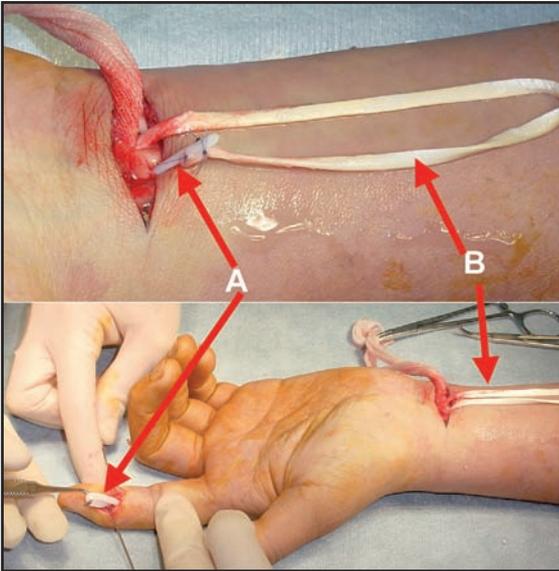


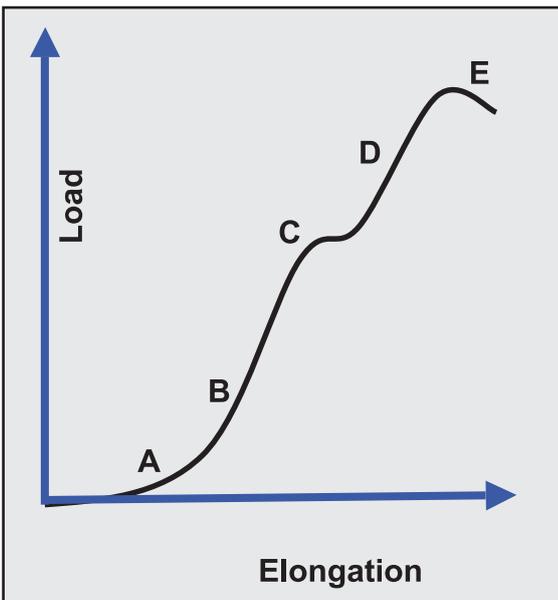
ORTHOPAEDIC CLINICAL QUIZ

The following questions were based on the images or illustrations provided. Answers and further information are available in the next page.



Q1. Implant A is shown in a surgical procedure.

- Name implant A.
- What is it made of?
- Name the surgical procedure.
- What is B? What step is being carried out?
- Why was implant A used?



Q2. This is the stress-strain curve of a tendon in an adult.

- Name region A of the curve
- What will happen if the tendon is loaded in zone A and why?
- Name region B. What is the characteristic of the tendon?
- Name point E and state its significance.
- What will happen if load E is applied in children? State the significance of the difference.



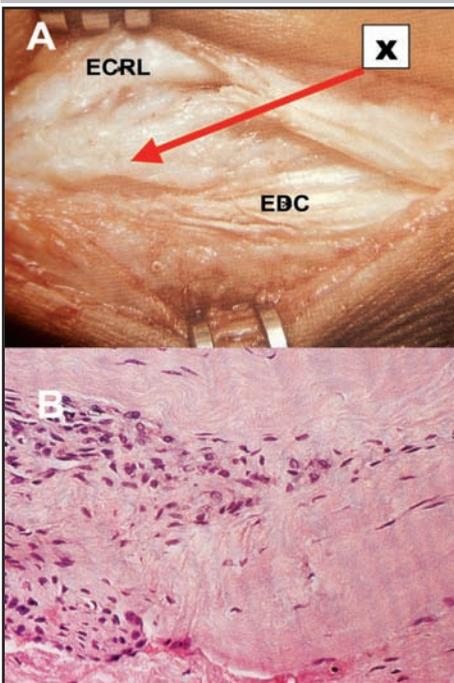
Q3. 50-year-old man has a large hard and fixed swelling in left buttock for many years but enlarging for last six months.

- Describe the radiograph.
- Name 2 most important clinical examination other than that of the mass.
- A biopsy was taken from the lesion. Name 3 characteristic features you expect to see.
- What is the diagnosis?
- What is the management?



