CASE BRIEF

Name: [redacted]

Age: 20years, Female.

Address: [redacted]

Diagnosis: Relapsed metastatic osteosarcoma of the right femur, post chemo.

Date of Diagnosis: 04/01/2020

Surgeons: Dr. Pramod S Chinder & Dr. Suraj

Medical Oncologist: Dr. Intezar Mehdi

Date of Surgery: 20/07/2022 & 29/07/2022

BRIEF SUMMARY OF THE EVENTS:

DATE	EVENTS	FINDINGS
2019	Complaints and pain & swelling	Associated with night pain.
1st Jan 2020	MRI	Ewing's sarcoma/Osteomyelitis.
4th Jan 2020	Biopsy	Osteosarcoma- Right femur.
8th Jan 2020	CT Scan Chest	No evidence of metastatic deposits.

The patient was diagnosed with osteosarcoma of right distal femur in 2019 at Sri Lanka following which she received one cycle of neoadjuvant chemotherapy (reports not available). The patient then was taken for Ayurvedic treatment and alternative medicine treatment for osteosarcoma (reports not available).

The patient and family members gave history of improvement in symptoms following ayurvedic medication and was off treatment for about one year when she fell and sustained pathological fracture of right distal femur (In October 2020).

Following pathological fracture, the patient had history of severe pain and swelling over the right distal thigh which gradually increased and her complaints worsened over the following 3-4 months. During this period, the patient was completely bedridden and was not able to walk.

The patient family members also gave history of 2nd attempt with neoadjuvant chemotherapy in March and April 2022 at Sri Lanka. Chemotherapy could not be completed.		
Treatment at HCG Hospital:		
30th May 2022	PET CT Scan	Osteosarcoma-Right femur.
30th May 2022	MRI Scan	Osteosarcoma-Right femur.
11th June 2022	Neoadjuvant chemotherapy	INJ. CISPLATIN and INJ. DOXORUBICIN
22nd June 2022	CT Scan	Stable 3 mm lung nodule in the left upper lobe.
4th July 2022	MRI Scan	Relatively stable expansile lytic lesion.
20th July 2022	Limb Salvage Surgery > 6-8hrs Dr. Pramod S Chinder and team and Dr. Murali Krishna (Consultant Vascular Surgeon)	Wide resection of **RIGHT DISTAL FEMUR + SEGMENTAL RESECTION OF FEMORAL ARTERY + EPINEURAL SCIATIC NERVE DISSECTION + PTFE VESSEL GRAFTING + NAIL CEMENT SPACER APPLICATION AND PRIMARY CLOSURE**
28th July 2022	CT Scan	Thrombosis of the distal right tibial and peroneal vessels. Diffuse subcutaneous edema in the right lower limb.
29th July 2022	Surgery Dr. Pramod S Chinder and team and Dr. Prashanth Puranik	**ABOVE KNEE AMPUTATION + STUMP RESTRUCTURING + MYODESIS AND SOFT TISSUE RECONSTRUCTION AND CLOSURE**

X-RAY IMAGES: 11/10/2021

MRI REPORT 01/01/2020

FINDINGS:
Heterogeneous signal intensity lesion in distal diaphysis of right femur which has a well defined and narrow zone of transition.
No marrow edema extending to proximal medullar.
Irregular cortical breach in medial aspect and periosteal elevation
Small solid and cystic component within the sub periosteum medially –4.5 x 1.2cm
No distal extension to right knee joint.
Edema extending lumideal compartment muscles.

Anterior and posterior compartment muscle normal.
Neuro vascular bundle is normal.
No extension epiphysis or joint cavity.

IMPRESSION:
1. Intra medullary destructive lesion in distal diaphysis of right femur
2. Lesion demonstrate a cortical breach and periosteal cystic and solid component
Differentials to consider - malignant neoplastic lesion- Ewing-sarcoma.
- osteomyelitis
Need comparison with hematological parameters and histology for further evaluation.

BIOPSY REPORT: 04/01/2020

LARGE SPECIMEN OTHERS
LARGE SPECIMEN OTHERS

Specimen	BONE BIOPSIES FROM RIGHT DISTAL FEMER LESION (A) SUPERFICIAL PERIOSTEAL BONE TISSUE BIOPSY (B) DEEP MEDULLARY BONE TISSUE BIOPSY
Macroscopy	(A) Multiple pieces of tissue together measuring 20 x 15 x 5 mm is received. A - Soft tissue A1 - Decal (B) Multiple pieces of tissue together measuring 15 x 12 x 5 mm is received. B - Soft tissue B1 - Decal
Microscopy	Sections reveal tumour composed of enlongated spindle cells containing enlarged irregular nuclei with coarse chromatic and indistict cytoplasm. Numerous atypical spindle cells, tumour giant cells and scattered pleomorphic cells are seen intermingly with collagen. Mitoses are seen. Few foci resembling tumour osteoid are seen within the tumour. Normal bone tissue and several small blood vessels are present in some fragments.
Conclusion	BONE BIOPSIES FROM RIGHT DISTAL FEMER LESION : (A) SUPERFICIAL PERIOSTEAL BONE BIOPSY : (B) DEEP MEDULLARY BONE BIOPSY : Appearances are compatible with the clinical diagnosis osteosarcoma.

CT SCAN 08/01/2020

FINDINGS

Both lung fields show normal parenchymal architecture.
No focal nodular lesions to suggest metastatic deposit. No areas of consolidation, ground glass changes or cyst formation.
No pleural effusion or pneumothorax.
No mediastinal or hilar adenopathy.
Oesophagus appear normal.
Heart is of normal size. No pericardial effusions.
Upper abdominal organs show no abnormality in the arterial phase.
No free fluid in upper abdomen.
Visualized bones are of normal density and no focal lytic or sclerotic lesions.

