

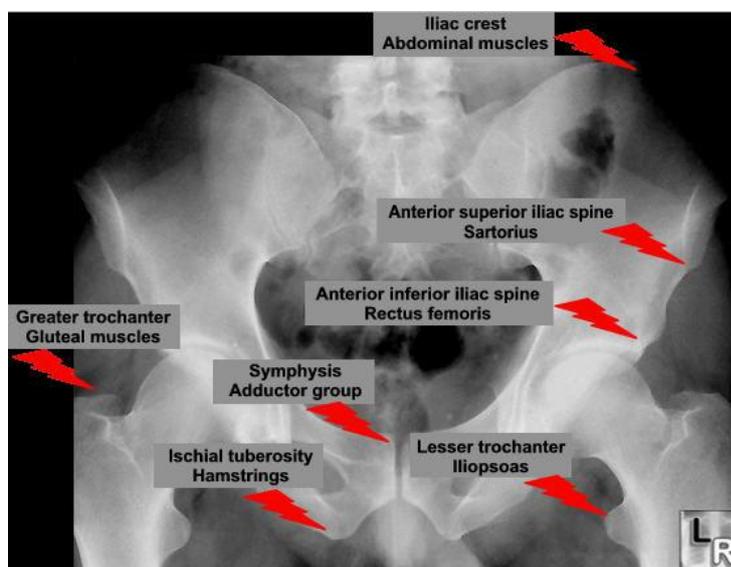
## Iliac Apophysitis

### INTRODUCTION

Iliac apophysitis is a mechanical overload type injury at the tendons that originate at the front/back of the pelvis and above the hip. This may also be referred to as a traction growth related injury, tendonitis or in more serious cases an avulsion fracture.

### BACKGROUND

- Iliac apophysitis is one form of several apophyseal injuries, which can occur in skeletally immature patients between the ages of 12 and 18.
- An "apophysis" is the anatomic term used to describe a cartilage growth area on a bone where there is a muscle attachment to the bone.
- Apophysitis is the term used to describe an acute or chronic traction injury at the tendon insertion site.
- There are several attachment sites on the pelvis for strong tendons which can be injured, aggravated, or avulsed (pulled off).
- The most common locations include the;
  - anterior superior iliac spine
  - anterior inferior iliac spine
  - the ischial tuberosity
  - the iliac crest apophysis
  - the lesser trochanter apophysis.



Shop No. P16, NorthPoint, 100 Miller St. North Sydney. NSW – 2060

T – (02) 99222212 F – (02) 99225577 W: [www.physio4all.com.au](http://www.physio4all.com.au) E: [info@physio4all.com.au](mailto:info@physio4all.com.au)

ABN: 77 548 297 578

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- Aggravation or avulsion of the anterior superior iliac spine (ASIS) occurs with a sudden contraction of the sartorius when the hip is extended with the knee flexed. On examination, localized tenderness and swelling is noted and flexion and abduction of the thigh provokes symptoms. X-rays may show displacement of the ASIS but marked displacement is rare.
- Avulsion of the anterior inferior iliac spine (AIIS) occurs after contraction of the rectus femoris with vigorous kicking. Examination reveals local tenderness and swelling in the region of the AIIS and exacerbation with active flexion. X-rays may demonstrate mild displacement of the AIIS.
- The ischial apophysis is the site of the hamstring and adductor magnus origin, and it is the last apophysis to unite, usually at age 25. The mechanism of injury is a vigorous hamstring contraction with the hip flexed and the knee extended. In football this often occurs as a stretch type injury. The athlete complains of pain at the ischial tuberosity and difficulty sitting. Gait may be painful. On examination, hip flexion with the knee extended will reproduce symptoms; thus, the presentation and examination are similar to a hamstring strain in an adult. Radiographs may demonstrate a displaced fragment and displacement greater than 2 cm may require surgical fixation. Although initial treatment is usually symptomatic as described below, poor healing or other complications are more frequent. In addition, time away from sports is often longer than that of other apophyseal avulsion injuries
- Acute avulsion of the iliac crest apophysis in a footballer occurs with the sudden contraction of the abdominal musculature that is opposed by simultaneous contraction of the gluteus medius and tensor fascia latae. This may result from excessive arm swing and trunk rotation while running and may occur with a sudden change in direction. On examination, symptoms are reproduced with resisted abduction of the ipsilateral side and palpation of the iliac crest. Oblique radiographs will reveal an avulsion of the iliac crest.
- Avulsion of the lesser trochanter apophysis may occur with sudden contraction of the iliopsoas. The athlete experiences a sudden onset of anteromedial hip pain while running. On examination, passive internal and external rotation and active hip flexion reproduce symptoms. Gait is antalgic. Radiographs demonstrate an avulsion of the lesser trochanter.
- Avulsion of the pubic symphysis and the adductor muscles (groin) is rare but sometimes can be seen in this age group. This apophysis also fuses really late in the maturation phase around the age of 21-22 years. The athlete experiences a sudden onset of groin pain while running, overstretching or with a quick change in direction. On examination, passive hip internal and external rotation and active hip adduction may reproduce symptoms. Gait can be antalgic. Radiographs demonstrate an avulsion of the pubic symphysis.

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## CLINICAL PRESENTATION AND DIAGNOSIS

Pain may start suddenly during a demanding activity or sport or it may have a gradual onset of pain with no clear history of injury. Examination reveals tenderness to palpation at the musculotendinous insertion into bone. An apophyseal avulsion fracture is usually acute, and the displaced fragment may be bony or cartilaginous. The mechanism of injury is an excessive force from a strong or violent muscle contraction that occurs across an apophysis. The usual symptom of an apophyseal avulsion fracture is a sudden onset of pain, swelling, and weakness. Generally, there is no history of direct trauma. Radiographs will confirm the diagnosis, and comparison views of the contralateral side may be helpful.

## TREATMENT

- Treatment progresses through several phases
- Treatment starts with rest, ice, NSAID medication and protection to limit muscle spasm
- Once acute pain has settled, it is beneficial to start gentle physiotherapy
- As the pain and motion continues to improve you will then be prescribed functional and progressive strength and flexibility exercises.
- In the longer term, continued participation with a focused flexibility and strengthening program are important for full recovery
- Re-integration to an on-field conditioning program is vital for a full recovery
- Most of these injuries are managed conservatively, and indications for surgical fixation are exceedingly rare.

## EXPECTED OUTCOME AND COMPLICATIONS

Overall prognosis is good, but healing time may be slow. (Anywhere from 3 to 12 weeks and sometimes longer depending on the severity)

Returning to exercise or sports too early can lead to a recurrent injury and slower healing.

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