

Limb Soft Tissue Injuries

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Introduction and General Principles

Soft tissue injuries constitute one of the commonest and yet most underestimated problems seen in the ED. Accurate documentation of the mechanism, examination and **correct diagnosis is essential**. The over-simplified "**strap and rest**" approach is inappropriate. Early movement is beneficial in most cases.

In order to reach the correct diagnosis, pay special consideration to:

History

- What was the **exact** mechanism? If there is no definite history of trauma, look for other causes of limb pain. "I don't know what I've done but....." often means there has been no injury
- Was there immediate loss of function (e.g. unable to weight bear in knee or ankle injury)?
- Was there immediate swelling?
- Was there anything atypical in the history? (e.g. "felt like I was kicked in the back of the ankle" - ruptured T. Achilles).
- Any previous injury or chronic instability of joint.

Examination

Always compare sides before deciding there is no problem, especially in children

- LOOK.
 - any obvious **joint** effusion.
 - any soft tissue swelling.
 - any bruising, inflammation
 - ability to weight bear.
- FEEL
 - signs of crepitus
 - bony tenderness
 - ligamentous tenderness
 - joint line tenderness
 - joint stability
- MOVE
 - active movement
 - passive movement

GOOD DOCUMENTATION OF HISTORY AND EXAMINATION IS ESSENTIAL.

Investigations

Make sure to request x-rays specific to the area in question. For instance, if your patient has a finger injury, ask for a finger view which will be centred on the finger

and include a true lateral of the finger with the other fingers held out of the way as far as is possible. A hand view will be centred on the metacarpals and will be inadequate for assessing the finger.

Adopt a systematic approach to examining the X-ray and examine the whole X-ray, not just the area you think is of interest. Important incidental findings can be found on X-rays requested for trauma

Treatment

Once a diagnosis is reached, the general principles to be applied are:

- Rest, ice, elevation
- Advice on self-physiotherapy (**very important - use the specific advice cards where appropriate**)
- Advice on prognosis (2-4 weeks in most injuries, as opposed to a few days).
- Clear follow-up arrangements either with the G.P. (in the vast majority) or via a formal physiotherapy referral.
- Analgesic support. Non-steroidal anti-inflammatory tablets if not-contra-indicated +/- Paracetamol.

N.B. Non-steroidals are contra-indicated in a patient with large muscle haematomata.

Compression supports used in the ED consist of wool and crepe bandages, and rigid supports such as a Futuro splint (for the wrist) or plaster of Paris.

There is no medical evidence that supports the use of tubigrip as a physical support in joint injuries although it can be useful in calf muscle strains.

The notes on the following pages refer to individual joint injuries and should be read in conjunction with the section on orthopaedic bony injuries.

The Ankle and Foot

Ottawa Ankle Rules: after inversion injury X-rays are only required if there is any pain in the malleolar or midfoot area, and **any one** of the following:

- Bony tenderness along the distal 6cm of the posterior edge of the tibia or tip of the medial malleolus
- Bony tenderness along the distal 6cm of the posterior edge of the fibula or tip of the lateral malleolus
- Bony tenderness at the base of the fifth metatarsal (for foot injuries).
- Bony tenderness at the navicular bone (for foot injuries).
- An inability to bear weight both immediately and in the emergency department for four steps.

[How to apply the Ottawa Ankle/Foot Rules](#) (Internet access required)

Certain groups are excluded, in particular children (under the age of 18), the pregnant, the elderly, and obviously those with existing bone problems and those with diminished ability to follow the test (for example due to head injury or intoxication).

Most injuries involving the ankle affect the lateral ligamentous complex. The anterior talo-fibular ligament (ATFL) will tear first, followed by the calcaneo-fibular ligament and finally the posterior talo-fibular ligament. Most ankle sprains affect only the ATFL.

A complete examination must include the proximal fibula, tendo-achilles, ankle, heel and foot (especially the base of 5th MT in inversion injuries).

Beware Tendo-Achilles ruptures if the pain is on the postero-lateral aspect of the ankle only and there is no history of inversion.

Beware calcaneal fractures if there is a history of fall from height landing on feet. Always examine the back if a calcaneal fracture is identified

Always examine the 5th metatarsal in inversion injuries and x-ray the foot if it is painful (fractures run at right angles to the shaft of the 5th metatarsal and epiphyses run parallel).

Avulsion fractures of the medial or lateral malleolus imply significant ligamentous injury and will require physiotherapy as well as being given a prognostic time scale of 4-8 weeks (treat as for severe sprains).

Consider plantar fasciitis in patients presenting with a spontaneous onset of heel pain, especially in obese individuals, those with valgoid feet or pes cavus.

The Knee

Ottawa Knee Rules: a knee x-ray is only required for adult knee injury patients with **any one** of these findings:

- age 55 or over
- isolated tenderness of the patella (no bone tenderness of the knee other than the patella)
- tenderness at the head of the fibula
- inability to flex to 90 degrees
- inability to weight bear both immediately and in the emergency department (4 steps - unable to transfer weight twice onto each lower limb regardless of limping).

