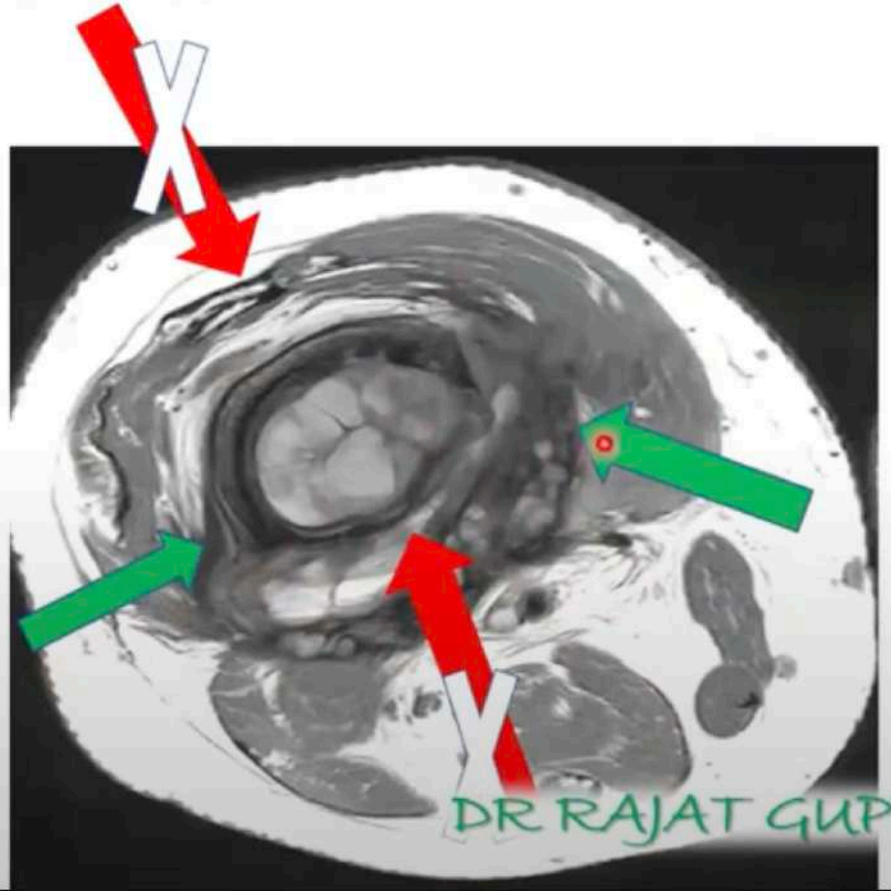
# PRINCIPLES OF BIOPSY

- **AVOID NEUROVASCULAR BUNDLE**




BONE CANCER CLINIC

TARGET ORTHO

# PRINCIPLES OF BIOPSY

- **SINGLE POINT OF ENTRY**

# PRINCIPLES OF BIOPSY

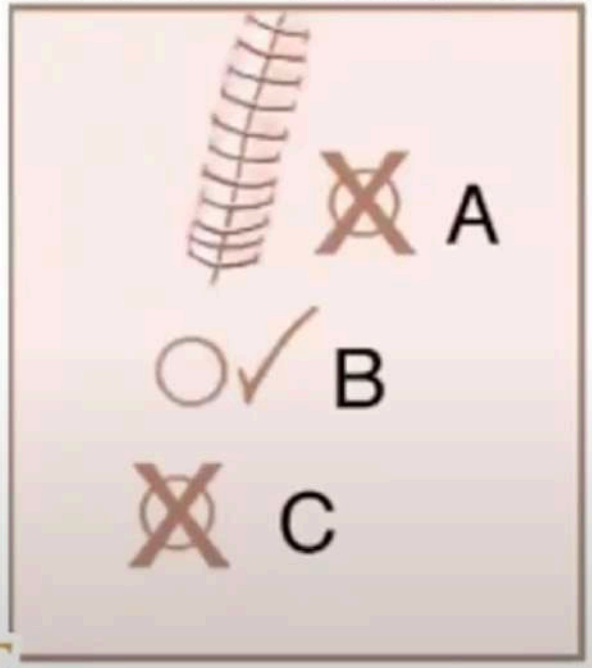
- **SINGLE POINT OF ENTRY**

# PRINCIPLES OF BIOPSY

- DO NOT RAISE FLAPS
- GOOD HEMOSTASIS

# PRINCIPLES OF BIOPSY

- DRAIN SITE SHOULD BE IN LINE WITH THE SCAR





BONE CANCER CLINIC

TARGET ORTHO

# PRINCIPLES OF BIOPSY

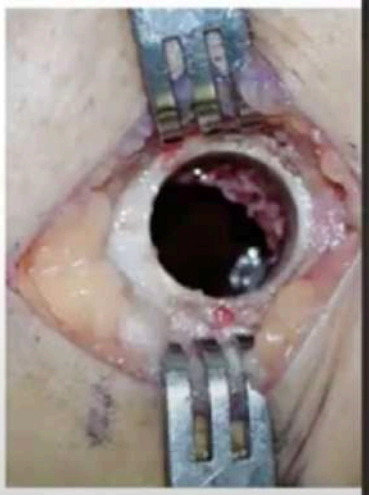
- DO NOT EXSANGUINATE (IF UNDER TOURNIQUET)

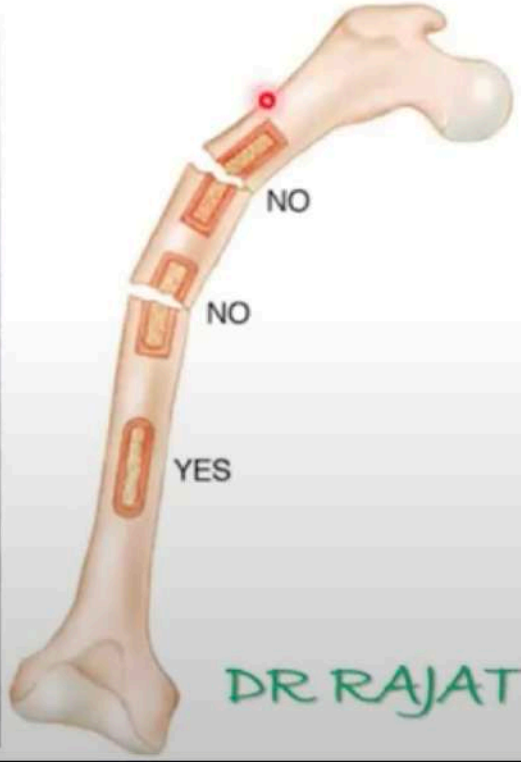
BONE CANCER CLINIC

DR RAJAT GUPTA

# PRINCIPLES OF BIOPSY

- **OVAL WINDOW**



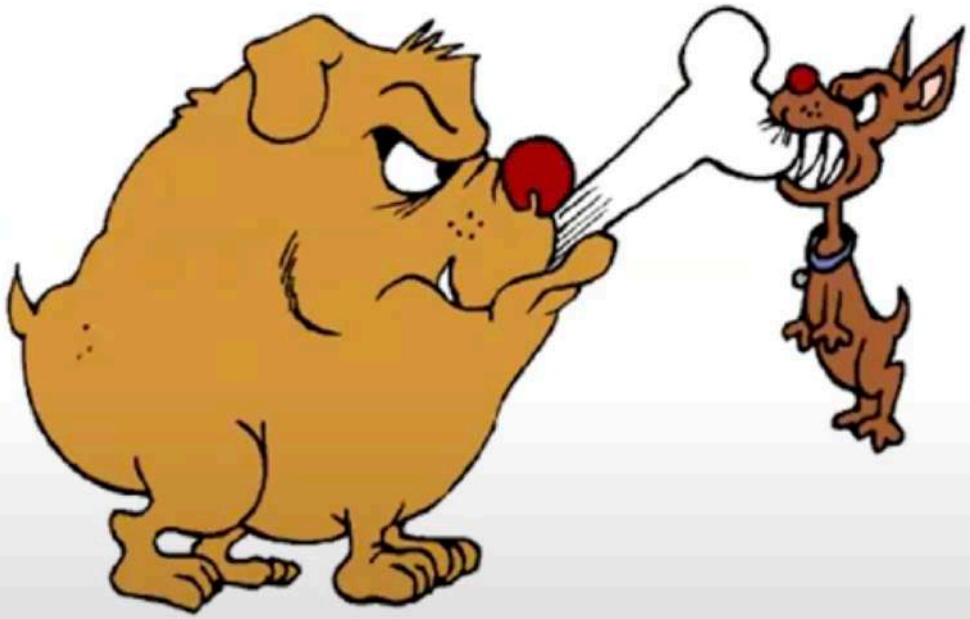



BONE CANCER CLINIC

DR RAJAT GUPTA

# PRINCIPLES OF BIOPSY

## DO NOT DIVIDE THE SPECIMEN



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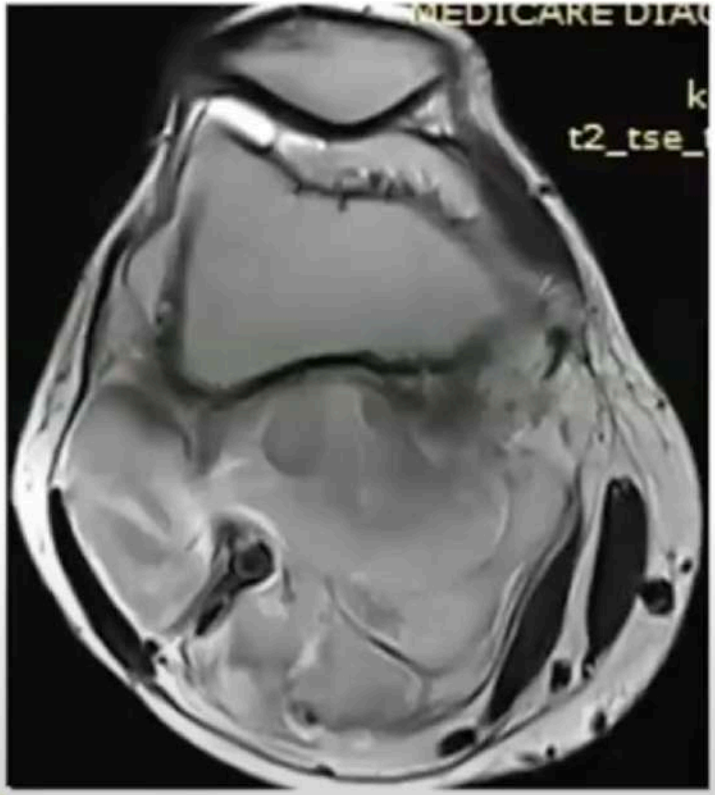
# 55Y/M SWELLING POPLITEAL FOSSA





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TARGET ORTHO

Diagnosis: Synovial Proliferation Right Popliteal Fossa ?? Lipomatosis Growth

Surgery : Arthoscopic Backer's Cyst Decompression + lipoma excision biopsy

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BONE CANCER CLINIC

## REPORT 1

*There is no evidence of any malignant pathology in the Smears studied.*

***DIAGNOSIS; LUMP LT POPLITEAL FOSSA; SPINDLE CELL LIPOMA.***

## REPORT 2

CONCLUSION: Synovial tissue, left knee shows-

- Myxofibrosarcoma, low grade.

## REPORT 3

Excised mass, left popliteal fossa: Suggestive of Myxoid Liposarcoma.

Note: Advised IHC/ molecular work up.