IMPRESSION:

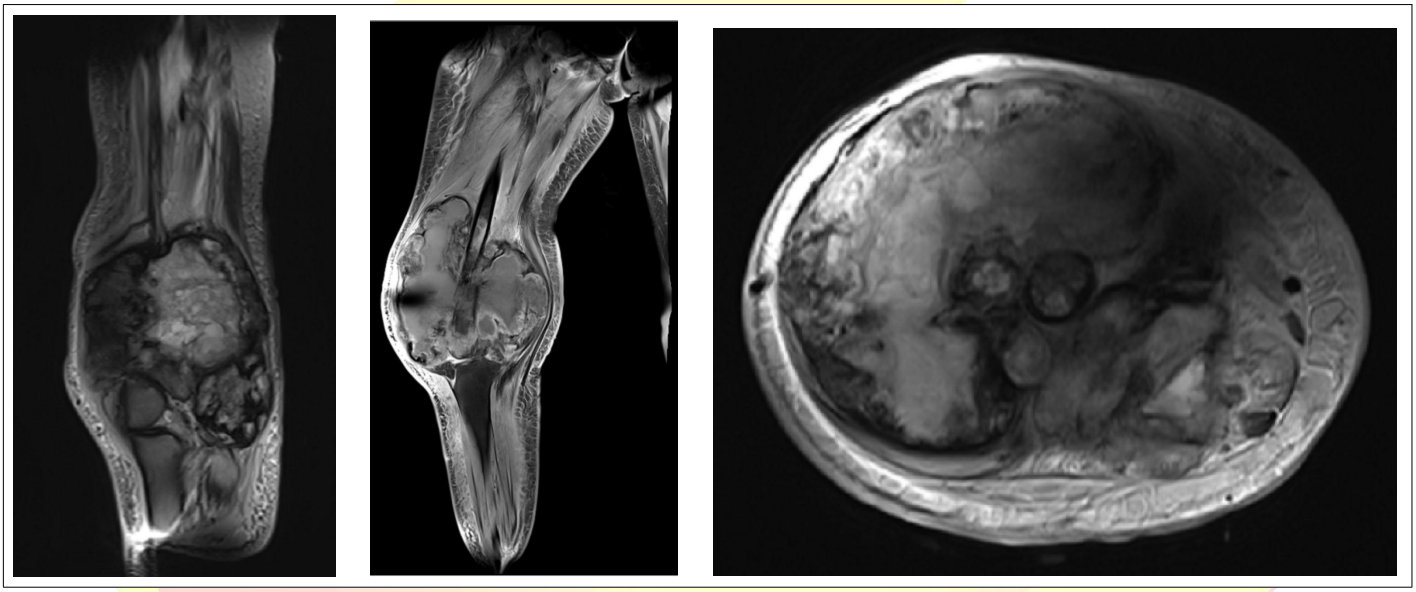
- Normal contrast enhanced CT chest.
- No evidence of metastatic deposits.

USG REPORT 09/02/2022

A moderately large solid mass seen in the distal thigh involving the regional muscles. Calcifications are seen within the mass. Too large to measure exactly with ultrasound. Lesion extends more than 10cm towards the mid thigh from knee joint. Depth/thickness more than 45mm.
Vascularity seen within the mass.
No significant knee joint effusion.

COMMENT – Known osteosarcoma with regional local spread.
Suggest MRI for further assessment.

MRI IMAGES: 07/05/2022

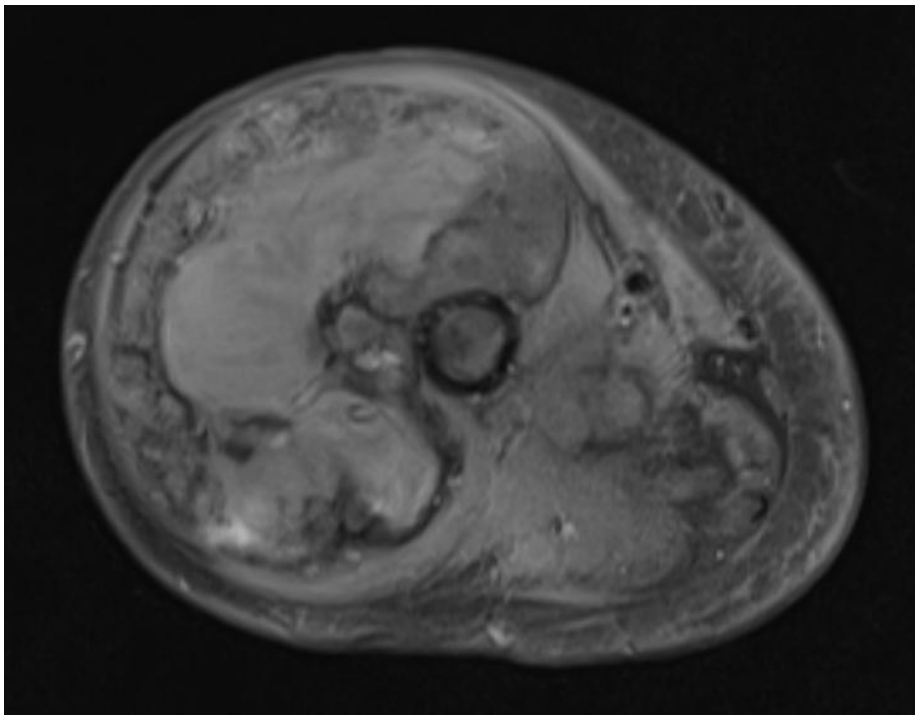


Findings:

1	Osteosarcoma of the distal femur with associated extensive soft tissue component. No deposits in proximal femur.

X-RAY: 30/05/2022

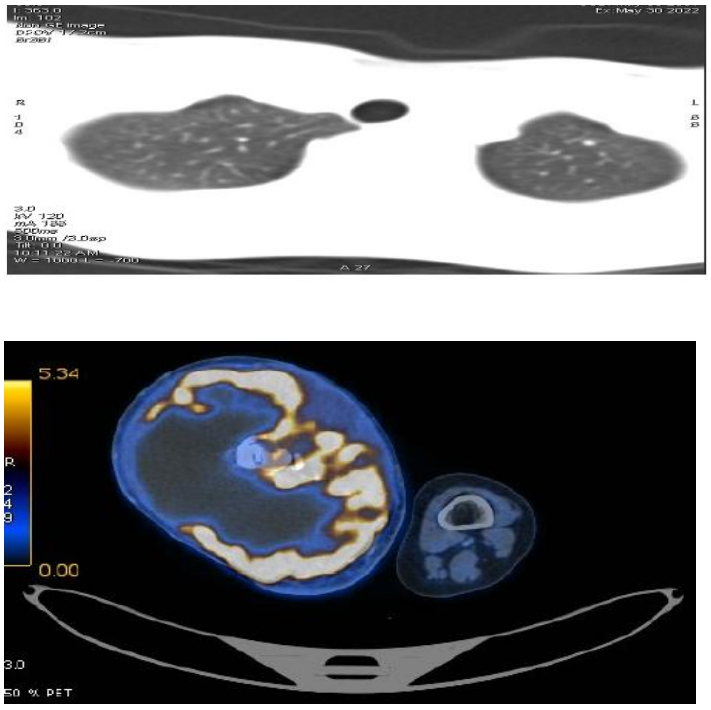
MRI IMAGES: 30/05/2022

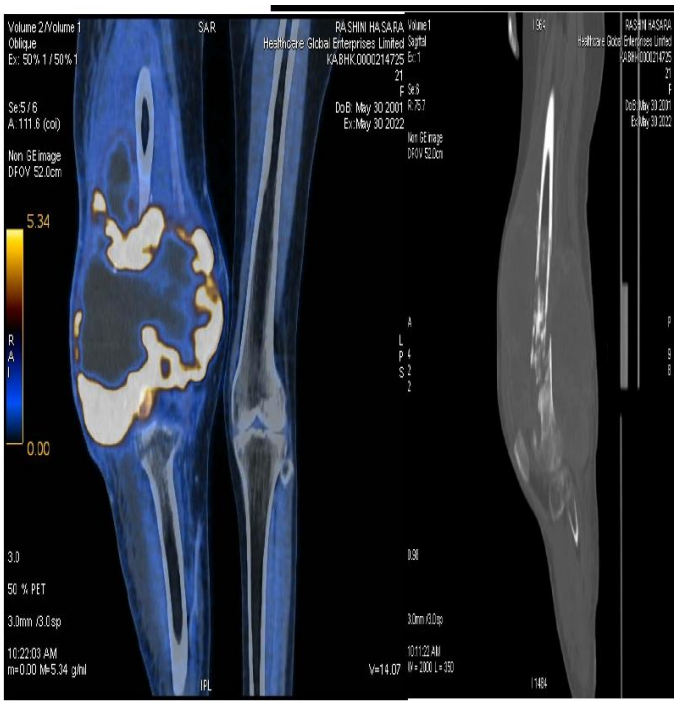


Findings:

1	19.5 x 17.8 x 23.6 cm expansile lytic lesion with significant extraosseous soft tissue involving the right distal femoral shaft extending upto the articular surface of the lateral femoral condyle, completely encasing distal superficial femoral and popliteal vessels, infiltrating the sciatic nerve and associated with pathological fracture– of malignant neoplastic etiology.

PET CT IMAGES: 30/05/2022

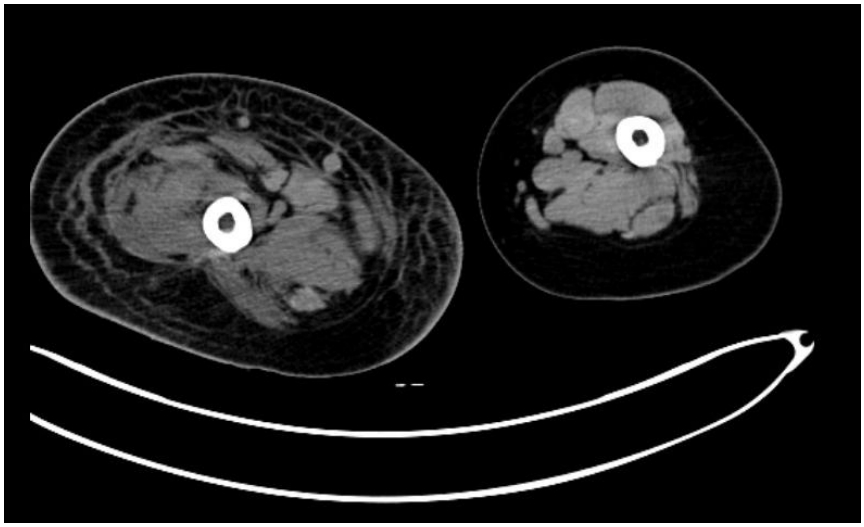




Findings:

1	19.5 x 17.8 x 23.6 cm large metabolically active mass with osteolytic / sclerotic lesion involving the lower metadiaphysis, epiphysis of the right femur with pathological fracture, muscular infiltration, vascular encasement and joint extension as described above - osteosarcoma.
2	3 mm lung nodule in the left upper lobe- of concern for metastases. Recommend direct comparison with prior studies / close follow up.
3	Mildly enlarged / prominent right inguinal, iliac, retroperitoneal and left supraclavicular lymph nodes- of inflammatory / infectious etiology versus metastases.

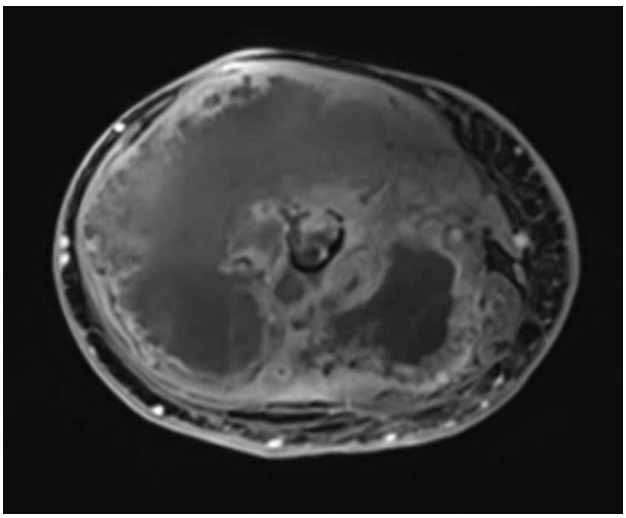
CT IMAGES: 22/06/2022



Findings:

1	Stable 3 mm lung nodule in the left upper lobe.
2	Relatively stable retroperitoneal, pelvic, right inguinal, right femoral and left supraclavicular lymph nodes.
3	Interval increase in diffuse subcutaneous and intermuscular edema in the right thigh.

