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GURU HOSPITAL

NEW CANCER TREATMENT WITH NEW TECHNOLOGY
Pandikovil Ring Road, Madurai

MANAGEMENT OF SOFT TISSUE SARCOMA

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WHAT IS SOFT TISSUE

SOFT TISSUE

- Non epithelial, extra skeletal tissue excluding Reticuloendothelial system, glial tissue.
- It also includes peripheral nervous tissue by convention.
- Embryologically - Mesoderm



- Soft tissue sarcomas are cancerous (malignant) tumors that originate in the soft tissues.



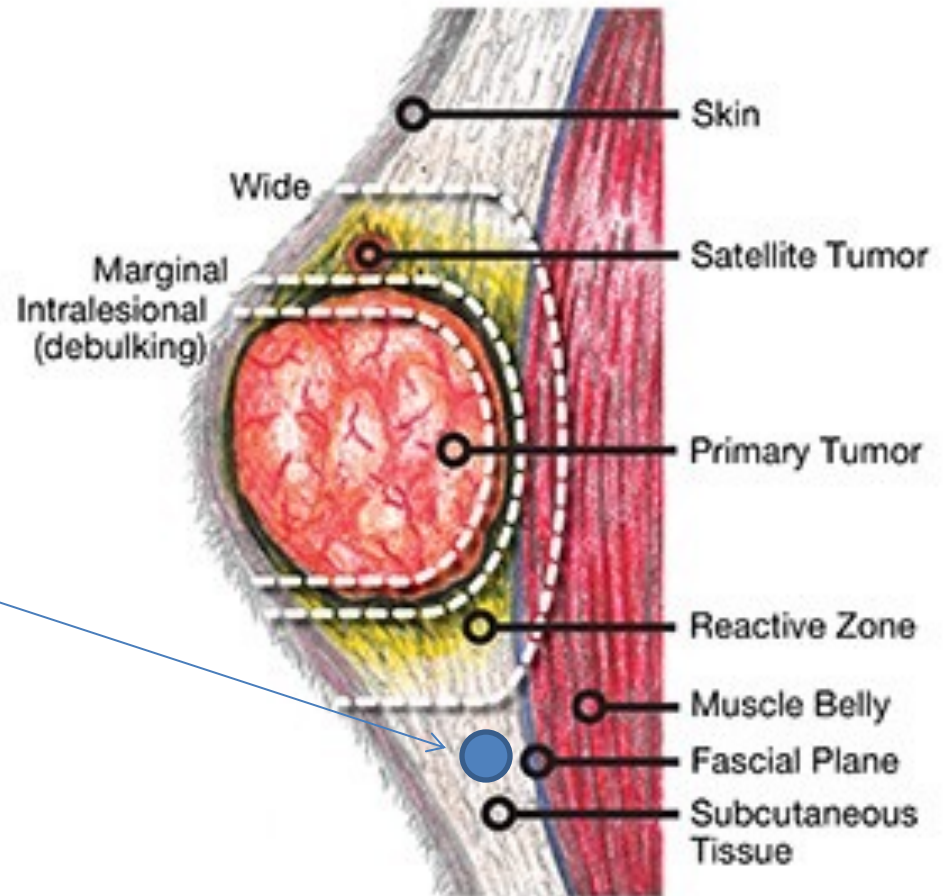
COMMONEST -DISTRIBUTION WISE

- Commonest type - MFH
- Extremities -Liposarcoma, MFH
- Retro peritoneum - Liposarcoma
- Visceral - Lieomyosarcoma



ANATOMY OF STS

- Primary lesion
- Satellite nodules -
Lesion in reactive zone
- skip metastasis -
Lesion in same muscle compartment



CLINICAL PRESENTATION

- Mostly asymptomatic mass
- Pain in 33% due to destruction of surrounding tissues
- Rarely paraneoplastic symptoms eg. fever



WHEN TO SUSPECT MALIGNANCY

- Any soft tissue mass Deep to Deep fascia.
- Any soft tissue mass > 5 cm.
- New Enlarging or Symptomatic soft tissue mass.



INVESTIGATION

OVERVIEW IN PLANNING

- Rational use of diagnostic imaging.
- Biopsy technique.
- Accurate staging and preoperative planning.
- Appropriate sequencing of multi modality treatment.
- (surgery, radiation and chemotherapy).



Noninvasive testing (CT/MRI) should
PRECEDE invasive testing (Biopsy)



- MRI

For extremity masses

- CT

For abdominal and retroperitoneal

- PET

May help determine metastatic work-up

May be helpful in recurrences



MRI

- Excellent soft tissue delineation.
- Multiplanar imaging possible.
- Images Skip metastases.



core biopsy is the choice.



