

Dr. \_\_\_\_\_ M.D.  
 Date \_\_\_\_\_

# Radiology Board Exam

Well done! You have successfully stayed awake through your "Medical School" classes and have earned your Radiology Internship. Your next step is a two "year" Residency program in which you will perform all of the duties of a radiologist including the best part ... billing your patients! You must first, however, demonstrate your competency by passing this little ole Radiology Proficiency Board Exam (RPB). Good luck!

1. What is the name of this exam? \_\_\_\_\_ Exam
2. A doctor who specializes in reading x-rays and other imaging media is called a R\_\_\_\_\_.
3. Four types of cells in bone tissue are called (Ch. 6):
  - a. Bone-building cells \_\_\_\_\_
  - b. Bone-breakdown cells involved in resorption \_\_\_\_\_
  - c. Mature bone cells which carry out normal metabolism \_\_\_\_\_
  - d. As-yet undifferentiated stem cells \_\_\_\_\_
4. The extracellular matrix of bone (what you think of as "bone") is about (Ch. 6)
  - a. 25% \_\_\_\_\_
  - b. 25% \_\_\_\_\_
  - c. 50% \_\_\_\_\_
5. The most abundant mineral salt is \_\_\_\_\_
6. Places where bones meet are called \_\_\_\_\_.
7. Match these joints (Ch. 9):

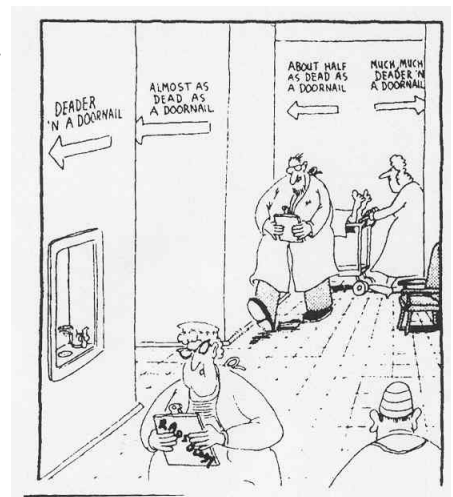
- |                                  |                    |
|----------------------------------|--------------------|
| _____ neck                       | a) Ball and socket |
| _____ sacrum, pelvis, cranium    | b) Pivot           |
| _____ knee, elbows, fingers, jaw | c) Fixed           |
| _____ forearm, lower leg         | d) Hinge           |
| _____ vertebra, hands, feet      | e) Swivel          |
| _____ shoulders, hips            | f) Gliding         |



6. A broken bone is called a \_\_\_\_\_.
7. Match these fractures (Ch. 6):

- |                   |   |
|-------------------|---|
| _____ Greenstick  | a) bone is broken in 3 or more fragments.       |
| _____ Hairline    | b) bone is flattened out of shape.              |
| _____ Stress      | c) bone is cracked along a long, thin line.     |
| _____ Simple      | d) bone is bent and broken on one side only.    |
| _____ Comminuted  | e) bone is partially broken by repeated stress. |
| _____ Compound    | f) bone is broken and punctures skin.           |
| _____ Compression | g) bone is broken and does not puncture skin.   |

8. Define the following parts of a long bone
  - a. diaphysis \_\_\_\_\_
  - b. epiphyses \_\_\_\_\_
  - c. metaphyses \_\_\_\_\_
9. Know Your Bones (human)
  - a. How many pairs of ribs? \_\_\_\_\_
  - b. How many cervical vertebrae? \_\_\_\_\_
  - c. How many thoracic vertebrae? \_\_\_\_\_
  - d. How many lumbar vertebrae? \_\_\_\_\_
  - e. Name of upper arm bone? \_\_\_\_\_
  - f. Name of both forearm bones? \_\_\_\_\_ and \_\_\_\_\_
  - g. Name of thigh bone? \_\_\_\_\_
  - h. Name of both lower leg bones? \_\_\_\_\_ and \_\_\_\_\_

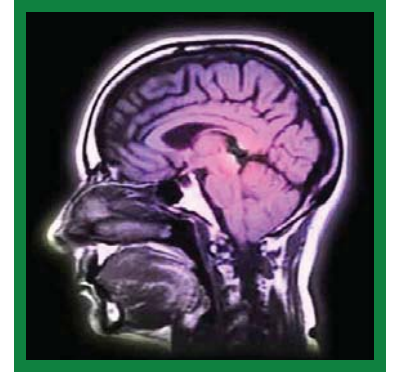


10. Look through the attached X-Rays of four (4) patients and answer the questions for each.

X-Ray Lab



# Patient 1



The bones of the spine are identified by number. This x-ray shows the vertebrae of the lumbar spine (lower back). Notice how they are labeled L1 to L5.

