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ANTERIOR CHEST WALL TUMOUR- A RARE TUMOUR AT RARE SITE

DEPARTMENT OF GENERAL SURGERY

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INTRODUCTION

- Giant cell tumour(Osteoclastoma) of the Rib is a relatively uncommon, benign and locally aggressive tumour which presents in the 3rd and 4th decades of life.

- More commonly affecting women and usually affects ends of long bone and **very rarely the ribs.**

- Even if it affects the rib, it is the Posterior arc of rib which is commonly involved.

- We present a Rare case of primary **GIANT CELL TUMOUR** arising from the **Anterior arc of 4th and 5th ribs.**

CASE HISTORY

A 21 years old male patient presented with

- Complaints of a swelling in the front of left chest wall since 8 months
- Size initially of approx 6x5cm, gradually increased to the current size of 12x8cms

The patient denies the history of

- Pain
- Trauma
- Breathing difficulty
- Cough
- Loss of weight/appetite

GENERAL PHYSICAL EXAMINATION

- PATIENT WAS CONSCIOUS , CO OPERATIVE AND WELL ORIENTED TO TIME PLACE AND PERSON.

ON EXAMINATION-

- TEMPERATURE- AFEBRILE

- PULSE- 84/MIN

- BLOOD PRESSURE- 110/70 MMHG

- NO EVIDENCE OF PALLOR ,ICTERUS ,CYANOSIS, CLUBBING, EDEMA ,OR GENERALISED LYMPHADENOPATHY.

LOCAL EXAMINATION

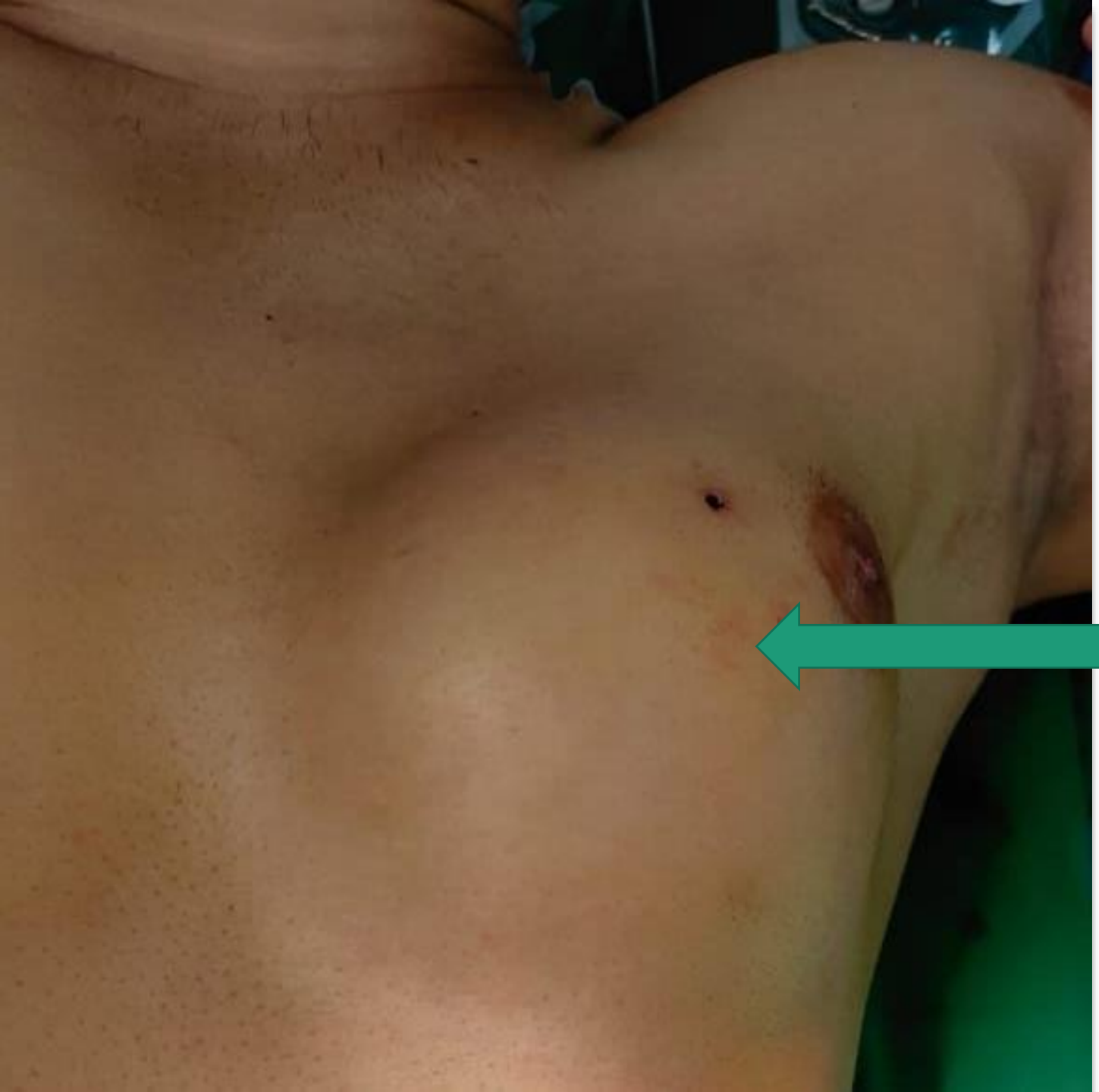
INSPECTION-

- A SINGLE APPROX 12 X 8 CM OVAL SHAPED SWELLING PRESENT OVER ANTERIOR CHEST WALL ON LEFT SIDE.
- SKIN OVER THE SWELIING IS NORMAL.
- NO ENGORGED VEINS.
- SCAR OF BIOPSY PRESENT OVER SWELLING.
- NIPPLE AREOLA COMPLEX- NORMAL.

PALPATION-

- A SINGLE 12X 8 CM SWELLING PRESENT OVER ANTERIOR CHEST WALL ON LEFT SIDE.
- NO LOCAL RISE OF TEMPERATURE.
- NON TENDER.
- HARD IN CONSISTENCY.
- SWELLING IS FIXED TO CHEST WALL.
- SKIN OVER THE SWELLING IS PINCHABLE.
- NIPPLE AREOLA COMPLEX – NORMAL.