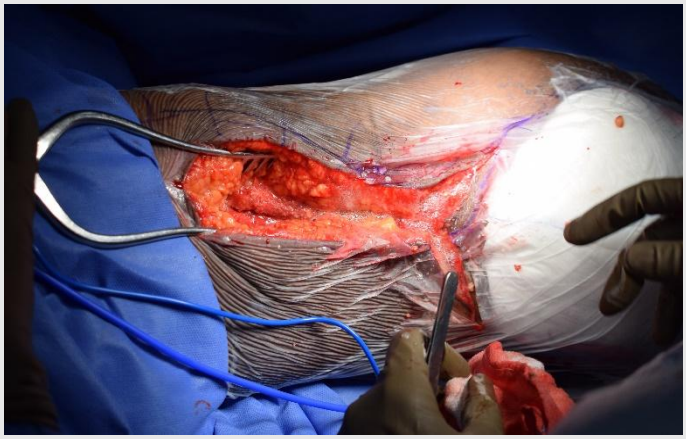
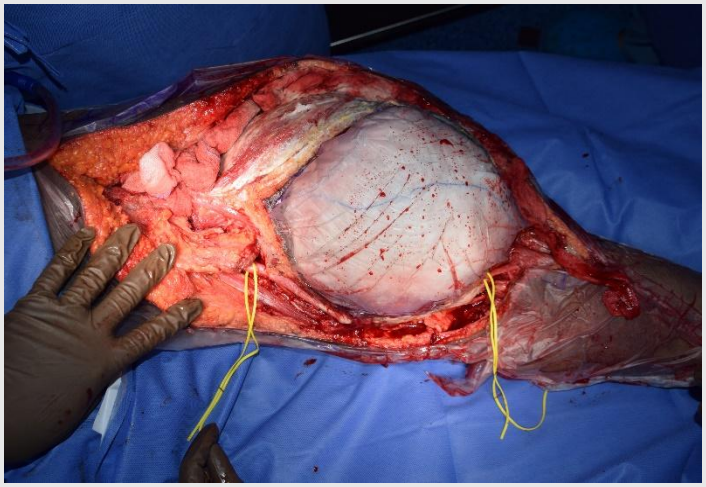
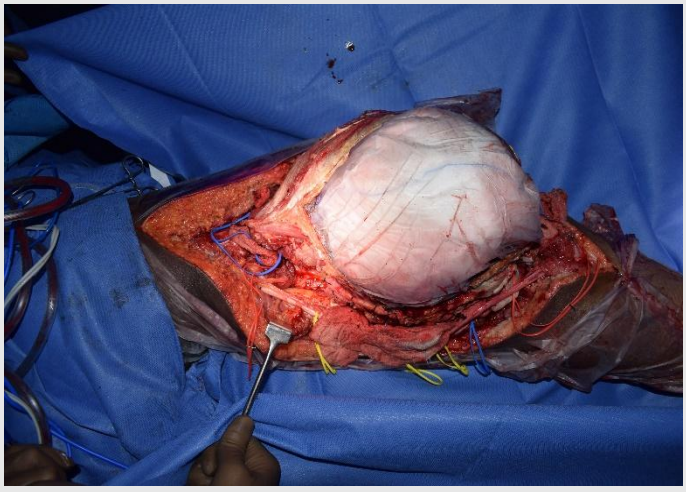
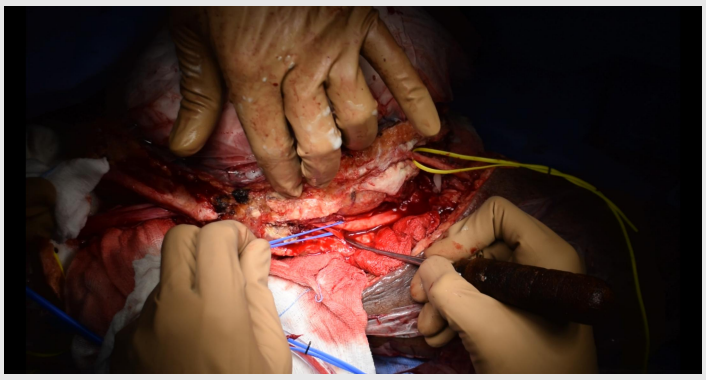
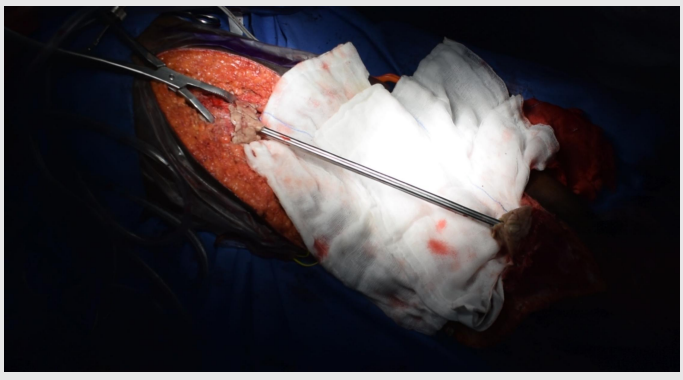
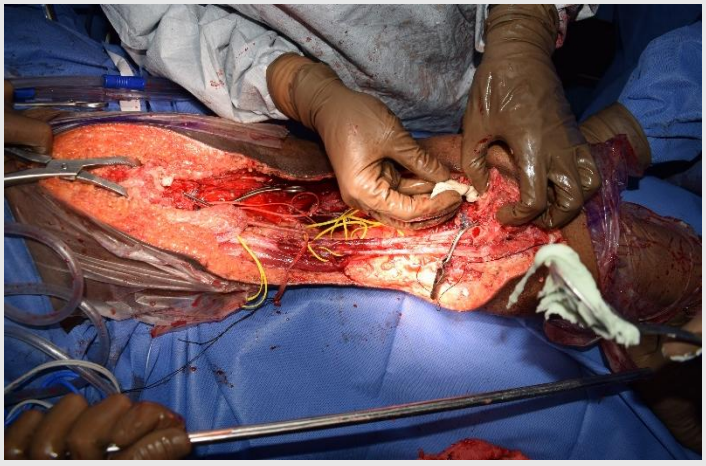
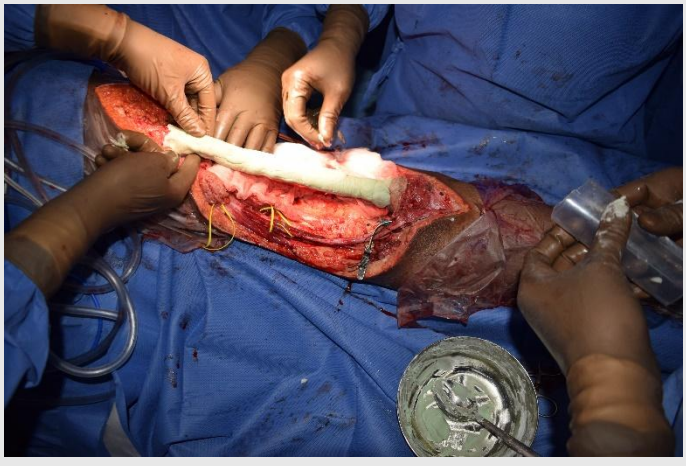
MRI IMAGES: 04/07/2022

