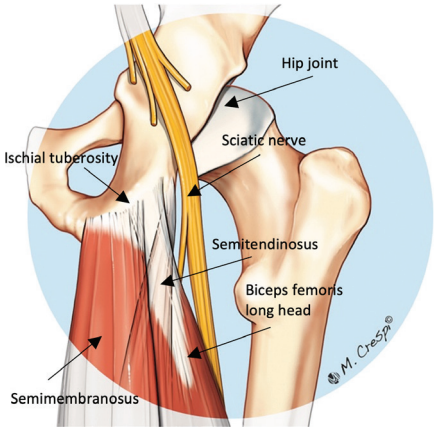
Proximal Hamstring Injuries

Anatomy

The hamstring muscles are at the back of the thigh. The hamstring group comprise the biceps femoris, semimembranosus and semitendinosus muscles. They run from the ischial tuberosity bone in the buttock region to the top of the tibia (shin bone). Lower down, the tendons can be felt at the back of the knee, both medially (inner side) and laterally (outer side).



Injury Patterns

The hamstrings can be injured at any level. The common hamstring tear involves the biceps femoris and is a tear at where the muscle fibres attach to the tendon (musculotendinous junction), roughly in the middle third of the thigh or just above.

These notes are about injuries that occur higher up (proximal) in the thigh and involve the tendon rather than the muscle. At this level there are two tendons, biceps femoris (also called the conjoint tendon) and semimembranosus. The semitendinosus has a muscular rather than tendinous attachment to the ischial tuberosity.

One or both of the biceps femoris and semimembranosus tendons can be torn off the ischial tuberosity. This is called an avulsion. When both tendons are avulsed, it is usually dramatic and associated with marked pain and weakness with subsequent bruising down the back of the thigh. Sometimes there can be a background of tendinopathy and the avulsion occurs over time and with less force. In this setting bruising is less common. When teenagers are still growing, the tendons can pull the tip of the ischial tuberosity away from the growth plate, rather than the tendon coming away from bone.

The biceps femoris tendon can also be torn just below the ischial tuberosity, typically 9-11cm from it. Because there are muscle fibres attached to the tendon in this region, these tears are called intramuscular tendon tears.

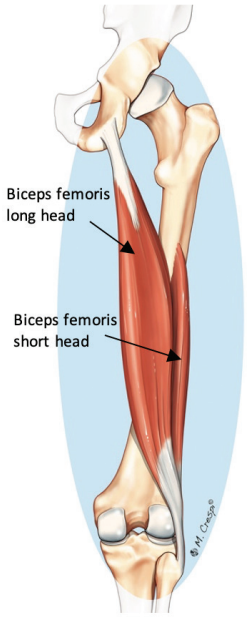
Surgery

The role of surgery in proximal hamstring injuries varies according to the type of tear, the amount of separation, the age of the person and their level of activity.

In general, surgery should at least be considered when there is an acute avulsion of both tendons. It is much easier and safer to repair these early. Although avulsions of bone in younger patients have frequently been treated without surgery, they don't necessarily heal as well as has been assumed and it is worth at least considering surgery for these injuries.

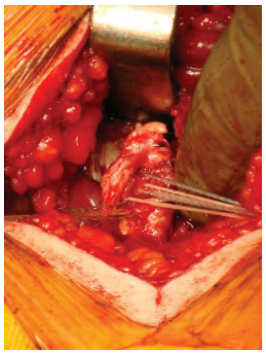
Acute avulsions of a single tendon and partial avulsions on a background of tendinopathy that have failed to settle with non-operative treatment may also be suitable for repair, but this will be very dependent on the activity level of the individual.

In recent years we have been repairing some intramuscular tendon tears of the long head of biceps femoris with good results. It is important to note that it is still unclear when these sorts of tears do better with early surgery compared to being treated non-operatively. The decision to recommend surgery is based on a combination of the sporting level of the individual, the degree of weakness, and the MRI appearances. At present, the main reason for recommending surgery is to prevent recurrent problems, rather than to speed up recovery.



What does surgery involve?

If you are having surgery to repair a proximal hamstring injury it will be done under a general anaesthetic and you will usually stay in hospital overnight. The incision is made either in a vertical or horizontal direction, depending on the nature and location of the hamstring tear. Horizontal incisions tend to heal better than vertical incisions, but are not always suitable for the type of injury.



Avulsion injuries are repaired back to bone using devices called anchors which are embedded in the bone to provide anchor point for stitches which are passed through the tendon. Intramuscular tendon tears are repaired with stitches with no need for anchors.

After surgery you can usually weight bear as tolerated and just use crutches for comfort. There is not a lot of rehabilitation to do in the first couple of weeks while the wound heals and your rate of progress after that will depend on the exact type of injury. Avulsion injuries usually take up to 12 weeks to heal properly, whereas other injuries might only need 6-8 weeks. Progression to return to sport is also quite variable, but it takes roughly twice the healing time.

What are the risks of surgery?

Nerve injury

The sciatic nerve is the major nerve on the back of the thigh and runs very close to the hamstring tendons. It is therefore at risk of injury during surgery. Damage to the sciatic nerve or its branches can result in significant weakness of the leg as well as numbness, both of which can

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be permanent. Fortunately, there are very few reports of this happening.

Skin nerves can be damaged as a result of surgery, leaving a strip of numbness on the back of the thigh. This will usually reduce with time, but can be permanent.

In large avulsion injuries there is sometimes traction to branches of the sciatic nerve. This can mean that parts of the relevant muscle may not regain their normal strength, despite surgical repair.

Infection

Antibiotics are given at the time of surgery to reduce the risk of infection. Despite this, infection of the wound can occur. This is usually easily treated with oral antibiotics. However, sometimes the infection goes deeper and may require admission to hospital, additional surgery and intravenous antibiotics.

Venous thrombosis

A thrombosis is a blood clot that may form in the veins in the legs. This can cause persistent swelling of the foot and ankle and can also be dislodged and be carried to the lungs (pulmonary embolus), resulting in chest pain and breathing difficulties.

These notes have been prepared by orthopaedic surgeons at OrthoSport Victoria. They are a general overview and reflect their views, opinions and recommendations. They do not constitute medical advice. The contents are provided for information and education purposes only and not for the purpose of rendering medical advice. Please seek the advice of your surgeon or other health care provider with any questions regarding medical conditions and treatment.

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