Leicester Orthopædics

SURGICAL MANAGEMENT OF SOFT TISSUE SARCOMAS

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ABC FELLOW 2014

DISCLOSURES

- Dinner last night

WAH JI WAH
Indian food at its best

SURGICAL MANAGEMENT OF SOFT TISSUE SARCOMAS

- Make a diagnosis
- Send to specialist centre
- MDT Management
- Take it out (+/- drugs / RT)
- Follow up

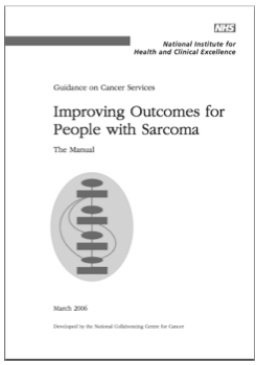
THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH · Royal College of Surgeons · ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF GLASGOW · RCSI

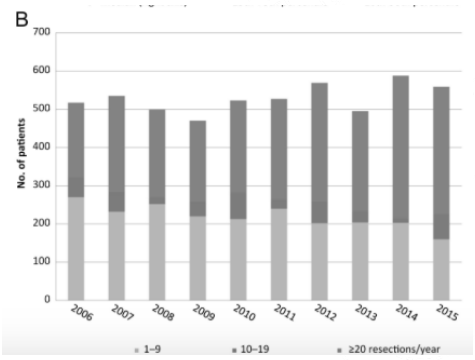
Joint Committee on Intercollegiate Examinations

Intercollegiate Specialty Examination in Trauma & Orthopaedic Surgery

IMPROVING OUTCOMES

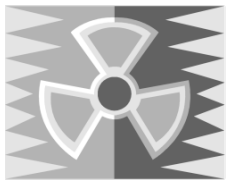
- Sarcoma Centres
  - 5 Bone (& Soft Tissue)
  - 15 Soft Tissue





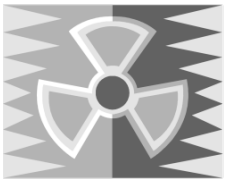
TREATMENT OPTIONS

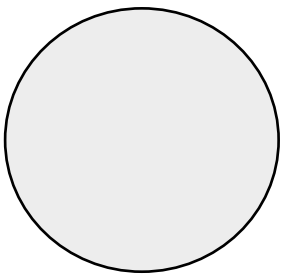
- Surgery
- Radiation Therapy
- Chemotherapy
- Targetted Therapy

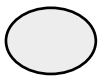


- Cure versus Palliate

TREATMENT OPTIONS







2 hours **6 weeks** **6 months**

CHEMOTHERAPY

- Administration
  - Orally
  - Intravenous
  - Intraarterially (infusion pump)
  - Intracavitary
  - Intraperitoneal
  - Intrathecal

CHEMOTHERAPY

- Alone or in combination with surgery ± RT
- Combinations vs. single agent
- Combination of drugs kill cells in different phases of the cell cycle
- Limited by amount of normal cell death

RADIOTHERAPY

- Can be used alone or in combination with other modalities – 50% of all cancer patients receive RT
- Cure and palliation
- Can preserve organ function - larynx, prostate-less impotence and incontinence than surgery
- Better Cosmesis- skin sarcomas
- Limited by critical structures
- Patient must be able to endure treatment

RADIOTHERAPY

Small, low grade tumors resected with clear margins may not require radiation

- Improves local control but not survival
- Whether improved local control leads to improved survival is controversial
- Proton beam

RADIOTHERAPY AS AN ADJUNCT TO SURGERY

- Preop or Postop ?

PREOP RADIOTHERAPY “INDUCTION”

- Smaller dose: 50Gy in 25 Fractions
- Easier for the oncologist to plan

- No brainer

DILEMMA…

- More wound complications with preop
- Lower dose
- Less long term sequelae

- So – if you are going to give radiotherapy first – accept wound complications

Toxicity

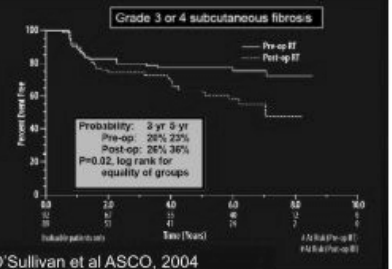
- Disadvantage to pre-op RT in early stages (6 weeks) of recovery following limb preservation
- With time (1 year) scores are similar for both treatment groups:
  - TESS (physical disability),
  - MSTS (clinical measures)
  - SF-36 bodily pain

Davis et al JCO, 2002

2-year Late Complications (>= grade 2)

	Pre-op RT	Post-op RT	p
Fibrosis	31.5%	48.2%	0.07
Stiffness	17.8%	23.2%	0.51
Edema	15.1%	23.2%	0.26

Davis et al Radiother Oncol, 2005



O'Sullivan et al ASCO, 2004

Correlates with increasing field size and dose

Princess Margaret Hospital

Fractures Following Radiotherapy and Limb-Salvage Surgery for Lower Extremity Soft-Tissue Sarcomas

A Comparison of High-Dose and Low-Dose Radiotherapy

364 lower extremity EBRT alone at PMH (1986-98)

Fracture rates:	Crude rates	5-yr frequency
Overall	6.3 %	4 %
High-dose (60-66 Gy)	10 %	7 %
Low-dose (50 Gy, mostly pre-op)	2 %	0.6 %

Females (6% vs. 2%, p = 0.02); > 55 yr (7% vs. 1%, p = 0.004)

Age, gender, and RT independent factors

Median fracture time: 44 months (range 12-153)

Holt et al. JBJS 2005

Princess Margaret Hospital

SURGERY

Alone- It is limited by tumour accessibility, patient's medical condition, tumour's extent (D'OH!)

