



History: 35 year old woman with diffuse pain but increasing of the right hip





T1



T2



IR



AP lumbar spine



T2 Coronal lumbar spine



SPECIAL SURGERY DEPARTMENT

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(R)



HOSPITAL FOR SPECIAL SURGERY DEPARTMENT OF RADIOLOGY AND IMAGING HOSPITAL

Images are approximately 6 months after previous image



AP Pelvis

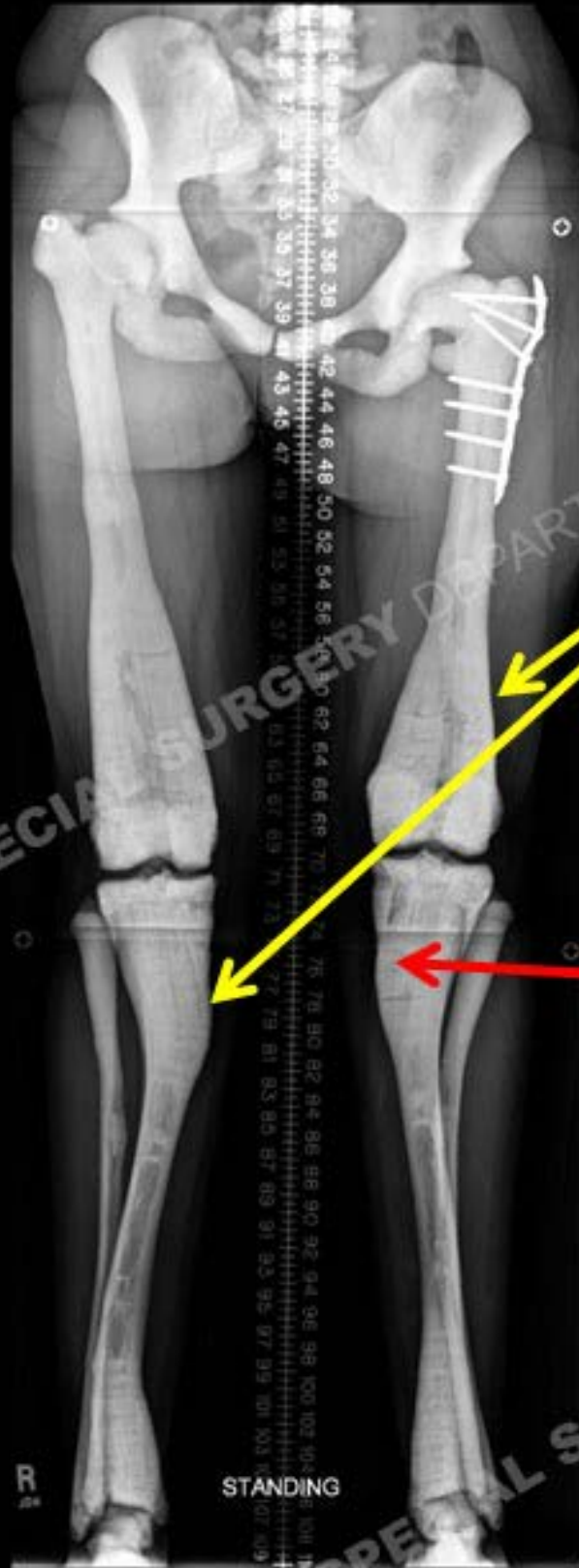


CT Coronal Reformation

Findings

There is a marked degree of diffuse sclerosis of the bone with modelling deformity yielding Erlenmeyer flask deformity, sandwich vertebrae/rugger jersey spine of the lumbar spine, and diffuse low signal of the bone on all pulse sequences of the mri. A transversely oriented fracture is then present of the proximal right femur with fixation and difficult apposition of the hardware to the bone. There is then subsequent removal of the hardware with the fracture line still visualized.