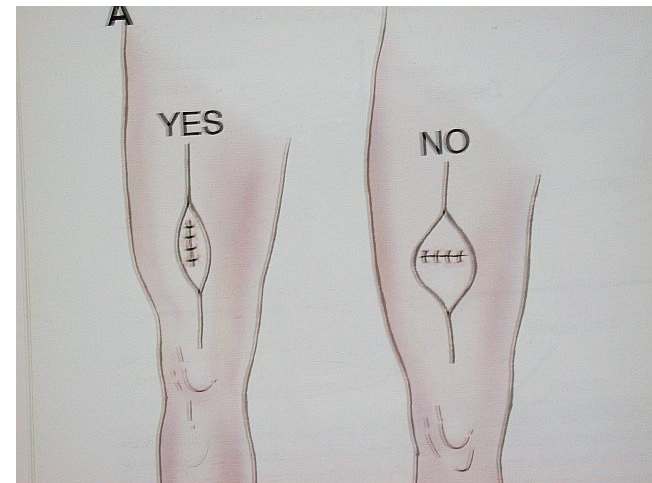
BASIC PRINCIPLES

- Point of entry should be along the future line of incision.
- Biopsy tracts are always contaminated.
- Excise tract along with tumor en bloc during definitive surgery.
- Do not violate more than one compartment.
- Be away from the Neurovascular pedicle.



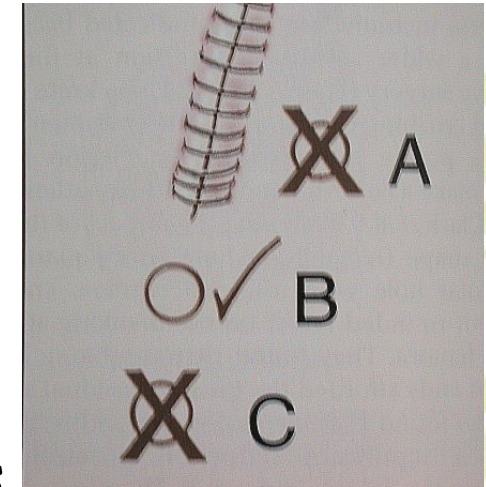
GUIDELINES FOR INCISIONAL BIOPSY

- Smallest Longitudinal incision to provide adequate specimen.
- Transverse incision contraindicated in the Limbs
- Shortest route to the tumor - minimal tissue disturbance and avoid raising flaps.
- Ideally should be done by the Surgeon providing definitive care.



GUIDELINES FOR INCISIONAL BIOPSY

- Use cold knife.
- Avoid crushing / distorting the specimen.
- Achieve absolute hemostasis- avoid hematomas.
- Drains - not as a routine. If used exit NEAR the wound and not away or by the side.



FNAC - APPLICATIONS

- Useful only when it is positive.
- Evaluation of Local / Distant recurrence in a documented sarcoma patient.



STAGING

- T1- 5 cm or less
- T2- >5 to \leq 10 cm
- T3 - >10 to \leq 15 cm
- T4 - >15 cm

- N0 – No Node present
- N1 – Node present

- M0 –No mets
- M1 – mets



Grading

is incorporated in stage grouping



ANATOMIC STAGE/PROGNOSTIC GROUPS

Stage IA	T1a	NO	MO	G1, GX
	T1b	NO	MO	G1, GX
Stage IB	T2a	NO	MO	G1, GX
	T2b	NO	MO	G1, GX
Stage IIA	T1a	NO	MO	G2, G3
	T1b	NO	MO	G2, G3
Stage IIB	T2a	NO	MO	G2
	T2b	NO	MO	G2
Stage III	T2a	NO	MO	G3
	T2b	NO	MO	G3
	Any T	N1	MO	Any G
Stage IV	Any T	Any N	M1	Any G

From Edge SB, Byrd DR, Compton CC, et al (eds): AJCC Cancer Staging Manual, 7th ed. New York, Springer, 2010.

Grade

- Single most important factor in Staging.
- Denotes the "Biological aggressiveness" of the neoplasm.
- Predicts the likelihood of metastases.



NODAL METASTASIS = DISTAL METATASIS

- Nodal metastases are rare in STS.
- Has the same prognosis as M 1 disease
- hence staged as Stg.IV.