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# PRINCIPLES OF BIOPSY

- SAMPLE SHOULD BE SENT TO MUSCULOSKELETAL PATHOLOGIST

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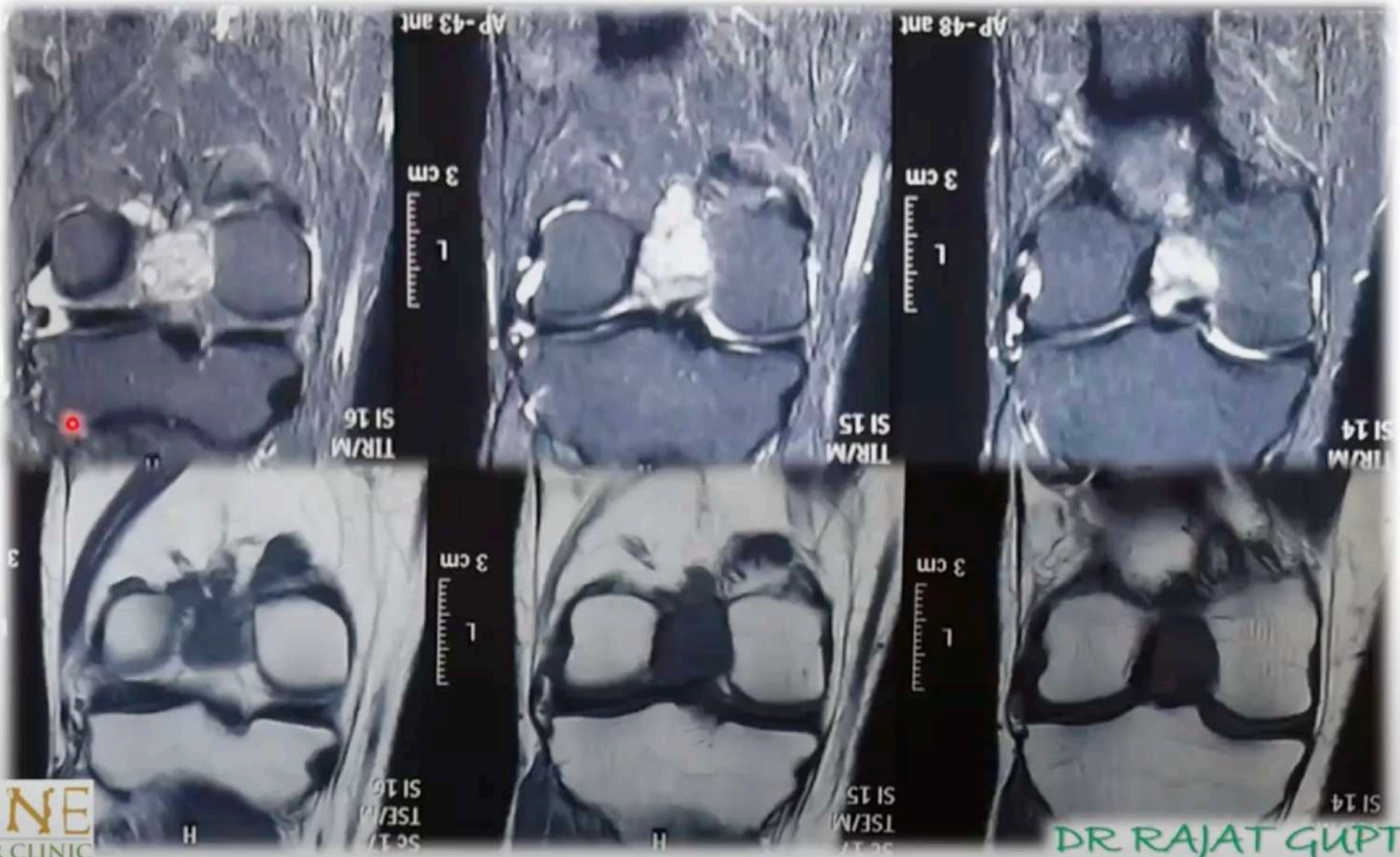
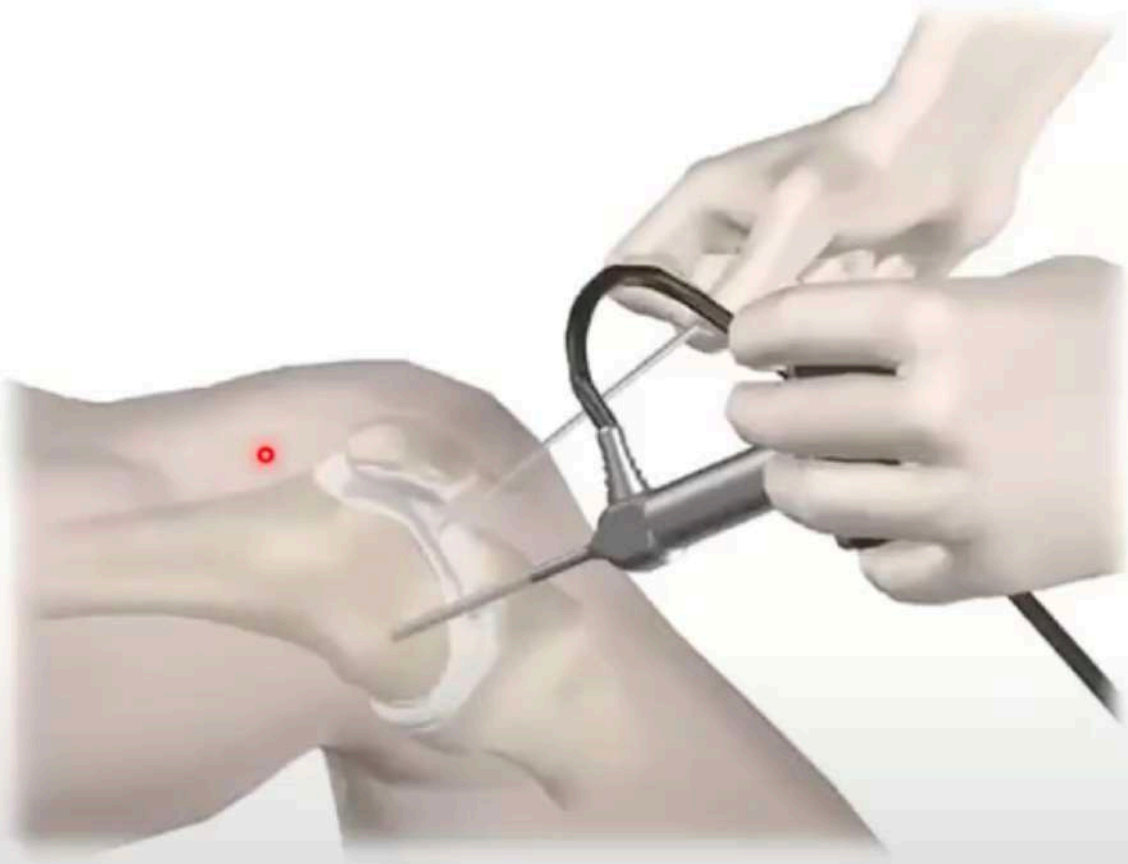




- Arthroscopic excision of “cyst”
- Tissue sent for histopathology

BONE CANCER CLINIC

DR RAJAT GUPTA

BIOPSY

P/2970/17

***GROSS***:Container A: Bony tissue

Container B: Soft tissue: Multiple grey white tissue bits.

***MICROSCOPY***:Microsections from soft tissue show unencapsulated cellular tissue composed of spindle cells arranged in sheets and focally in storiform pattern.The cells are bland with elongated hyperchromatic nuclei,inconspicuous nucleoli and scant bipolar cytoplasm.

No increase in mitosis seen.

No necrosis seen.

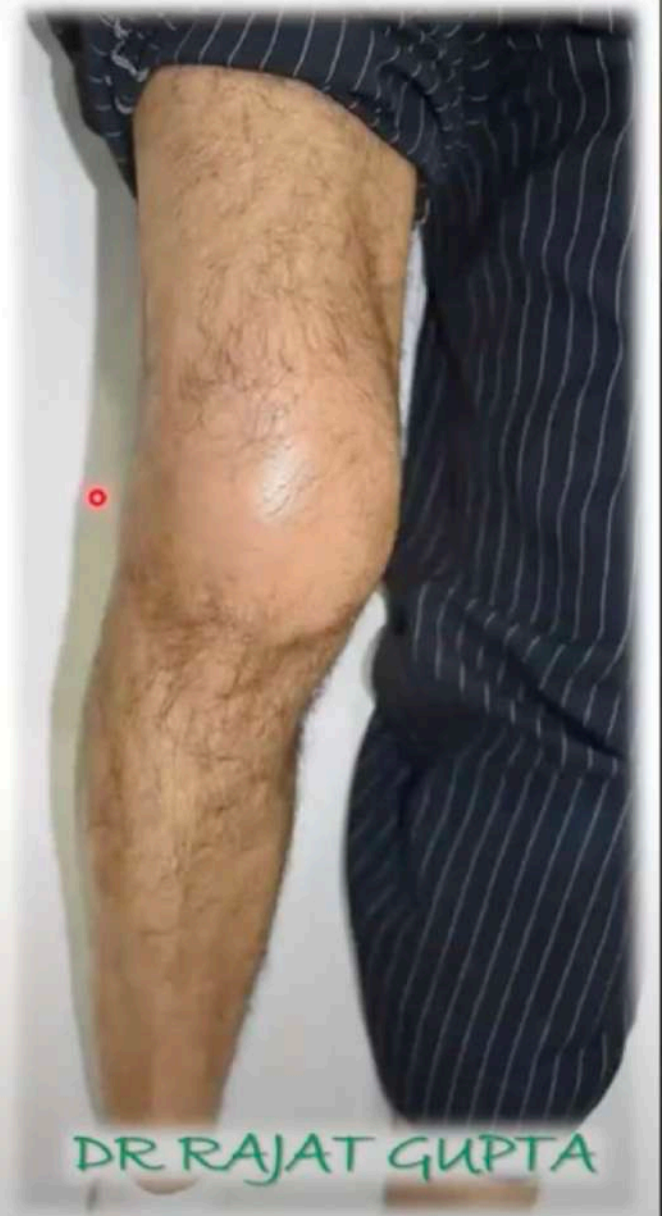
Decalcified section of bone shows normal bony trabecule.No deposits or atypical cells seen.

***OPINION:Benign spindle cell lesion.***

***Please correlate with clinical findings.***

*** END OF THE REPORT ***

# 6 MONTHS AFTER ARTHROSCOPIC EXCISION

Multiple sections studied show large areas of hemorrhage with tumor composed of two populations of cells. One population of cells is spindle cells in form of plump fascicles. The cells have scant cytoplasm. The second population predominates in the biopsy and shows plump epithelial cells forming glands and cords. The epithelial cells have prominent nucleoli. The tumor has hemangiopericytomatous pattern at places.

Focal areas of necrosis are seen.

Overall features are of Spindle cell tumor with possibility of synovial sarcoma (biphasic type).

Advise - Immunohistochemistry (CK, EMA, BCL-2, CD99, CD34, S100 and SMA) to confirm exact sub typing.

BONE CANCER CLINIC

DR RAJAT GUPTA

-- End of Report --

## Histopathology Report

BIOPSY

P/2970/17

***GROSS***:Container A: Bony tissue
Container B: Soft tissue: Multiple grey white tissue bits.

***MICROSCOPY***:Microsections from soft tissue show unencapsulated cellular tissue composed of spindle cells arranged in sheets and focally in storiform pattern.The cells are bland with elongated hyperchromatic nuclei,inconspicuous nucleoli and scant bipolar cytoplasm.
No increase in mitosis seen.
No necrosis seen.
Decalcified section of bone shows normal bony trabecule.No deposits or atypical cells seen.

***OPINION:Benign spindle cell lesion.***
***Please correlate with clinical findings.***

*** END OF THE REPORT ***

ent with mass in knee joint

ng to 3.2x2.0 cm, submitted entirely.

hage with tumor composed of two
le cells in form of plump fascicles. The
redominates in the biopsy and shows
epithelial cells have prominent
ttern at places.

