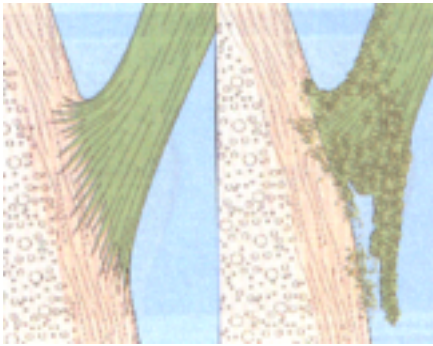
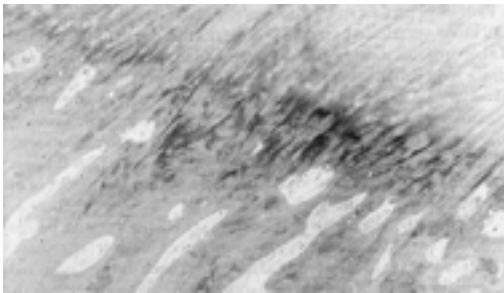


Enthesopathy



The enthesis is the specialized area at the junction of tendons, articular capsules or ligaments and bone. Common enthesis disruptions include tennis elbow (junction of the common extensor tendon and lateral humeral epicondyle), golfer's elbow (junction of the flexor tendon and the medial epicondyle), and planter fasciitis (undersurface of the heel at the origin of the plantar fascia). The illustration shows invagination of a tendon fiber into bone at a normal enthesis.



At the enthesis the collagenous extraosseous fibers are continuous with the Sharpey's fibers of the bone itself. The illustration shows a tendon insertion with chondrocytes at the bone-tendon interface and collagen fibers crossing the interface.

Enthesis disruption may be a manifestation of many disorders, including traumatic, degenerative, inflammatory or metabolic diseases. The insertion of the tendon, ligament or joint capsule can be divided into four zones, which blend into each other and represent the transition of the tendon at its insertion into bone. The zones are:

- the actual tendon or ligament composed of collagen fibers
- unmineralized fibrocartilage
- mineralized fibrocartilage
- the bone itself

At the ligamentous or tendinous attachment, the collagen fibers blend imperceptively with those of the bone matrix. These fibrous connections are called Sharpey's fibers or perforating fibers. Entheses are composed of metabolically active tissue to which there is a prominent nerve supply. It is the disruption of this attachment that causes the pain and pinpoint tenderness.

Tenderness of the periosteum at the enthesis can be related to increased muscular tension. If the spinous processes are tender one side, this can indicate the side of muscle spasm.

Strain may occur at the enthesis in the tendon or ligament. Minor rupture occurs leading to a small scar, which can remain painful for an extended time, aggravated by movement. This imposes a pulling force on the early fibroblasts. Each muscle contraction can renew the rupture, and later it can further irritate the painful scar.

In chronic ligamentous sprains, adhesions have formed because of inadequate movement in the acute stage. Each time the patient uses his joint vigorously he re-sprains the adherent ligament.

When an enthesis is disrupted the patient will complain of pinpoint pain in one or more spots and will point to the spots with one finger. The disrupted area is palpated as a small roughening on the bone, which is exquisitely tender.

| <u>Enthesis Point</u> | <u>Joint Dysfunction</u> | <u>Muscle Tightness</u> |
|----------------------------------|--------------------------|-------------------------------|
| Heel spur | | Plantar aponeurosis |
| Pes anserinus | Hip | Long adductors |
| Fibular head | Tibiofibular | Biceps femoris |
| Upper patella | | Quads or TFL |
| Ischial tuberosity | | Hamstrings |
| Lateral pubic symphysis | SIJ, Hip | Adductors |
| Upper pubic symphysis | | Rectus abdominis |
| Coccyx | | Glut Max, Lev Ani, Piriformis |
| Iliac crest | T/L junction | Quad Lumb, Glut Med |
| Greater trochanter | Hip | Abductors |
| L5 spinous process | | Deep paraspinals |
| T5, T6 spinous processes | Low C, T/L junction | |
| C2 spinous process | C1-2, C2-3 | Levator scapulae |
| Xiphoid process | | Rectus abdominis |
| Ribs in mammary & axillary line | | Pectoralis, Serratus ant |
| Sternocostal junction upper ribs | | Scalenes |
| Sternum just below clavicle | 1 st rib | |
| Medial end of clavicle | | SCM |
| TVP of atlas | C0-C1 | SCM, Lat rectus capitis |
| Styloid process of radius | Elbow joint | |
| Epicondyles | Elbow joint | Wrist flexors and extensors |
| Attachment of deltoid | Scapulohumeral joint | |
| Condyle of mandible | TMJ | Masticatory muscles |
| Cornua of hyoid bone | | Digastricus |



Treatment of an enthesis disruption consists of firm thumb pressure into the enthesis until tenderness diminishes somewhat, or a release is felt. The aim of treatment is to restore the normal attachment to bone, to relieve pain and inflammation, and to reduce tenderness over the enthesis. This usually requires firm pressure for about 5 seconds to 30 seconds. The spot to be treated should be exquisitely tender, and if not, the thumb should be moved slightly until the patient indicates the thumb is on the most-tender spot.



The enthesis disruption can also be treated using electric point stimulation. The electrical stimulation has an effect on pain and inflammation, and acts as an electromotive force to drive the Sharpey fibers back into the bone.

ICD 9 Diagnosis Codes for Enthesis Disruption

1. Spine
2. 726.2 Other affections of Shoulder Region Not Elsewhere Classified
3. 726.30 Enthesopathy of Elbow (Unspecified)
4. 726.4 Enthesopathy of Wrist and Carpus (Enthesopathy of Wrist)
5. 726.5 Enthesopathy of Hip Region (Enthesopathy of Hip)
6. 726.60 Enthesopathy of Knee (unspecified)
7. 726.7 Enthesopathy of Ankle and Tarsus (Unspecified)
8. 726.71 Achilles Bursitis or Tendonitis
9. 726.80 Other Peripheral Enthesopathies (Peripheral enthesopathy NEC)
10. 726.90 Enthesopathy of Unspecified Site Other (Enthesopathy)
11. 726.72 Tibialis Tendonitis
12. 726.73 Calcaneal spur

CPT Treatment Codes for Enthesis Disruption

- 97140 Manual therapy
- 97035 Ultrasound
- 97032 Attended EMS
- 97124 Transverse friction massage (if 97140 not done)

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