ANATOMIC STAGE/PROGNOSTIC GROUPS				
Stage IA	T1a	NO	MO	G1, GX
	T1b	NO	MO	G1, GX
Stage IB	T2a	NO	MO	G1, GX
	T2b	NO	MO	G1, GX
Stage IIA	T1a	NO	MO	G2, G3
	T1b	NO	MO	G2, G3
Stage IIB	T2a	NO	MO	G2
	T2b	NO	MO	G2
Stage III	T2a	NO	MO	G3
	T2b	NO	MO	G3
	Any T	N1	MO	Any G
Stage IV	Any T	Any N	M1	Any G

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SARCOMA WITH LYMPHATIC SPREAD

- Malignant fibrous histiocytoma
- Synovial cell sarcoma
- Angiosarcoma
- Rhabdomyosarcoma
- Clear cell sarcoma
- Epitheloid sarcoma



MANAGEMENT

FACTORS TO BE CONSIDERED

- Multimodality approach is essential to achieve best outcome.
- First surgical procedure has the best chance of cure.
- Biopsy and definitive surgery should be done by the same surgeon.



FACTORS INFLUENCING THE OUTCOME

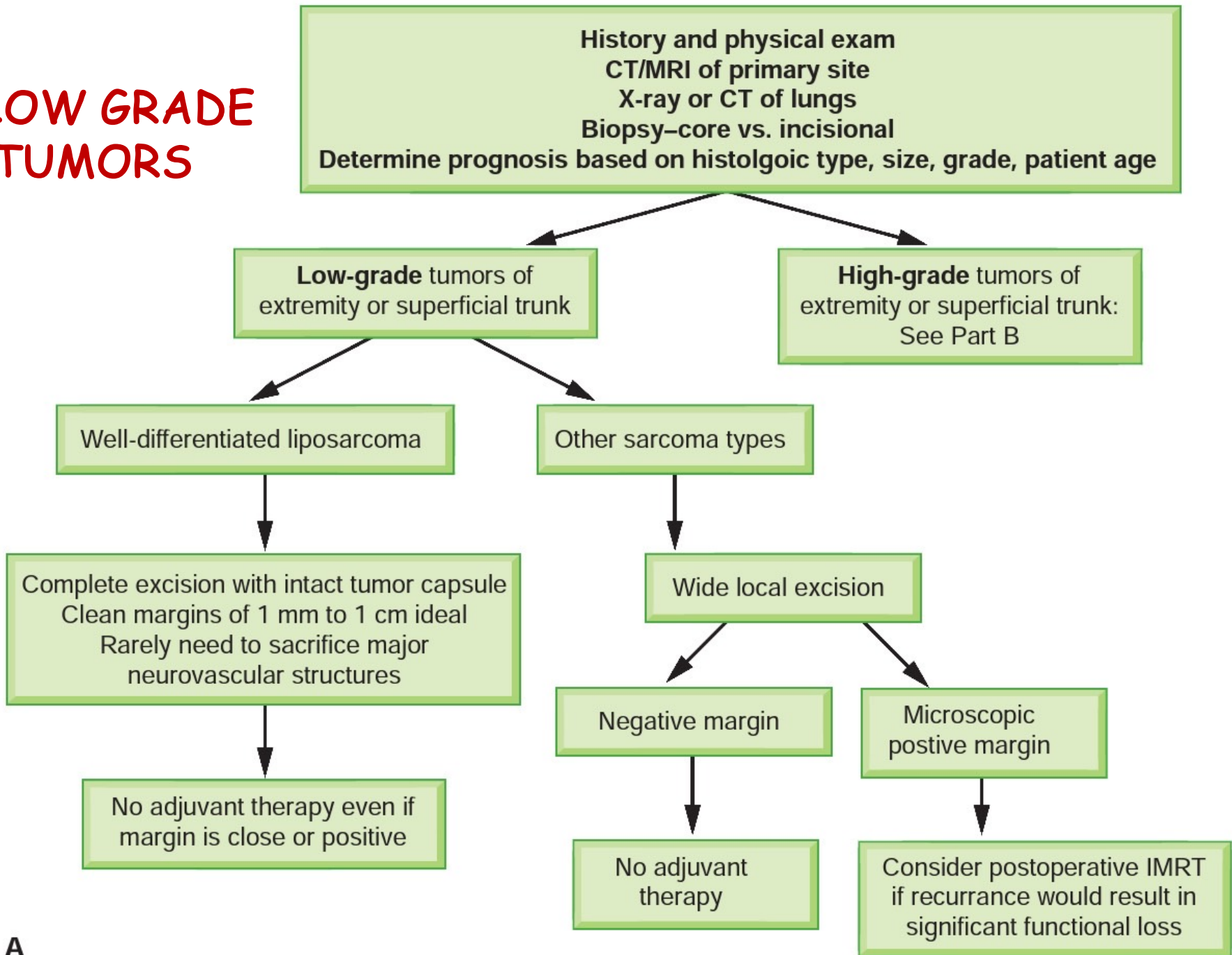
- Location and size of the lesion
- Relationship to the pedicle
- Biopsy site
- Infection
- bony involvement