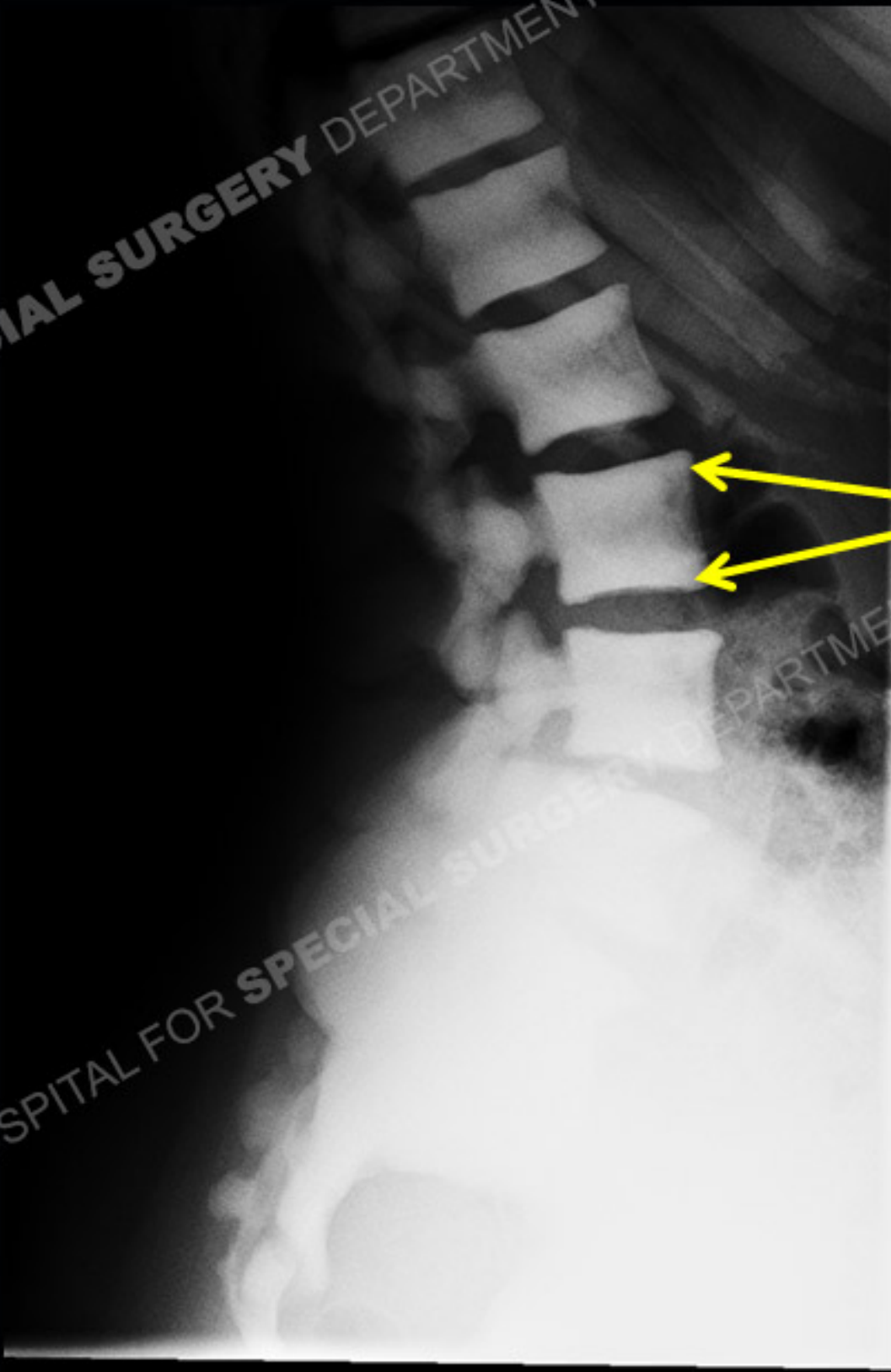




Diffuse, marked sclerosis of the bone

Modelling deformity with bowing deformities and Erlenmeyer flask deformity

Additional classic finding of this pathology:
Longitudinal metaphyseal striations



