

# A successful total femur replacement in an unusual presentation of pathological fracture of shaft of femur and related difficult events during surgery- a case report

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## Research Article

**Keywords:** total femoral replacement, chondrosarcoma of femur, pathological fracture and vascular involvement

**Posted Date:** March 23rd, 2022

**DOI:** <https://doi.org/10.21203/rs.3.rs-595863/v1>

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# Abstract

We here present a case of chondrosarcoma of diaphysis of femur with extensive involvement of the length of the bone. We encountered the involvement of the vessels at the junction of middle and lower third of femur during surgical resection of the tumor. The involvement of the vessel may be attributed to the pathological fracture which might have deranged the integrity of the vascular bundle. Total femur replacement was done in this case with a bipolar head and repair of abductors and hip flexors to the implanted prosthesis

## Introduction

Total femur replacement is a salvageable option for various oncological and non-oncological conditions. It has been used in cases where the pathology is confined to the femur and it is difficult to put a long single joint prosthesis on a short remnant stump of either end of femur. Chondrosarcoma is the tumor of adulthood and the most common sites include pelvis, sternum etc. (1) Most of the times the look of these tumors is aggressive but indolent cases are also seen. Pathological fracture through the lesion changes the approach to the tumor. Post fracture the aggressiveness of the tumor hastens and involvement of the neurovascular structure should be anticipated seen during the resection.

## Case Presentation

We present a case of 65 years old male patient who had presented to us with lytic lesion in the diaphysis of the femur. The lytic lesion had involved whole of the femur starting from 6 cm from the tip of greater trochanter to 6 cm proximal from the metaphyseal scar of the femur. Biopsy was planned and done for this patient which reported to be enchondroma on the first instance. Since the age and presentation was not matching so a repeat core biopsy was done which reported to be low grade chondrosarcoma.

Surgical resection of the lesion was then planned and patient was advised to get admitted. There was some time lag from the patient side and reported back to us with pathological fracture of the femur. Post fracture the tumor started enlarging aggressively. The resection was still the only option because he did not have any distant metastasis till then.

Since the involvement of the lesion was extensive so neither replacement with joint of either side (megaprosthesis) nor intercalary prosthesis was an option. Total femur replacement was planned and executed

The surgical resection started from the proximal aspect where arthrotomy and dislocation of hip was done leaving the abductors and vastus lateralis. The femur with the tumor was resected in the proximal aspect but as we went distal the involvement of the soft tissue was observed around the fracture site. The vessel was found to be stuck into the tumor at the fracture site. The help of plastic surgeon was then taken and clamping of the vessel was done both proximal and distal to the involved soft tissue site.

The tumor was then resected along with 8 cm of the vessel involved. The distal part of the femur was resected from the knee along with the collateral ligament. Vessels were then reconstructed with the help of PTFE (poly tetra fluoro ethylene) (Braun).

The knee was then prepared and tibial component was then inserted. Appropriate length of femoral prosthesis was then assembled on table according to the size of femur resected and articulated with the tibial component. Hip abductors and flexors are then stitched back to the hole provided on the proximal aspect of the prosthesis. After confirming the distal vascularity, closure was then done over drains. Post-operative period was uneventful. The patient was mobilized after 6 weeks anticipating the healing of abductors and flexor of the hip. The patient was followed up for 3 months and was walking with the help of walker.

## Discussion

The decision to perform total femoral replacement should be considered keeping in view the functional expectation of the patient. (2) Although total femur replacement could provide long term ambulatory outcome but selection of the surgical candidate is essential to ensure the success of the treatment. Due to the technical complexity of the procedure this surgery requires longer operating time and so increased the chances of periprosthetic joint infection. (3) Shengjun Qian et al reported 11 cases of total femoral replacement in which major complication was pulmonary metastasis in 4 cases and one case had peroneal nerve involvement. (4) K L Pan in his series of 9 patients of total femur replacement done for osteosarcoma showed distant metastasis to be the most common complication after this surgery. (5) C Friesecke et al in his series of total femoral replacement done for 100 cases for non-oncological etiology reported deep infection as the most common complication (6) Nerubay J et al in his series of 19 patients in which total femoral replacement was done for oncological etiologies reported wound healing problem as the most common complication (7)