- **IPSILATERAL AXILLARY LYMPHNODES NOT PALPABLE.**
- **NO PALPABLE SUPRACLAVICULAR LYMPHNODE**

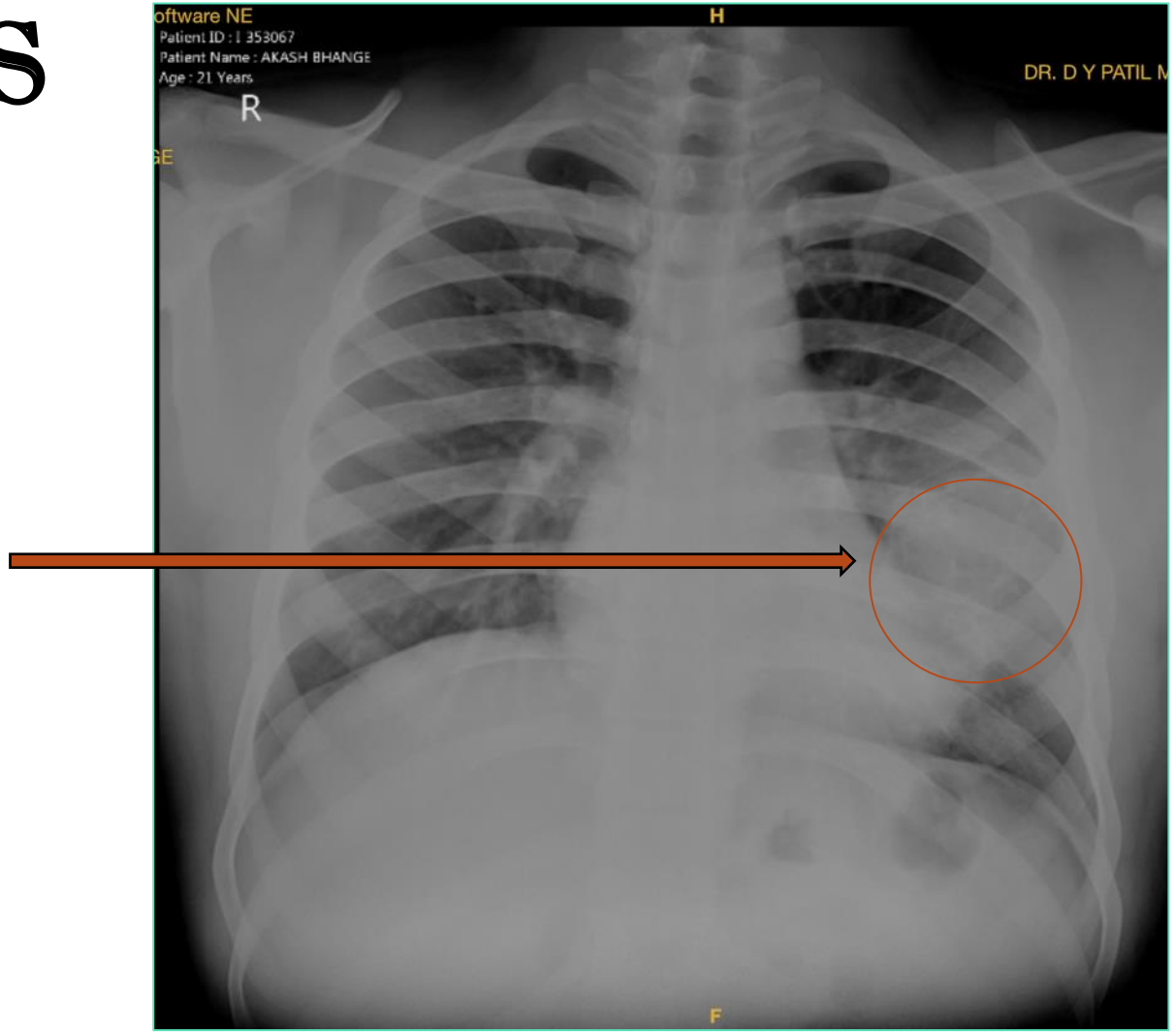


INVESTIGATIONS

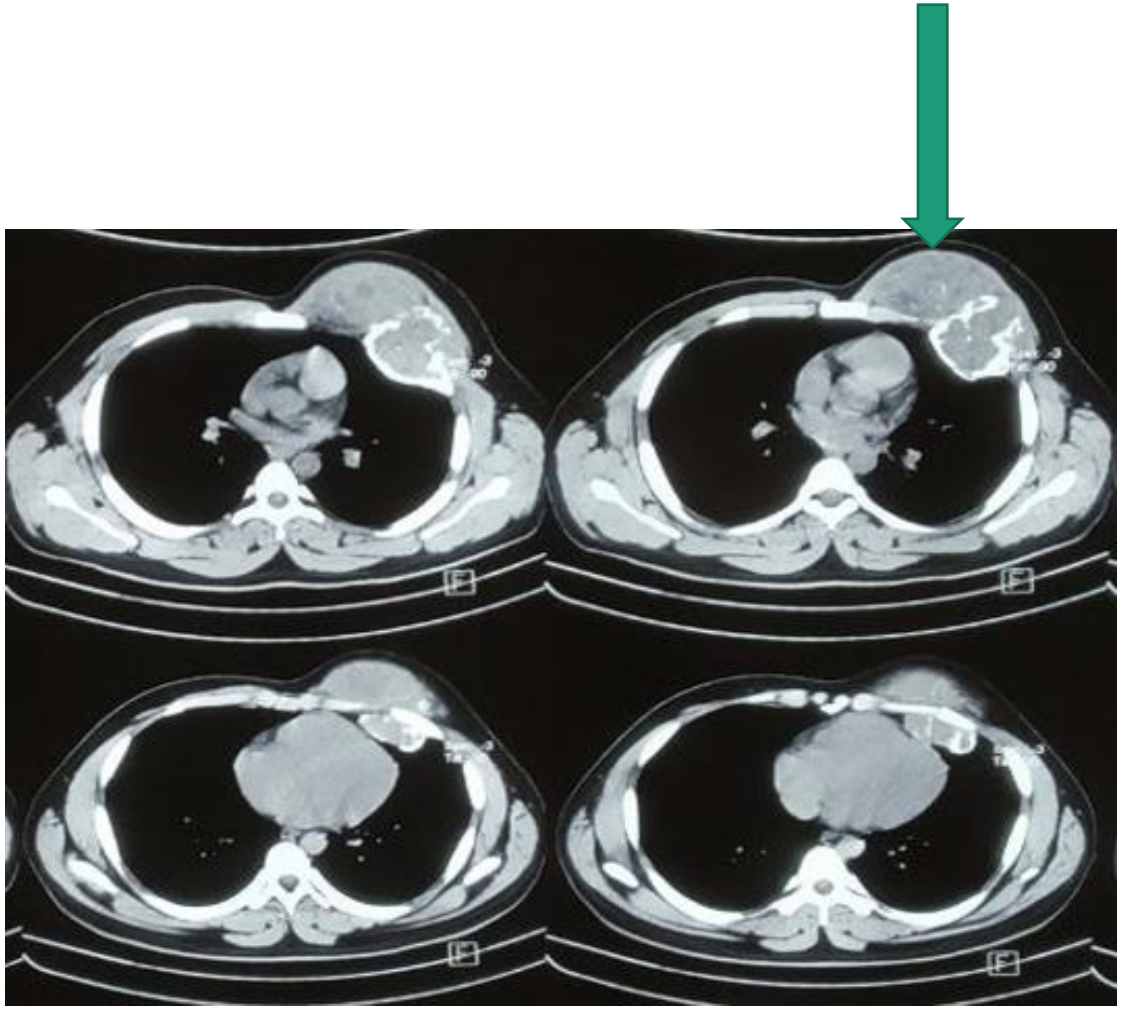
- ALL THE ROUTINE BLOOD INVESTIGATIONS WERE NORMAL