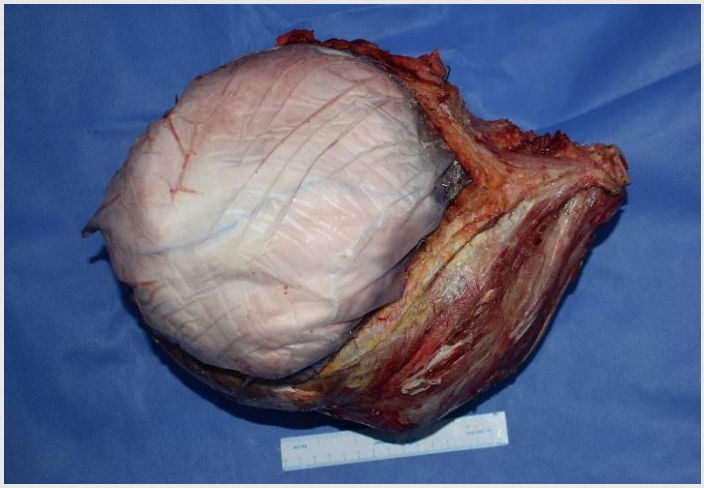


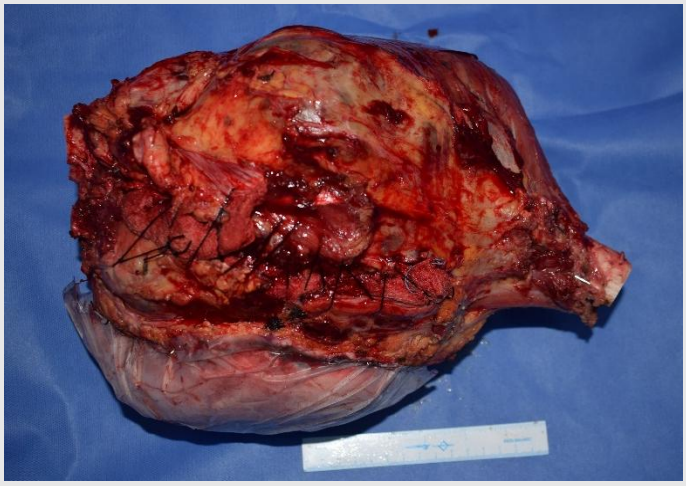
Findings:

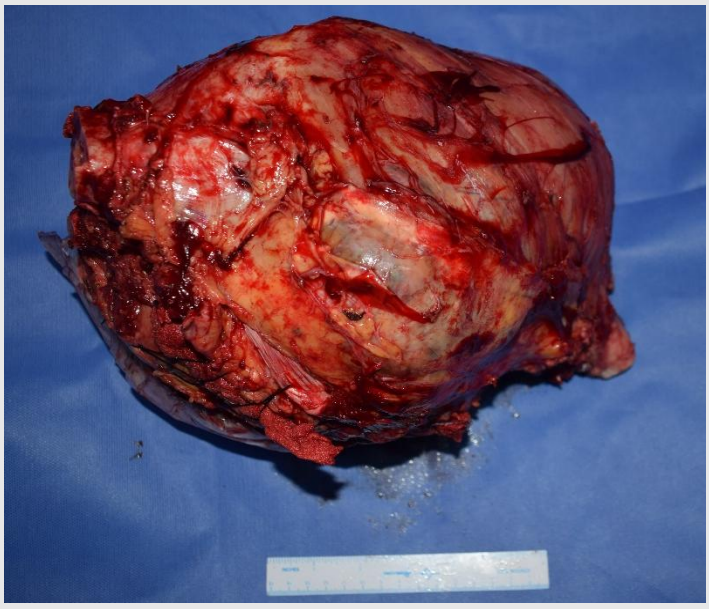
1	Relatively stable expansile lytic lesion with extraosseous soft tissue involving the right distal femoral shaft with pathological fracture and extensions.