Though the literature also reports that mean patient reported functional scores for the patient undergoing femoral replacement is lower than those who had undergone proximal femur or distal femur replacement. (8) However a recent study also shows that patients who underwent total femoral replacement after multiple failed revision, the functional scores improved after total femoral replacement. (6)

Our case report is unique in describing a rare presentation of chondrosarcoma of the diaphysis of the femur which eventually landed into pathological fracture. The fracture increased the aggressiveness of the tumour so much so that the vascular structure got involved and had to be resected during the surgery in order to achieve negative margins.

## Conclusion

Chondrosarcoma are the tumors of the adult age. May have variable presentation and may show different characteristics after fracture. Long standing enchondroma also may result in secondary

chondrosarcoma. Involvement of vessels should be anticipated preoperatively and a back-up plan should always be ready. Total femur replacement seems to be a good treatment modality for the treatment of these tumors.

## Declarations

*Funding*- the authors did not receive any funding from any source.

*Conflict of interest*- On behalf of all the authors the corresponding author states that there is no conflict of interest

*Ethical approval*- the ethical approval was obtained from the ethical board of the institute

*Consent to participate*- consent was obtained from the patient for the publication

*Consent for publication*- the consent of all the authors and the institute was obtained for the publication of this case report

*Availability of data and material*- the relevant photographs and other material is available with us and can be given as required

*Authors contribution*- (all the three authors were part of the surgical procedure performed)

1 Dr Mohit Dhingra- data collection and manuscript writing

2. Dr Madhubari – Manuscript writing

3. Dr Rajkumar- compiling of data

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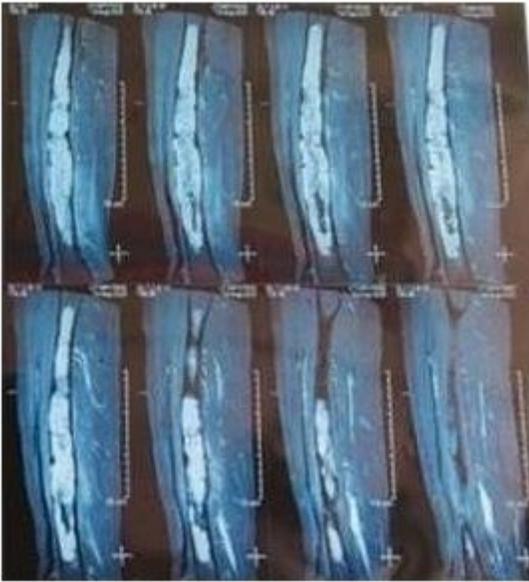
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## Figures



