

AVULSION FRACTURES OF THE ANTERIOR INFERIOR ILIAC SPINE (AIIS)

DESCRIPTION

Avulsions fractures are separation of bone due to pull of muscle-tendon units. These may occur in fully grown athletes, though in the pelvis, they tend to occur more commonly in skeletally immature (growing) athletes. This is due to the relative weakness of the growth plate as compared with the bone, muscle and tendon. The growth plate is an area of relative weakness and injury to it occurs due to repeated stress or vigorous exercise. An avulsion in the growing athlete thus is a separation of bone at the growth plate. A similar injury in adults would be a muscle-tendon strain. Since the pelvic growth plates close at skeletal maturity, this problem is uncommon after fully grown.

The anterior inferior iliac spine (AIIS) is the bony attachment of part of one of the quadriceps (thigh) muscles, the rectus femoris. The quadriceps are important in bending the hip and straightening the knee.

FREQUENT SIGNS AND SYMPTOMS

- A slightly swollen, warm and tender area in the front of the hip
- Pain with activity, especially stretching the muscle or having the muscle contract to perform its function (forcefully bending the hip and/or straightening the knee or stretching with the knee bent and hip straight - the hurdler's stretch)
- Pain with walking (usually walk with a limp)
- A pop is often heard in the area at the time of injury.
- Crepitation (a crackling sound) when the area is touched
- Bruising in the thigh 48 hours following the injury
- Weakness with bending the hip

CAUSES

Results from a powerful contraction of the quadriceps muscles, such as with kicking sports. This force exceeds the strength of the growth plate.

RISK INCREASE WITH

- Sports that require kicking sports such as soccer, football kicker and rugby
- Poor physical conditioning (strength/flexibility)
- Inadequate warm-up prior to practice or play
- Previous thigh, knee or pelvis injury.

EXPECTED OUTCOME

These fractures do not move too far out of normal alignment and can heal without surgery. Return to sports averages 4 - 12 weeks.

POSSIBLE COMPLICATIONS

- Recurrent symptoms and quadriceps strains, especially if athlete resumes activity too soon
- Prolonged healing time if usual activities are resumed too early
- Non-union (not healing of bone)
- Mal-union (healing in bad position) – Particularly there is a potential risk of causing impingement of the hip due to the displaced piece of bone
- Weakness of the hip and knee

GENERAL TREATMENT CONSIDERATIONS

Initial treatment consists of medications and ice to relieve pain, stretching and strengthening exercises (particularly of the thigh muscles) and modification of activities. The exercises can all be carried out at home for acute cases or a referral to a physical therapist or athletic trainer for further evaluation or treatment. Use of crutches while the athlete is limping may be helpful. Relative rest, particularly avoiding the activity that caused the problem is helpful. Some feel surgery is beneficial to reattach the bone, though this is likely unnecessary for most cases. There is the risk that the piece of bone may result in impingement of the hip when taking the hip through extremes of motion (Such as doing squats or sprinting), however early surgery is also a risk for developing heterotopic bone (extra bone growing in the soft tissues) that may limit hip motion.

MEDICATION

- Non-steroidal anti-inflammatory medications, such as aspirin and ibuprofen are often recommended to reduce inflammation (do not take if surgery planned in 7 days or less). Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset or an allergic reaction occurs. Other minor pain relievers, such as acetaminophen, may also be used.
- Pain relievers may be prescribed as necessary. Use only as directed and only as much as you need.

HEAT AND COLD:

- Cold is used to relieve pain and reduce inflammation for acute and chronic cases. Cold should be applied for 10 - 15 minutes every 2-3 hours for inflammation and pain, and immediately after any activity which aggravates your symptoms. Use ice packs or an ice massage.
- Heat may be used prior to performing stretching and strengthening activities prescribed by your physician, physical therapist or athletic trainer. Use heat pack or a warm soak.

NOTIFY OUR OFFICE IF:

- Symptoms get worse or do not improve in 4 weeks, despite treatment
- New, unexplained symptoms develop. Drugs used in treatment may produce side-effects.