain, especially when pressure is exerted on the fibula head. The affected knee can be compared with the contralateral knee showing a difference in anatomical landmarks. It should be noted that a full range of motion of the affected knee can still be observed. Therefore an adequate history taking, with special attention to the trauma mechanism and the findings in the clinical examination, can distinguish PTJD from other knee injuries.⁹ A plain X-ray may prove the diagnosis, however due to minor changes it can be inconclusive. Therefore a CT scan or MRI is often necessary.^{4 5}

Treatment recommendations of PTJD include conservative treatment with brace or a backslab,^{5 10} closed reduction^{11 12} or open reduction and internal fixation.^{13 14} In general, open reduction and internal fixation is chosen when closed reduction and internal fixation is failed or in cases of a late diagnosis. In our case we performed a closed reduction and internal fixation after spinal anaesthesia. The knee was flexed to 90 degrees as this relaxes the tibiofibular ligament. Antero-posterior pressure was applied on the proximal fibula head resulting in a clear 'plop'.

After the reduction, stability of the joint and function of the peroneal nerve should be examined. An X-ray should be made to evaluate the treatment. The postoperative treatment consists of immobilisation with cast or a brace. As described by Nieuwe Weme *et al* there is no consensus on the period of immobilisation and weight bearing after the reduction, the length of immobilisation varies from one to six weeks.⁴ Untreated PTJD may lead to peroneal nerve injury in up to 5% of the patients and these patients are prone to degenerative joint changes and pain during sport activities.¹⁴⁻¹⁶

In the current case, the patient had a typical trauma mechanism for proximal tibiofibular joint dislocation resulting in type II dislocation. Our patient was free of complications at the end of three months follow-up. She had no pain and normal range of motion of the knee. Due to its rarity, proximal tibiofibular joint dislocation should be considered in each lateral knee trauma. When a plain X-ray is not sufficient a CT scan or MRI can be used. Closed reduction and internal fixation is advocated before surgery. Early management would avoid potential complication like peroneal nerve injury.

Learning points

- ▶ Proximal tibiofibular joint dislocation should be considered in each trauma of the lateral knee.
- ▶ When X-ray of the affected side is not conclusive a bilateral X-ray or CT scan can be helpful for making the diagnosis.
- ▶ Closed reduction and internal fixation treatment is recommended and is possible when treated swiftly.
- ▶ Post-reduction immobilisation period remains uncertain, more evidence is needed to identify the significant period of immobilisation.

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