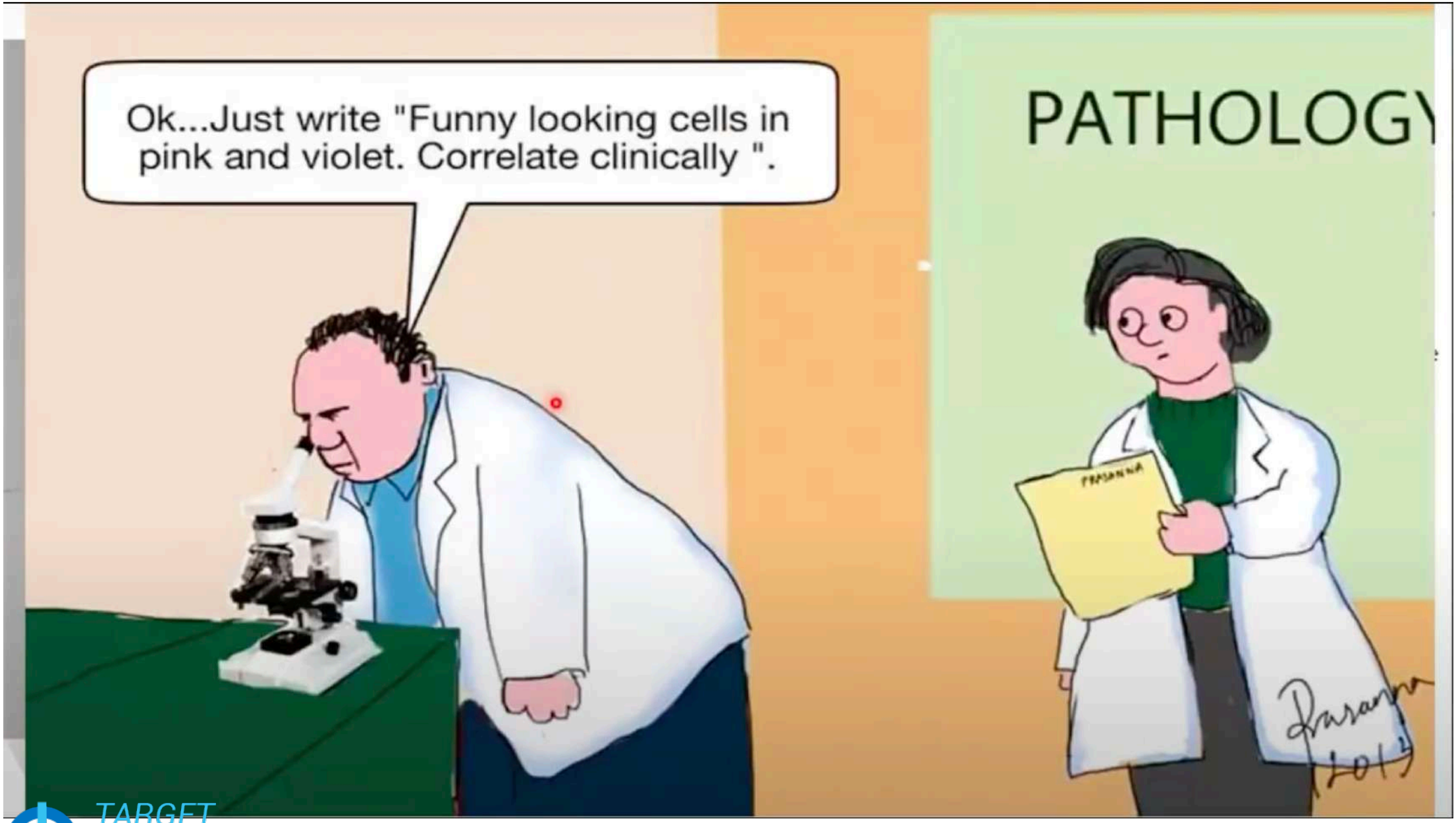
bility of synovial sarcoma biphasic

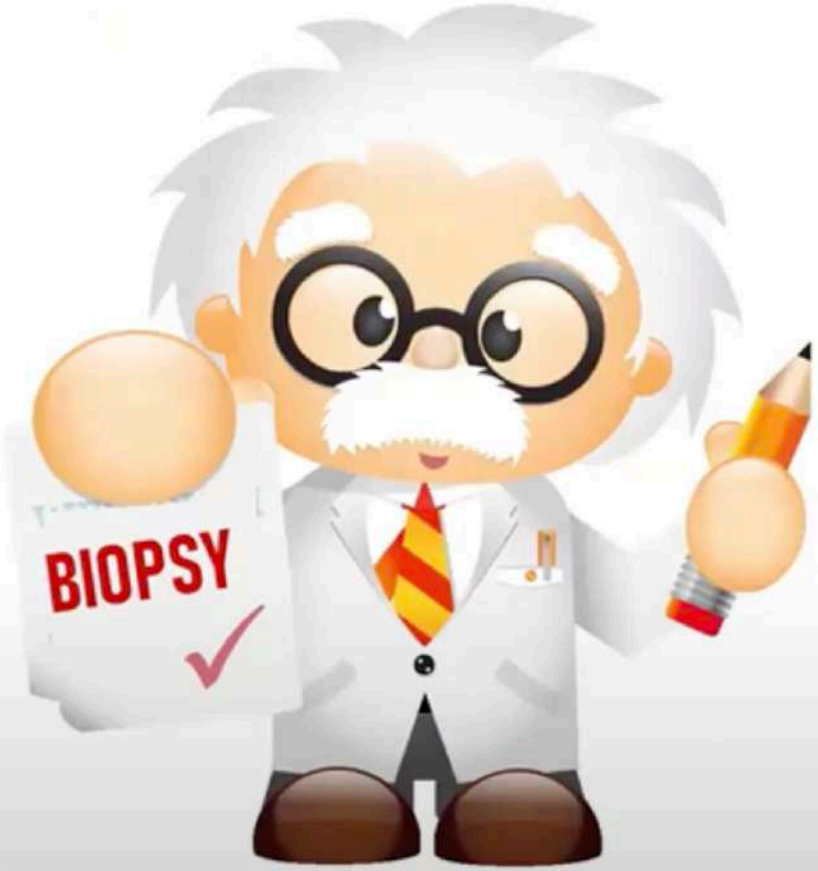
99, CD34, S100 and SMA) to confirm

BONE CANCER CLINIC

DR RAJAT GUPTA

-- End of Report --






# ➢BONE BIOPSY

- WHEN LESION IS SOLID
- WHEN LESION IS CYSTIC

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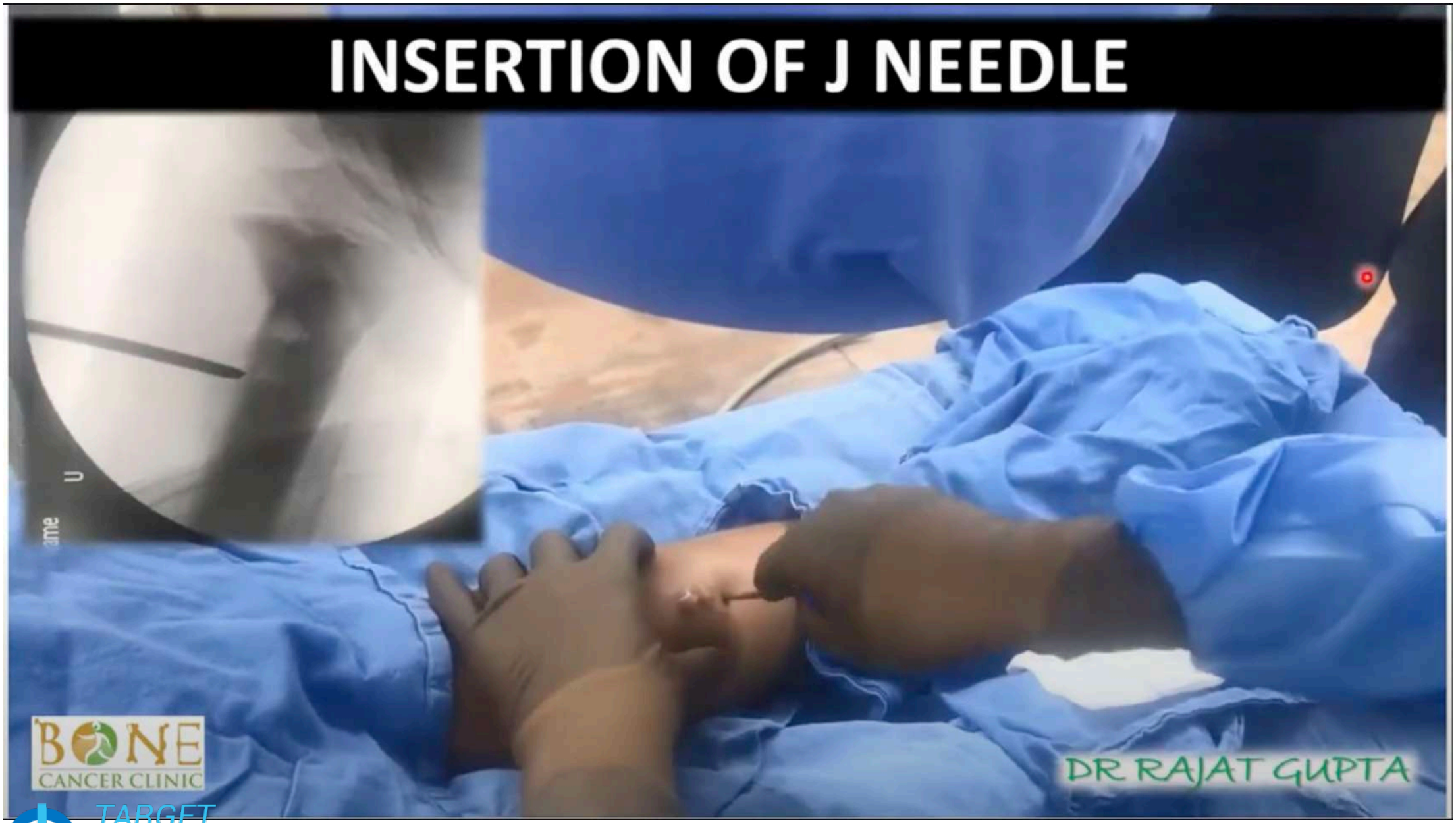
# 10 Y/M PAIN / SWELLING PROXIMAL TIBIA

# INSERTION OF J NEEDLE



# WHEN LESION IS CYSTIC

HEMORRHAGE

&

BLOOD CLOTS

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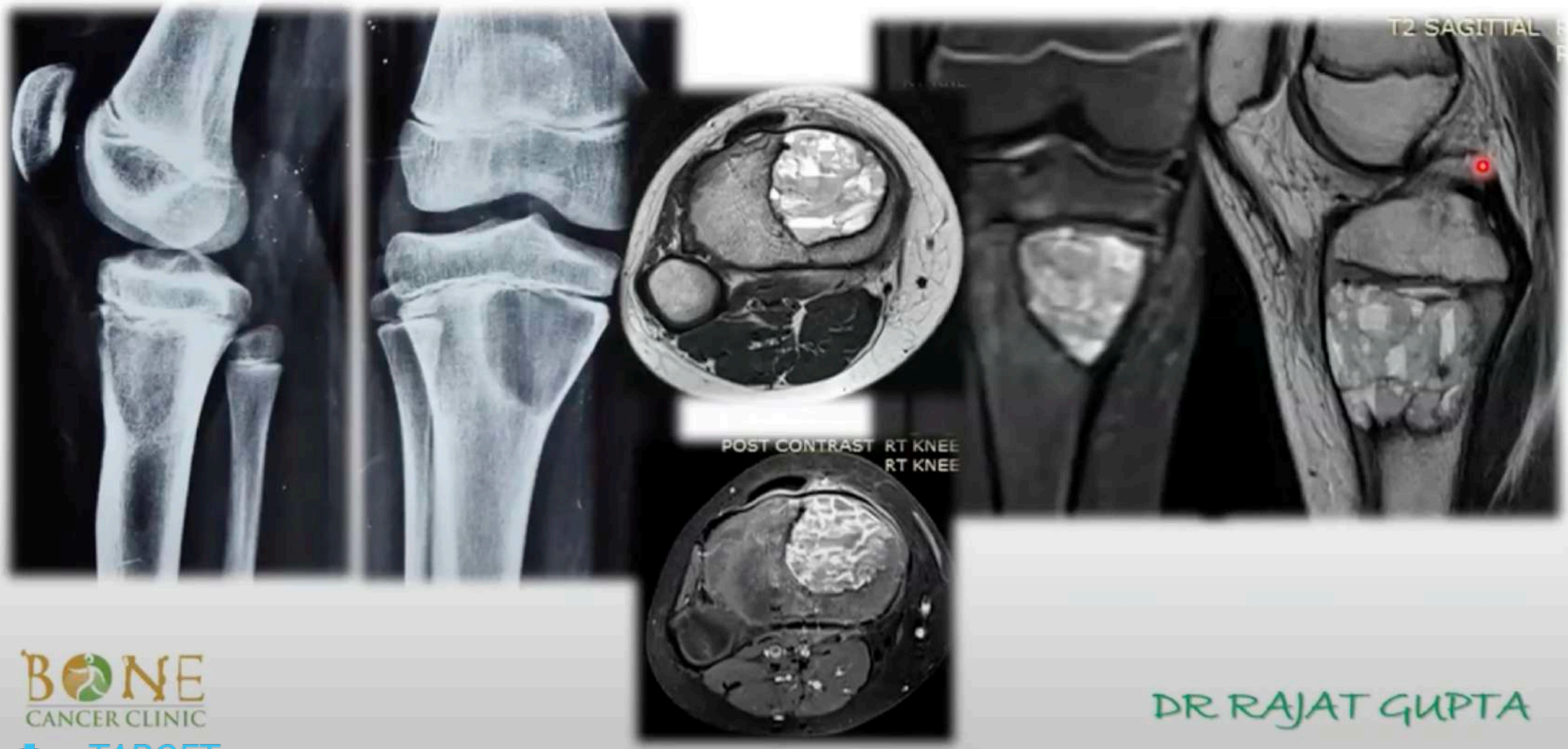
BONE CANCER CLINIC

# 12 Y/ M LYTIC LESION PROXIMAL TIBIA




BONE CANCER CLINIC

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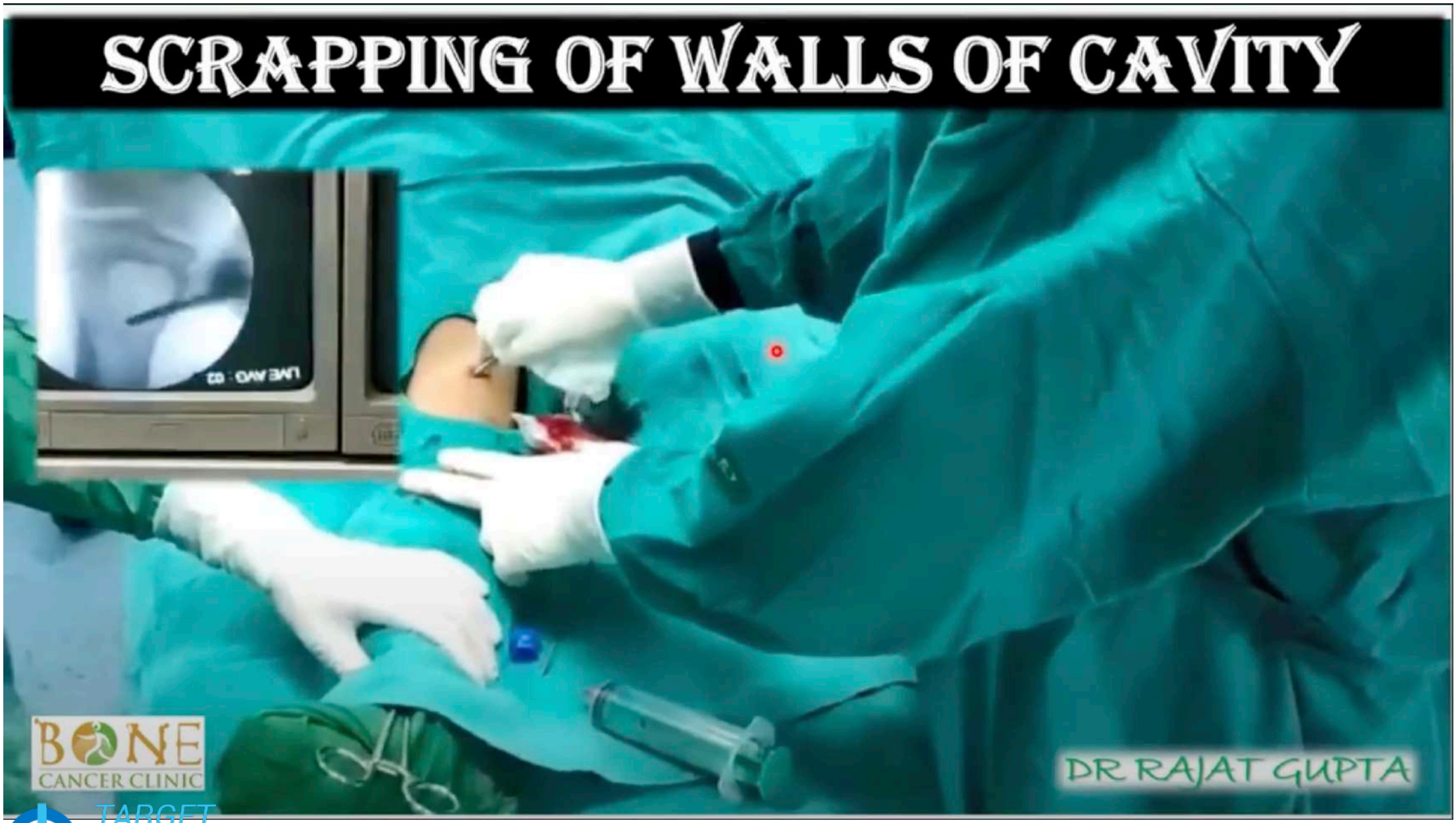
# HEPARANISATION OF J NEEDLE