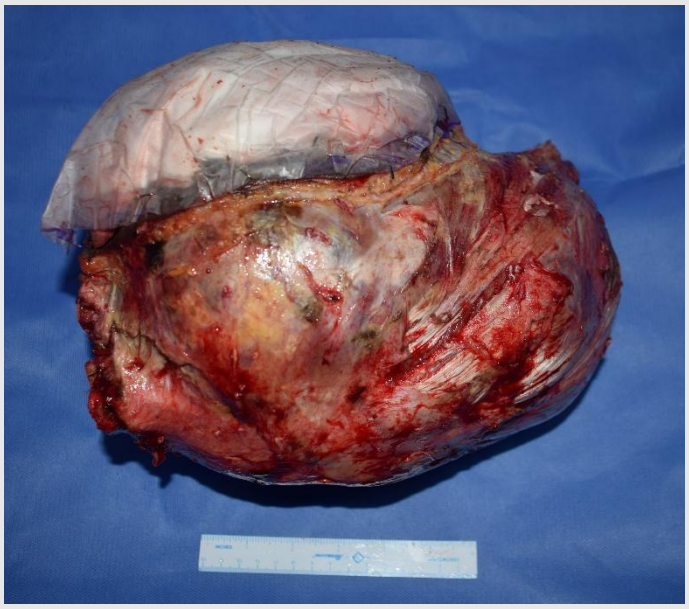
OPERATIVE IMAGES: 20/07/2022

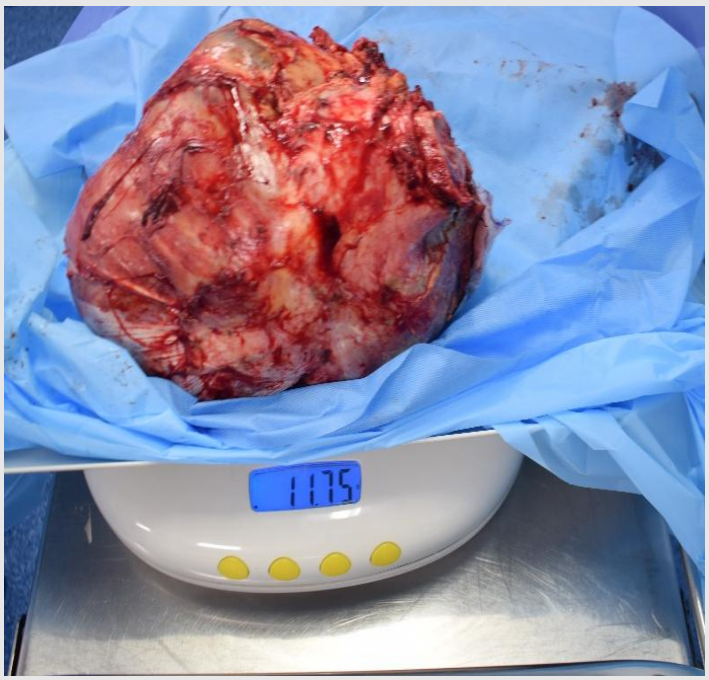









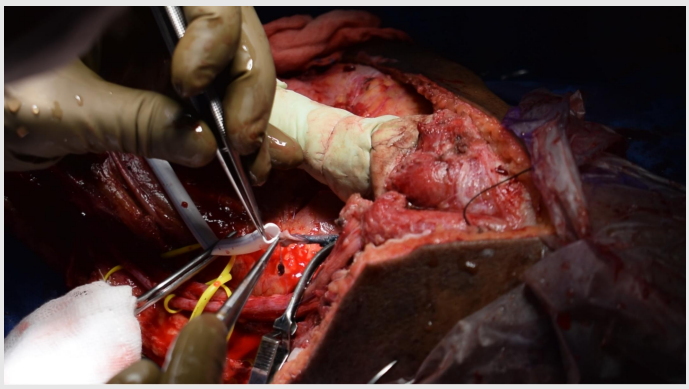




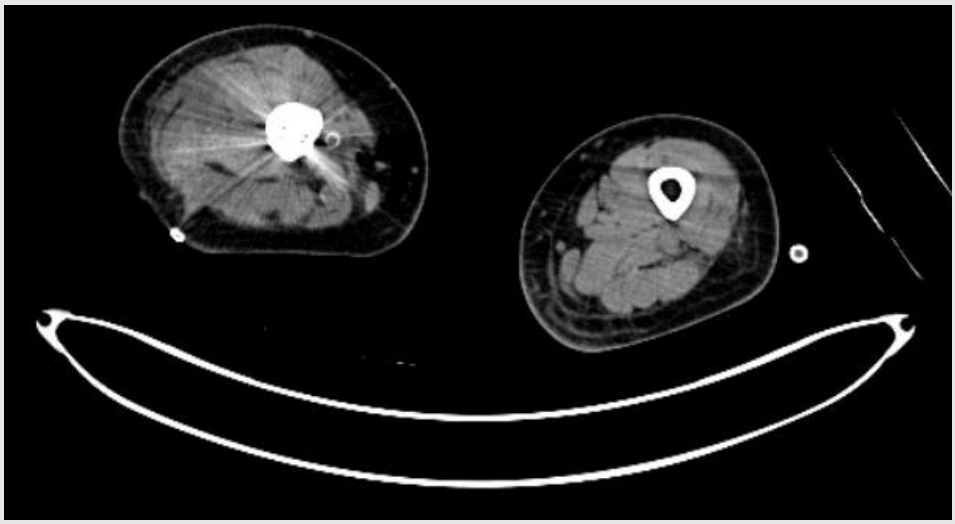








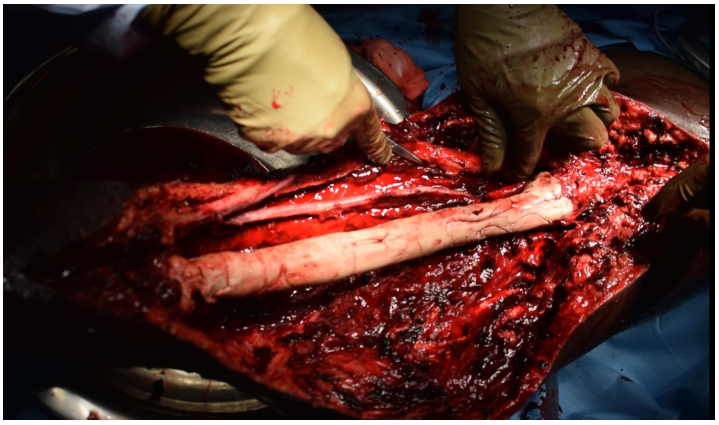

On 28.07.2022: CT RIGHT LOWER LIMB ANGIOGRAM (HCG):

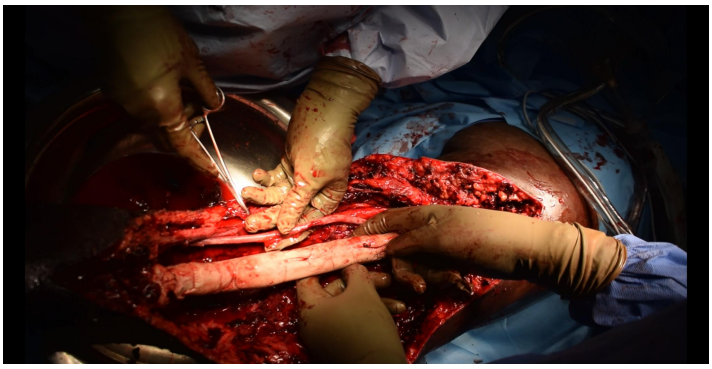
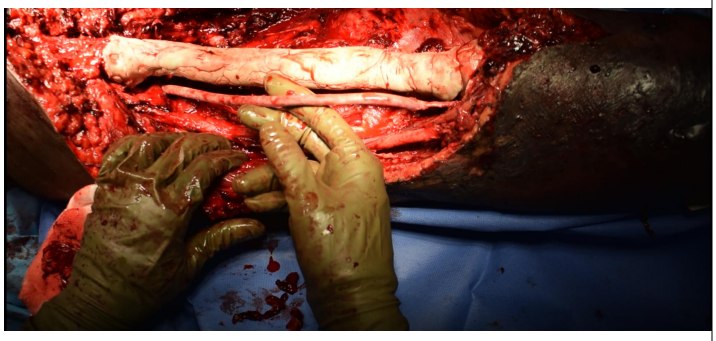
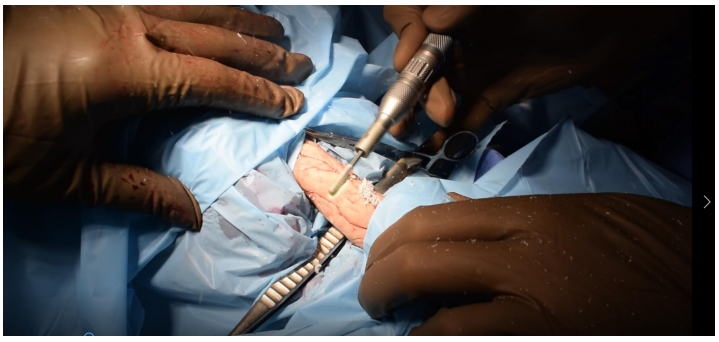