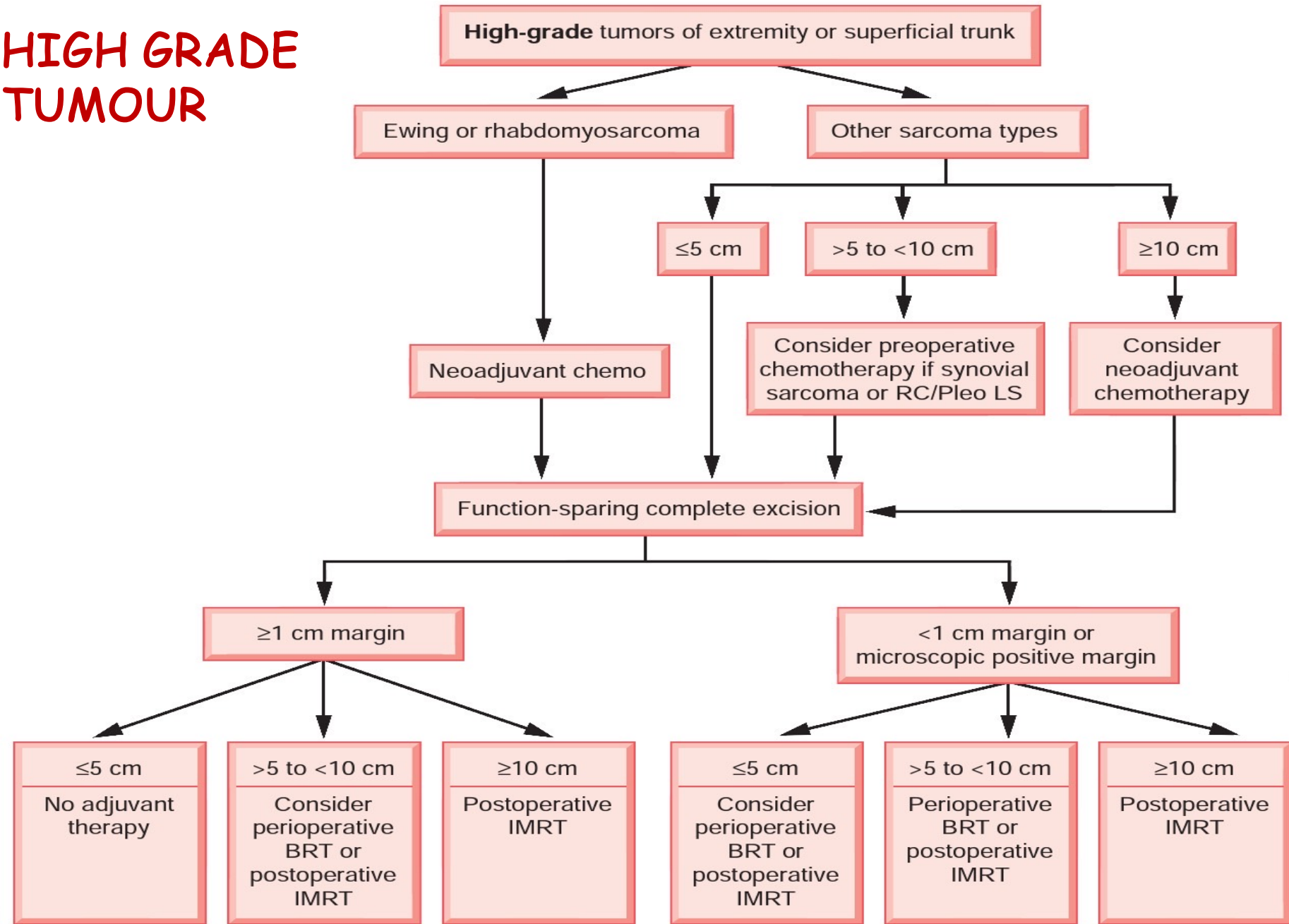
MANAGEMENT ALGORITHM FOR SOFT TISSUE SARCOMA



LOW GRADE TUMORS



HIGH GRADE TUMOUR



B

Figure 90.6 (Continued)

MANAGEMENT ALGORITHM

GRADE

LOW GRADE
HIGH GRADE



MANAGEMENT ALGORITHM

GRADE

LOW GRADE

**TYPE
SIZE
MARGIN**



MANAGEMENT ALGORITHM

GRADE -LOW GRADE

MARGIN

NEGATIVE - No adjuvant treatment

POSITIVE- Re-excision
Adjuvant radiotherapy.