# SCRAPPING OF WALLS OF CAVITY



# ISOLATING TUMOUR TISSUE

# BONE BIOPSY WITH GUN


BONE CANCER CLINIC

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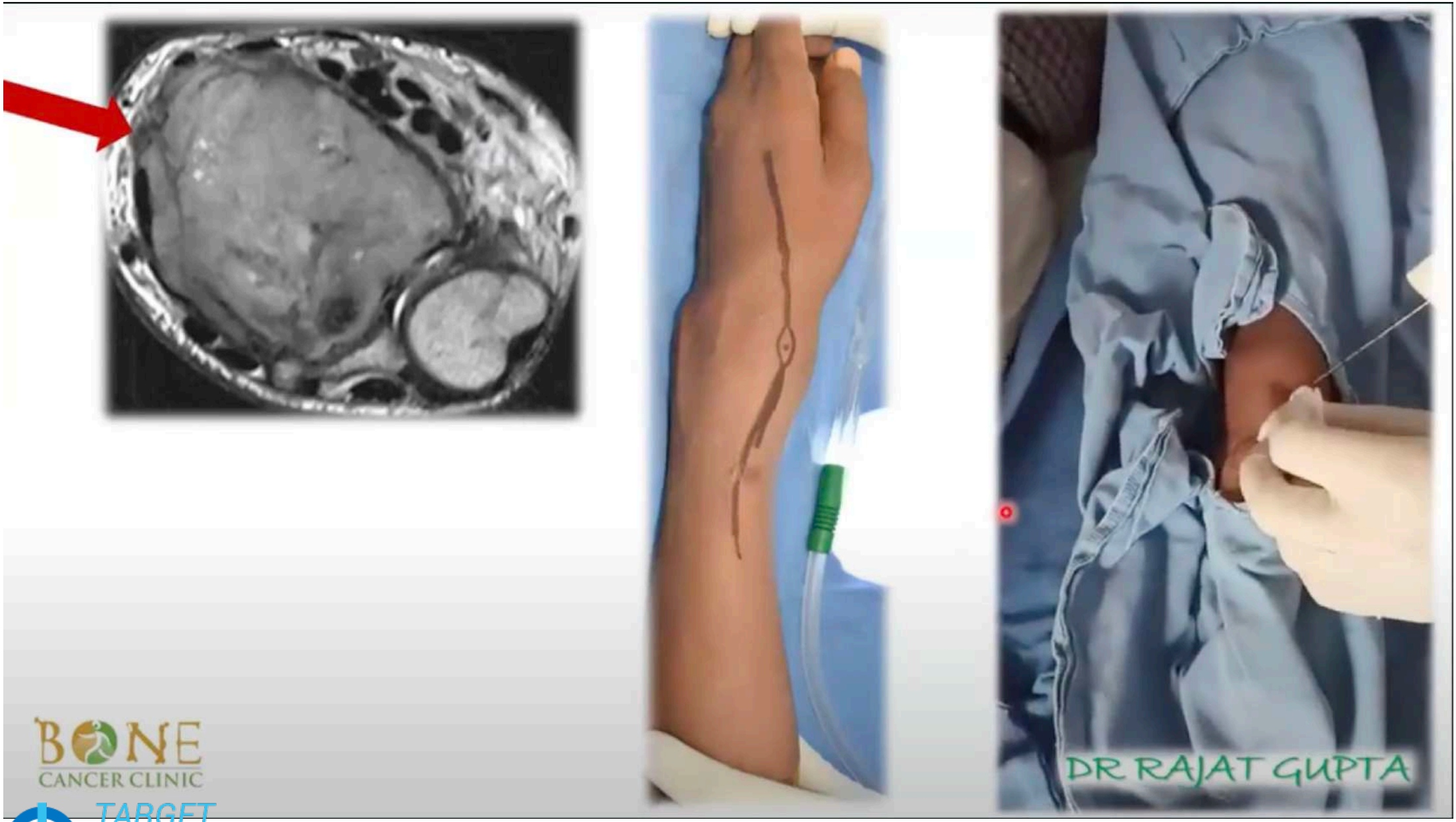


BONE CANCER CLINIC

TARGET ORTHO


- NEEDLE BIOPSY IS AS ACCURATE
- PROPER PLANNING BEFORE BIOPSY
- FOLLOW THE PRINCIPLES
- SHOULD BE DONE BY SURGEON DOING DEFINITIVE SURGERY

BONE CANCER CLINIC

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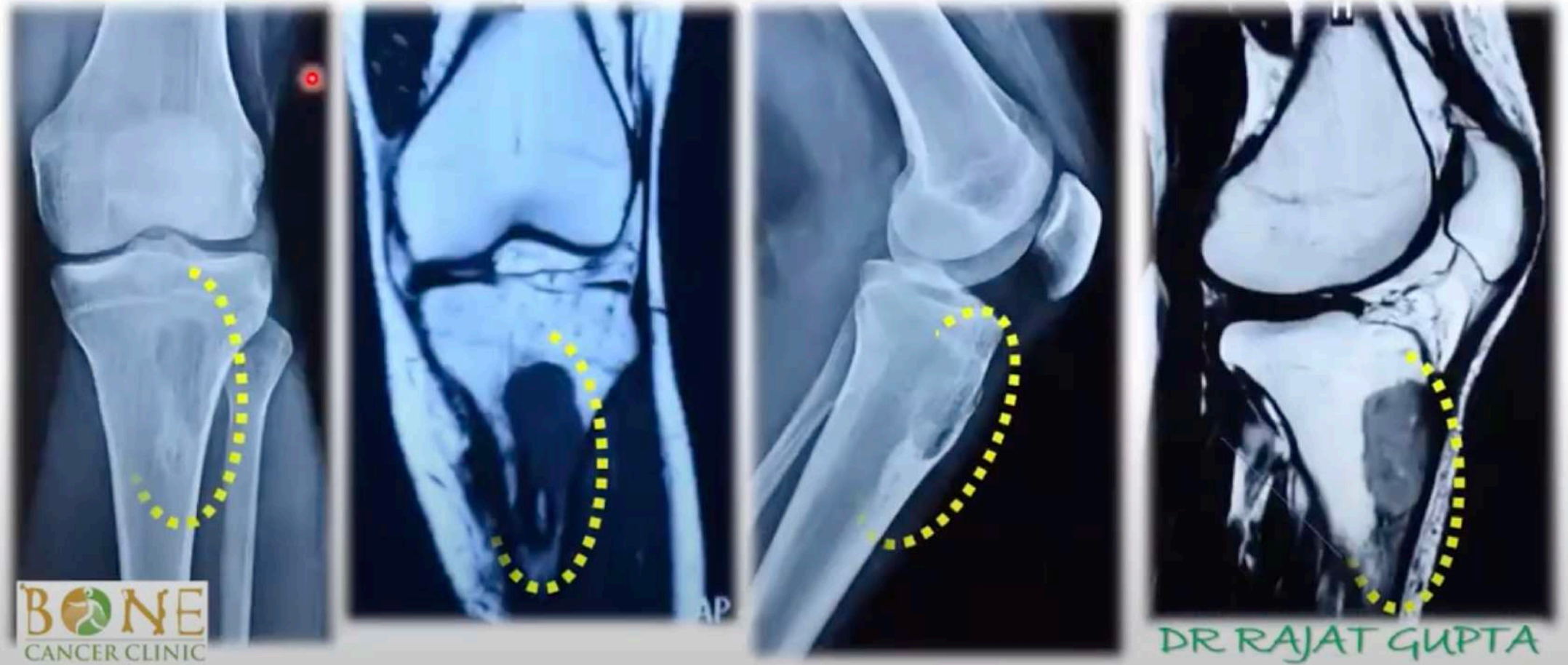
# WHY TO BIOPSY ?



# WHY TO BIOPSY ?

- Eccenteric cystic lesion in proximal metadiaphyses of left tibia, bulging anterior cortex at level of insertion of patellar tendon with positive 'Penumbra sign' on T1WI. Surrounding marrow edema present extending into tibial epiphyses. Few tiny conglomerated T1/T2/STIR hyperintense lesions with sclerotic rim along caudal aspect of above-mentioned lesion.
- No solid area / fluid fluid level/ internal fat signal seen. No intra-epiphyseal/ extra-osseous extension.
- Deep subcutaneous and deep muscular plane edema.

Features are suggestive of Benign cortical lesion, likely subacute etiology- Brodies' abscess.

- Horizontal tear seen in the posterior horn of medial meniscus extending to adjacent body.

Suggested clinical correlation and further evaluation.

BONE CANCER CLINIC

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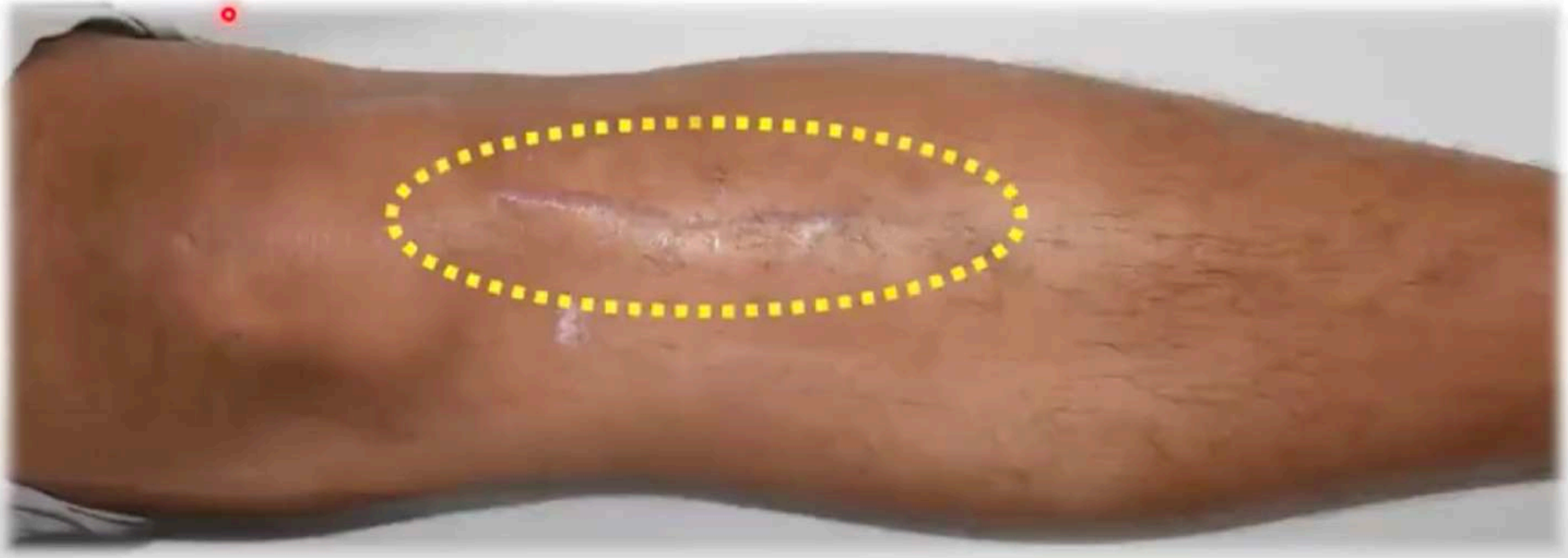
# WHY TO BIOPSY ?



BONE CANCER CLINIC

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# WHY TO BIOPSY ?

**SPECIMEN :** ABSCESS AT TIBIA HEAD

**GROSS EXAMINATION:** Received soft tissue measuring 3.0x2.0x1.5 cm. Calcified tissue measuring
3.0x1.5 cm.

**MICROSCOPIC EXAMINATION :** Section shows sheets and fascicles of neoplastic spindle cells with mild to moderate degree of pleomorphism and anaplasia. Increased atypical mitosis and pleomorphic mtumor cells seen. Lace like osteoid material seen.

