Bone Tumor Congress
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Sacral tumors
How to approach and treat them

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Sacral tumors

Ewing sarcoma
Aneurysmal Bone Cyst
osteosarcoma

malignant schwannoma (MPNST)
Giant cell tumor
Chondrosarcoma

Chordoma
metastasis

Age

15 - 30 years old
30 - 50 years old
> 50 years old
Boy 18 y
Right sciatica
• T1 :
  - Hyposignal
  - Intrusion canal avec contact racine S1

• T2 :
  - Hypersignal
  - Cloisons
  - Logettes liquidiennes avec niveau

Gadolinium :
  - rehaussement

Biopsy : ABC
Treatment with biphosphonates 3 mths
Regression Of Giant Cell Tumor Of The Cervical Spine
With Bisphosphonate As Single Therapy. Gille O, spine 2008
Sacral tumors

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- osteosarcoma
- malignant schwannoma (MPNST)
- Giant cell tumor
- Chondrosarcoma
- Chordoma
- metastasis

Age

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- > 50 years old
Goals

• carcinologic resection of the tumor
  – “en bloc” resection
  – No tumor violation

• Neurologic decompression

• Stabilization
Means

- Surgical planning
- Peroperative navigation is now mandatory
Surgical strategy

• Type of the tumor
• MRI post chemotherapy
• Multidisciplinary decision making
• Patient!
  – Sexual function: S2
  – Anorectal and Bladder function: S3
    • Gunterberg JBJS 1976
Surgical strategy

• To define the approach
  – Scare of a prior biopsy?
• To quantify the bone muscular neurologic and vascular resection
• To define the levels of osteotomies
• To plan the reconstruction
Surgical strategy

• Total sacrectomy
  – Ligation of dural tear L5-S1

• Partial sacrectomy
  – vertical (tumor including or not the SIJ)
  – Horizontal

• If pelvic ring disrupted, reconstruction is necessary
Reconstruction Techniques

• Improve the functional result
• Lumbar pedicle screws, iliac screws
• Allograft / Fibula

• Increase infection risk
Surgical approach

• Posterior alone
  – distal tumor (S3)

• Double approach
  – Anterior
  – Posterior
Anterior approach

• Midline transperitoneal
  – Advantages
    • Possibility to lift a greater omentum flap
  – Drawback
    • limited view on the anterior SIJ
Anterior approach

• U retroperitoneal
  – Advantages
    • Good exposure of SIJ
    • Rectus abdominis flap
  – Drawback
    • Limited view on the medial part of the sacrum?
Anterior approach

• vascular ligations in complete sacrectomy
  – Internal iliac vessels
  – Median sacral vessels
• Release the anterior part of the tumor
  (extension to rectum on MRI?)
• Anterior opening of the SIJ
• L5-S1 Discectomy
• ± flap
Posterior approach

• Vertical
  – Advantages
    • Good exposure from lumbar coccyx
  – Drawback
    • Limited exposure on SIJ

• Mercedes incision
  – Advantages
    • Good exposure
  – Drawback
    • Healing of the scar?
Posterior approach

• Horizontal curved

  • Advantages:
    – Distance to anus
    – Exposure of posterior part of iliac bone and SIJ
    – Exposure of gluteus maximus muscle: flap is possible

  • Drawback:
    – Difficulty to screw above L4
Posterior approach

- Release of the posterior part of the tumor
- Ligation of the dural tear
- Section of sacrotuberus ligament
- Osteotomy
Osteotomies

• Generally from back to front
  – After protection of the anterior face of sacrum
  – Helped with navigation +++

• Distal tumor
  – Horizontal osteotomy

• Total Sacrectomy
  – Osteotomy of SI
  – Resection of posterior part of the L5S1 disc

• Sacroiliac joint / hemisacrectomy
  – Vertical osteotomy
    • Medial: ipsilateral sacral holes, medial line or contralateral sacral holes
    • Lateral: ilium
examples
1/ Small distal sacral tumor

- Excision biopsy, posterior approach
2/ Nerve decompression

Mr Bre... 86 y/o
Cauda equina syndrome

malignant schwannoma
3/ Sacral tumor below S3

• Posterior stage alone
4/ Sacral tumor above S3

- Anterior stage first
- Then posterior stage
Chondrosarcoma
Anterior stage
Posterior stage
Posterior stage
Posterior stage
Posterior stage
6/ Asymmetric lesion
6/ Extension to SI joint

- Double temps
- Voie élargie de l’aile iliaque
- Ostéotomie dans l’aile iliaque
- Ostéotomie verticale du sacrum
Conclusion

• Difficult surgery
• Good team
• Better no surgery than surgery with tumor contamination