MANAGEMENT ALGORITHM

GRADE

HIGH GRADE

**TYPE
SIZE
MARGIN**



MANAGEMENT ALGORITHM

GRADE –HIGH GRADE

TYPE

CHEMOSENSITIVE [ewings, rhabdomyosarcoma]- Neoadjuvant chemo

SIZE

MORE THAN 5 CM-

Adjuvant radiotherapy

MORE THAN 10 CM-

Neoadjuvant chemo

MARGIN

NEGATIVE - No adjuvant treatment

POSITIVE- Re-excision
Adjuvant radiotherapy.



Histology-Significance

Histology will not change the management significantly,
it is significant in prognosticating the disease



SURGERY

L.S.S - RATIONALE

In sarcoma, development of local recurrence and distal metastasis are determined by two separate independent factors

All local recurrences are salvageable without compromising the survival



SURGICAL HINTS

DO'S

1. Repeated dissection in a circular fashion
2. Dissect from normal tissue
3. Do what is easy first
4. Work where there is exposure
5. Mass is encircled many times before removal



Avoid trauma to capsule of tumor

Maintain hemostasis throughout

**Guard against frustration towards
end of procedure**



SURGICAL HINTS

DO'S



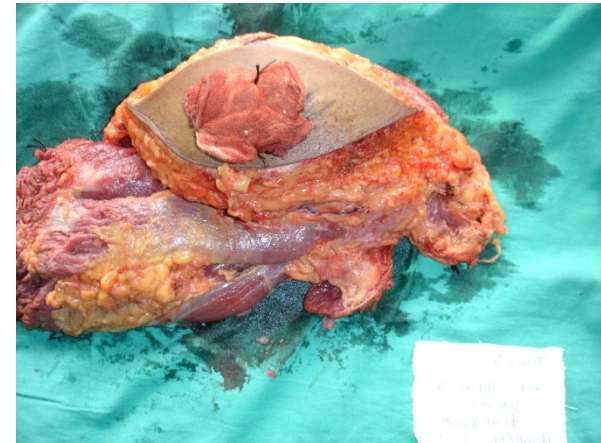
GUIDING PRINCIPLES IN SURGERY

- Identification and preservation of key neurologic and vascular structure.
- Resection of affected tissue should have a wide margin with normal tissue cuff in all directions.
- Adequate motor reconstruction by regional muscle transfers.
- Adequate soft tissue coverage to reduce skin flap necrosis and secondary infection.



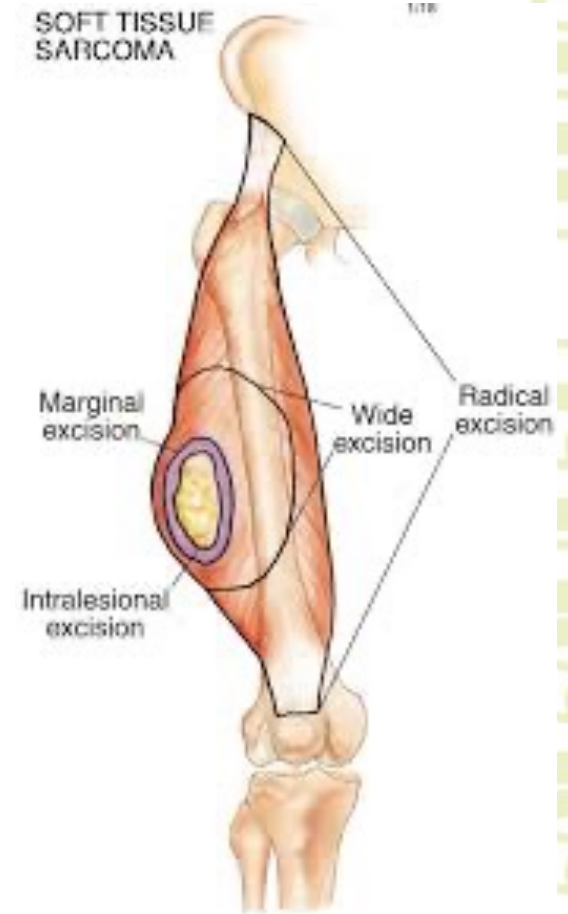
MARGINS

- A 2 cm margin for low grade and a 5cm margin for high grade is indicated in soft tissue sarcomas.
- Just removal of uninvolved
deep fascia
periosteum
intermuscular septum
adventitia
considered oncologically sound margin