**OPINION : HIGH GRADE SPINDLE CELL SARCOMA MORPHOLOGICALLY AN OSTEOGENIC SARCOMA.**
**ADV. IHC PANEL**
**CORRELATE RADIOLOGICALLY.**

BONE CANCER CLINIC

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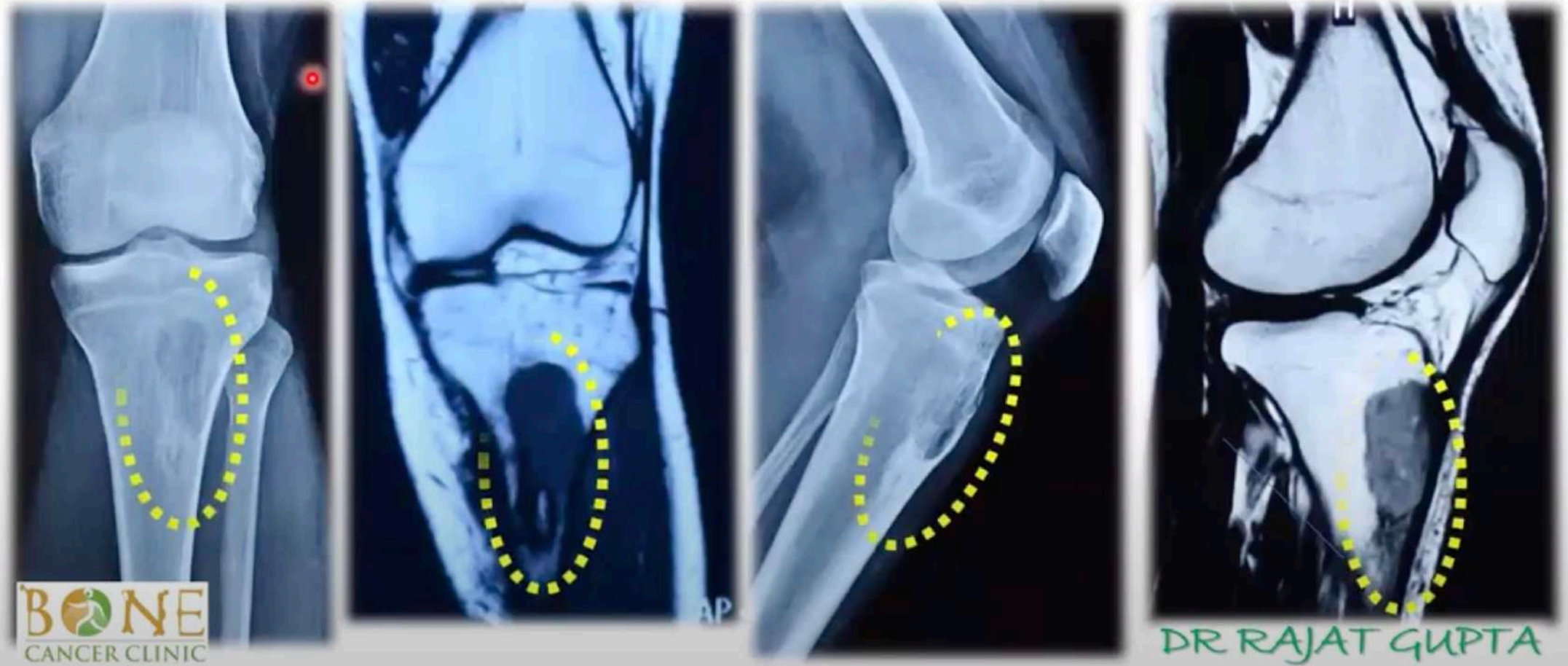
# WHY TO BIOPSY ?



# WHY TO BIOPSY ?

- Eccenteric cystic lesion in proximal metadiaphyses of [illegible]
  anterior cortex at level of insertion of patellar tendon with positive 'Penumbra sign' on T1WI. Surrounding marrow edema present extending into tibial epiphyses. Few tiny conglomerated T1/T2/STIR hyperintense lesions with sclerotic rim along caudal aspect of above-mentioned lesion.
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Suggested clinical correlation and further evaluation.

BONE CANCER CLINIC

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# WHY TO BIOPSY ?

80 Y/ F

PAIN

KNEE

X

1 YEAR

BONE CANCER CLINIC

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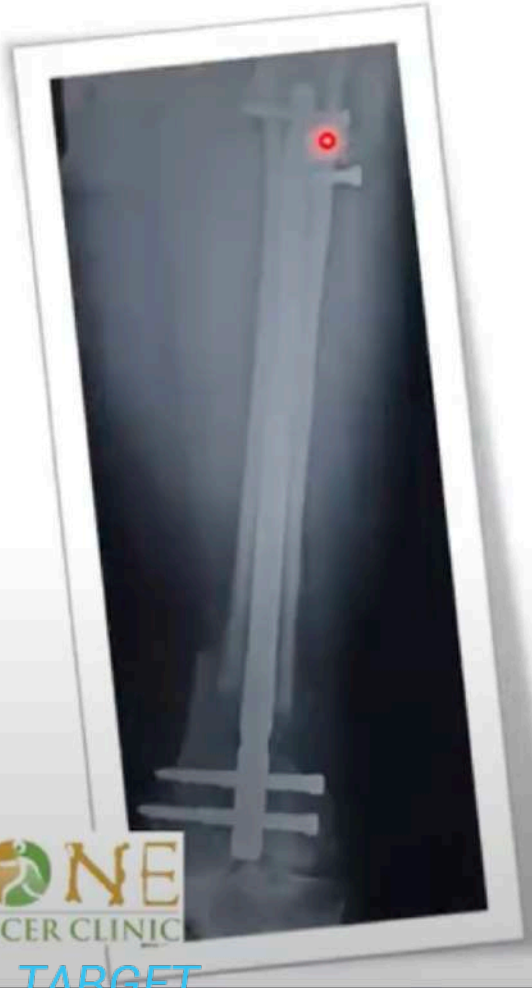
# WHY TO BIOPSY ?



## NAILING DONE FOR PATHOLOGICAL FRACTURE

BONE CANCER CLINIC

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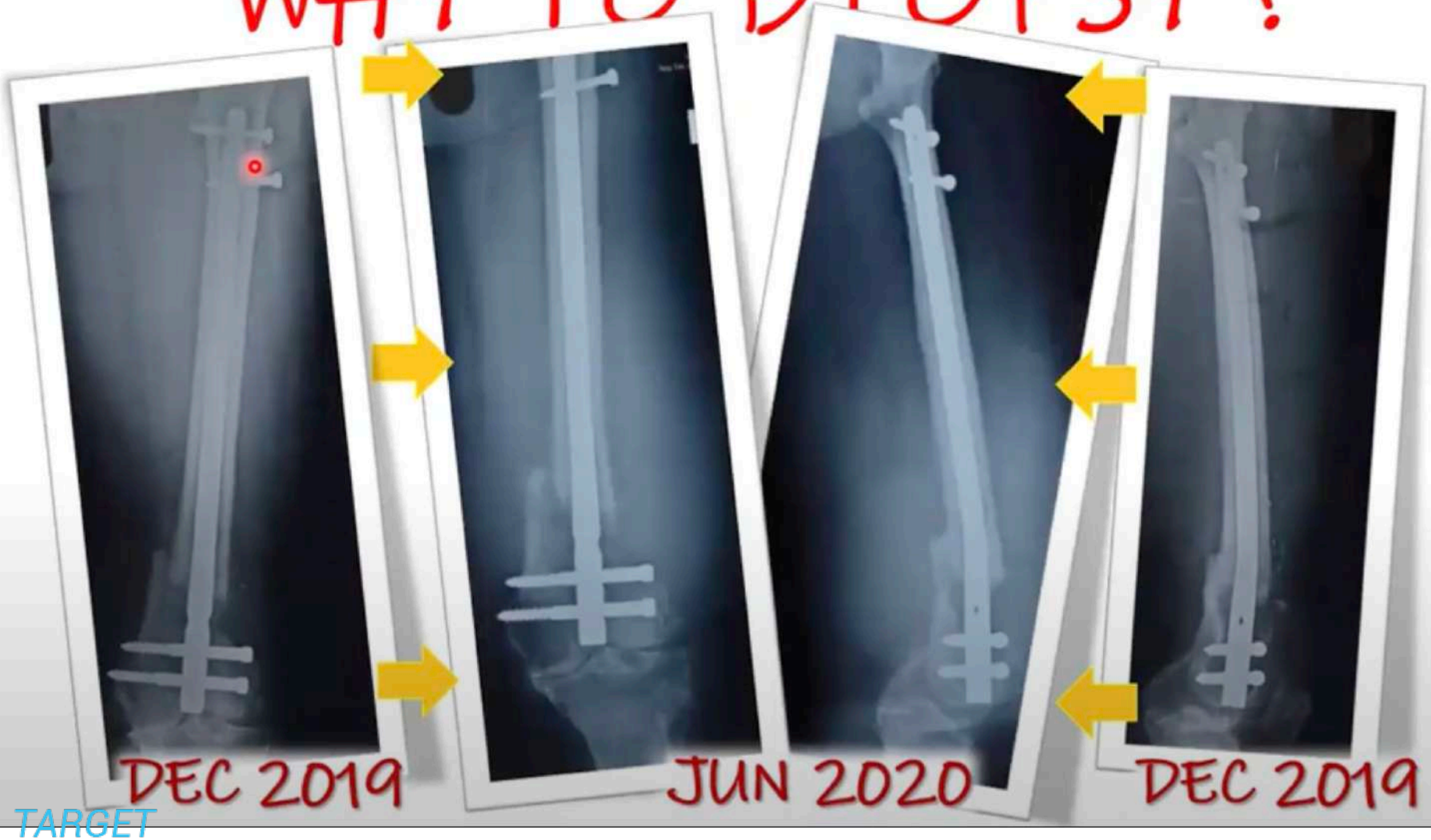
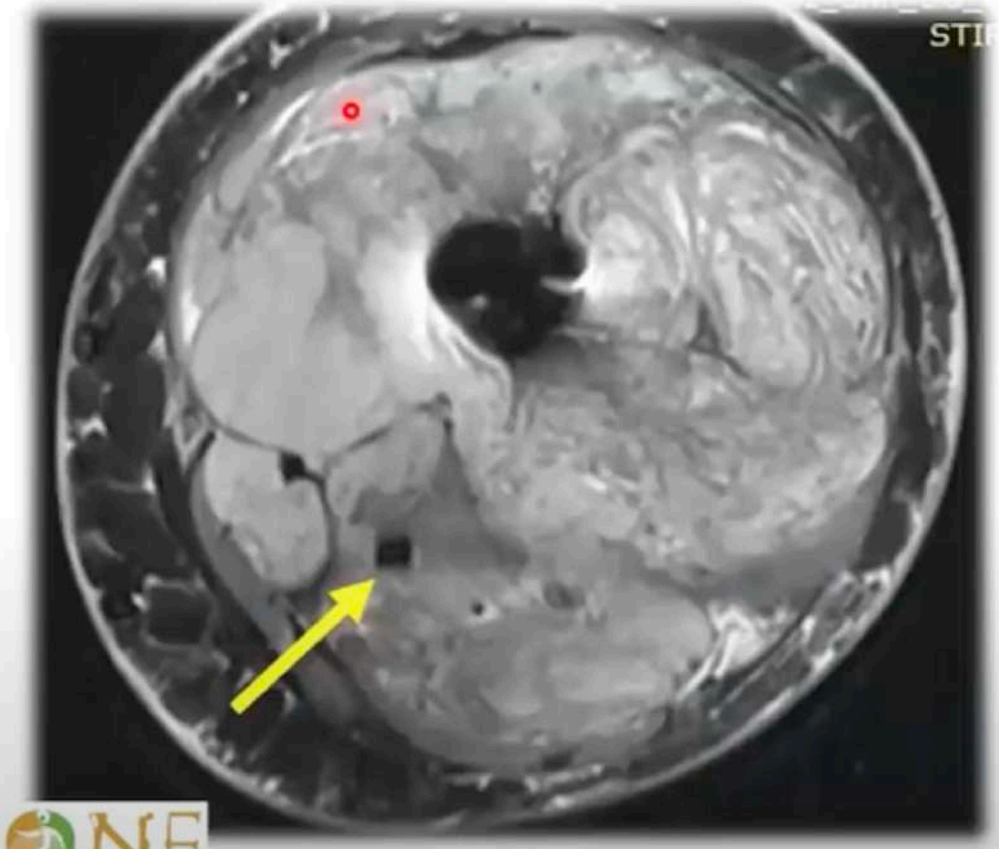
# WHY TO BTOPSY ?