**Figure 1**

pre op xray of the patient before fracture



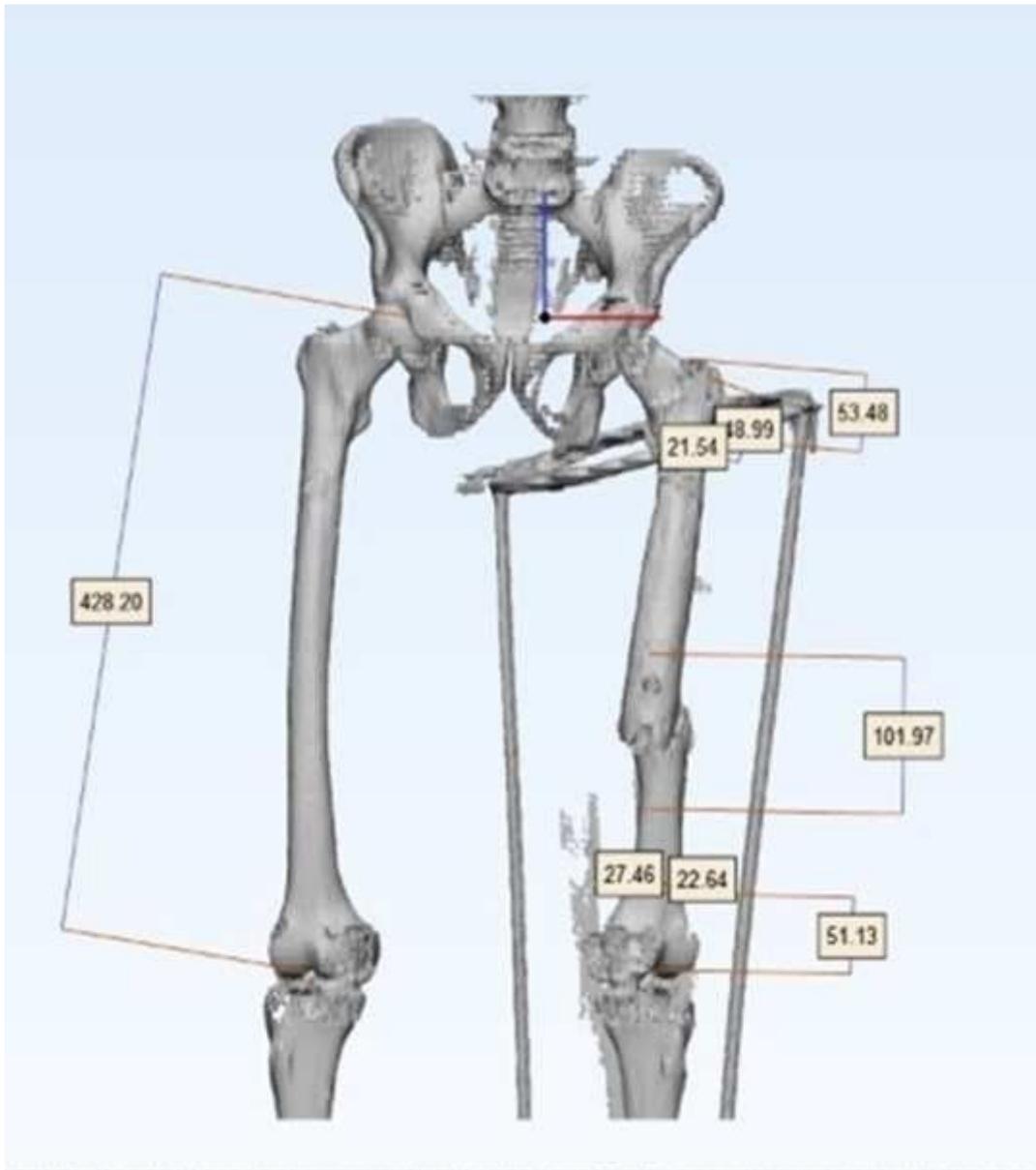
**Figure 2**

Pre op MRI of the patient before fracture