- **CHEST X RAY – A SOFT TISSUE SHADOW WAS SEEN OVER THE ANTERIOR PART OF LEFT 5TH AND 6TH RIBS**

- ECG – WITHIN NORMAL LIMITS



CONTRAST ENHANCED CT CHEST



A LARGE, WELL DEFINED, MULTILOBULATED LESION WAS SEEN INVOLVING THE ANTERIOR ASPECT OF LEFT 4TH RIB WITH MILDLY ENHANCING SOFT TISSUE COMPONENT OF SIZE 6X5X6 CM

INVOLVING THE MUSCLES OF ANTERIOR CHEST WALL

NO INTRALESIONAL CALCIFICATIONS

BILATERAL LUNG PARENCHYMA WAS NORMAL/ NO EFFUSION

POSSIBLITY OF NEOPLASTIC ETIOLOGY – ARISING FROM BONY CAGE OF THORAX(RIBS)

MRI CHEST

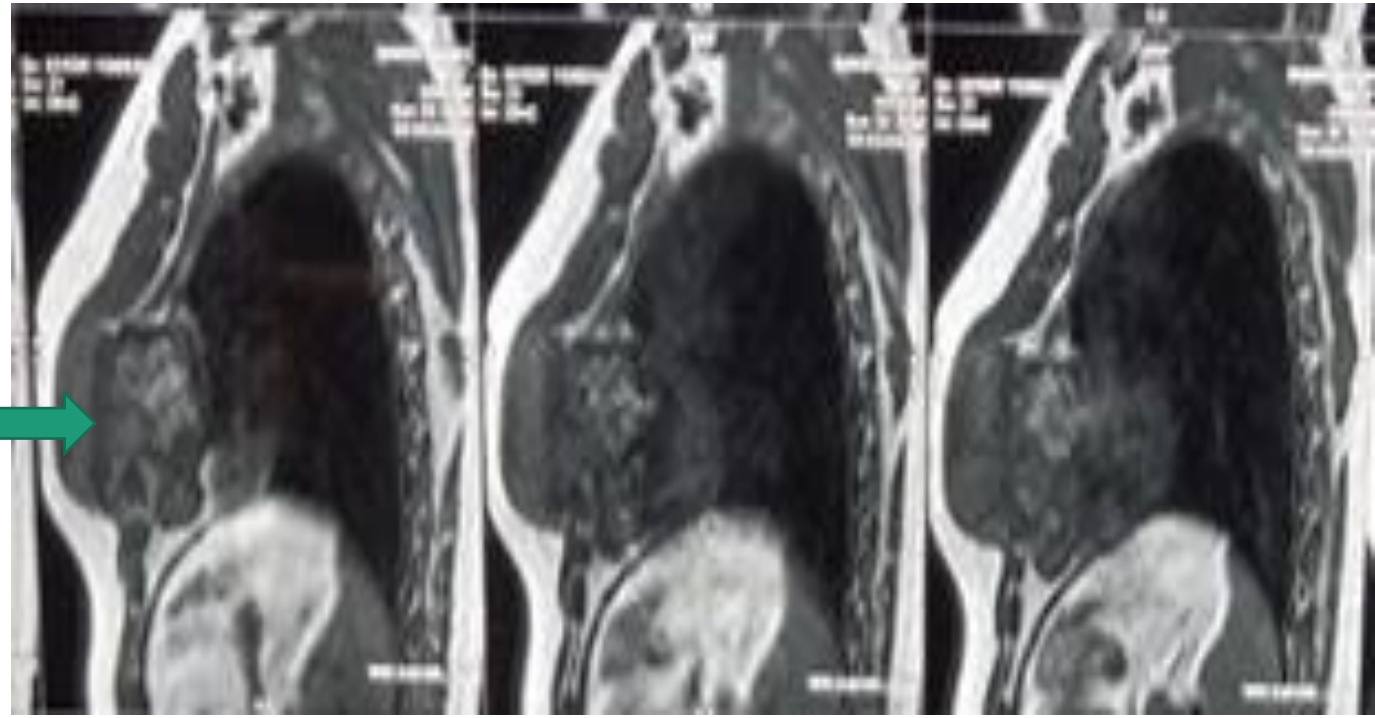
A WELL MARGINATED, LOBULATED,

HETEROGENEOUSLY ALTERED SIGNAL INTENSITY

LESION SEEN ALONG THE ANTERIOR LEFT THORACIC

WALL INVOVING THE FOLLOWING PLANES

- SUBCUTANEOUS FAT PLANE
- MYOFASCIAL PLANES
- THORACIC CAGE
- INTRATHORACIC REGION



TRUCUT BIOPSY REPORT –

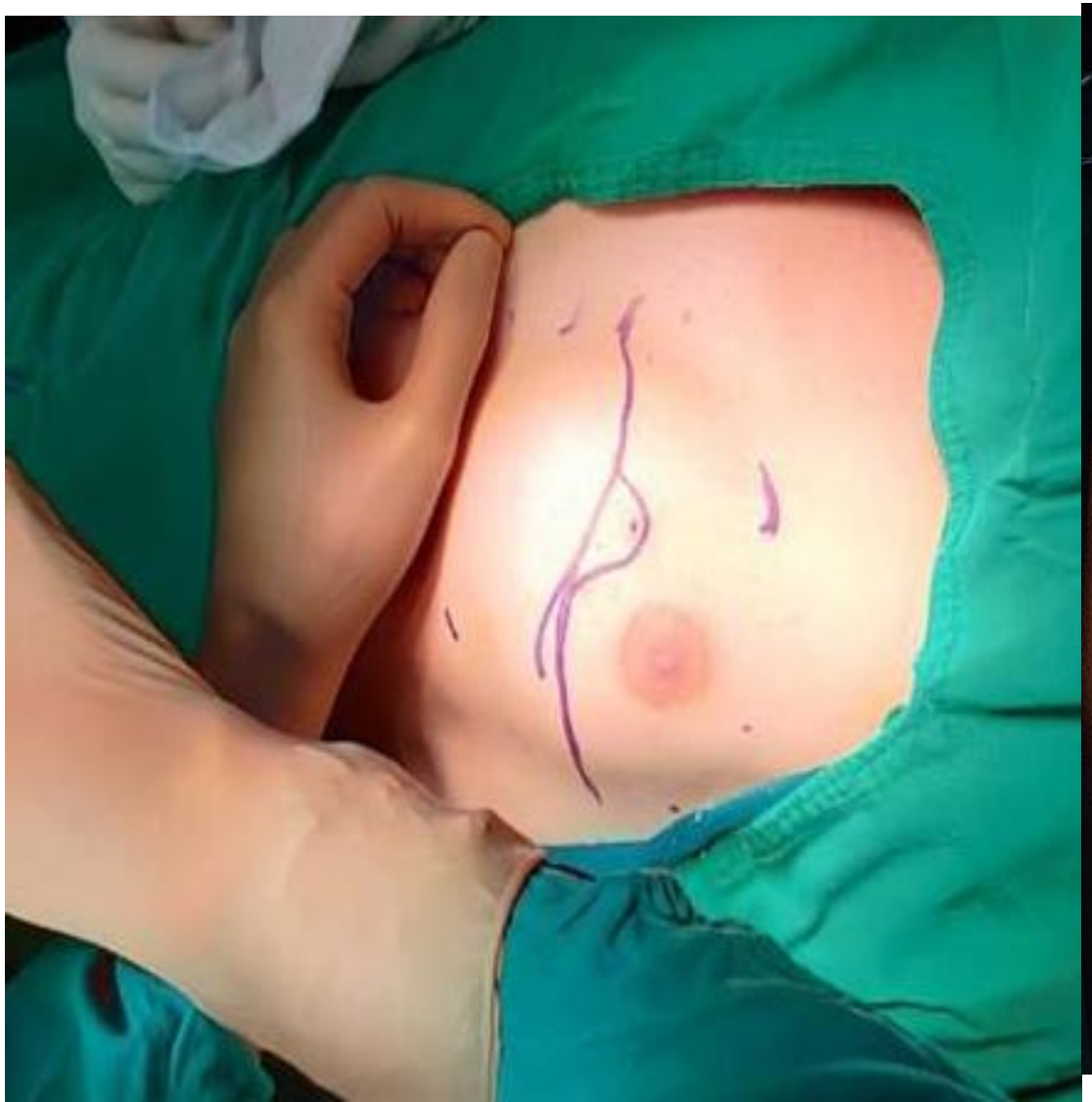
MONONUCLEAR SPINDLE CELLS WITH OVOID NUCLEI AND PROMINENT NUCLEOLI WITH OSTEOCLASTIC GIANT CELLS S/O - GIANT CELL TUMOUR OF RIB