# WHY TO BIOPSY ?

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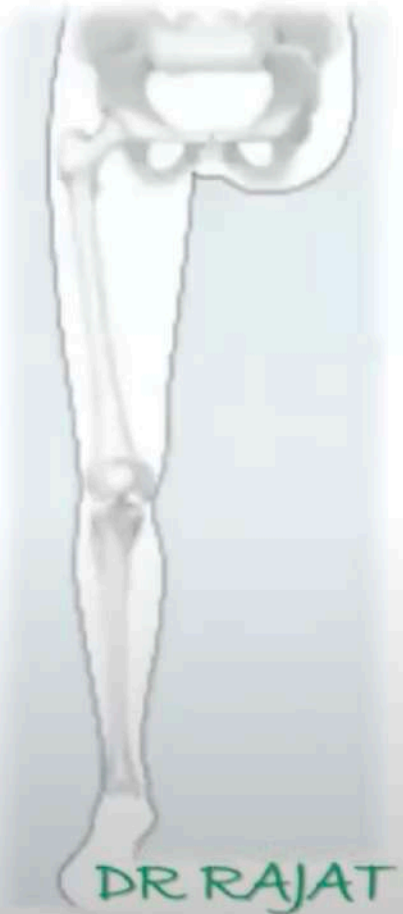
BONE CANCER CLINIC

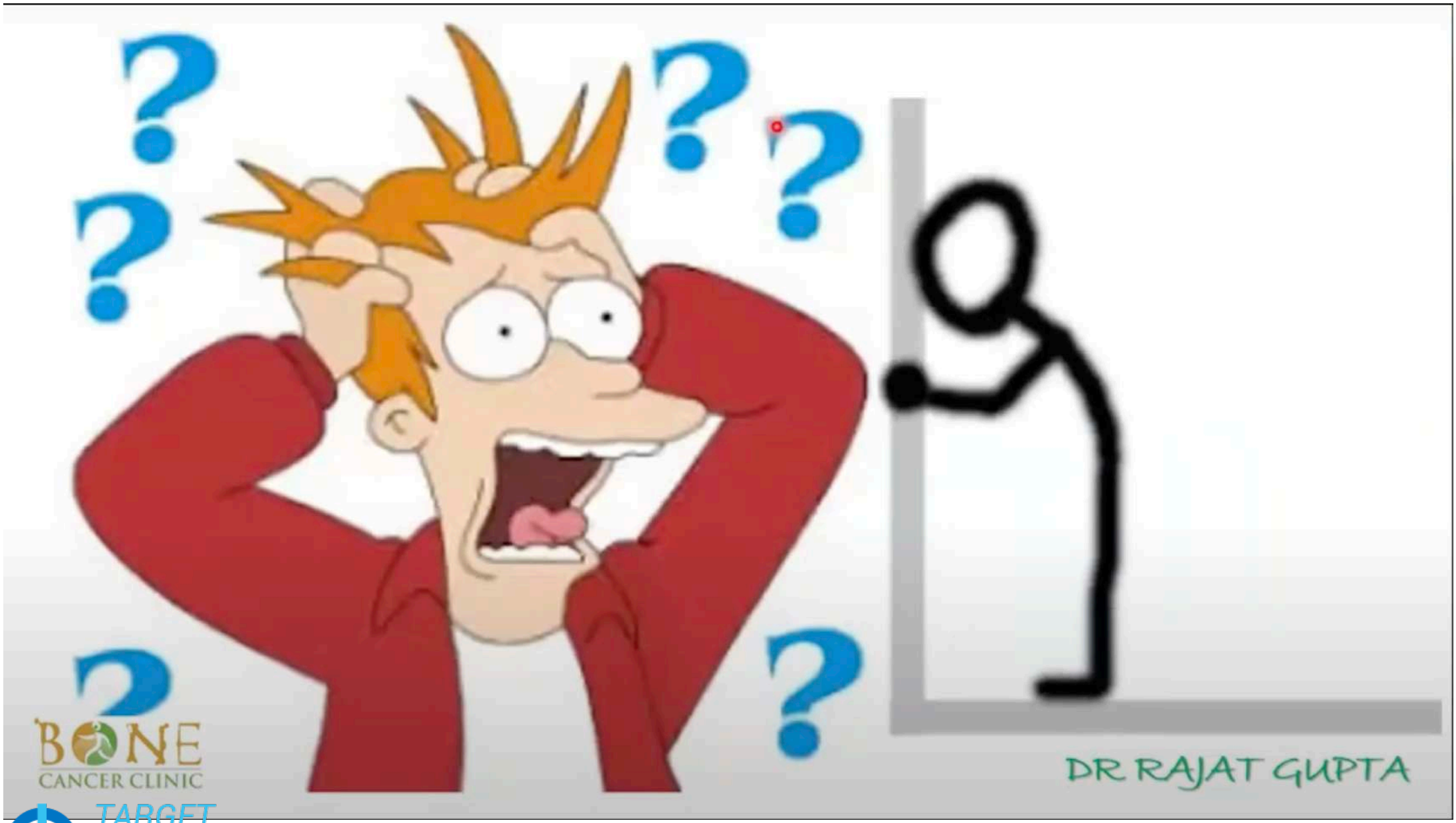
TARGET ORTHO

# WHY TO BIOPSY ?



BONE CANCER CLINIC

DR RAJAT GUPTA




BONE CANCER CLINIC

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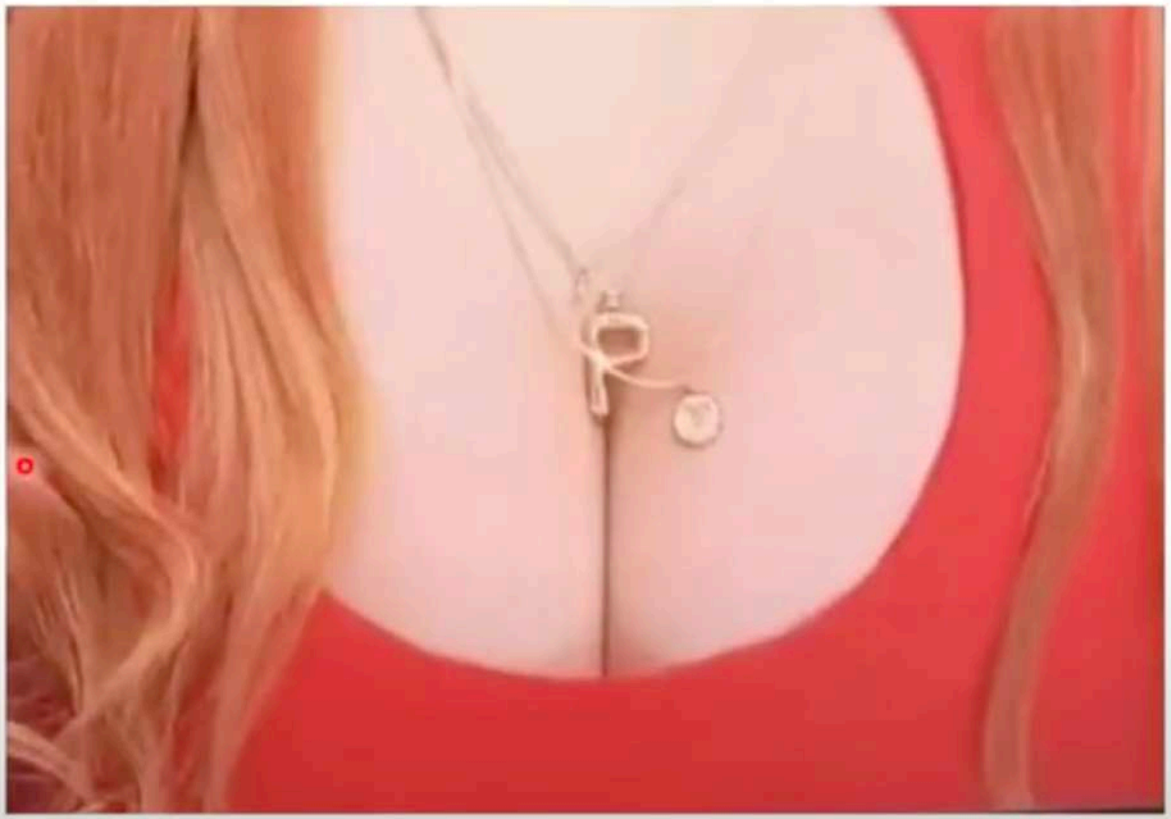

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# WHY TO BIOPSY ?

- TO ESTABLISH HISTOPATHOLOGICAL DIAGNOSIS
- TREATMENT PLAN


BONE CANCER CLINIC

# WHY TO BIOPSY ?

- TO ESTABLISH HISTOPATHOLOGICAL DIAGNOSIS
- TREATMENT PLAN
- PROGNOSTICATE THE PATIENT

# WHEN TO BIOPSY ?

- AFTER IMAGING HAS BEEN DONE
  - Ideal site for biopsy within the tumour

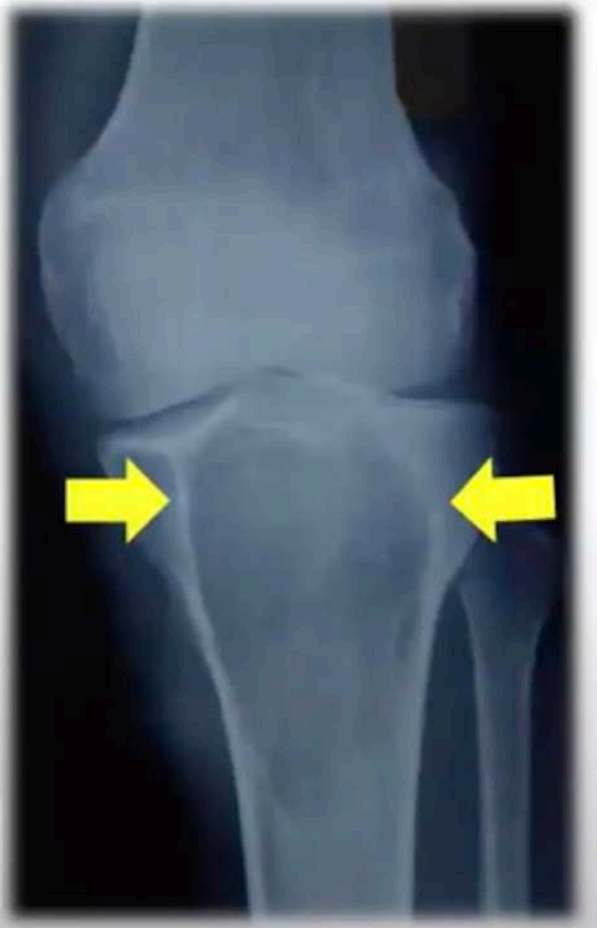

BONE CANCER CLINIC

# WHEN TO BIOPSY ?


BONE CANCER CLINIC

TARGET ORTHO

# WHEN TO BIOPSY ?

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# WHICH LESION TO BIOPSY ?



BONE CANCER CLINIC

TARGET ORTHO

# HOW TO BIOPSY ?

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# HOW TO BIOPSY ?

- LESSER COST
- OPD / DAYCARE PROCEDURE
- MINIMAL PAIN
- LESSER CONTAMINATION
- LESSER CHANCE OF INFECTION/ PATHOLOGICAL FRACTURE

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# HOW TO BIOPSY ?

- MORE MATERIAL
- RESEARCH
- INEXPERIENCED PATHOLOGIST

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J Orthop Surg (Hong Kong). 2013 Apr;21(1):92-5.

## Accuracy of core needle biopsy for musculoskeletal tumours.

Seng C[1], Png W, Tan MH.

Cancer. 2000 Dec 15;89(12):2677-86.

## The percutaneous needle biopsy is safe and recommended masses.

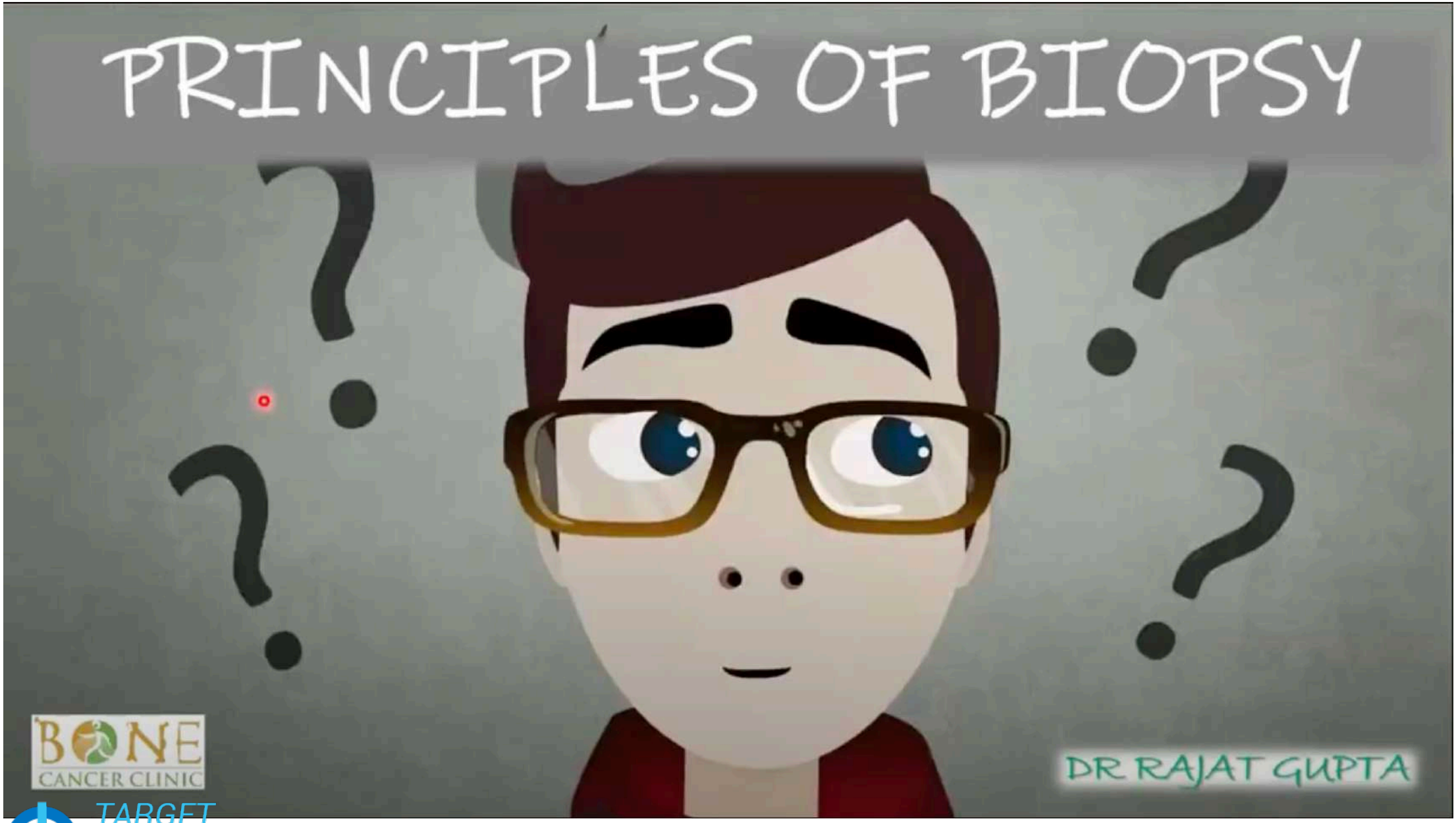
Welker JA[1], Henshaw RM, Jelinek J, Shmookler BM, Malawer MM.