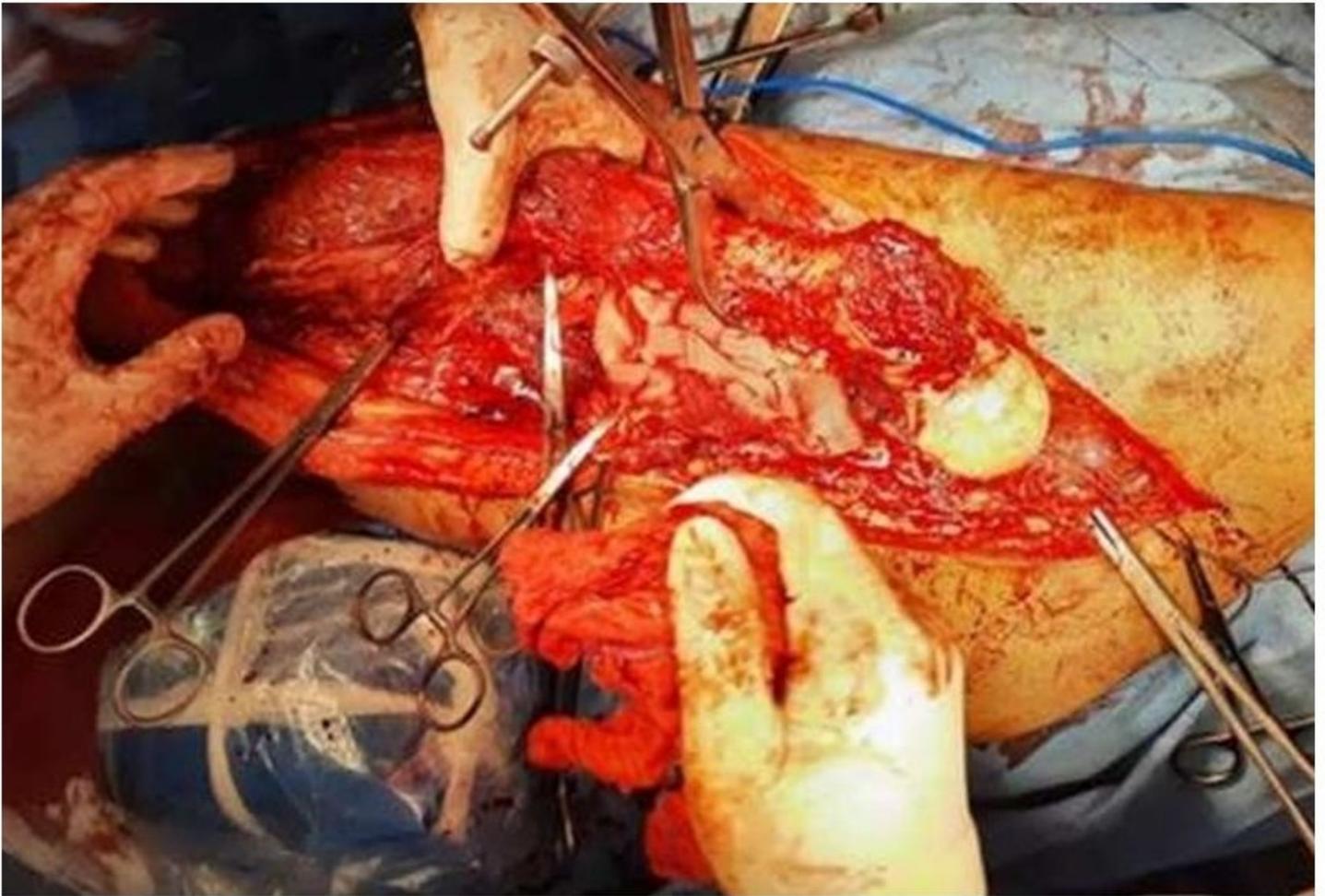
**Figure 3**

pre op xray of the patient after pathological fracture



