



Management of Giant Cell Tumor of the Spine

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Background

- Giant cell tumor (GCT): Rare
- Accounts for about 1.4 %, 9.4 % of primary spine tumors
- Classified as benign, but has the characteristic of aggressiveness
- Potential to metastasize
- Common site of metastasis = Lung
- Mets usually seen in patients with advanced or recurrent disease

Objectives

- Discuss the prevalence of giant cell tumor of the spine
- Review the common treatments for giant cell tumor of the spine and sacrum
- Discuss the role of Advance Practice Provider in the management of these patients

GCT of the Spine

- Most common site of giant cell tumor = sacrum
- Sacrum accounts for approximately 2-8 % GCTs
- Above the sacrum next lumbar and thoracic spine
- Rarely the cervical spine
- Affect more females than males: 2:1 ratio
- Age: 20-40 years

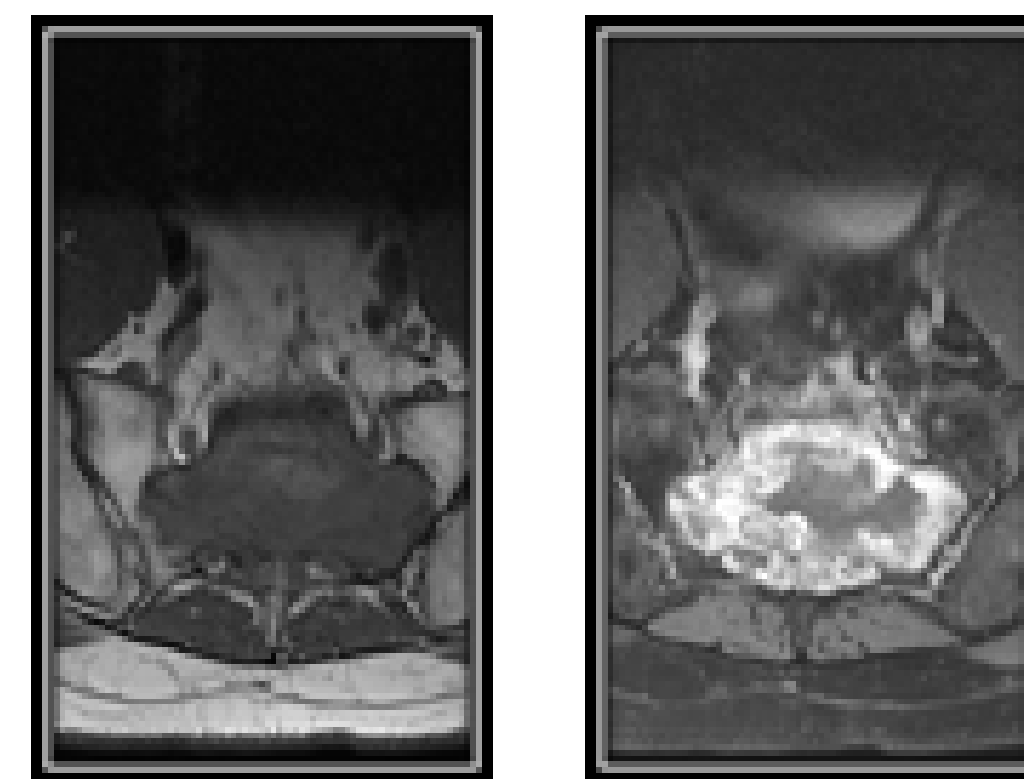
Case

- ❖ 52-year-old male
- ❖ 1–2-year history of left lateral thigh pain, worse at night
- ❖ MRI revealed a sacral mass
- ❖ CT guided biopsy confirmed giant cell tumor

Radiographic Appearance

MRI:

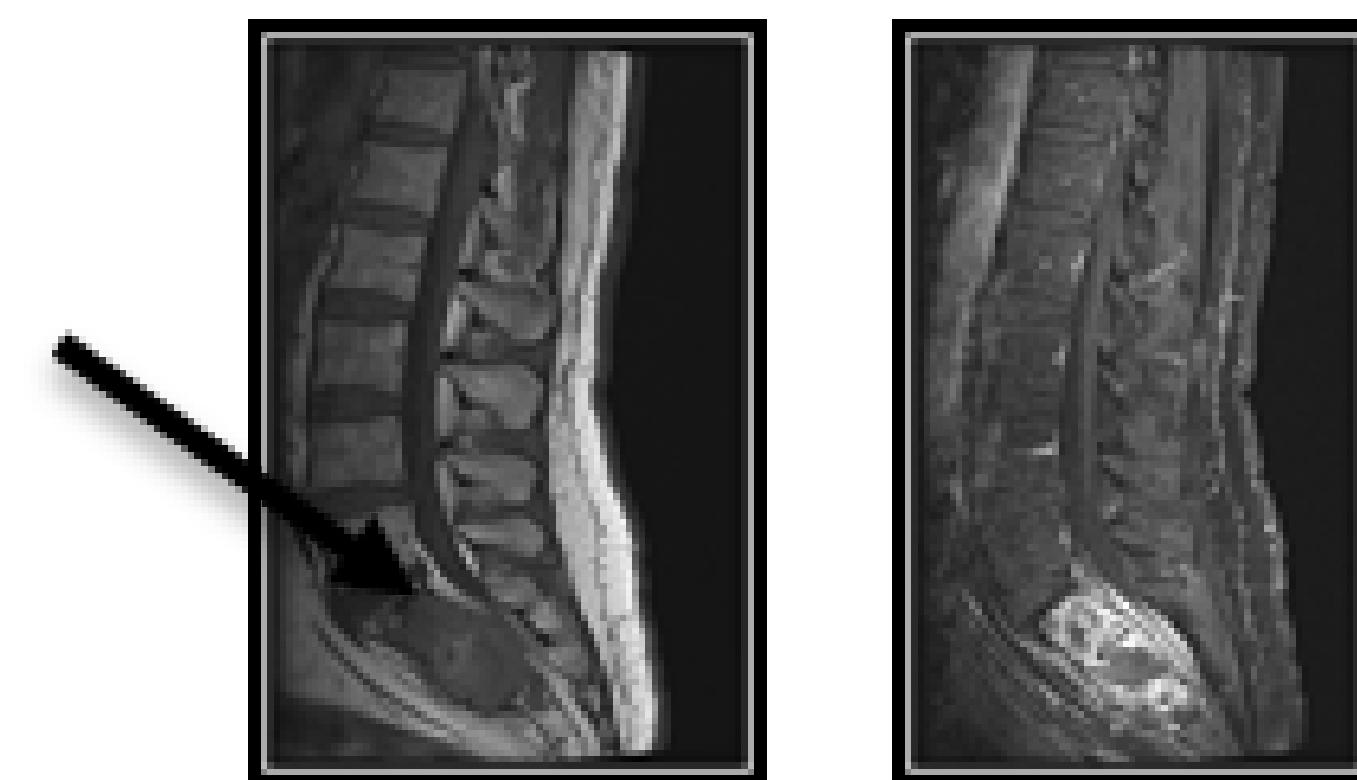
- Heterogeneous
- Expansile osteocytes lesion
- Low-intermediate signal intensity on T2 weighted images
- Cause vertebral body collapse
- Soap bubble appearance



Axial T1 w/wo contrast



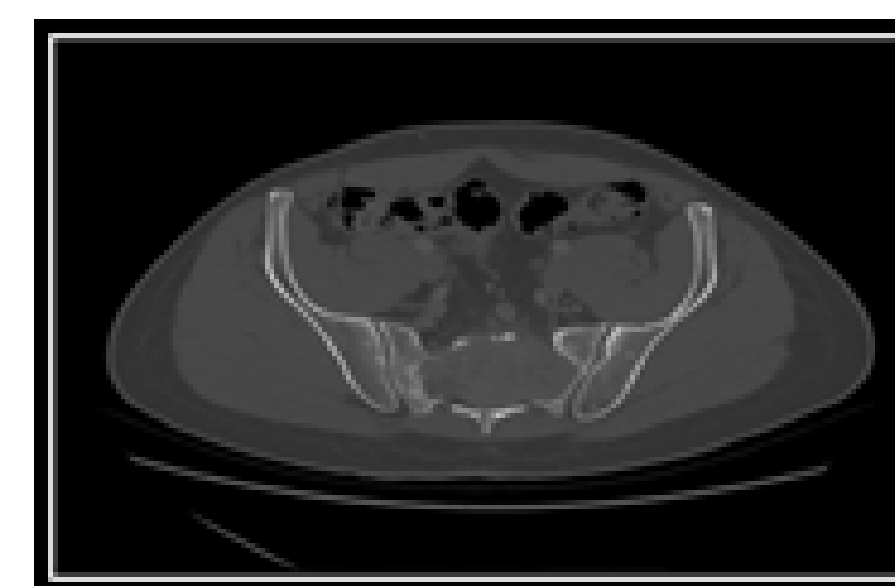
Axial T2 MRI



MRI sacrum w/wo contrast

CT:

- Soft tissue attenuation
- No mineralized matrix
- Lytic area
- Sclerotic margins, hemorrhage or necrosis



Treatment for GCT

- ✓ Surgery # 1 goal
- ✓ Systemic therapy = Denosumab
- ✓ If en bloc resection is not achieved the recurrence rate ranges from 22.4 % to 41.7%
- ✓ Radiation
- ✓ Serial embolization
- ✓ Combination-multidisciplinary approach

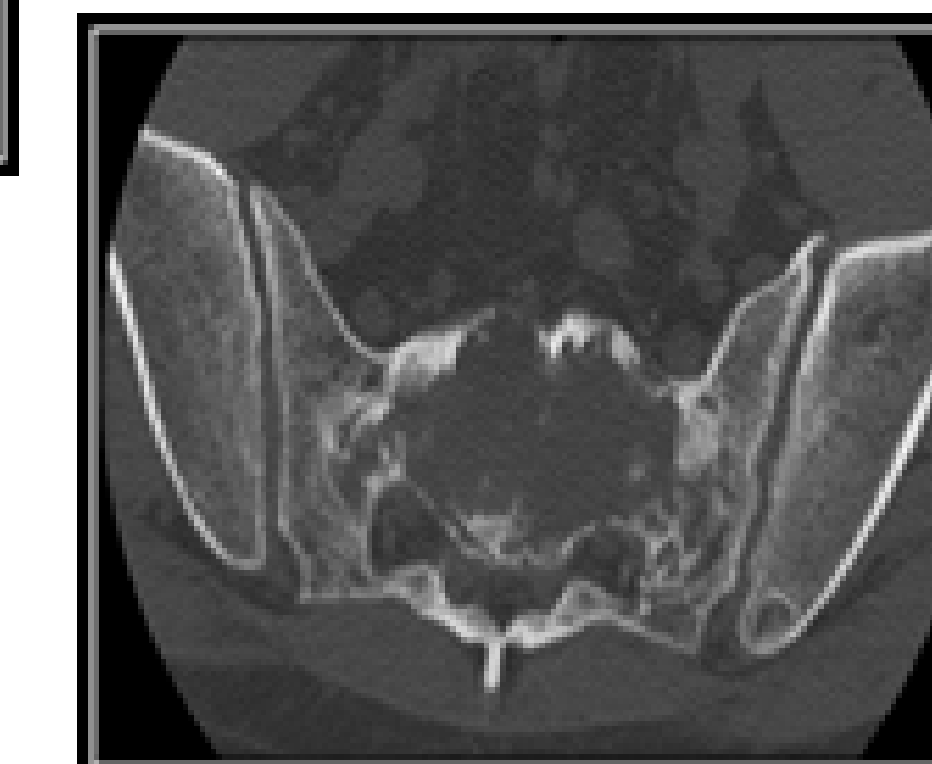
Denosumab

- ✓ Monoclonal Ab against RANKL (receptor activator of nuclear factor-kappa beta ligand)
- ✓ RANKL expressed on neoplastic stromal cells and multinucleated giant cells of GCT mediate bone resorption
- ✓ Denosumab inhibits RANKL decreasing bone turnover and reproduction of multinucleated giant cells
- ✓ Most successfully used therapy and extensively studied
- ✓ Increases bone formation
- ✓ Tumor reduction

Post Treatment



Post Resection



CT post Denosumab and embolization
Evidence of increase bone formation

Implications for APPs

- ❑ Care coordination amongst the multidisciplinary team including surgery, Sarcoma, Pain, IR and Radiation
- ❑ Instrumental in educating the patient on disease, hospitalization, pre-operative process, admission, disability, post-operative process and long-term complications due to neurological deficits
- ❑ Management of surgical and neurological complications
- ❑ Manage long term neurological symptoms and coordinate multidisciplinary long-term follow-ups

References

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