1. What does 'L' stand for?
2. Which vertebra is closest to the sacrum? (give the letter and number)
3. Which vertebra seems to be out of alignment from the others?
4. What is the name of the bone labeled "A"?
5. What is the name of the bone labeled "C"?
6. What **type of joint** is labeled "B"?
7. Look at the area where the arrow (D) is pointing. Is this a **fracture** (broken bone) or is it **normal**?

**PATIENT**  
**1**

**L1**  
**L2**  
**L3**  
**L4**  
**L5**

EX

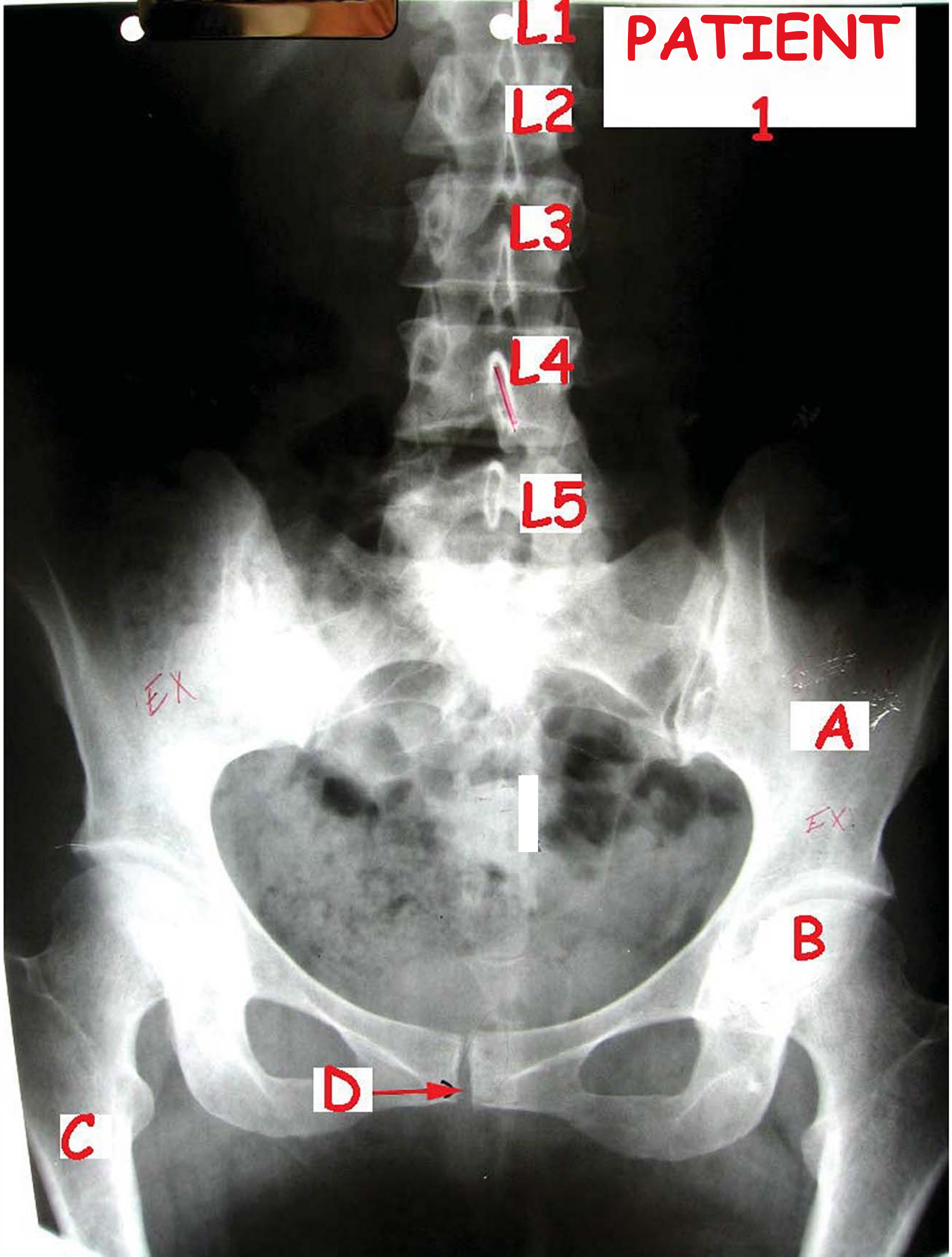
**A**

EX

**B**

**C**

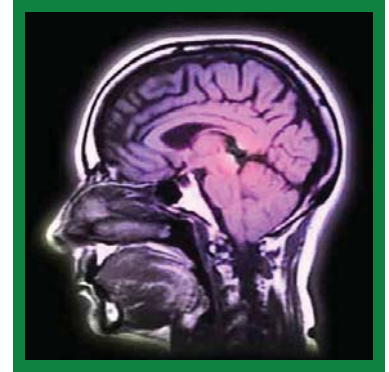
**D** →



X-Ray Lab



# Patient 2



Your patient has been complaining of headaches and a stiff neck. After examining this x-ray you are confident you have discovered the problem.

7. The line drawn on the x-ray indicates the spine is not properly lined up. The patient is suffering from a \_\_\_\_\_ (choose one)
  - simple fracture
  - hairline fracture
  - subluxation
  - dislocation
  
8. At which two vertebrae does the twist (misalignment) occur? (choose one)
  - C7 and T1
  - T1 and T2
  - T2 and T3
  - T4 and T5
  
9. What is the name of the bone marked "A"?
  
10. What is the name of the bone marked "B"?
  
11. What treatment would you recommend for this patient?
  - adjust the spine
  - surgery
  - amputation (remember, this is a neck problem)