SERUM ACID PHOSPHATASE LEVELS -10.2 IU/L (NORMAL)

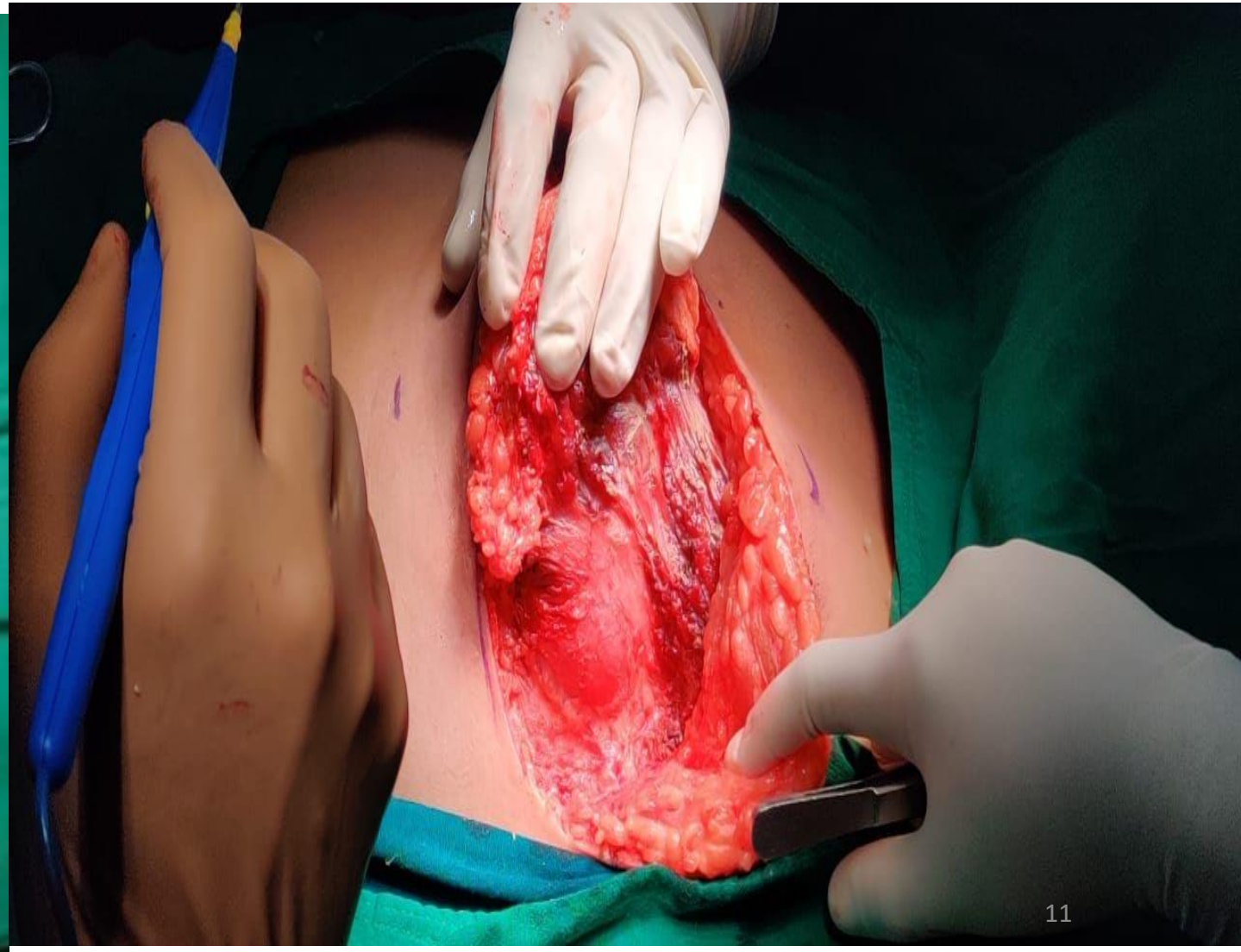
SURGERY PLANNED

WIDE LOCAL EXCISION WITH CHEST WALL RECONSTRUCTION

