Hamstring Tears

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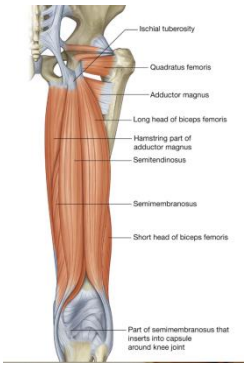
Concord Sport & Spine Physiotherapy

Complete Tear of the Hamstrings Tendons

An injury that I see with surprising frequency, is a rupture (complete tear) of the hamstring tendons where they arise from the 'ischial tuberosity' or 'sit-bone' (see diagram). The tendons are what join the muscle to the bone, and this particular attachment point is known as the 'hamstring origin'. The hamstrings are made up of three muscles – the *biceps femoris* on the outside of the thigh, and the *semitendinosus* & *semimembranosus*, both on the inside of the thigh. While said to be common in certain sports, particularly waterskiing, the injury often occurs in middle-aged recreational individuals who experience a slip or fall. Rupture of the hamstring origin is said to account for up to 9% of all hamstring injuries (Koulouris & Connell 2003, cited in Wood et al 2008).

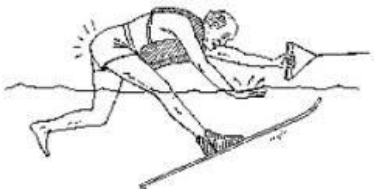


Injury mechanism:

The most common mechanism of injury is a sudden fall forward over a bent hip, with the knee straight [1,2,6]. This leads to rapid over-stretching, and concentration of force at the top of the leg. The injury usually involves all 3 hamstring tendons. In contrast, the common hamstring muscle strain involves 1 of the 3 muscle groups and typically occurs during sprinting. It is rarely a full tear.

Sports related injuries:

Apart from waterskiing, other sports associated with this injury include football, rugby, tennis, basketball, horse riding, sprinting, volleyball, martial arts, jet-skiing and snow skiing. In waterskiing, the injury typically occurs as the skier falls forward, attempts a jump, or is pulled forcefully out of the water at take-off However in up to 50% of cases reported in the literature, the injury occurred during a recreational activity [7]. In the reviewed studies, the average age of subjects was 40-46 years [2,7,8].



In adolescents, hamstring origin ruptures are occasionally seen, and usually involve a fracture of the bony attachment rather than tendon tearing off bone. These can often be treated without surgery, unless the fracture is displaced 1-2cm or more.[8] Tears of the tendon from the bone are more likely in older teenagers & adults – from 16 years onwards[1]. While considered rare, this injury is often missed on initial presentation, so cases are probably under-reported. In approximately 120 cases reported across two studies, the injury was missed by the primary physician, or the severity of the injury was not recognized [7,8].

Signs & Symptoms:

The mechanism & description of injury give important clues, as examination findings can be unreliable. On initial presentation the patient walks with a stiff-legged gait, minimizing stretch or contraction of the muscle [1]. There may be gross swelling and bruising, however this can be delayed for several days. The patient will usually describe initial severe pain, often with a pop or tearing sensation, followed by difficulty walking, painful cramping, difficulty sitting and weakness ascending stairs [2,6,7,8]. An experienced examiner can sometimes feel a defect where the injury occurs, but swelling will often mask this. Specific hamstring strength testing will reveal pain and weakness. In chronic cases (beyond 1-3 months) patients complain of ongoing weakness and poor leg control, cramping, and difficulty running [1]. There may be 'sciatic-type' symptoms – pain down the back of the leg - due to scarring around the sciatic nerve.

Investigation:

Plain X-ray findings are usually normal. Magnetic Resonance Imaging (MRI) is the scanning technique that

has the ability to confirm the diagnosis, identify the muscle(s) involved, and reveal the extent of injury [8].

Management:

In the past, many of these injuries were treated without surgery, unless there was significant ongoing weakness and pain. However more recent evidence suggests that most of these injuries will not do well unless surgically repaired [6,8]. Even partial hamstring origin tears will sometimes lead to long-term weakness and loss of function.

Surgical Management:

Where possible, early surgery is preferable (within the first 2-4 weeks) as restoration of the anatomy is considerably easier during this time. In as little as 4 weeks, scar tissue can develop around the sciatic nerve, and the free ends of the tendon can become scarred to surrounding tissues [1,6]. Evidence suggests that the tendons are likely to be pulled further away from the bone with a delay in surgery, making repair somewhat more difficult. [6,8].

With a good surgical procedure, the injury can be repaired successfully. Several researchers have reported excellent post-operative results [2,3,6,7,8] . Most patients (around 80-90%) are able to return to their pre-injury activity levels [1,6,8], with return to sport at approximately 6-9 months [2,8] . Even chronic cases have a good prospect for return to normal function. In the reviewed studies, the average time between injury and surgery was from 4 months to over 18 months [2,7,8]. Good to excellent results are possible even years after the injury.[2,3,8], however all the authors agree that early repair yields superior results. Hamstring strength & endurance will return to between 80% & 90% of normal [2,8], and patient age did not appear to affect outcome [2].

Rehabilitation:

In some cases after hamstring origin repair, a brace will be worn to protect the healing tissues. This will often be necessary with delayed repair – beyond 1-3 months. The timing of when post-operative exercises begin will be influenced by the degree & time since the injury, whether a brace was required, and surgeon preference. This may be as little as a few weeks [2] or up to 3 months post-operatively [8]. Generally the patient will partially-weight-bear on crutches for 6 weeks, and be allowed full-weight-bearing after 6 weeks. When physiotherapy commences there is initially no hamstring stretching or direct muscle resistance loading. Maintenance of core and leg strength (particularly quadriceps and calf) is encouraged. Gluteal & general hip strengthening is introduced cautiously soon after. Hamstring strengthening & stretching commences at around 12 weeks but is initially gentle, and gradually progressed. Exercises are then advanced over the following 3 months, with gradual introduction of sport specific training, and possible return to sport at 6 months post-operatively.

References:

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