Pediatric Tumors and Decision Making

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Orthopaedic Rehabilitation Meeting
Cooper Medical School of Rowan University
• Consultant for Stryker
Age-Adjusted and Age-Specific Cancer Incidence Rates for Patients Aged 0–14 Years (SEER 2009–2012)

- Leukemia
- CNS
- Lymphoma
- Soft tissue
- Neuroblastoma
- Renal
- Bone
- Epithelial
- Germ cell
- Retinoblastoma
- Liver
- Other

Age-Adjusted and Age-Specific Cancer Incidence Rates for Patients Aged 15–19 Years (SEER 2009–2012)

- Epithelial
- CNS
- Lymphoma
- Leukemia
- Germ cell
- Soft tissue
- Bone
- Renal
- Liver
- Neuroblastoma
- Other
Diagnoses

- Osteosarcoma
- Rhabdomyosarcoma
- Ewing’s Sarcoma
Medical Care Team

- Pediatric Oncologist
- Orthopaedic Oncologist
- Radiation Oncologist
- Pediatric surgical oncologists
- Pathologists
- Nursing staff
- Physical Therapist
- Occupational Therapist
- Social Worker
- Pharmacist
- Prosthetist
- Geneticist

Cooper University Health Care
MD Anderson Cancer Center
Cooper Medical School of Rowan University
Limb salvage vs Amputation
Considerations

• Best oncologic outcome
  o Timing to surgery
  o Timing to chemo
• Growth potential
• Body image
• Longevity of reconstruction
• Cultural acceptance
Considerations

- Best oncologic outcome - Amputation/limb salvage
  - Timing to surgery
  - Timing to chemo
- Growth potential – Limb salvage
- Body image - Limb salvage
- Longevity of reconstruction - Amputation
- Cultural acceptance - Limb salvage
<table>
<thead>
<tr>
<th>Table 1</th>
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<tbody>
<tr>
<td><strong>Relative Contraindications to Limb Salvage</strong></td>
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Factors most likely to preclude attempting limb salvage
- Major neurovascular involvement
- Very immature skeletal age

Factors most likely to delay reinstituting chemotherapy
- Infection preceding definitive resection
- Difficulties with postoperative wound healing

Factors most likely to be associated with local recurrence
- Tumor-bed contamination (*e.g.*, biopsy complications)
- Positive surgical margins
- Pathologic fracture
Case 1
Effect of Time to Resumption of Chemotherapy After Definitive Surgery on Prognosis for Non-Metastatic Osteosarcoma

By Hamayun Imran, MD, MSc, Felicity Enders, PhD, MPH, Mark Krailo, PhD, Franklin Sim, MD, Scott Okuno, MD, Douglas Hawkins, MD, Joseph Neglia, MD, MPH, R. Lor Randall, MD, Richard Womer, MD, Leo Mascarenhas, MD, MS, and Carola A.S. Arndt, MD
Effect of Time to Resumption of Chemotherapy After Definitive Surgery on Prognosis for Non-Metastatic Osteosarcoma

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Delay >3 weeks decrease prognosis
Limb salvage vs Amputation
• Staging – small pulmonary nodules, disappeared after chemo
• Family history of cancer
  o P53 germline mutation +
• Social support poor
• High risk radiation induced sarcoma
  o Want to avoid XRT
<table>
<thead>
<tr>
<th>Amputation</th>
<th>Limb-Salvage</th>
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<tbody>
<tr>
<td><strong>External Hemipelvectomy</strong></td>
<td><strong>Front-back through the sciatic notch, femoral LN resection</strong></td>
</tr>
<tr>
<td>• Pro</td>
<td>• Pro</td>
</tr>
<tr>
<td>o Margins wide</td>
<td>o Maintain limb</td>
</tr>
<tr>
<td>o Avoid XRT</td>
<td>o Family acceptance</td>
</tr>
<tr>
<td>• Cons</td>
<td>• Cons</td>
</tr>
<tr>
<td>o Disfiguring</td>
<td>o Longer surgery</td>
</tr>
<tr>
<td>o May need urinary diversion</td>
<td>o Will need XRT with close margins</td>
</tr>
<tr>
<td>o Family distress</td>
<td>o Post-radiation wound and neural complications</td>
</tr>
<tr>
<td>o Prognosis likely poor</td>
<td>o Delay to chemo</td>
</tr>
<tr>
<td>o Progressive prosthetic fitting</td>
<td>o Loss of sciatic nerve</td>
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