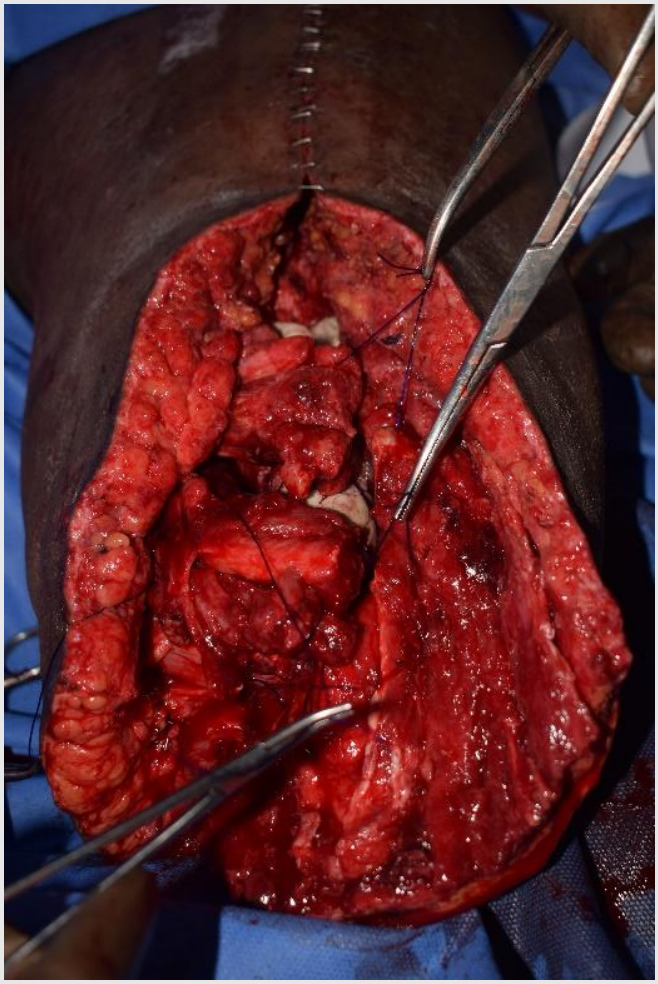
Findings:

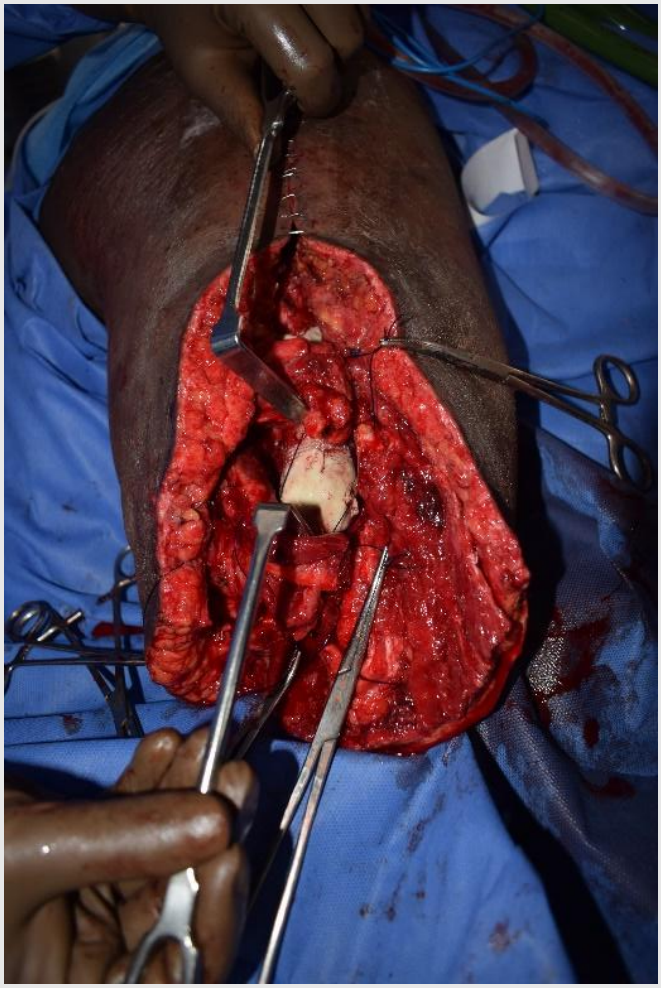
1	Interval resection of previously noted large osteolytic / sclerotic lesion involving the lower metadiaphysis and epiphysis of the right femur with interval placement of intramedullary prosthesis in the right femur and tibia.
2	Post operative collection with multiple hyperdensities / hemorrhage and multiple air pockets around the femoral shaft in the intramuscular plane.
3	Interval placement of graft with proximal anastomosis at right superficial femoral artery.
4	Central intraluminal filling defect in the graft with wall hyperdensity – thrombosis.
5	Thrombosis of the distal right tibial and peroneal vessels. Diffuse subcutaneous edema in the right lower limb.
6	Marginal interval regression in the size of mildly enlarged / prominent right inguinal, external iliac and common iliac lymph nodes.
7	Interval development of bilateral lower lobe lung nodules in the visualised portions of the lung – likely infectious etiology – likely fungal.

OPERATIVE IMAGES: 29/07/2022





Findings:

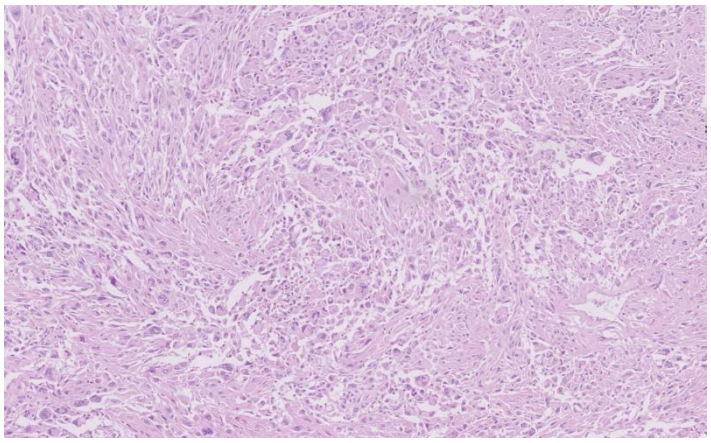
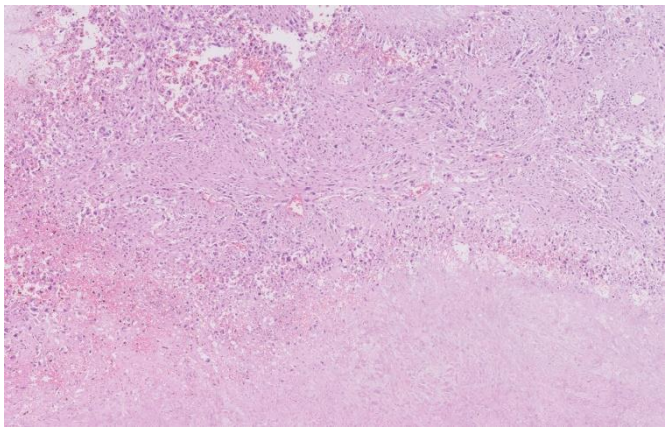
1	**Surgery performed on 20.07.2022**: The patient under GA and prophylactic antibiotics, incision was taken over the lateral aspect of the right lower limb including pressure sore area, subcutaneous dissection was done in layers and the right distal femur lesion was identified, isolated and separated from the surrounding soft tissues. Almost all of the soft tissue in the right thigh baring the subcutaneous tissue and skin were involved the tumor. Femoral artery was cut about 20 cm distal to the hip joint and upper knee level and was resected along with the tumor. Once the tumor was isolated, carefully the sciatic nerve was epineurally dissected and separated from the tumor bundle. Once the tumor tissue was removed, the tumor bed was thoroughly washed with hydrogen peroxide and multiple pulse lavage washes. The skin and the subcutaneous tissue was found to be viable and the skeletal defect was reconstructed using a 40 cm K nail and antibiotic eluding bone cement. Primary wound closure was achieved and the patient was shifted to the ICU for monitoring.

