Commentary: Correlation between trochlear dysplasia and anterior cruciate ligament injury

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Acute patellar dislocation (APD) and anterior cruciate ligament (ACL) injury are common injuries and can lead to devastating consequences if not treated appropriately. Their mechanism of injury is similar, namely, a valgus twisting injury as a result of sudden non-contact deceleration. Those at risk also share similar epidemiological and anatomical characteristics; they tend to be female, have ligamentous laxity, and be young, active adults, with dysplastic intercondylar and trochlear notches. Concurrent injuries are common: osteochondral defects and medial patellofemoral ligament tears are associated with APD,1–3 and meniscal and collateral ligament tears are associated with ACL injury. Magnetic resonance imaging (MRI) is the gold standard to diagnose these injuries and to differentiate patients that warrant surgery as opposed to conservative treatment.

A large study in New Zealand estimated the incidence of ACL injuries to be 36.9 per 100 000 person-years.4 ACL injury is possibly associated with a narrow intercondylar notch, particularly in females. Nonetheless, controversies exist as to the mechanism; whether a narrow notch leads to impingement and attritional rupture or whether a narrow notch means a smaller and more vulnerable ACL remains unknown.

Anterior knee pain has many possible causes. It is associated with trochlear dysplasia on MRI.5 The incidence of APD is 5.8 to 29 per 100 000 person-years.6 Approximately 38% of young patients with APD were reported to have trochlear dysplasia,7 and the figure was even higher (66%) in another study looking at MRI-defined anatomic risk factors following APD.8 Nonetheless, in the general population, the prevalence of trochlear dysplasia is estimated to be one in 2000.9 If trochlear dysplasia is present, the intercondylar notch remains dysplastic and prone to ACL injury.

ACL injury associated with trochlear dysplasia has not been reported in the literature. In this issue, Botchu et al.10 review 95 MRIs of patients with anterior knee pain and suspected ligamentous injury. Classically, lateral radiographs were used to detect trochlear dysplasia and to correlate classification with the associated MRI appearances.11 This is important, as obtaining a pure lateral radiograph is often problematic; studies have shown that malalignment of even 5º can give false positives.12 Botchu et al.10 report that ACL tears were the most common injury, and none occurred without trochlear dysplasia (Dejour type A ensued in 12 and type B in one). The authors highlight the importance of anatomic variants that may influence injury patterns. Although screening patients by means of MRI is not feasible, patients with known trochlear dysplasia should receive training to prevent future ACL injury.

REFERENCES