

Patient Information Sheet

MENISCAL TEAR

Structure

The knee lies between the thigh bone (*femur*), leg bone (*tibia*) and knee-cap (*patella*). It consists of two joints: the thigh-leg (*tibio-femoral*) and the thigh-kneecap (*patello-femoral*). These joints are stabilised by ligaments: the collaterals (*inner-medial & outer-lateral*) prevent side-to-side movement and the cruciates (*anterior-front & posterior-back*) prevent rotational movement. The knee is straightened (*extended*) by the thigh muscles (*quadriceps*) and bent (*flexed*) by the hamstring muscles.

The menisci are spacer washers lying between the curved lower femur and the flat upper tibia. There are two menisci – one on the inside (*medial*) and one on the outside (*lateral*) of the knee. They are C-shaped from the top and wedge-shaped in cross section. They consist of fibre arcs (*collagen*) in a semi-fluid gel (*proteoglycans*). The outer 1/3 of each meniscus has a blood and nerve supply. This area has a healing potential and is painful if stimulated.

Function

The menisci transfer over 1/2 the load from the femur to the tibia. They also absorb shock, stabilise, lubricate and aid joint position sense (*proprioception*) in the knee.

Failure

Menisci tear vertically or horizontally. A complex high energy injury (tackle) to a strong younger meniscus causes a severe vertical tear that may be associated with ligament injuries (ACL). A simple low energy injury (squat) to a weaker older meniscus causes a mild horizontal tear that may be associated with knee “wear and tear” (*osteoarthritis*).

Diagnosis

Younger patients have an acute injury whilst older patients usually do not. Examination findings include pain when fully straightening the knee while standing, mild joint swelling (*effusion*), tenderness of the inner aspect of the knee (*medial joint line*) and pain when the knee is fully bent and twisted (*McMurray’s test*). MRI scanning usually confirms the diagnosis. Remember that a tear may be present with a normal MRI (5%).

Management

- Restrain – Non-operative management is undertaken initially. This includes activity modification, optimisation of body mass index, physiotherapy and oral Glucosamine.
- Repair – Uncommonly, acute peripheral tears may be stabilised by suturing. This requires a prolonged (6 month) recovery in a brace.
- Resect – Commonly, unstable central tears are removed. This allows a rapid recovery (2 month) to sport. However, as the important shock absorber has been removed, wear of the articular cartilage (*osteoarthritis*) will develop in 10 to 20 years.
- Replace – Meniscal transplantation is an experimental procedure. Laboratory produced menisci (tissue engineered) are not yet available for human trials.

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The Knee Joint

