Principles of Sarcoma Surgery

2nd Annual Wyckoff Mini-Medical School

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Sarcoma Surgery

- Decision
  - Biopsy
- Planning
- Execution
- Follow-up
Decision

• Specific Pathology
  – Soft tissue sarcoma: surgery mainstay of treatment
  – Ewing’s sarcoma: can get cure with chemotherapy and radiation

• Life expectancy
  – Time to recover and benefit

• Anatomy
  – Possible with acceptable morbidity
TWO Biopsy Principles

1. Don’t burn bridges
   - May not be able to fix without altering optimal treatment course

2. Get diagnostic tissue
   - If not successful can be done again

May be fewer complications if done at specialty center
Biopsy Principles: Don’t burn bridges

• Limit contamination of surrounding tissues
  – Small incision
  – Avoid undermining/flaps
  – Hemostasis
  – Go through muscle edge to contain field
  – Multilayer closure
  – Drain if needed: in line and close

• Incision along line used for resection
  – Extendable with minimal contamination of structures
Biopsy Principles: Get Tissue

- Frozen section while in OR
  - Confirm that tissue is “diagnostic” (good quality, abnormal)
  - Not to get diagnosis immediately
Sarcoma Surgery

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Planning

- Timing
- Imaging
- Rehearsal
- Blood products
- Tumor removal
- Reconstruction
Planning: Timing

• Soft tissue sarcoma
  – Recovered from preoperative chemotherapy
  – Preoperative radiation
    • Surgery 2-6 weeks afterward
  – Get wounds healed in time for postoperative radiation or chemotherapy
    • Osteosarcoma: postoperative delay worsens prognosis
Planning: Imaging

• See entire extent of tumor, entire bone
• Look for landmark structures to judge extent of tumor interoperatively
• Decide what stays and what goes
• What structures must be moved
Planning: Tumor Removal

• Goal: removal with negative margins
  – Wide resection: normal tissue around tumor
  – Marginal: pseudocapsule exposed
  – Intralesional: inside tumor
  • No role in sarcoma surgery: rapid recurrence

• Decide where margins will be
  – What structures will stay with tumor
Planning: Reconstruction

- Bone
  - Endoprosthesis of appropriate size
  - Allograft available
  - Backup plan
    - Allograft breaks or does not fit
    - Fracture
    - Tumor size larger

- Soft tissues
  - Coverage: muscle flaps, skin graft
Planning: Rehearsal

• Rehearse surgery in your head several times
  – Address any new questions that arise
• Review subtle anatomy as needed
Planning: Blood Products

- Blood available if possible need
- Patient not taking blood thinners
Execution: Preparation

- Sterile technique
- Draw entire incision and possible extensions
Execution: Excision

• Avoid squeezing tumor
  – Manually or with elastic tourniquet

• Measure for bone cut
  – Usually 2 cm of marrow away from tumor
  – Consider more than 1 landmark

• Soft tissue margins
  – Some tissues better barrier than others
  – Greater needed for soft tissue sarcoma if radiation not planned
Execution: After Excision

- Irrigation
- Hemostasis
- Drains
  - If needed, place in line with incision
  - Close to end of incision
- Orient tumor
  - Suture in 2 spots helps pathologist know position
  - Insures margins are accurate
Execution: Reconstruction

- Bone
  - Measure specimen to decide on endoprosthesis
  - Trial endoprosthesis
    - Muscle balance
    - Position, rotation
  - Cover with muscle and skin graft as needed

- Skin
  - Avoid excessive tension especially if radiated
Follow-up

• Healing
  – 2 week check of incision, unless …
  – Radiated: staples for 21 days
  – Motion and weight bearing according to strength of reconstruction
  – Wound drainage
    • Aggressive washout and antibiotics if allograft or prosthesis underneath
    • May be more conservative if good soft tissue below

• Physical therapy as needed
Thank you