In combination with RT ± chemo

Cure or palliative goals

SURGERY

- Limb-sparing vs amputation

  Comparison study with post-op radiation in limb sparing showed no difference in survival

- Amputation still may be indicated for neurovascular or bone involvement

RESECTION

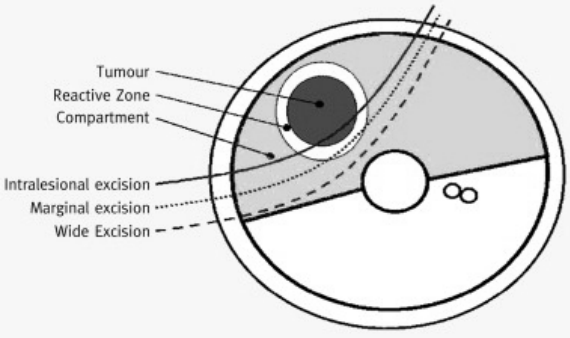
- Adequate margin if no plan for post-op radiotherapy
- Negative margins may be adequate for post-op radiation therapy

  Presence of positive margins increases local recurrence by 10-15%

- No need for lymph node dissection as only 2-3% have nodal metastasis

PRINCIPLES OF SURGICAL RESECTION

- Planned Resection
  - Radical
  - Wide
  - Marginal
  - Biopsy



POSITIVE MARGINS

- R0 / R1 / R2
- UPM v PPM: LR 37.55% v 3%
- PPM eg. on nerve

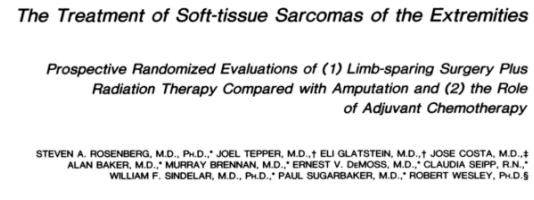
THE JOURNAL OF BONE & JOINT SURGERY [Br]

Classification of positive margins after resection of soft-tissue sarcoma of the limb predicts the risk of local recurrence

C. H. Gerrand, J. S. Wunder, R. A. Kandel, B. O'Sullivan, C. N. Catton, R. S. Bell, A. M. Griffin, A. M. Davis

From Mount Sinai Hospital and Princess Margaret Hospital, Toronto, Canada

AMPUTATION V LIMB SALVAGE



The Treatment of Soft-tissue Sarcomas of the Extremities

Prospective Randomized Evaluations of (1) Limb-sparing Surgery Plus Radiation Therapy Compared with Amputation and (2) the Role of Adjuvant Chemotherapy

STEVEN A. ROSENBERG, M.D., Ph.D.,* JOEL TEPPER, M.D.,† ELI GLATSTEIN, M.D.,† JOSE COSTA, M.D.,‡ ALAN BAKER, M.D.,* MURRAY BRENNAN, M.D.,* ERNEST V. DeMOSS, M.D.,* CLAUDIA SEIPP, R.N.,* WILLIAM F. SINDELAR, M.D., Ph.D.,* PAUL SUGARBAKER, M.D.,* ROBERT WESLEY, Ph.D.§

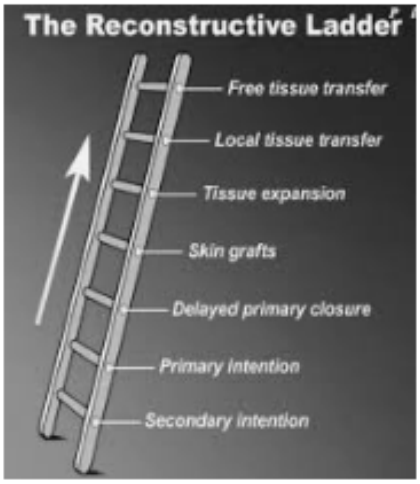
- Higher LR with limb salvage
- No difference in 5-year survival

S.A. Rosenberg, J. Tepper, E. Glatstein, *et al.*
The treatment of soft-tissue sarcomas of the extremities: prospective randomized evaluations of (1) limb-sparing surgery plus radiation therapy compared with amputation and (2) the role of adjuvant chemotherapy
Ann Surg, 196 (1982), pp. 305-315

PRINCIPLES OF RECONSTRUCTION

RECONSTRUCTION

- Reconstructive ladder



PRINCIPLES OF RECONSTRUCTION

- Radiotherapy kills normal tissue
- Margins matter
- Do not compromise your resection for your reconstruction
- Living tissue

PRINCIPLES OF RECONSTRUCTION

- Increased flap rate
- Increased burden
- Increased complications
- Better outcome

SURGICAL MANAGEMENT OF SOFT TISSUE SARCOMAS

- Make a diagnosis
- Send to specialist centre
- MDT Management
- Take it out (+/- drugs / RT)
- Follow up