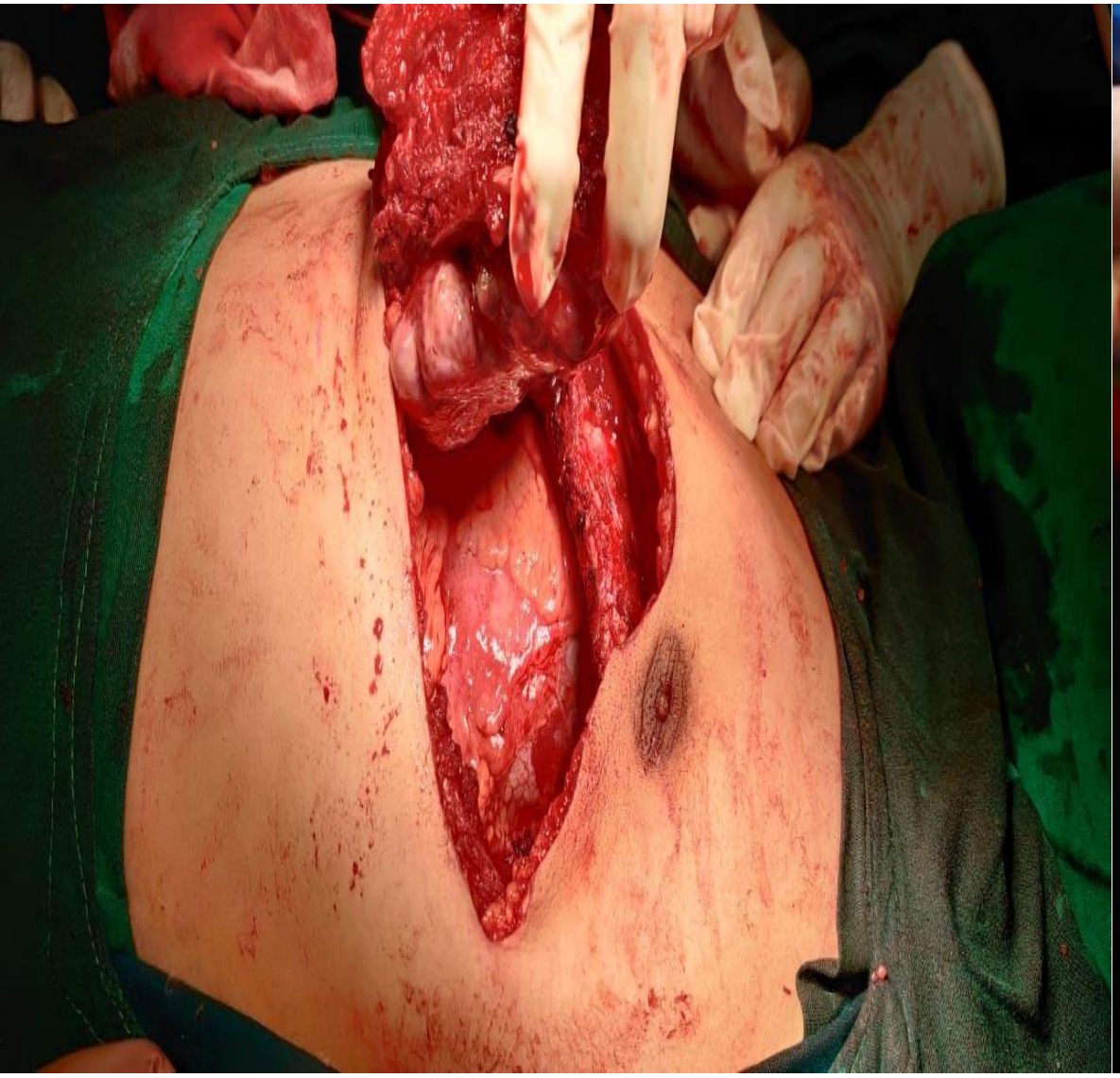
MARKING OF INCISION



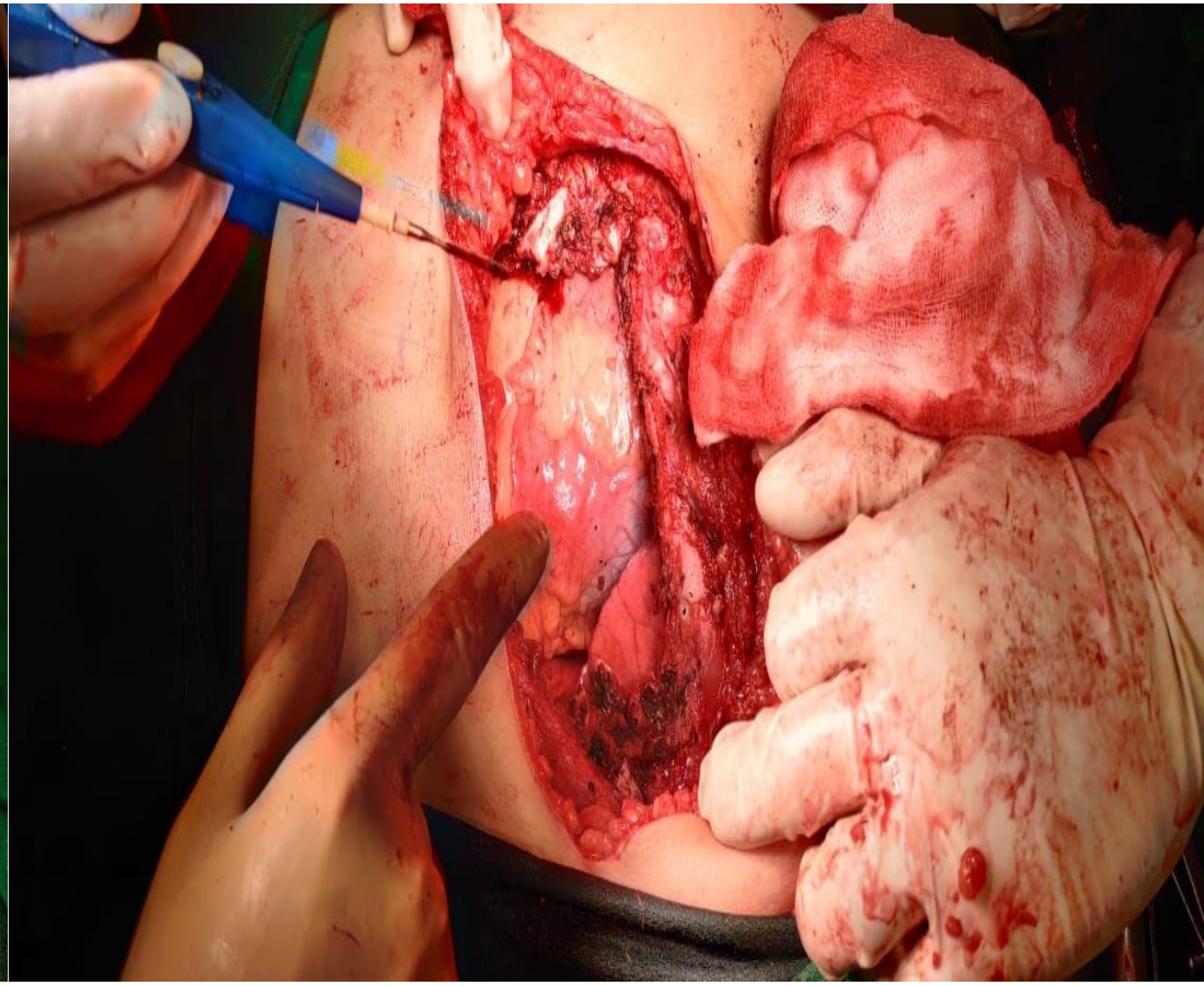
RESECTION OF THE TUMOUR.