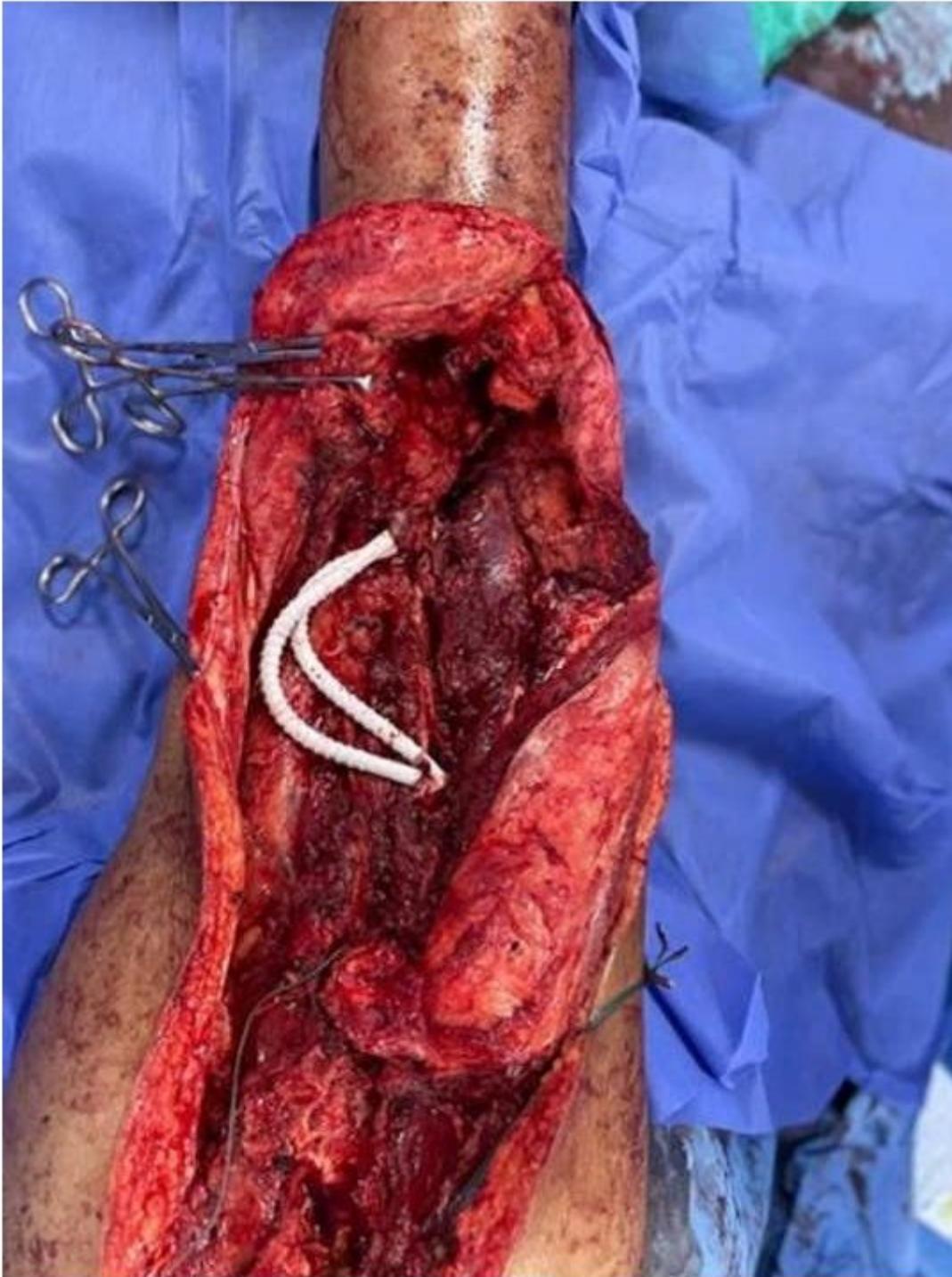
**Figure 4**

CT planning to see the size of the implant and the length of the bone which is not affected by tumor