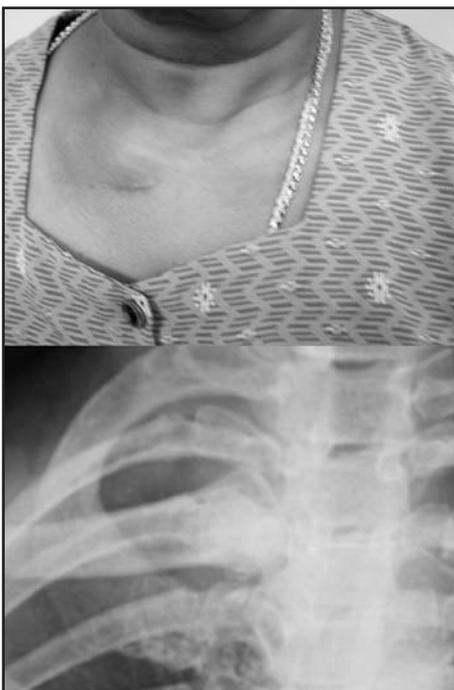
Q4. A car ran over this 14-year-old boy's foot.

- Describe the radiograph.
- Name the fracture.
- Name one expected complication.
- How to manage the complication?
- How to manage the injury?



Q5. A 35-year-old sportsman was operated for chronic lateral elbow pain. Photograph A shows the gross pathology of the tendon seen during surgery and slide B is the histology of tissue taken from X.

- What is the usual description of lesion A and where do you find it?
- Name the pathology of the lesion.
- List three salient histological features of the underlying pathology
- Based on the histological findings, what is the role of steroid injection?
- Name one complication of this condition.



Q6. 54-year-old, otherwise healthy lady developed a slowly enlarging lump on her upper chest over the last 6 months.

- Name 3 differential diagnoses.
- What does the radiograph show?
- Full blood count and erythrocyte sedimentation rate (ESR) were within normal limits. What other investigation is appropriate?
- Biopsy was inconclusive. What is the likely diagnosis?
- How will you treat this lady?

Answers and additional information for Clinical Quiz in the previous page

Q1.

- Name implant A (Tendon spacer)
- What is it made of? (Silastic / silicon)
- Name the surgical procedure (Second stage flexor tendon reconstruction).
- What is B? What step is being carried out? (Tendon graft with palmaris longus. The tendon spacer is replaced with a tendon graft)
- Why was implant A used? (To recreate a smooth tunnel for tendon gliding)

When a flexor tendon is cut and its sheath is scarred, a new tunnel can be created with the use of a silastic tendon spacer. The first stage of the procedure involves placing the spacer in the path of the original tendon. Passive gliding movement of the silastic spacer will create a smooth and shiny sheath. At the second stage, the spacer is replaced with tendon graft.

Silicon synovitis can be a complication and sometimes it may mimic infection.

Q2.

- Name region A of the curve (The 'toe' or 'toe-in' region)
- What will happen if the tendon is loaded in zone A and why? [Small increase in stress (load) causes non-linear large change in strain (length)]
- Name region B. What is the characteristic of the tendon? [The 'linear' region. Elastic deformation occurs if the tendon is strained less than 4% of its length]
- Name point E and state its significance. (Macro-failure point. Fibres started to show gross tear if tendon is stretched more than 10% of its length and eventually reach failure point F).
- What will happen if load E is applied in children? (Avulsion fracture or fracture at the tendinous insertion instead of tendon rupture).

The diagram shows a typical stress-strain (s-s) curve for ligaments and tendons (if visco-elastic behaviour is neglected). There are three major regions of the s-s curve. In physiologic activity, most tendons and ligaments exist in the toe or somewhat linear region. These constitute a non-linear s-s curve, since the slope of the toe-in region is different from that of the linear region.

The toe region represents 'un-crimping' of the crimp (waviness) in the collagen fibrils. Since it is easier to stretch out a crimp, this part of the curve shows a relatively low stiffness. As the collagen fibrils become un-crimped (straightened) then the collagen fibril backbone itself is being stretched, which gives rise to a stiffer material. As the individual fibrils within the tendon begin to fail (micro-failure), damage accumulates, stiffness is reduced, and the ligament/tendon begins to fail ('D') and finally snaps (point 'E' or macro-failure point).

The key concept is therefore the overall behaviour of the tendons and ligaments depends on the individual crimp structure and failure of the collagen fibrils. In children, the stiffness of the tendon or ligament is far greater than the stiffness of the bone (mainly collagen II) and the bone will yield or fracture before the tendon does.