PATIENT

2

A A A A

C6

C7

T1

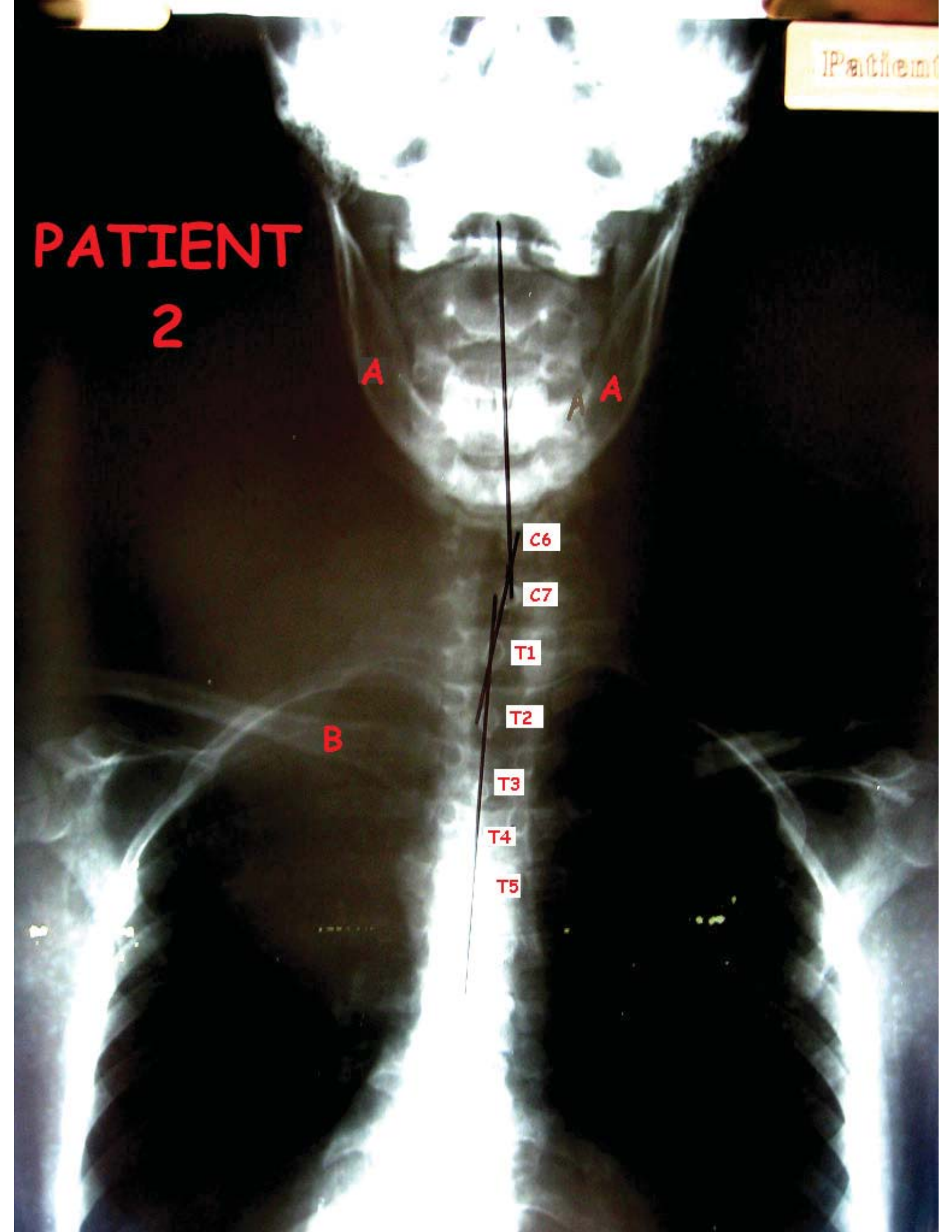
T2

T3

T4

T5

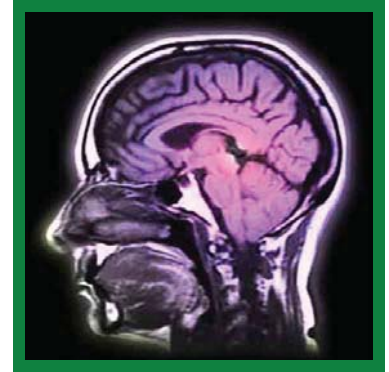
B



X-Ray Lab



# Patient 8



OH! My aching back!!

This is an example of x-ray fluoroscopy using a 'dye' and is called a **Myelogram** (mile-O-gram). It shows the condition of the spinal cord. The spinal cord appears white due to an injection of dye. This patient has a ruptured disk which is applying pressure to the spinal cord.

36. Between which two vertebrae is the bulging disk located?

37. What does 'T' stand for?

38. This patient is suffering pain in the \_\_\_\_\_ (pick one)

- upper back
- lower back
- neck
- foot

39. What **type of joint** is found in the spine?

T11

PATIENT

8

T12

L1

L2

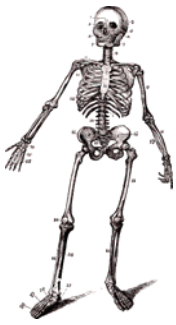
L3

L4

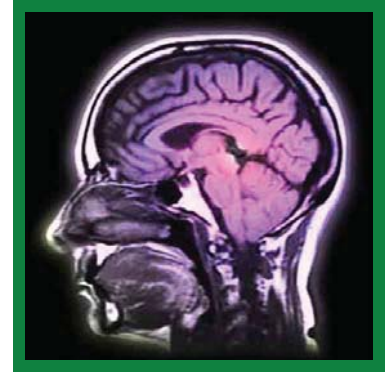
L5



ROOY RWBY HENRY  
1560 HI



# Patient 9



**Yolanda Flugelhoffer**, premier elephant trainer for the Barnum and Bailey Circus, suffered this injury when her newest elephant mistook the command "Go Forward" for "Sit Down". The Flight for Life helicopter removed the elephant and Yolanda was taken to the nearest hospital by ambulance.

39. What is the name of the bone that has been broken?
40. What **type of fracture** do you think this is?
41. What **type of joint** is at letter "A"?
42. What type of treatment do you think will be required to fix Ms. Flugelhoffer? (pick one)
  - a simple plaster cast
  - simple surgery to set the bone
  - major surgery to fasten the bone together with some type of hardware (pins, plates, screws, etc)
  - a new job training toy poodles



PATIENT

9

A

A fluoroscopic image of a knee joint, showing the femur, tibia, and patella. A red letter 'A' is placed on the right side of the image, near the femoral condyle. The image is in grayscale with a greenish tint, typical of medical X-rays.