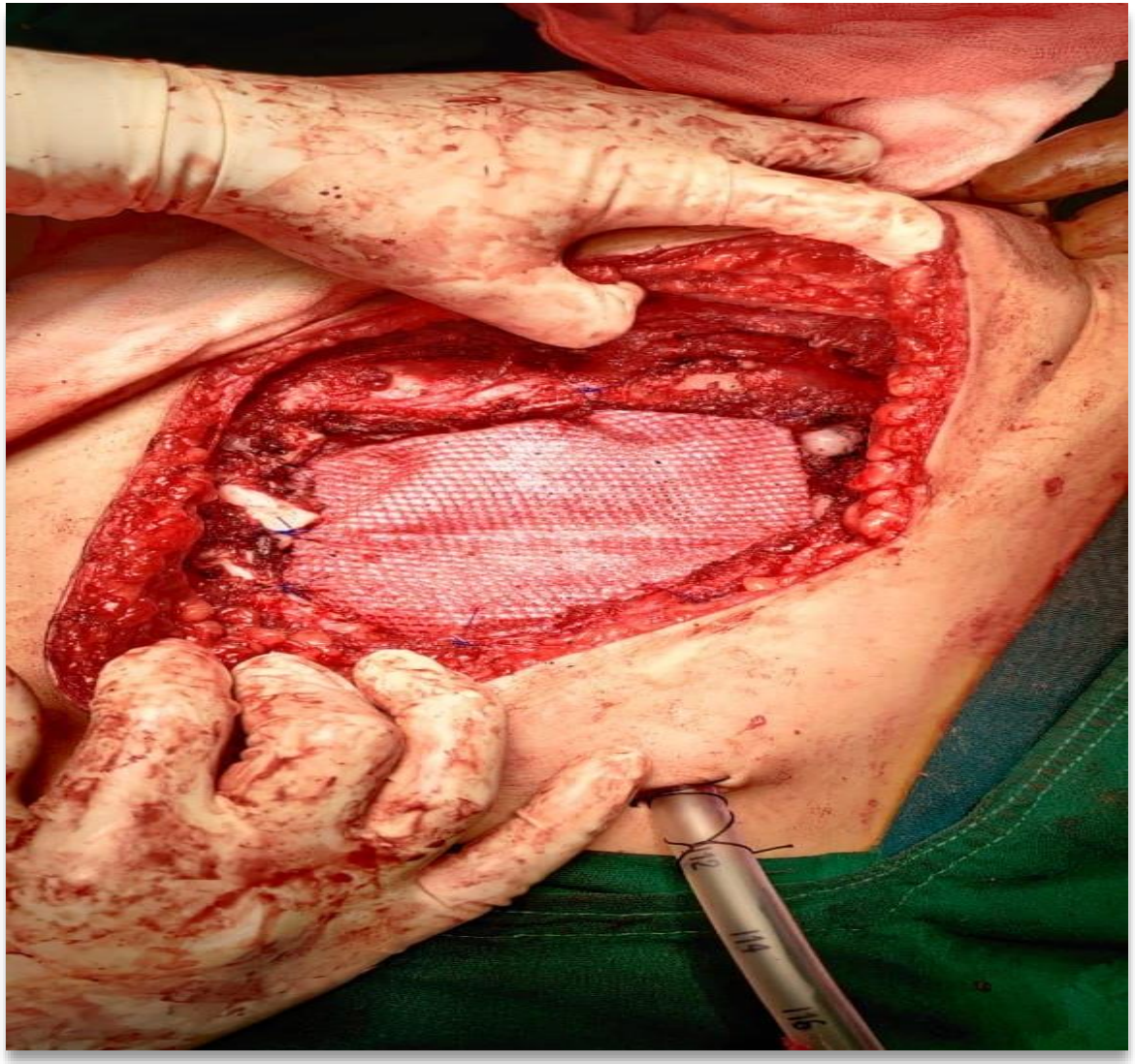
PLEURA EXPOSED AFTER RESECTION OF THE TUMOUR.