Rugger jersey spine



English rugby jersey with alternating stripes yielding the term rugger jersey spine

Very low signal marrow on all pulse sequences



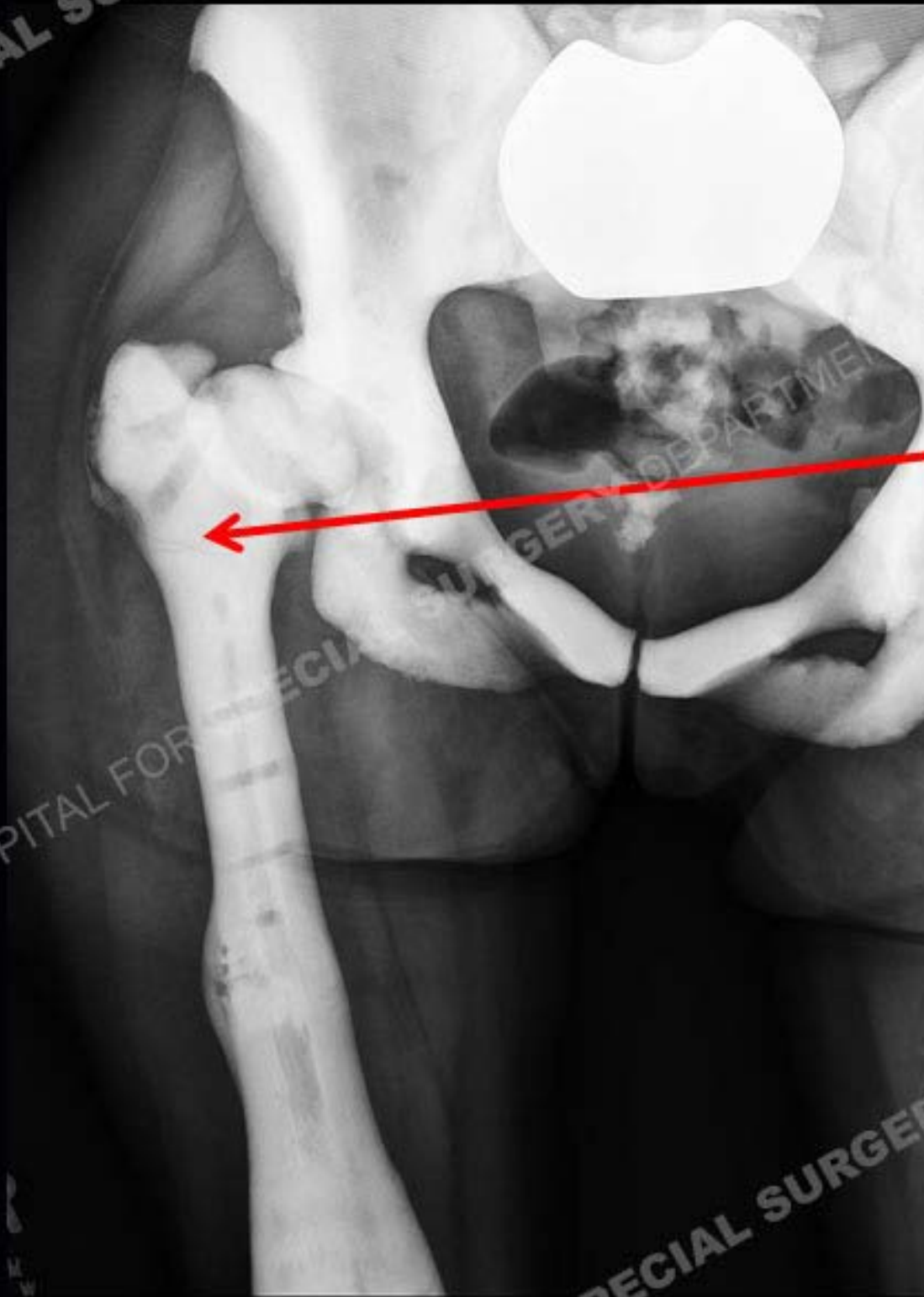
T1



T2



IR

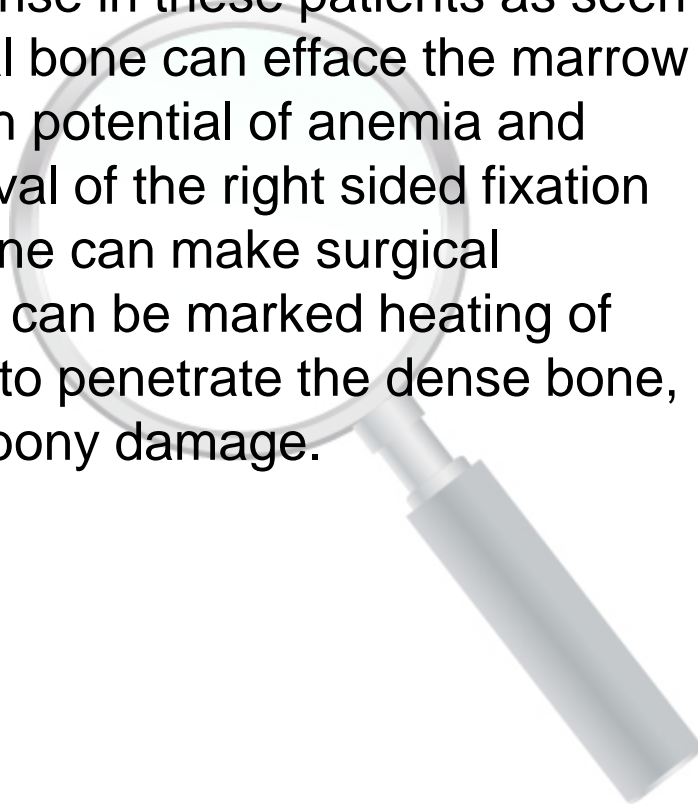


Difficulty/delay with healing

Diagnosis: Osteopetrosis

Osteopetrosis is a disease related to malfunction of osteoclasts leading to decreased bone resorption and a subsequent marked degree of sclerosis of the bone and encroachment of bone upon the marrow cavity. Different forms and degrees based on inheritance of the disease are present from more severe presenting early in life to less severe presenting in adult life. Although the bone becomes markedly sclerotic it is also extremely brittle, making it predisposed to transverse fractures as seen in this case. In addition, the overall lack of bone turnover makes fractures in these patients frequently delayed in healing.

Unfortunately, multiple other complications can arise in these patients as seen in this case. The marked thickening of the cortical bone can efface the marrow leading to a decrease of all marrow elements with potential of anemia and infection as seen in this case necessitating removal of the right sided fixation hardware. In addition, the dense nature of the bone can make surgical procedures extremely difficult and because there can be marked heating of the instruments during the procedure from trying to penetrate the dense bone, there can be significant adjacent soft tissue and bony damage.



Diagnosis: Osteopetrosis - continued

After eradication of the infection, this patient was scheduled for a total hip arthroplasty but sought a second opinion at an esteemed institution where it was elected to perform a Girdlestone procedure instead which is extremely reasonable related to the complications and difficulties as described above.







References

Wang J1, Liang Y, Zhang Q, Jiao J, Kan W. Total joint arthroplasty in a patient with osteopetrosis: 10-year follow-up. Orthopedics. 2010 Apr;33(4). doi: 10.3928/01477447-20100225-23. Epub 2010 Apr 16.

Resnick D, Kransdorf M. Bone and Joint Imaging 3rd Ed. 2005.

[Medscape - Osteopetrosis](#)