Sensitivity - 90 – 95 %
Specificity - 95- 100 %
Positive predictive value – 100%
Negative predictive value- 80%

J Bone Joint Surg Am. 1996 May;78(5):644-9.

## Diagnostic accuracy and charge-savings of outpatient core needle biopsy compared with open biopsy of musculoskeletal tumors.

Skrzynski MC[1], Biermann JS, Montag A, Simon MA.



# PRINCIPLES OF BIOPSY

Should be done by surgeon doing definitive procedure

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# 20 Y/ M EWING'S SARCOMA TIBIA

## UNDERWENT OPEN BIOPSY ELSEWHERE

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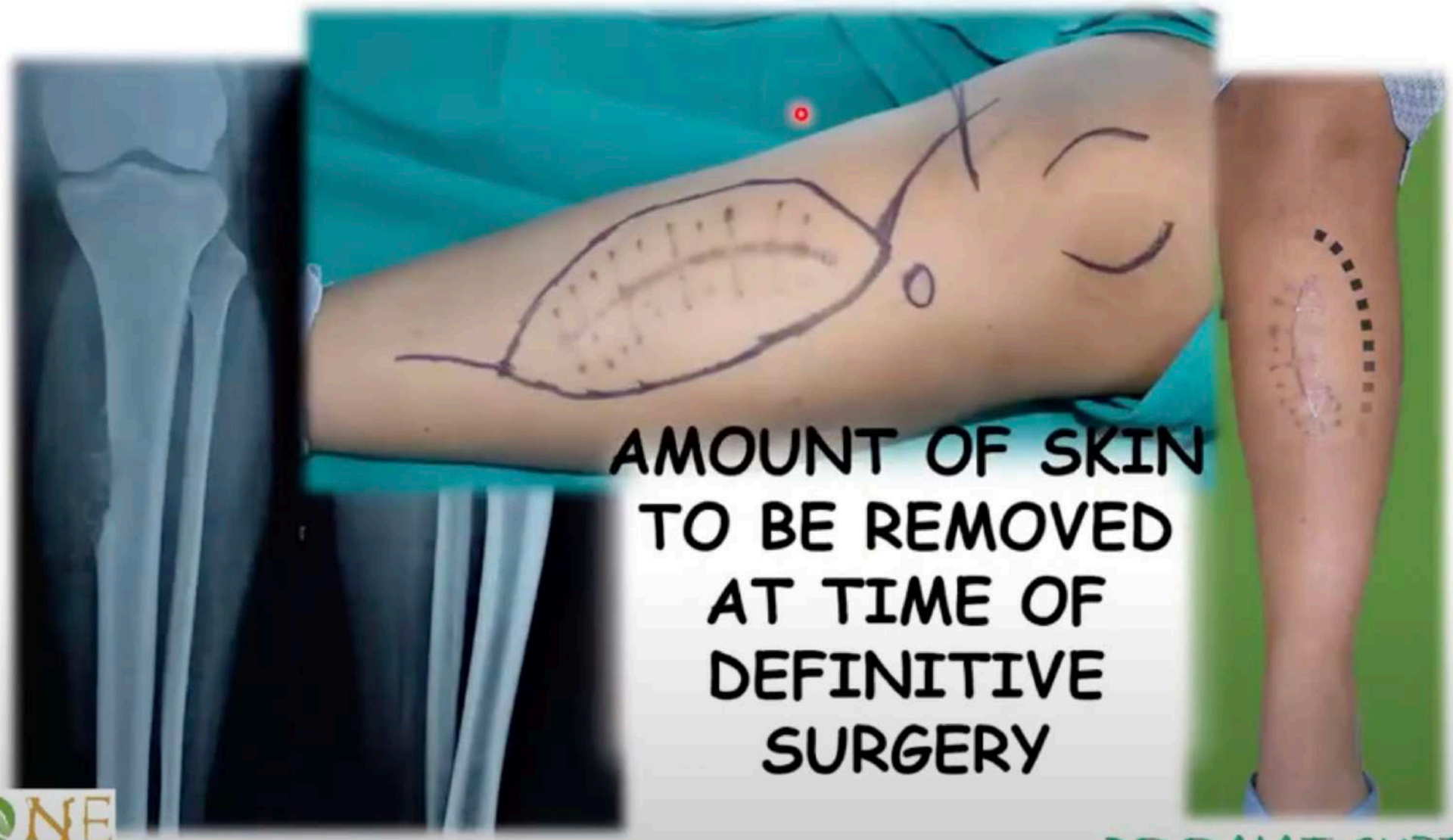
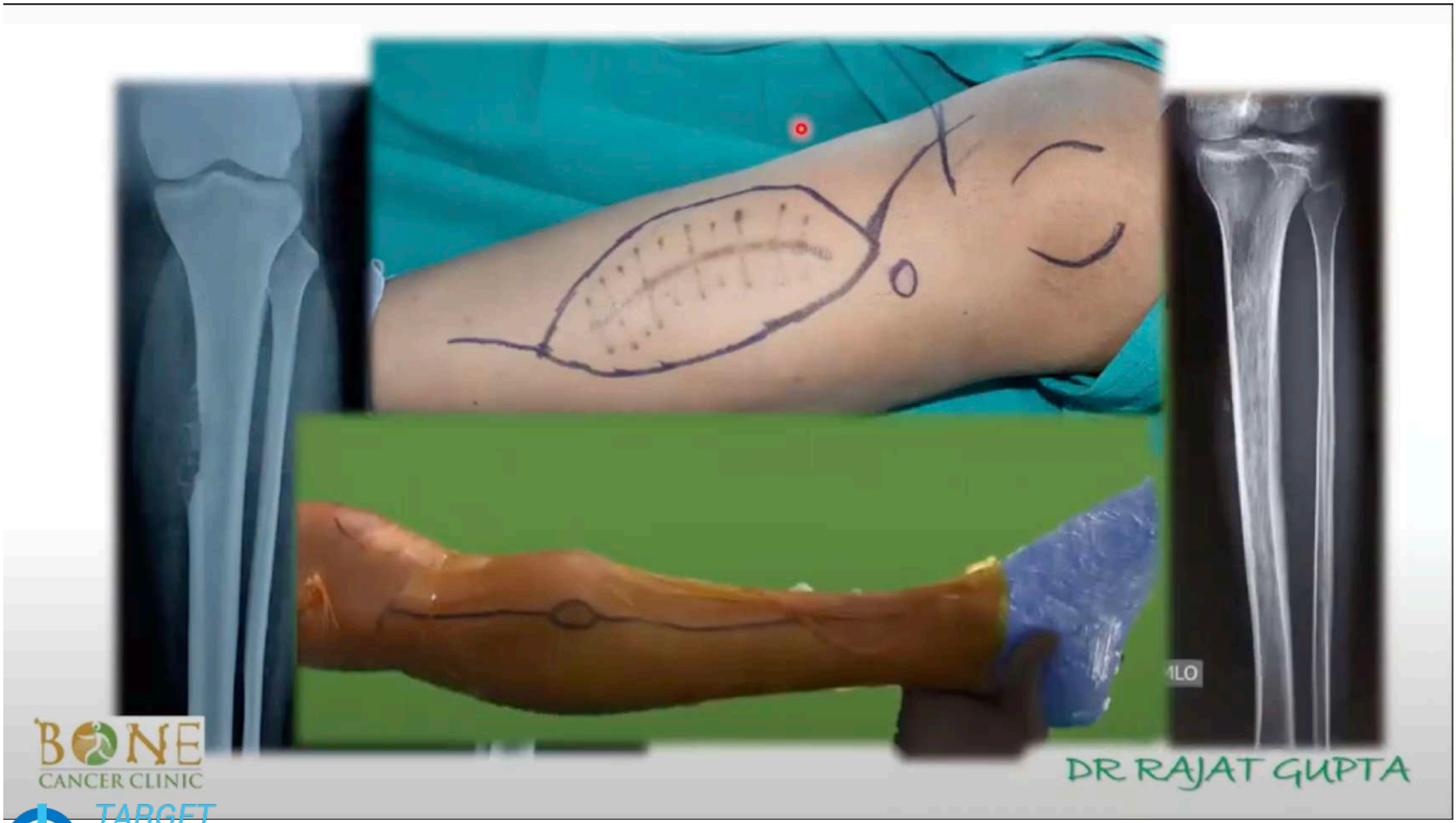
BONE CANCER CLINIC

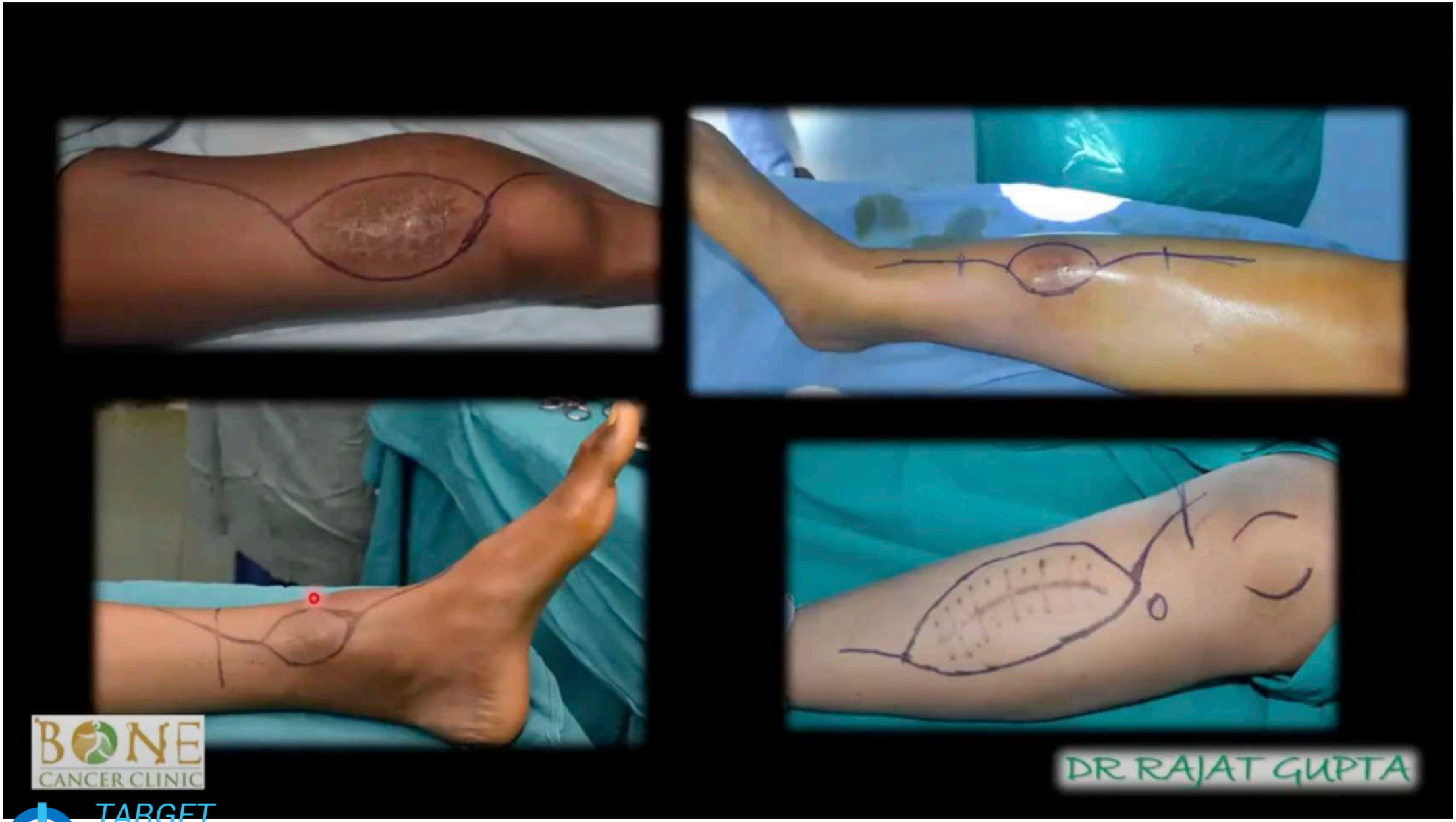
TARGET ORTHO




BONE CANCER CLINIC

TARGET ORTHO





- Increases Surgical morbidity
- Require additional procedure
- May delay adjuvant therapy
- Compromises final outcome

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BONE CANCER CLINIC

J Bone Joint Surg Am. 1996 May;78(5):656-63.

# The hazards of the biopsy, revisited. Members of the Musculoskeletal Tumor Society.

Mankin HJ[1], Mankin CJ, Simon MA.