2	**Surgery performed on 29.07.2022**: On re-exploration through the previously performed incision, the PTFE graft was completely thrombotic with no vascular supply to the distal leg. The muscles found to be necrotic in the leg. The skin and soft tissue was dark in color with no capillary refill with edema and bloods all around. The nail cement spacer was cut and above knee amputation was completed. Thorough wound wash was given to the bed and additional bone cement was applied to the edge of the K nail for adequate soft tissue cover. A prolene mesh was then wrapped around the remaining nail cement spacer which would function as a stump extensor and thorough myodesis and myoplasty was performed. Wound was closed in layers over a suction drain and compression dressing done. The patient withstood the procedure well and was shifted to the ICU for monitoring.
3	**Course in the Hospital:** After thorough preoperative evaluations, checkup and preanesthetic checkup and clearance, the patient was planned for limb salvage surgery. She underwent Wide Excision of Right Distal Femur Lesion + Segmental Resection of Femoral Artery + Epineural Dissection of Sciatic Nerve + Nail Cement Spacer Application on 20.07.2022. The patient tolerated the procedure well and was monitored in the ICU and treated with repeated blood transfusion in view of low hemoglobin and was later shifted to the ward once the general condition improved and the vitals stabilized. The patient was made to sit by the edge of the bed and made to stand on POD 3. She was treated with epidural analgesics in view of severe postoperative pain and supportive care with intravenous antibiotics, analgesics, antacids, IV fluids were continued. On 27.07.2022, the patient complained of severe pain at the operated area and difficulty in moving the toes and ankles. She was immediately attended to and on clinical examination, the leg was found to be pale with poor capillary refill. Immediately, CT angiogram of the right lower limb was performed which showed a clot in the grafted femoral artery. The patient was taken up for re-exploration on 28.07.2022 by Dr. Pramod and team, Dr. Prashanth Puranik and team and Dr. Murali Krishna (Consultant Vascular Surgeon).
4	On re-exploration, the grafted femoral artery was completely thrombosed with limited blood flow to the leg. The condition of the patient and the options were extensively discussed and the patient and attenders were explained regarding the non-viability of the right lower limb. Wound closure was done and the patient was shifted to ICU for observation and to be planned for definitive management. While the patient was in the ICU and was stabilizing, the condition of the patient and the limb was explained to the patient and attenders and there were counseled for above knee amputation as the limb was not salvageable.

	Once again complications and consequences of trying to salvage the limb which could result in real failure, sepsis and multi organ failure were clearly explained to the attenders and finally consent was obtained for above knee amputation. On 29.07.2022, the patient was re-taken in to the operating room & above knee amputation was performed.
5	Postoperative period was uneventful. She was made to sit by the edge of the bed on POD2. She was made to stand and walk with the help of walker support on POD4. Foley's catheter was removed. Blood transfusion was performed in view of low hemoglobin and she was treated with IV fluids, analgesics, antacids and supportive care. General condition significantly improved & the patient was planned for discharge. As of now, the patient is ambulant with the help of walker support, she is also being planned for prosthetic replacement of the right lower limb.

POST-OP X-Ray: 12/08/2022

HISTOPATHOLOGY IMAGES: 20/07/2022:

Findings:

1	Features are of residual viable osteogenic sarcoma, HUVOS Grade 1. Pathologic stage (8th AJCC staging system): ypT2N0
2	Treatment effect: Present- Percentage of necrosis tumor: 35% (Reports attached)

PROPOSED RECOMMENDATION AS DISCUSSED IN TYR MULTIDISCIPLINARY SARCOMA TUMOUR BOARD:

1	**Discussion:** To continue chemotherapy as advised (Case summary attached)
2	To review once in 3 months for every 2 years and for every 6 months for next 3 years with follow up X-rays, MRI and PET scan accordingly.

Physiotherapy Notes: (Home programme)

1	Stump strengthening exercises (hip abduction and flexor strengthening)
2	Gentle assisted and active right hip ROM exercises.
3	Ambulation with the help of walker support.
4	Pelvic bridging exercises. Left lower limb strengthening exercises.

Do's and Don'ts:

1	Maintain spica dressing and compression dressing till further advice.
2	Avoid strenuous activities.

OUR MDT TEAM MEMBERS:

NAME	DESIGNATION
Dr.Pramod Chinder	Consultant Orthopaedic Oncosurgeon
Dr Suraj H P	Orthopaedic Oncosurgeon
Dr. Anto	Fellow -Orthopaedic Oncology
Dr. Amar	Fellow -Orthopaedic Oncology
Dr. Kunal	Consultant Oncopathologist
Dr. Aparna	Consultant Oncopathologist
Dr. Imran	Consultant Oncopathologist
Dr. Shivakumar	Consultant Radiologist
Dr. Kumaraswamy	Consultant Radiation Oncologist
Dr. Vikram Maiya	Consultant Radiation Oncologist
Dr. Vijay Agarwal	Consultant Medical Oncologist
Dr. Intezar Mehdi	Consultant Paediatric Medical Oncologist

OUR TEAM MEMBERS:

NAME	DESIGNATION	CONTACT NUMBER
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Dr.Suraj H P	Orthopaedic Oncosurgeon	
Dr. Anto	Fellow- Orthopaedic Oncology	

Dr. Amar	Fellow- Orthopaedic Oncology	
Mr. Roofus Mohan	Nurse Practitioner	8197859696
Mr. Aasim Mohammed	Nurse Practitioner	9060178007 - **9632419696**
Ms. Tejashvini Anchan	Secretary	9535832969 – **7996907996**
Mrs. Kavya	MSW	9632971901
Mrs. Veena	Coordinator	9148663925

Prepared by: Tejashvini.

Checked by: Dr.Pramod.S.Chinder