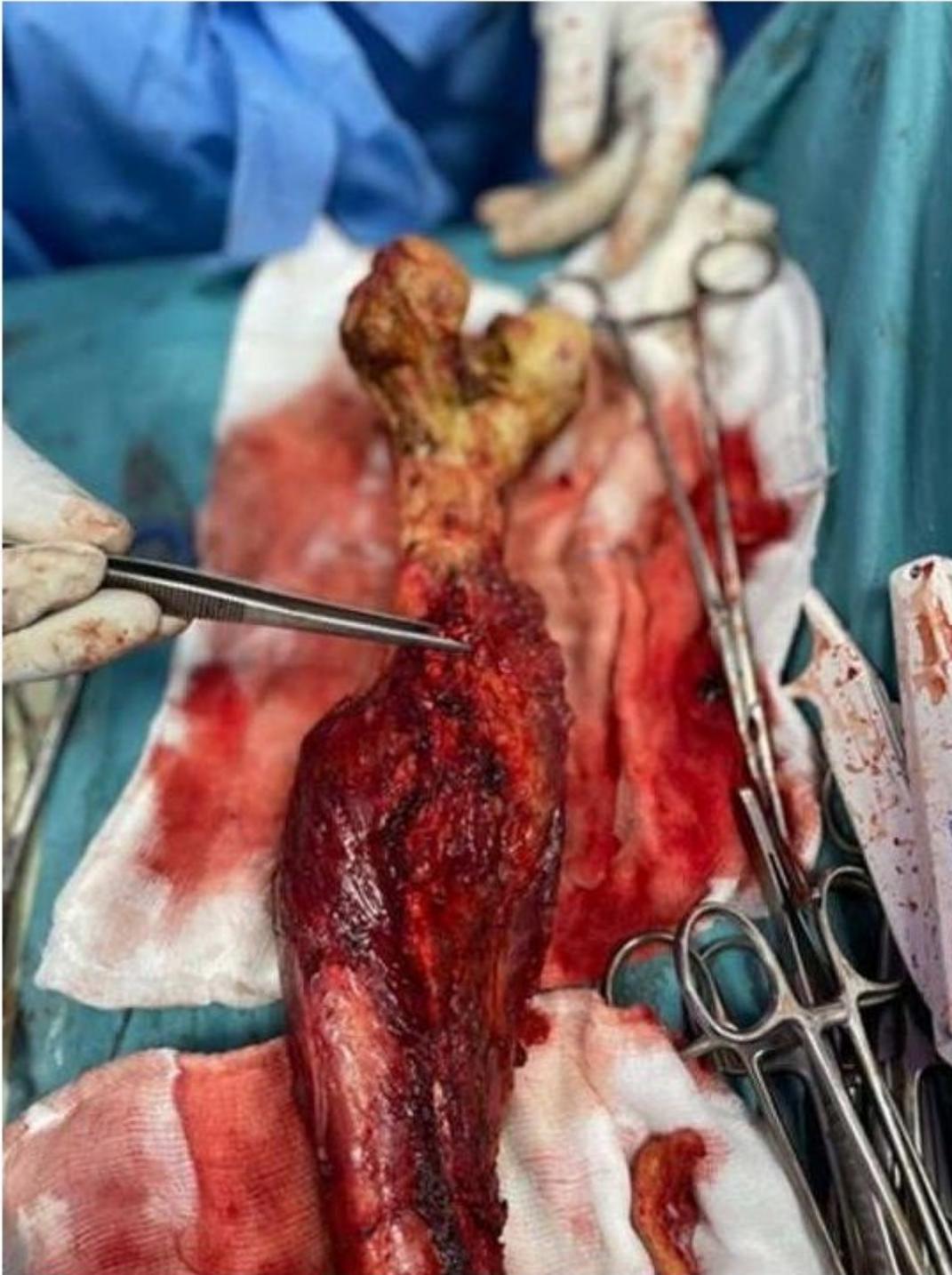
**Figure 5**

per operative picture of the dislocation of the hip and resection of the tumor



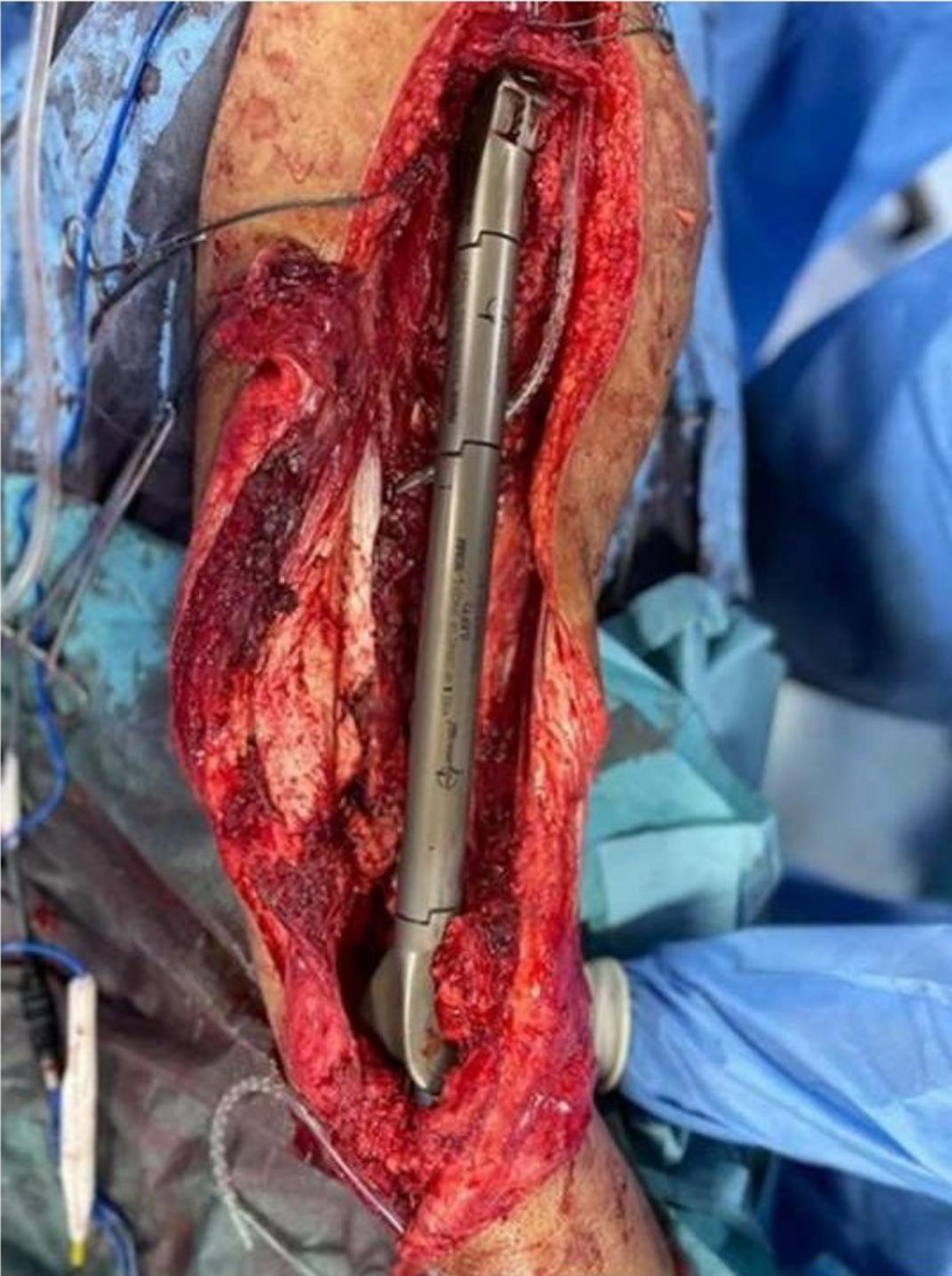
**Figure 6**

reconstruction of the vessels with PTFE graft



**Figure 7**

evaluation of the resected mass for the vessel involved in the tumor



**Figure 8**

implantation of the total femoral prosthesis



**Figure 9**

immediate post op x-ray of the patient



**Figure 10**

immediate post op x-ray of the patient



**Figure 11**

x-ray of the patient after 3 months



**Figure 12**

follow up xray of the patient at 5 months



**Figure 13**

follow up xray of the patient at 5 months



**Figure 14**

follow up xray of the patient at 5 months



**Figure 15**

follow up xray of the patient at 5 months