SURGICAL PROCEDURES

- Wide excisions
- Radical excisions
- Amputation



உன்னால் முடியும்

உன்னால் முடியும்

உன்னால் முடியும்

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WIDE EXCISION

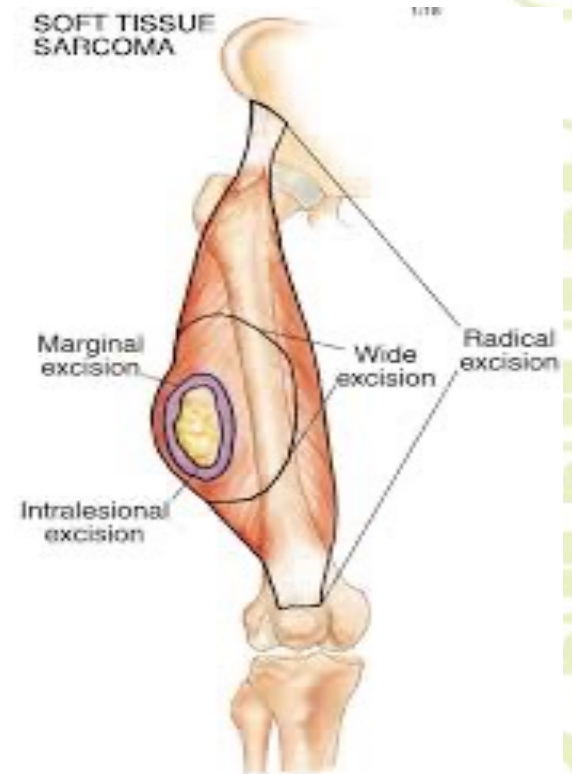
- En bloc resections done through normal tissues beyond the reactive zone.
- Tumor never visualised during the procedure.
- Likelihood of local recurrence 30%