[How to apply the Ottawa Knee Rules](#) (Internet access required)

90% of the diagnoses can be gained from the history. Twisting mechanisms will suggest meniscal injury. Valgus / varus strains will cause collateral ligament injury. Anterior cruciate ligament (ACL) rupture will occur with AP deceleration mechanisms. Mixed forces will cause a combination of injuries. Don't forget to assess the extensor mechanism of the knee to exclude patella tendon/quads ruptures.

N.B. 75% of patients with an acute haemarthrosis will turn out to have an ACL rupture.

Self-physiotherapy (especially quadriceps exercises) is an essential component in the rehabilitation of patients with knee injuries.

1. All patients with truly locked knees, complete (Grade 3) ligament injuries or tense haemarthroses should be **referred to the Orthopaedic team.**
2. Patients with a likelihood of significant knee injury should be referred for physiotherapy
3. All patients must be given advice on quadriceps exercises, use the knee injury advice cards

The Hip

Beware children with vague hip and/or knee pain, possibly related to trauma. Take a FULL history and thoroughly examine, don't forget to test hip extension. Request X-Rays if appropriate, don't forget to request genital screening if relevant.

If the X-Ray is normal check FBC & ESR (to exclude infection / malignant disease)

If all investigations are normal prescribe regular analgesia. If there is any doubt discuss the need for orthopaedic referral with an ED senior.

Remember septic arthritis (< 5 years old commonly), Perthes' (5-10 years), slipped upper femoral epiphyses (10-14 years).

Viral synovitis of the hip is a diagnosis of exclusion.

All elderly patients having had a fall with hip pain **must** have an x-ray to exclude a fractured neck of femur.

The Shoulder

If the x-ray of the shoulder reveals no apparent bony injury or dislocation, consider the following:

Posterior dislocation of the shoulder

A good history and examination should alert you to the possibility of this diagnosis. Beware the epileptic who complains of a sore shoulder after a convulsion. The X-ray may appear normal at first glance but the head of the humerus will show the typical "light-bulb" appearance. The axillary or axial view should confirm the dislocation but can be difficult to obtain in true dislocations. If in doubt, consult an ED Senior.

Acromio-clavicular joint

Point tenderness over the AC joint should suggest damage. Ask for weight-bearing x-rays.

Grade 1 injuries: Have no radiological abnormality (on weight-bearing views) and suggest a sprain to the AC ligament.

Rx: broad arm sling, analgesia, early mobilisation, GP follow-up one week.

Grade 2 injuries: Will show a subluxation at the AC joint on weight-bearing views and are consistent with a rupture of the AC ligament.

Rx: broad arm sling, analgesia and physiotherapy referral

Grade 3 injuries: Will show marked displacements of the end of the clavicle and suggest major disruption of the coracoclavicular ligaments as well.

Rx: broad arm sling, analgesia, and Fracture Clinic referral.

Rotator cuff injury

This is a commonly misdiagnosed injury. Consider it always in those patients in whom you have excluded bony injury, dislocation and AC injury. A high-riding humeral head on the AP x-ray will confirm the diagnosis in the minority of cases. All but the mild ones should have physiotherapy and complete ones should be referred to the Fracture Clinic. Even complete disruptions in elderly patients may benefit from reconstruction.

Stiff shoulder syndrome

If the above conditions are mismanaged an intractable stiff shoulder will almost certainly result. Be aware of the need to advise on simple early mobilisation exercises. Where a stiff shoulder is established, referral to the physiotherapists is appropriate.

Tendonitis

Patients presenting with acute pain and a history of minimal/no trauma may have supraspinatus/biceps tendonitis. X-ray may reveal calcification. Discuss treatment with non-steroidals/steroid injection + physiotherapy, with the Doctor in charge. Most episodes resolve in 2/52.

The Elbow

Patients with no bony injury who have a significant haemarthrosis (positive fat pad or sail sign) should be treated in collar & cuff, given appropriate analgesia and reviewed in the Fracture Clinic

The Wrist

Tenosynovitis should be considered in minor trauma, especially with a repetitive component. Clinical presentation consists of a swollen, hot, tender area on the dorso-lateral aspect of the wrist/forearm. The presence of crepitus implies a hyper-acute presentation.

Hyper-acute cases; NSAIDs. Futuro splint support. See GP if not settling in 10-14 days

Chronic cases (minimal signs): NSAIDs. G.P. follow-up.

Physiotherapy

The majority of patients will be able to do their own physiotherapy if given adequate instruction. This consists of verbal directions and advice cards.

The Role of Physio in Acute Injuries

The musculoskeletal physiotherapy team are experts at managing musculoskeletal problems, whether from injury or otherwise. In this Trust they work closely with the orthopaedic and rheumatology teams. When referring patients for physiotherapy do not try to determine the treatment required yourself, simply give the physios information on the mechanism of injury, primary or differential diagnosis, and any significant previous history or concurrent conditions. The physios will determine the treatment required

All patients referred for physiotherapy will need the pink referral card to be fully completed and given to the A&E receptionists, who will then give instructions on how the patient can arrange their first appointment. Always record a contact telephone number

NB The onus is on the patient to make their first appointment. This reduces the number of missed appointments. It is essential the referral process is strictly followed

DO NOT refer patients with chronic conditions/injuries without prior discussion with an ED Senior.