**Sally Harper case study**

**Ch. 6 Bone Tissue**

Name and date submitted (3 pts):

Using this handout as a TEMPLATE, create space in between questions below and write or type your answers. Turn in your completed work as an email attachment.

(10 questions, 100 points possible)

Chief Complaint: 84-year-old woman who fell on her right hip.

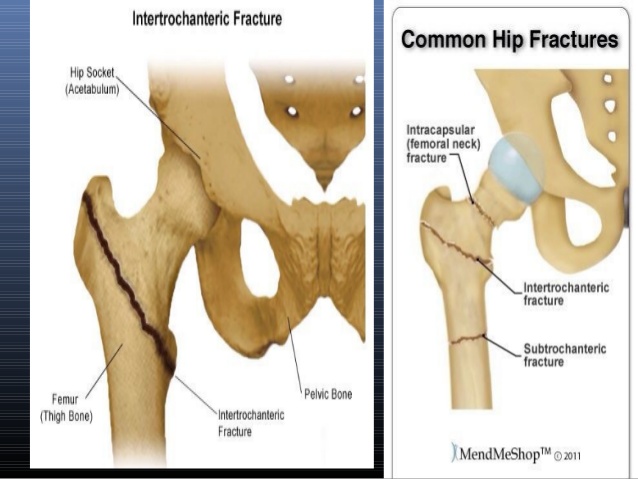
History: Sally Harper, an 84-year-old white female, was brought to the emergency room by her son-in-law after falling in her bathtub. She was previously in good health, despite leading a relatively sedentary lifestyle and having a 40-year history of cigarette smoking. The only medication she currently takes is Inderal (propranolol) for mild hypertension (high blood pressure). She fell upon entering the bathtub when her right leg slipped out from under her; she landed on her right hip. There was no trauma to her head, nor does she complain of right or left wrist pain. However, she reports severe pain in the right hip and upper thigh, and was unable to get up after her fall. An injection of oxymorphone hydrochloride (Numorphan) helped relieve her pain and she was taken to the radiology department for an X-ray of her right leg and hip.

Physical examination: The patient was alert, oriented to time, place and date, and was responding appropriately to questions despite being in considerable pain. There were no signs of trauma to the head, neck, torso, arms or left leg. The right thigh and hip were extremely tender and were immobilized by a leg splint. Heart and lung sounds were normal and abdominal sounds were reduced.

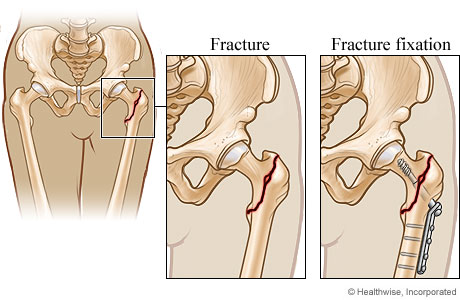
[](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwiFhvb574TYAhXs6YMKHbSiD2AQjRwIBw&url=http%3A%2F%2Fwww.wheelessonline.com%2Fortho%2Fintertrochanteric_fractures&psig=AOvVaw37VWupVFYl8J4S1RUvBe0q&ust=1513181849546200)

Radiology report: The X-ray of the right hip revealed a complete, comminuted, intertrochanteric (*top part of the femur*) fracture of the right hip. No other fractures were noted in the right leg. There were also long-term osteoporotic changes in the femur, tibia and fibula.

1. What is meant by a “complete, comminuted, intertrochanteric fracture of the right hip?” There is a lot of information on the Web, including videos and descriptions. I am looking for at least 4-5 well-written sentences describing this condition, and contrasting it with other types of hip fractures.

[](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjj18mL8YTYAhWf2YMKHfPrBOgQjRwIBw&url=https%3A%2F%2Fwww.slideshare.net%2Fmontheralkhawlany%2Fintertrochantric-fracture&psig=AOvVaw37VWupVFYl8J4S1RUvBe0q&ust=1513181849546200)

1. The radiologist reports signs of osteoporosis. How is osteoporotic bone different from regular bone?
2. Why do bones become osteoporotic in some people? What, specifically, is happening in the bones themselves? Your book has a whole section on this, and you should read it before continuing with this assignment. There’s also lots of information on the Web. Use your own words, and summarize the causes and what is happening on a “physiology” level.