• SKIP METASTASIS - NOT ADDRESSED



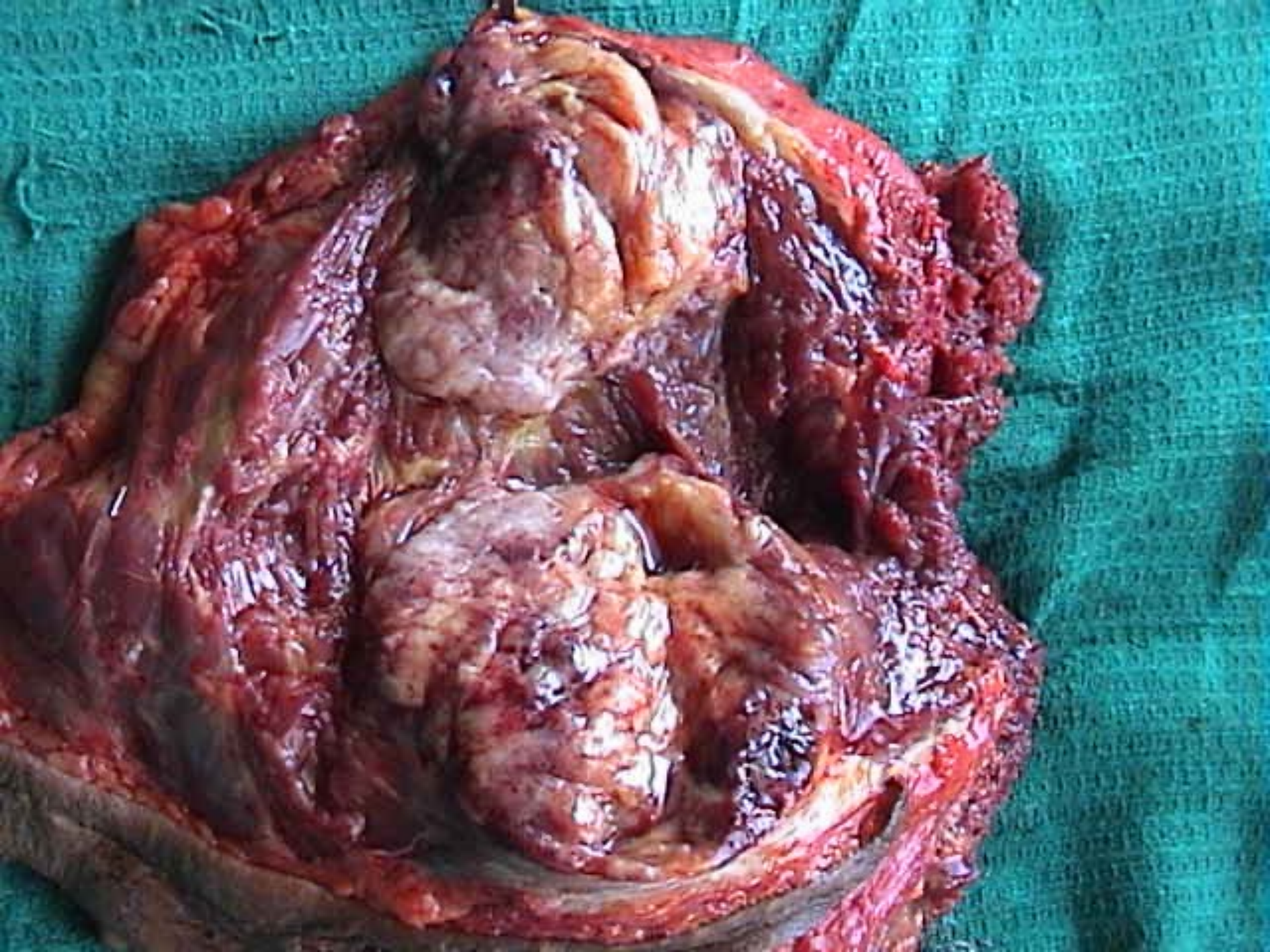
RADICAL EXCISION

- Also called compartmental excision.
- En bloc resections of the tumor and the entire compartment from origin to insertion.
- Skip metastasis addressed.
- Likelihood of local recurrence lowest.
- Have high morbidity compared to wide excision.



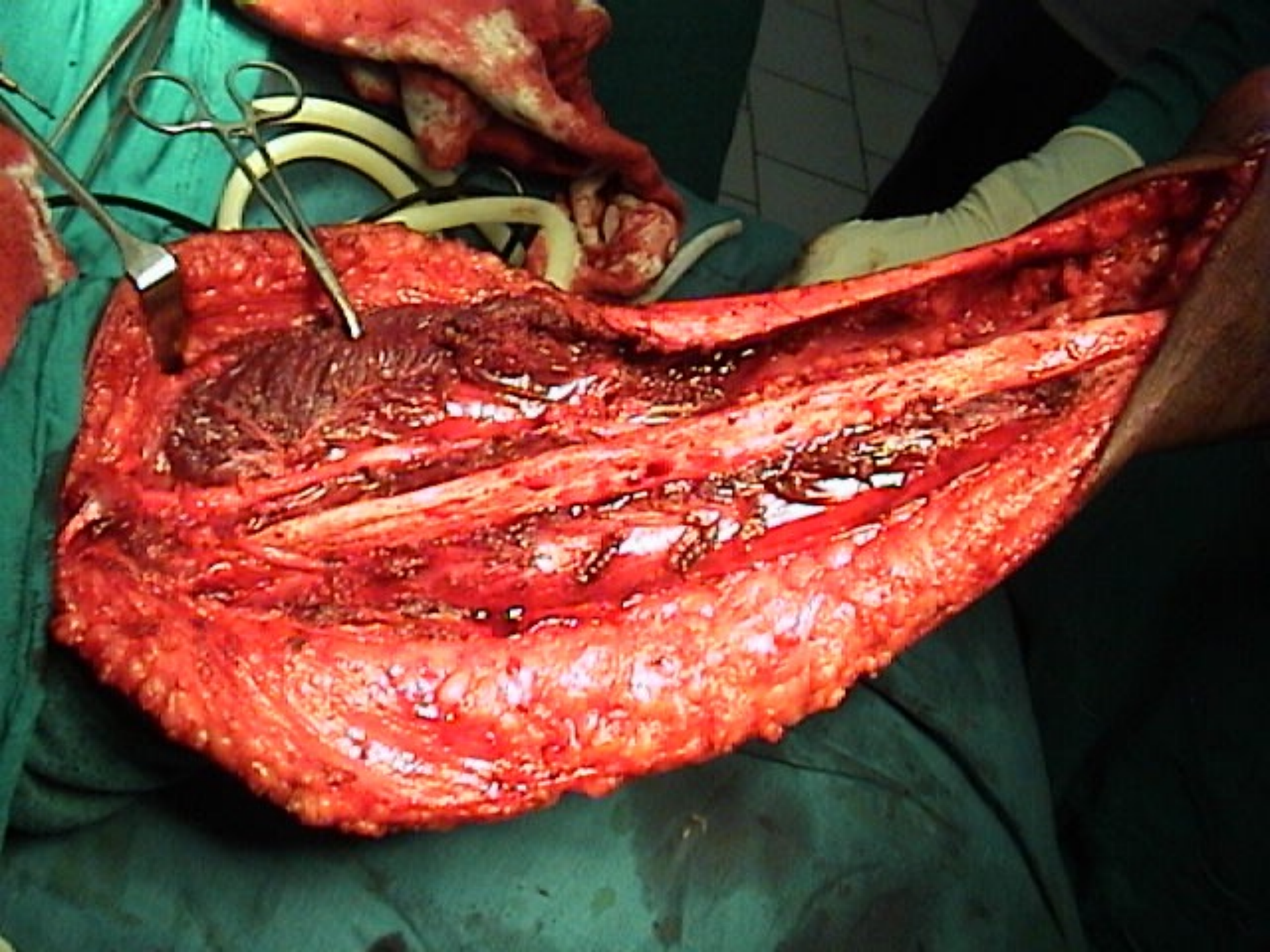
KAVITHA 22/F
815964
FIBROMATOSIS (L) ARM
WIDE LOCAL EXCISION
20/09/05
PROF. R.R.UNIT 651