Q3

- Describe the radiograph (Area of extensive calcification arising from left ASIS).
- Two most important clinical examination other than that of the mass. (Ends of long bones, examination of close relatives).
- A biopsy was taken. Name 3 characteristic features you expect to see (Basic stained stellate cells, eosinophilic matrix, multinucleate cells with mitotic figures).
- What is the diagnosis? (Malignant change of osteochondroma / chondrosarcoma)
- What is the management? (Curative wide excision of the lesion if no pulmonary metastasis.)

Chondrosarcoma (CS) is one of the commoner primary bone tumours comprising up to 13% of all such tumours. Unlike osteosarcoma CS occurs in middle aged adults, 40- 60 year group with a slightly more male prevalence.

It usually affects axial bones like pelvis, ribs, vertebrae and proximal femur and humerus, in contrast to benign cartilage tumours which mostly affect appendicular bones.

It is generally accepted that CS may arise from a pre existing benign cartilage tumour, eg., cartilage cap of an osteochondroma (exostosis)

in diaphyseal acasia or in enchondromatosis (Ollier's disease), specially when associated with soft tissue haemangiomas (Mafucchi's syndrome). Usually patient presents with a fairly long history of localised pain and swelling without any constitutional symptoms. Diagnosis is usually radiological.

Radiological appearance is that of an intra-medullary lobulated osteolytic lesion with endosteal erosion and with characteristic and pathognomonic foci of calcification. Occasionally the cortex may be breached with an extra-osseous extension into soft tissues.

Q4.

- Describe the radiograph (Fracture dislocation through tarso-metatarsal joints with lateral displacement)
- Name the fracture (Lisfranc fracture dislocation)
- Name one expected complication (Compartment syndrome).
- How to manage the complication? (Release compartments: plantar and dorsal- through a medial incision).
- How to manage the injury? (Reduction and fixation with K-wires)

The Lisfranc injury of the forefoot is thought to have originated from Napoleon's surgeon Lisfranc. If a rider was thrown out of his horse and the foot was caught in the stirrup, the rider often suffered a severe fracture of multiple bones in the midfoot region with dislocation of the fragments. This often led to amputation of foot through the 'Lisfranc Joint'. - Lisfranc's amputation. However the Lisfranc injury (or fracture dislocation) now defines a specific injury involving tarso-metatarsal complex.

The joint between the bases of 1st and 2nd MT and medial cuneiform with the ligaments are responsible for the stability of this key joint and maintaining the arch. Injury involving the joint complex and disruption of the ligament constitutes the Lisfranc Injury.

Q5

- What is the usual description of lesion A and where do you find it? (Crab-meat lesion in the ECRB tendon)
- Name the pathology and histology of the lesion. (Tendinosis. Angiofibroblastic hyperplasia).
- List three salient histological features of the underlying pathology (New blood vessels without lumen, disorganized fibroblasts collagen fibers, absence of inflammatory cells).
- Based on the histology of the lesion, what is the role of steroid injection? (Analgesic effect).
- Name one rare complication of this condition (Posterolateral elbow instability)

Tennis elbow or lateral epicondylitis can affect many racquet sport players. It can also occur in those who never play tennis but perform a lot of strong wrist extension. Therapy should be started early using gentle stretching, muscle strengthening, rest (using a band to rest the proximal segment of muscle) and electrotherapy.

In a small percentage of cases, chronic symptoms may warrant surgical intervention. Historically this involve release of extensor aponeurosis. More recently, debridement of attachment of extensor carpi radialis brevis muscle is being considered.

Q6

- Name 3 differential diagnoses (Costochondritis, TB of S-C joint, tumour like chondrosarcoma)
- What does the radiograph show? (Fragmented end of 1st rib)
- FBC and ESR were within normal limits. What other investigation is appropriate? (Aspirate for gram stain & AFB, C&S, tissue for biopsy)
- Biopsy was inconclusive. What is the likely diagnosis? (Costochondritis)
- How will you treat? (Reassurance and if necessary mild NSAIDS)

Costochondritis (Tietze's syndrome) is an inflammation of the costal end of a rib at its attachment to sternum. This is a common cause of chest pain in young adults or middle aged. It was first described in 1921 by the German surgeon Alexander Tietze It is a self limiting condition and disappears in a few weeks. Usually the cause is unknown. Mild trauma, viral infection or auto immune diseases. Pain at costosternal area may be mild or severe and may or may not be associated with a swelling. If it is on left side, it may mimic a heart attack.