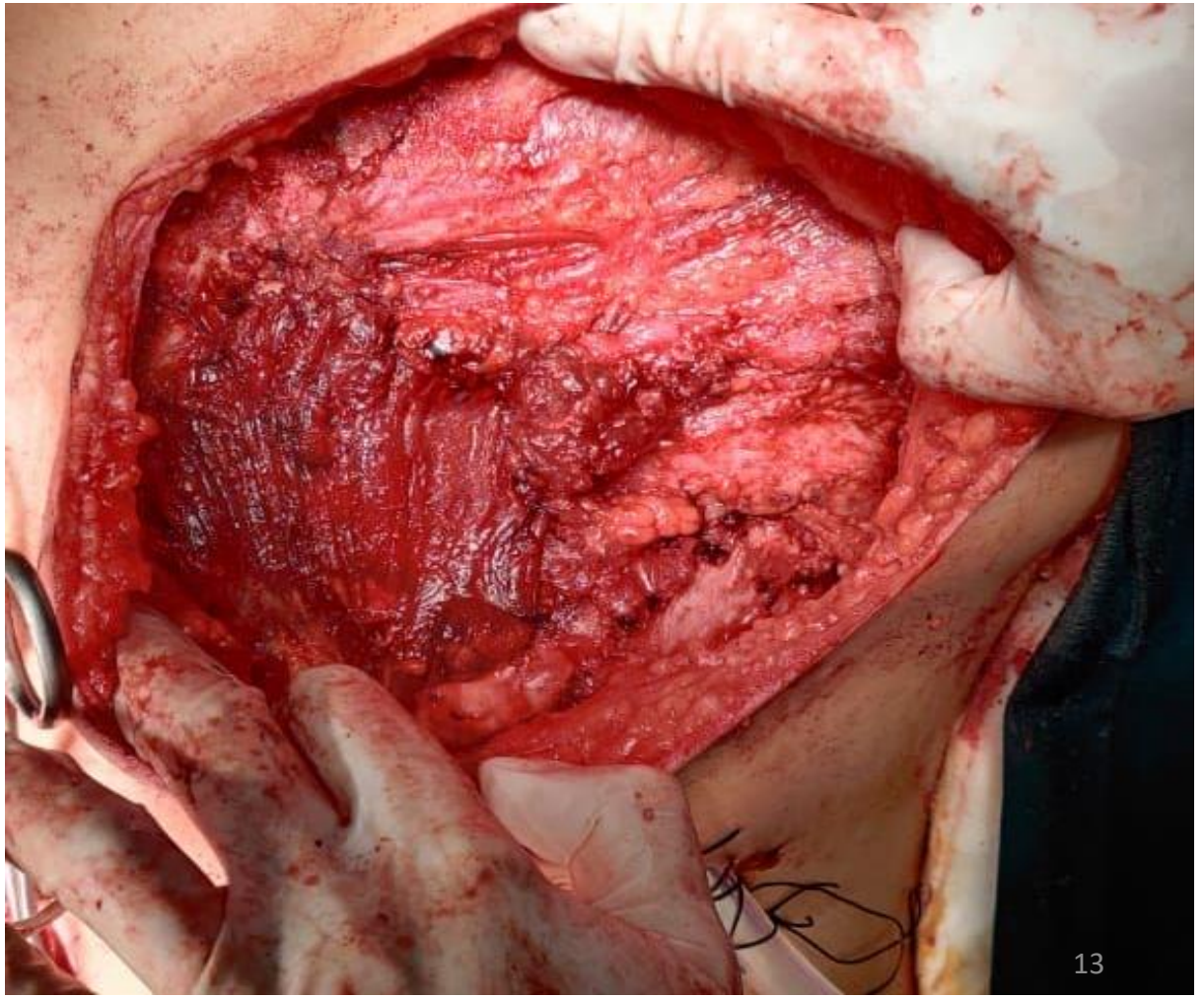
DEFECT AFTER RESECTION OF THE TUMOUR



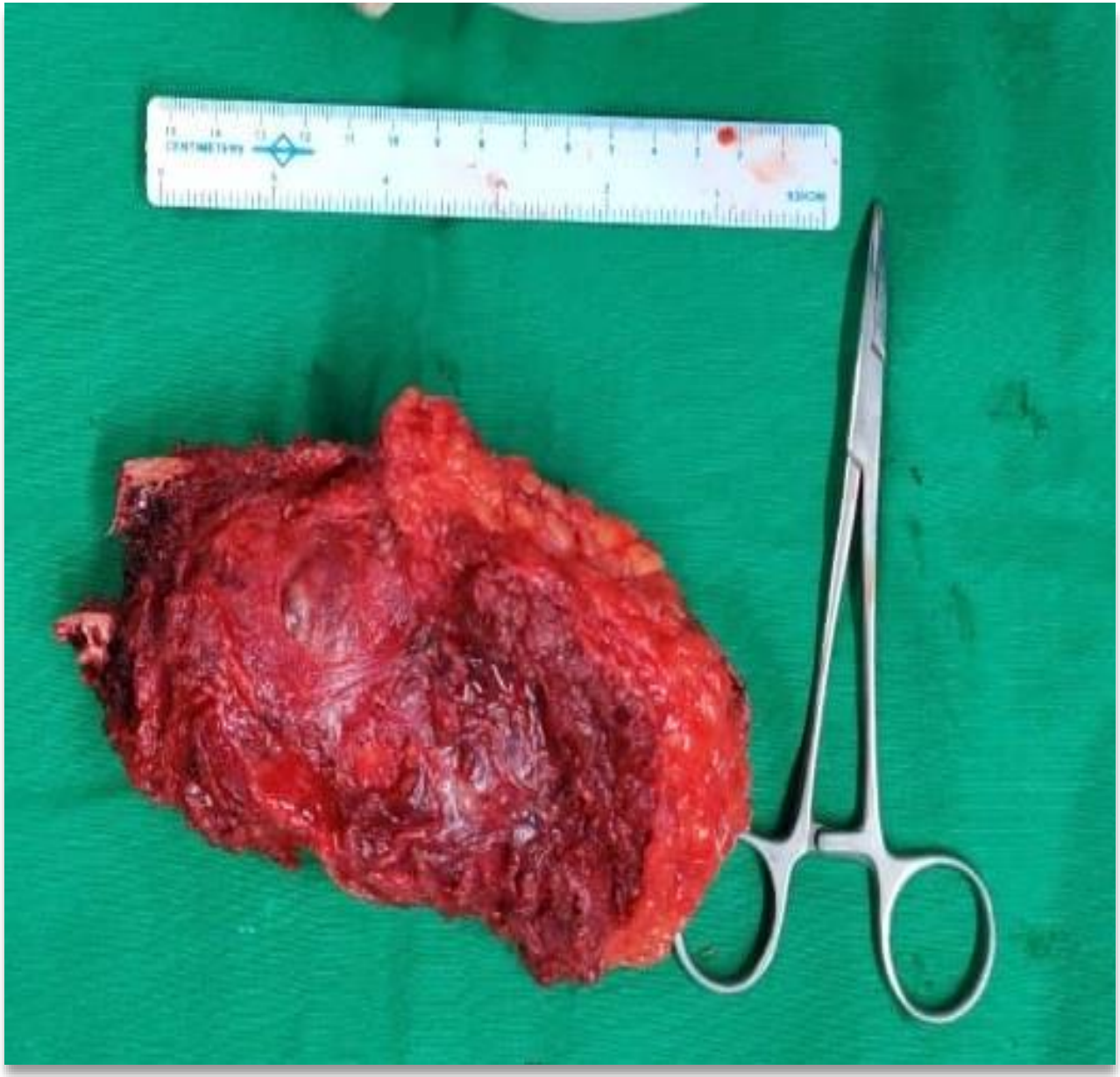
POLYTETERAFLUOROETHYLENE (PTFE) MESH PLACEMENT WITH ICD.



RECONSTRUCTION DONE BY LOCAL ADVANCEMENT FLAP COVER WITH PECTORALIS MAJOR AND RECTUS ABDOMINIS



RESECTED SPECIMEN



HISTOPATHOLOGY

- **S/O GIANT CELL TUMOUR**

DISCUSSION

- GCT OF THE BONE IS AN UNCOMMON NEOPLASM ACCOUNTING FOR 4-5% OF ALL PRIMARY BONE TUMOURS
- GIANT CELL TUMOUR OF ANTERIOR ARC OF RIB IS A RARE SITE WITH A REPORTED INCIDENCE OF <1%,THAT TOO OF POSTERIOR ARC BEING COMMON.
- COMMON IN AGE GROUP BETWEEN 30-40YRS.
- COMMON IN FEMALES, ESTROGEN AND PROGESTERONE RECEPTORS ARE IDENTIFIED IN THE CELLS OF THIS LESION
- DERIVED FROM FUSED STROMAL CELLS OF MONONUCLEAR PHAGOCYTIC LINEAGE.

MOST COMMON SITES OF GIANT CELL TUMOUR:

1. METAPHYSIS OR EPIPHYSIS OF LONG BONES (MOSTLY KNEE JOINT BONE)- 60%
2. VERTEBRAL BODIES
3. SCAPULA
4. STERNUM
5. PATELLA
6. SKULL BONE
7. TALUS

CLINICAL & RADIOLOGICAL FEATURES

- PAIN AND INCREASE IN THE LOCAL VOLUME
- PATHOLOGICAL FRACTURE DUE TO WEAKENING OF THE CORTICAL BONE

RADIOLOGICALLY

X RAY – ECCENTRIC EXPANDED LYTIC LESION WITH A SURROUNDING SCLEROTIC HALO WITH CORTICAL THINNING AND BONE EXPANSION.

CT OF CHEST - OSSEOUS LYSIS CAUSED BY TUMOUR.

MRI OF CHEST – DELINEATION OF TUMOUR WITH INVOLVEMENT OF THE ADJACENT STRUCTURES AND HELPS IN SURGICAL PLANNING.

GRADING AND STAGING

- GENERALLY CONSIDERED BENIGN BUT MALIGNANT CELLS CAN ARISE DE NOVO OR VIA TRANSFORMATION FROM A BENIGN NEOPLASTIC GIANT CELL LESION