⊕ Author information

## Abstract

In 1982, members of the Musculoskeletal Tumor Society, representing sixteen centers for the treatment of bone and soft-tissue cancer, compiled data regarding the hazards associated with 329 biopsies of primary malignant musculoskeletal sarcomas. The investigation showed troubling rates of error in diagnosis and technique, which resulted in complications and also adversely affected the care of the patients. These data were quite different when the biopsy had been carried out in a treatment center rather than in a referring institution. On the basis of these observations, the Society made a series of recommendations about the technical aspects of the biopsy and stated that, whenever possible, the procedure should be done in a treatment center rather than in a referring institution. In 1992, the Musculoskeletal Tumor Society decided to perform a similar study to determine whether the rates of complications, errors, and deleterious effects related to biopsy had changed. Twenty-five surgeons from twenty-one institutions submitted the cases of 597 patients. The results were essentially the same as those in the earlier study. The rate of diagnostic error for the total series (in which cases from referring institutions and treatment centers were combined) was 17.8 percent. There was no significant difference in the rate of patients for whom a problem with the biopsy forced the surgeon to carry out a different and often more complex operation or to use adjunctive irradiation or chemotherapy (19.3 percent in the current study, compared with 18 percent in the previous one). There was also no significant differences in the percentage of patients who had a change in the outcome, such as the need for a more complex resection that resulted in disability, loss of function, local recurrence, or death, attributable to problems related to the biopsy (10.1 percent in the current study, compared with 8.5 percent in the 1982 study). Eighteen patients in the current study had an unnecessary amputation as a result of the biopsy, compared with fifteen in the previous study. Errors, complications, and changes in the course and outcome were two to twelve times greater ($p < 0.001$) when the biopsy was done in a referring institution instead of in a treatment center.

# PRINCIPLES OF BIOPSY

Should be done by surgeon doing definitive procedure

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# PRINCIPLES OF BIOPSY

- SHORTEST ROUTE THROUGH ONE COMPARTMENT ONLY

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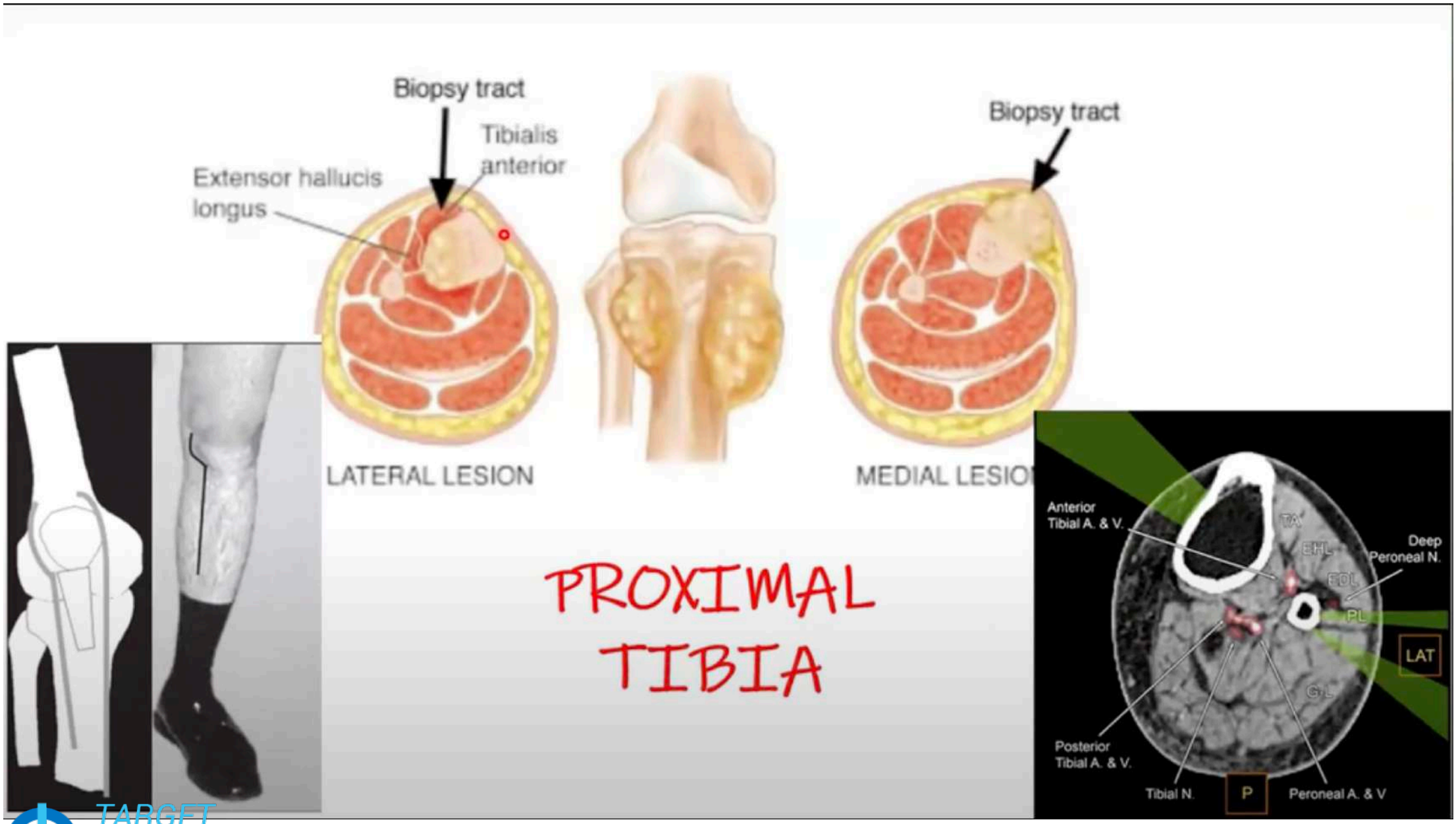
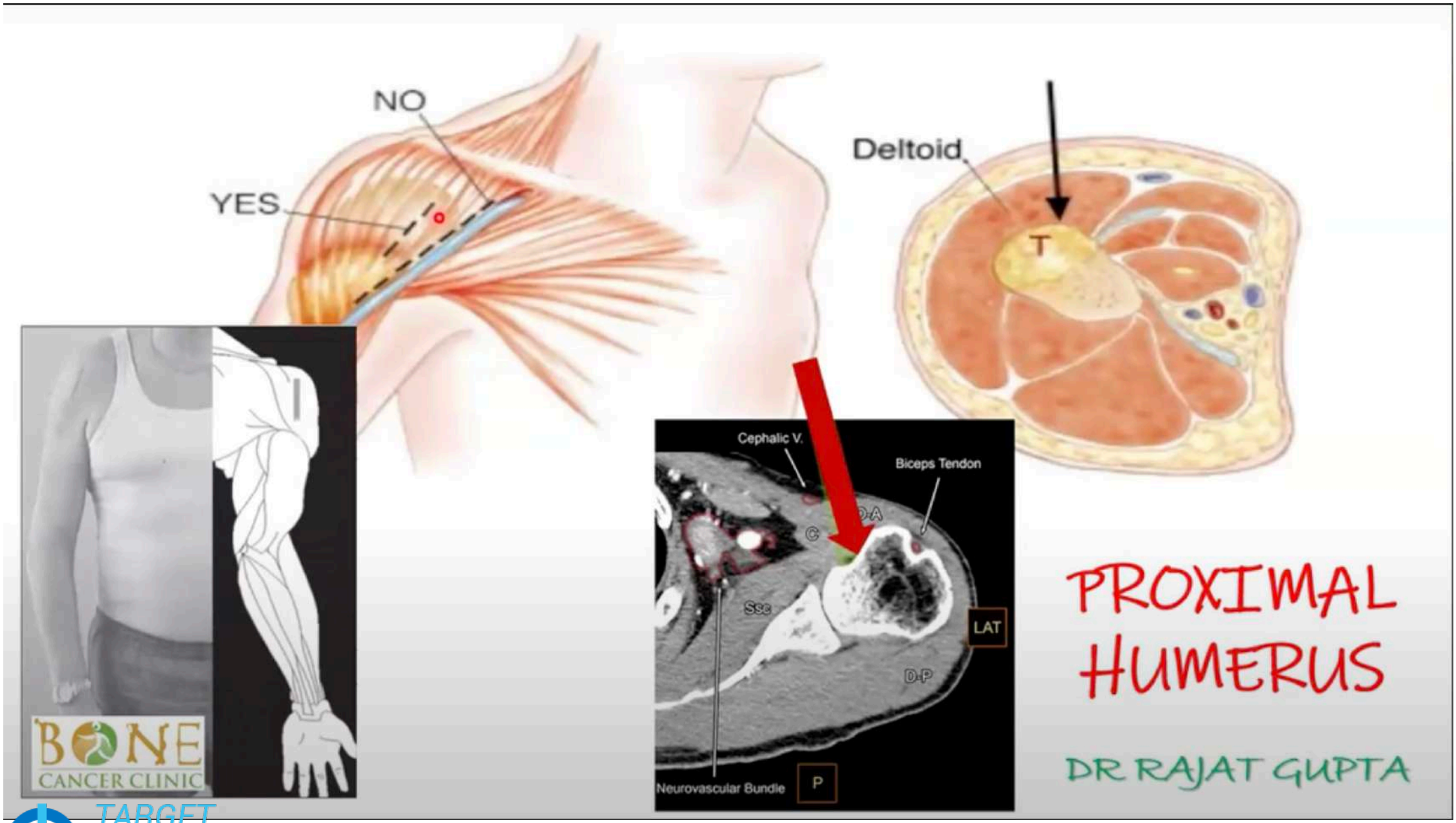
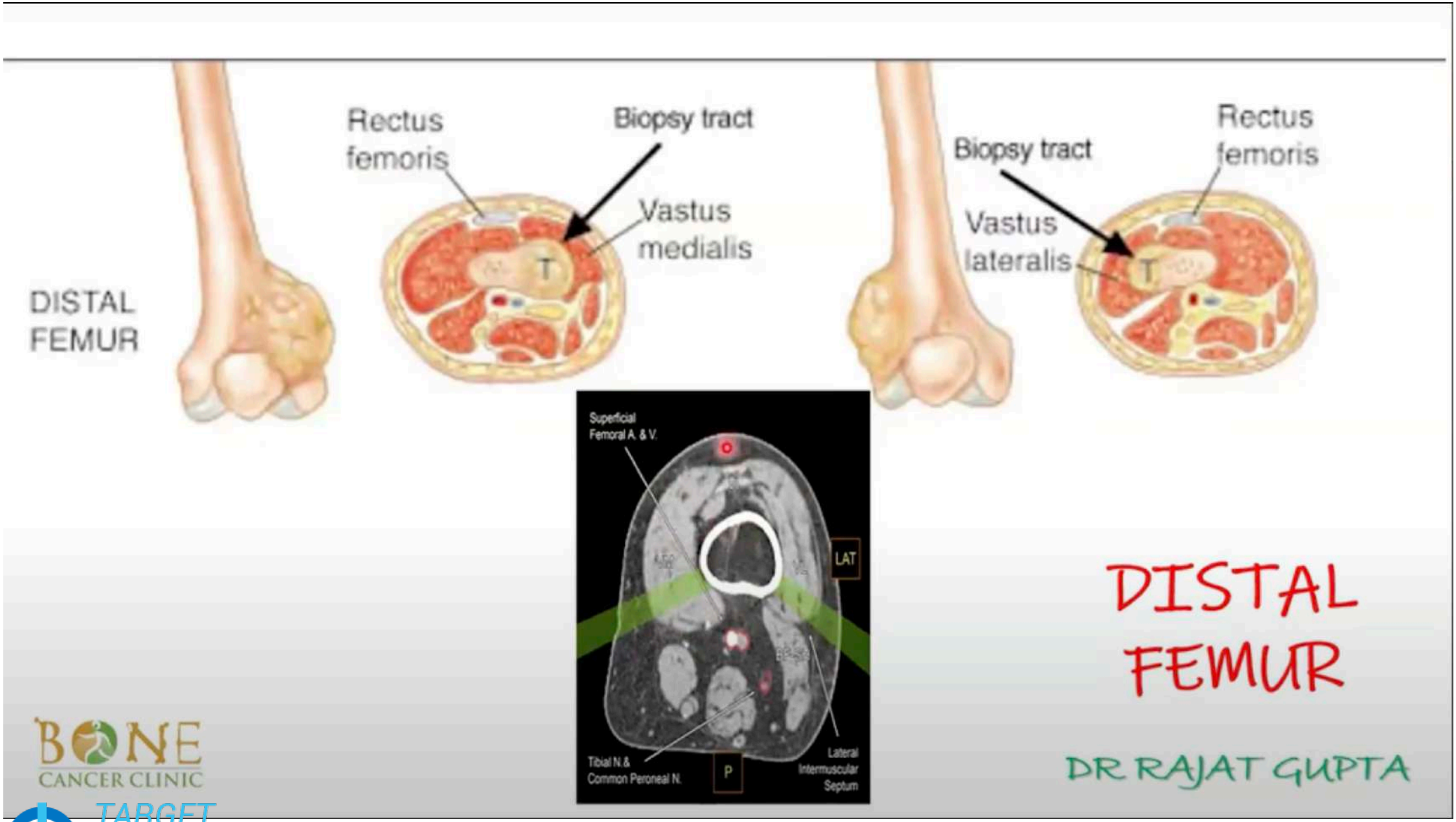
# PRINCIPLES OF BIOPSY

- IN LINE WITH SURGICAL INCISION








# OPEN BIOPSY - MIDLINE INCISION THROUGH RECTUS

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BONE CANCER CLINIC

TARGET ORTHO

# PRINCIPLES OF BIOPSY

- AVOID JOINT/ ARTHROSCOPIC BIOPSY