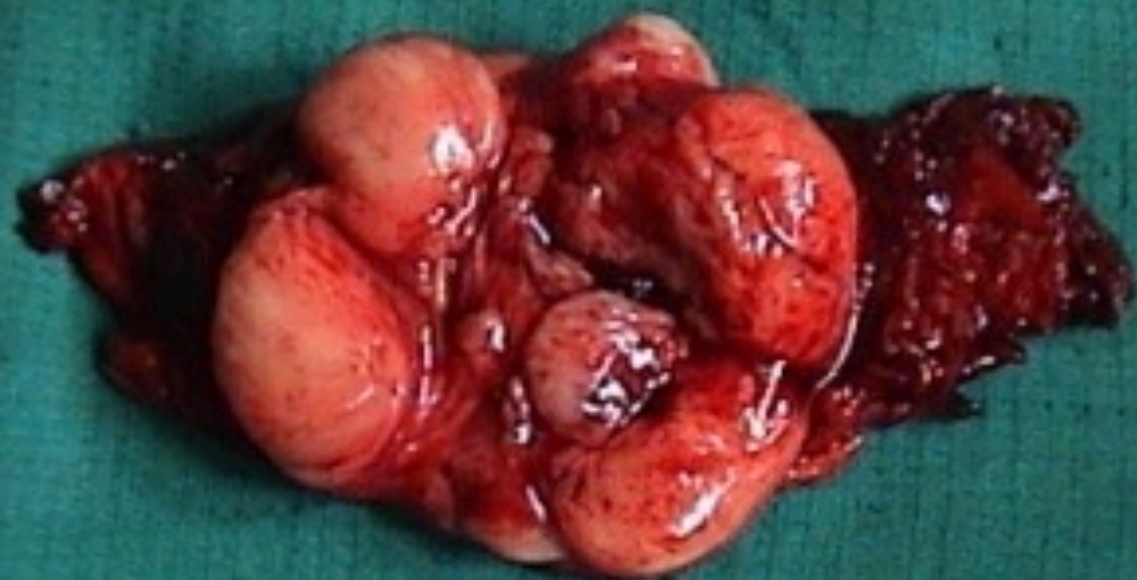




Siva Pragasam 17 Male
Epidemiology Rt. Cervical
Region and Neck
Prof. R.R. UNIT







LAKSHMI DEVI

71 ♀

STS (R) ARM

18. 7. 2

GRH Pox MS unit

RECONSTRUCTION

Soft tissue

- Obliterate dead space.
- Cover Neurovascular pedicle.
- Provide durable tissue for Radiotherapy.
- Restore function.



FLAP RECONSTRUCTION



FLAP RECONSTRUCTION



VASCULAR RESECTIONS FOR STS



GENERAL INDICATIONS FOR LOWER EXTREMITY AMPUTATIONS

- Local recurrence
- Major vessel involvement
- Major nerve involvement
- Soft tissue contamination
- Poorly planned biopsy
- Infection
- Skeletal immaturity



BIOPSY SPECIMEN

- Organ and site of sarcoma
- Depth and size
- Histological grade
- Status of excision margin
- Lymph node status
- Mitotic rate
- Vascular invasion and necrosis.



RADIOTHERAPY

RADIOTHERAPY

Improves **local control** but not survival

Adjunct Radiotherapy is beneficial for:

- Lesion > 5 cm
- High grade tumour
- Positive margin or close margin < 1cm.



Neoadjuvant radiotherapy

- If tumor close to the neurovascular bundle to downstage and prevent amputation.
- Forms thickened pseudocapsule makes dissection easier and prevents tumor seeding.
- Tumors in inaccessible areas



CHEMOTHERAPY

Chemosensitive tumors

- Small, blue, round cell sarcomas of childhood
Ewings / PNET family
Embryonal RMS
Neuroblastoma
- High grade tumor > 10 cm



- Chemotherapy mainly used in metastatic sarcoma for systemic control and increase the overall survival.
- Anthracycline based chemotherapy works effectively against metastatic sarcoma



TAKE HOME MESSAGES

MESSAGE

Surgery is the primary modality

Adjuvant treatment not to cover inefficiency in surgery



THANK YOU..