1)BASED ON HISTOLOGICAL FEATURES

-BENIGN

-AGGRESSIVE AND MALIGNANT – INCREASED MITOTIC FEATURES AND PLEOMORPHISM

2)SURGICAL STAGING

-CLINICALLY LATENT

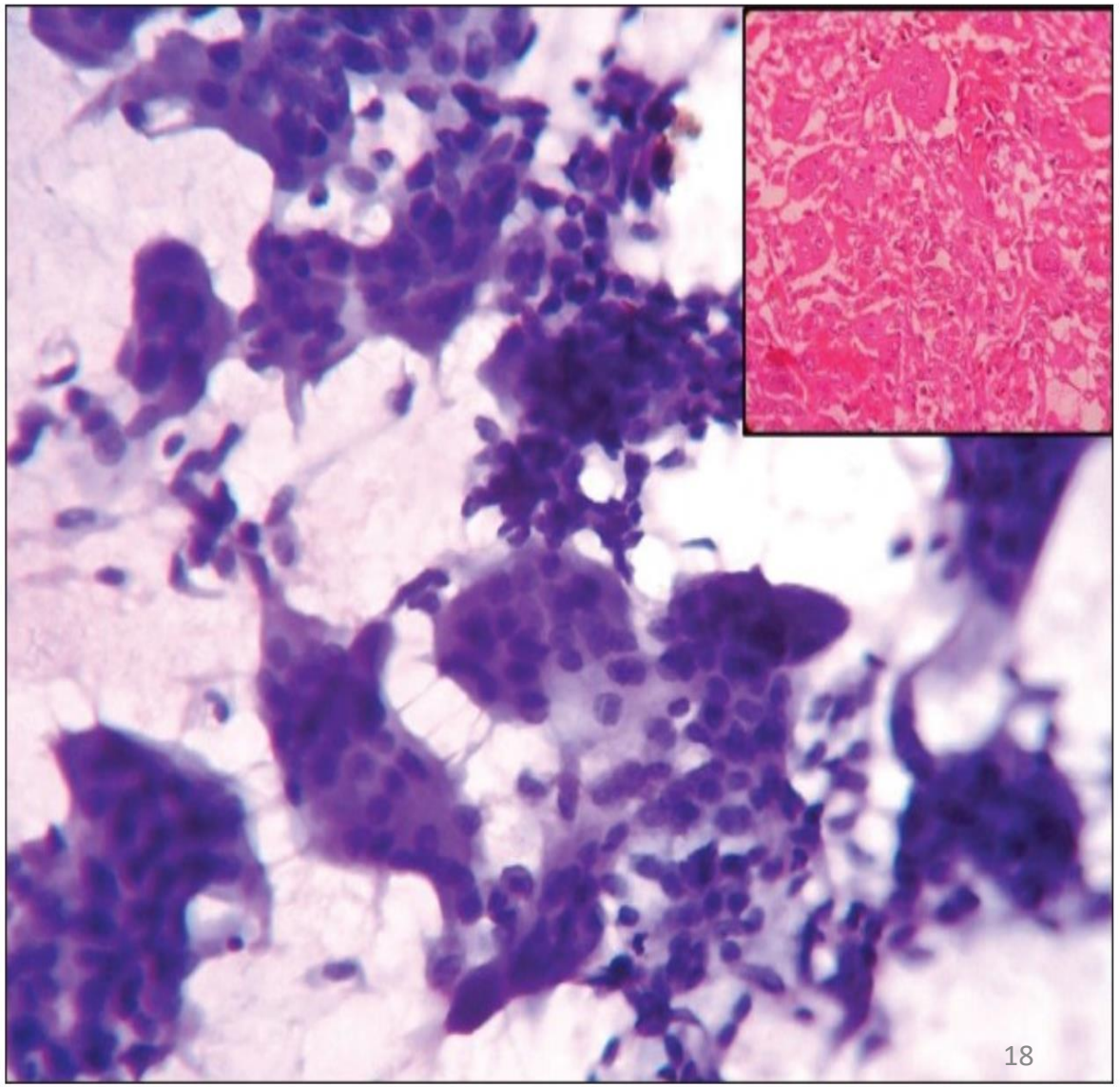
- ACTIVE AND AGGRESSIVE

HISTOLOGICAL DIFFERENTIAL DIAGNOSIS

- QUALITY AND SIZE OF THE BIOPSY ARE IMPORTANT AS A WIDE ARRAY OF LESIONS HISTOLOGICALLY MIMIC EACH OTHER

1) ANEURYSMAL BONE CYST
2) BROWN TUMOUR
3) CHONDROBLASTOMA
4) CHONDROMYXOID FIBROMA
5) NON OSSIFYING FIBROMA
6) GIANT CELL RICH OSTEOSARCOMA
7) MALIGNANT FIBROUS HISTIOCYTOMA

HISTOPATHOLOGICAL PICTURE



CONCLUSION

- **METICULOUS HISTORY TAKING, IMAGE EVALUATION ,PRE OPERATIVE HISTOPATHOLOGY CONFIRMATION** ARE EXTREMELY IMPORTANT FOR DIFFERENTIAL DIAGNOSIS AND DEFINITIVE SURGICAL TREATMENT IN SUCH UNUSUAL CHEST WALL TUMOURS.
- GIANT CELL TUMOUR ARE BENIGN LOCALLY AGGRESSIVE NEOPLASMS WITH INCIDEENCE OF 4-5% WITH COMMON SITE OF ORGIN BEING METAPHYSIS OR EPIPHYSIS OF LONG BONES LIKE FEMUR, TIBIA, OR RADIUS.
- RIB IS RARE SITE AND ANTERIOR ARC OF RIB IS EXTREMELY RARE SITE.
- **NEOPLASTIC OSTEOID FORMATION IS ABSENT** WHICH EXCLUDES GCT FROM OTHER TUMOURS.

- **SERUM ACID PHOSPHATASE VALUES IS THE USEFUL MARKERS IN THE DIAGNOSIS OF GCT AND FOLLOW UP FOR LOCAL RECURRENCE ,**THE VALUES ARE HIGH IN 56% OF GCT PATIENTS.
- BIOPSY WOULD BE DIAGNOSTIC IF ADEQUATE SPECIMEN IS OBTAINED.
- **TO CONCLUDE, GCT OF THE ANTERIOR CHEST WALL CAN BE MISTAKEN FOR ABC AND OTHER MALIGNANT TUMOURS OF BONE AND SOFT TISSUES.**

REFERENCES

- 1. Shin JS, Lee IS, Kim A, Kim BH. Giant cell tumour originating from the anterior arc of the rib. J Korean Med Sci. 2002;17:849–51.
- 2. Kilpatrick SE, Renner JB, Creager A, editors. Diagnostic musculoskeletal surgical pathology: Clinicoradiologic and cytologic correlations. Pennsylvania: Saunders; 2004. pp. 163–79.
- 3. Vigorita VJ, Ghehman B, Mintz D, editors. Orthopaedic pathology. 2nd ed. Philadelphia: Lippincott Williams and Wilkins; 2008. pp. 280–9.
- 4. Mardi K, Sharma J. Primary giant cell tumour of soft parts - report of a case with fine needle aspiration cytology and histology findings. J Cytol. 2007;24:58–9.
- 5. Cordeiro SZ, Cordeiro PDe B, Sousa AM, Lannes DC, Pierro GS. Giant cell tumour of the rib occupying the entire hemithorax. J Bras Pneumol. 2008;34:185–8.
- 6. Hanna RM, Kyriakos M, Quinn SF. Case report 757: Giant cell tumour of rib. Skeletal Radiol. 1992;21:482–8
- 7. Dogra AS, Kulkarni SS, Bhosale PB. Distal fibular giant cell tumour. J Postgrad Med. 1995;41:83–4.
- 8. Mahajan R, Sharma U, Talib VH. Primary malignant giant cell tumour of sacrum–a case report. Indian J Pathol Microbiol. 2001;44:173–5.
- 9. Mondal A, Kundu B, Kundu R, Bhattacharya MK. Multifocal giant cell tumour of bone in a skeletally immature patient-a case report. Indian J Pathol Microbiol. 2001;44:479–81.
- 10. Goto T, Iijima T, Kawano H, Yamamoto A, Arai M, Matsuda K, et al. Serum acid phosphatase as a tumour marker in giant cell tumour of bone. Arch Orthop Trauma Surg. 2001;121:411–3.

THANK YOU