[](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwiunsXZ8ITYAhXD44MKHVLrDFQQjRwIBw&url=https://www.webmd.com/a-to-z-guides/internal-fixation-for-hip-fracture&psig=AOvVaw2V1OcehDRJDvPuygQrOdSK&ust=1513181758673493)Surgeons performed an open reduction of Sally’s fracture, immobilizing the bones with internal pins. “Open reduction surgery” is a procedure in which the broken bones are re-aligned and long, thick pins are inserted lengthwise into the bone tissue. The pins are held in place by screws drilled in from the outside of the bone.

1. Do research on ‘open reduction and internal fixation’ surgery. Describe this important procedure using at least 5, well-written sentences USING YOUR OWN WORDS.
2. Your book describes four (4) stages that a bone fracture undergoes as it is healing. This is a complicated process, but I want you to try to explain what is going on in each of these 4 steps USING YOUR OWN WORDS. Read/research carefully, and do you best to summarize each step in 3-4 sentences. Make a nice table below, or carefully number and label each step.

During her long recovery, Sally is advised by her physician to begin weight-bearing as soon as she can. To aid her in this regard, Sally begins light physical therapy three times per week

1. How does weight-bearing influence the bone healing process? Be detailed! Your book has a section on ‘exercise and bone tissue’.
2. In addition to the physical therapy benefits, why else might Sally’s physician want her to avoid prolonged bed-ridden activity? You will need to research “Wolff’s Law” and briefly explain what it has to do with Sally’s post-operative recovery.
3. What risk factors does Sally have for osteoporosis? The term “risk factors” means “what factors increase her likelihood” of developing osteoporosis. I want you to search “risk factors for osteoporosis”, study it, and then try to be specific as to Sally’s situation.

Following her recovery, Sally was placed on three medications: 1) oral calcium supplements, 2) an oral estrogen (Raloxifene or Evista), and 3) an antiresorptive drug which inhibits the activity of osteoclasts (Fosamax or Boniva).

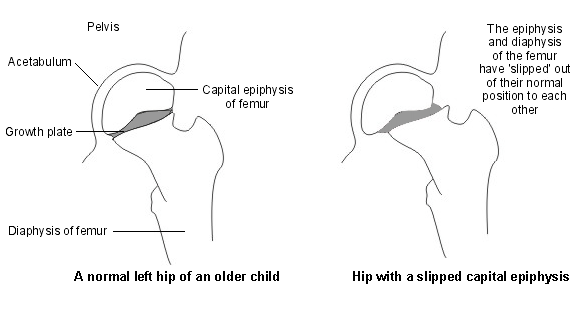
1. Specifically describe how each of these medications works to treat Sally’s condition. You will need to research them by their brand-names and read the manufacturer’s descriptions.
2. Oral calcium supplement (over the counter, Costco, etc)
3. Oral estrogen (selective estrogen receptor modulator)
4. Antiresorptive (bisphosphonate) drug

Mini Case-Study: ‘Slipped capital femoral epiphysis’

1. A 12 year-old boy fell while playing basketball. The physician explained that the head (epiphysis) of the femur was separated from the shaft (diaphysis). Although the bone was properly set, by the time the boy was 16 y/o it was apparent that the injured lower limb was shorter than the normal one. Explain why this difference occurred.

Hint: your book covers this in the section “bone growth during infancy….”

See diagram and X-ray on next page.

[](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&ved=0ahUKEwi-8PGbi4XYAhVs7oMKHeKNDqcQjRwIBw&url=https%3A%2F%2Fpatient.info%2Fhealth%2Fslipped-capital-femoral-epiphysis-leaflet&psig=AOvVaw3363C1rtnzhl-F5iWyP3nE&ust=1513189175271718)

X-Ray below: look carefully at the patient’s left femur, at the head or ‘capital’

[](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwj2naDmi4XYAhWp1IMKHenyALAQjRwIBw&url=https%3A%2F%2Fradiopaedia.org%2Farticles%2Fslipped-upper-femoral-epiphysis&psig=AOvVaw0n3FGAGSIv4OOiHz7qRWOC&ust=1513189325982332)