

ROUND 3 ORTHOPEDICS

Case Study I: (15 pts)

- Emily, a 10-year-old girl, accidentally fell down from a tree while she was playing in her backyard. Due to immense pain and visibly impeding her ability to move her arm, her parents decided to visit the emergency room as soon as possible. There, the medical staff ordered an X-ray to be made of the area.
 - i. Explain how X-rays work and list at least 4 health-related complaints that can be diagnosed with the help of X-rays.
(Total - 1.5 points, 0.5p for mechanism, 0.25p/complaints)
 - ii. Name the bones and joints present in Figure A. Consequently, interpret the following X-ray scan that was taken of Emily's shoulder.
(Total - 2.5 points, 0.25p/label, 1p for diagnosis)

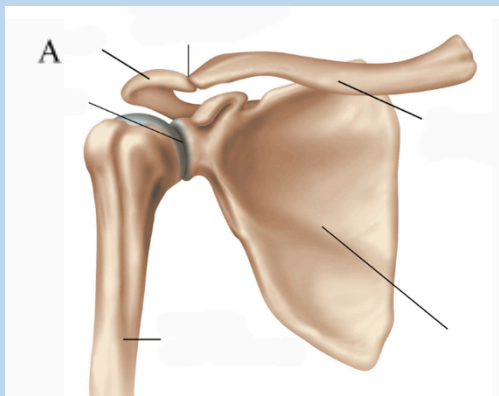


Figure 1. (A) Osteology of the shoulder region. (B) X-ray film of a fracture in the shoulder region.

- iii. The fracture is causing significant pain. As a healthcare professional, how would you approach the fixation of this fractured shoulder to ensure proper healing, minimize discomfort, and restore functional mobility for this young patient? Please detail the potential surgical and non-surgical strategies at your disposal and decide which one to pursue in this case. Support your answer with at least three reasons tailored to this specific case.
(Total - 1.5 points, 0.5p/strategy, 0.5p/correct choice of strategy, 0.5p/considerations)

Contrary to the normal healing process, Emily shows limited mobility in her shoulder even after more than a year.

- iv. Mention four reasons someone might present sustained limited mobility long after the incident.
(Total - 2 points, 0.5p/reason)

Over the years, her condition worsened, leading to the formation of palpable bony masses within her muscles and connective tissues. Her doctors suspect that she might have a rare genetic condition called Fibrodysplasia Ossificans Progressiva (FOP).

v. What is Fibrodysplasia Ossificans Progressiva (FOP), what causes it, and what are the primary symptoms of this condition?
 (Total - 3 points, 1p for description/causes/symptoms)

vii. On the X-ray prepared by the hospital circle the region that shows signs of Fibrodysplasia Ossificans Progressiva.
 (Total - 0.5p)



Figure 2. X-ray film of the shoulder region.

vii. On the X-ray prepared by the hospital, circle the region that shows signs of Fibrodysplasia Ossificans Progressiva
 (Total - 0.5p)

Doctors have run all the necessary diagnostic tests and found that Emily is most probably living with Fibrodysplasia Ossificans Progressiva. They explained to the family that the condition is not curable, but with different assisting methods and devices, a good quality of life can be maintained.

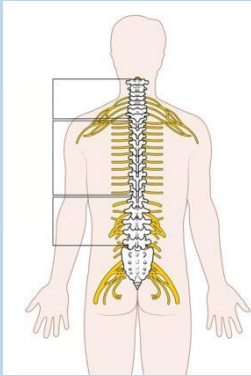
viii. Describe what it means for a condition to be progressive.
 (Total - 0.5 point)

ix. What are those condition management methods and assisting aids that might help Emily in the future? List four of them.
 (Total - 2 points, 0.5p / method or aid category)

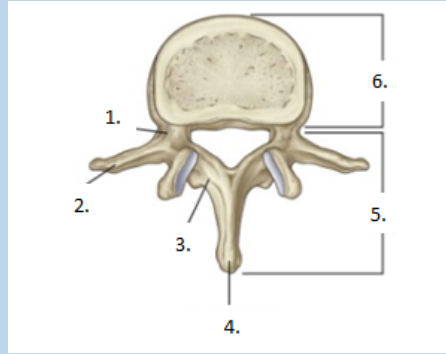
x. Why is surgery not recommended for people with Fibrodysplasia Ossificans Progressiva? List 3 reasons and also mention at least one case in which it might be more necessary to undergo surgery, even with this condition.
 (Total - 1 points, 0.25p / reason, 0.25p / justification for surgery)

Case Study II: (15 points)

- i. What is scoliosis? (1pt)
- ii. Name the parts illustrated in the figures below. Total- 4.5pts, 0.5/ part.



A



B

Julia, a 9-year-old girl, comes to you with her parents with a referral from her pediatrician under suspicion of having scoliosis.

- iii. What question would you ask the patient and her parents? (0.5 pt)
- iv. What is the first test you perform? (0.5 pts)
- v. What is the next diagnostic method you choose to determine the curve? Describe how it is obtained. (1 pts)

Julia's X-ray is as shown.



- vi. Perform the diagnostic test on the x-ray and provide approximate values of the results (2 pts)

vii. What are the thresholds for different treatments of scoliosis? (1.5 pts)

viii. What course of treatment do you recommend for Julia's Cob angle? (1 pt)

As Julia continued with her checkups, approximately once a year, the curve got worse. She is now 12 years old and the latest x-ray showed a curve of 55 degrees.

ix. Which surgical intervention would you recommend? (1 pt)

x. Describe the process involved in the procedure. (2 pts)

Case Study III: (15 points)

Anita, a 45-year-old female office worker, presents with complaints of persistent shoulder pain and limited range of motion. She reports that the pain started gradually about six months ago and has progressively worsened over time. Anita denies any traumatic injury to the shoulder or any recent changes in her occupational or physical activities.

Anita's Profile:

- Age: 45
- Gender: Female
- Occupation: Office worker
- Chief Complaint: Persistent shoulder pain and limited range of motion

Patient History:

- Occupation: The patient spends long hours at her desk working on a computer, involving repetitive arm movements and prolonged periods of sitting.
- Medical History: The patient has a history of type 2 diabetes and is currently on medication for its management. She denies any other significant medical conditions or previous orthopedic injuries.
- Lifestyle: The patient does not engage in regular exercise or physical activity outside of her work duties. She admits to poor posture habits and often slouches while sitting at her desk.

Physical Examination:

- Inspection: No visible deformities or swelling noted in the shoulder region.
- Range of Motion: Restricted range of motion in all directions, particularly with abduction and external rotation. Pain is elicited during active and passive movements.
- Strength: Mild weakness observed during resisted movements of the shoulder.
- Palpation: Tenderness and localized swelling over the supraspinatus tendon insertion site.

Imaging and Tests:

- X-ray: A standard X-ray of the shoulder reveals no bony abnormalities or fractures.
- Ultrasound: Ultrasound imaging shows thickening and inflammation of the supraspinatus tendon consistent with tendonitis.



1. What are some other possible causes of shoulder pain that could be considered in the differential diagnosis for this patient? (2 pts)
2. State any 2 relevant occupational factors from Anita's history. (1 pt)
3. Explain the treatment options for managing Anita's diagnosis. (3 pts)
4. What is the potential role of physical therapy in the management of Anita's diagnosis? (1 pt)
5. What medications are commonly prescribed to reduce pain and inflammation in patients as in Anita's case? List an example. (2 pts)
6. When would a corticosteroid injection be considered in the treatment and what is its role? (2 pts)
7. Describe 2 special tests that could be conducted and their significance, when evaluating Anita's shoulder pain. (4 pts)