

Novel Surgical Technique to Reconstruct a Large Soft Tissue Defect of the Adductor Compartment after Sarcoma Resection

FERNANDA CRITELLI², MARIO SCAGLIONI², GABRIELA STUDER²,
BRUNO FUCHS¹⁻³

Sarcoma Service, Cantonal Hospitals Winterthur¹ & Luzern², University Hospital Zurich³
www.SARCOMA.SURGERY / www.SWISS-SARCOMA.NET

INTRODUCTION

Sarcomas of the adductor compartment are particularly prone for postoperative, specifically wound complications. Resection of this type of tumors requires wide margins, and the large defects usually are associated with compromised perfusion, specially subsequent to preoperative radiation therapy. These resulting defects are usually deep and frequently expose the femoral vessels without any possibility to cover with healthy tissue, reason why it is usually advocated to bring in fresh tissues. However, there is continued debate of what reconstruction technique is preferentially used.

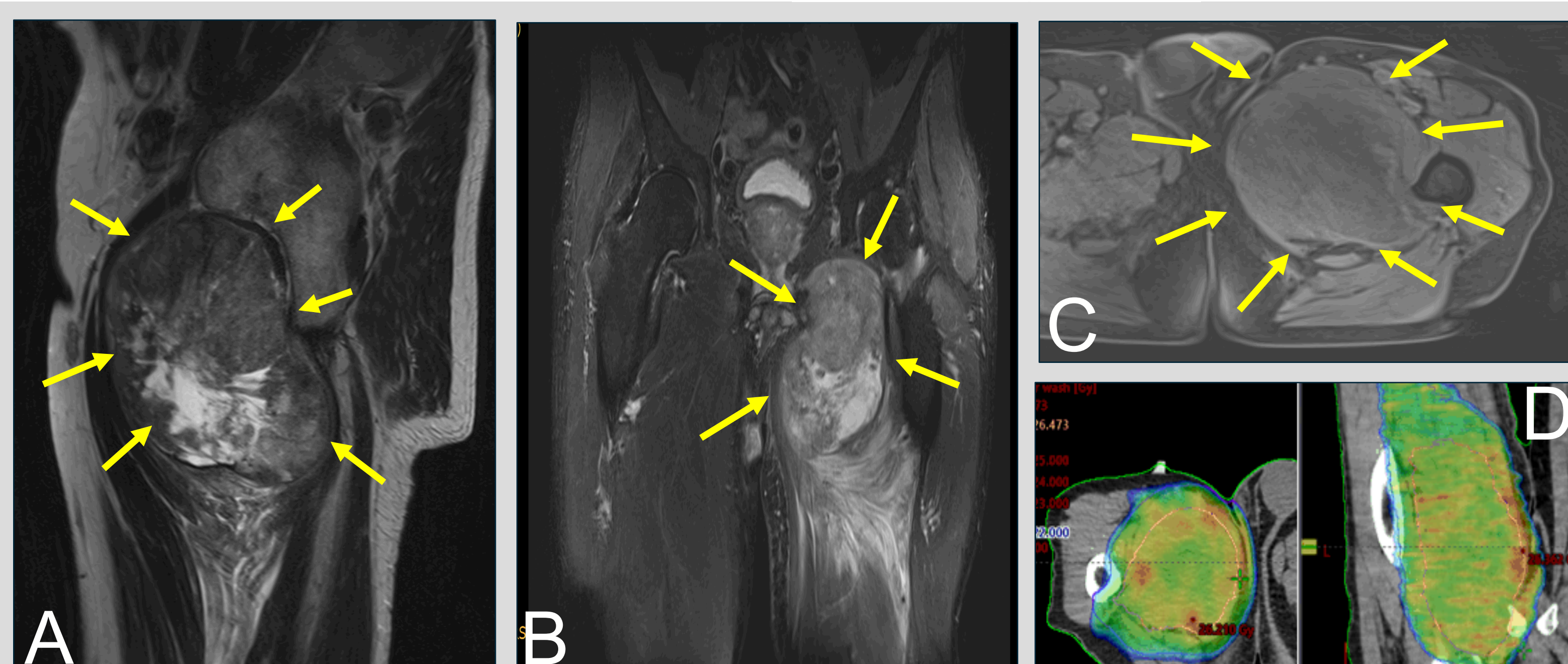


Figure 1: (A) Sagittal, (B) coronal and (C) axial MRI slices of tumor in the left adductor compartment (arrows). (D) Planning of preoperative radiation.

PATIENT & METHODS

A 85 years-old male noticed a history of painless progressive swelling in the left thigh of 11x9,7x8,2cm. MRI demonstrated a mass located in adductor magnus muscles. Staging studies with PET-CT showed lung metastases. A biopsy revealed an undifferentiated pleomorphic sarcoma (UPS) G3 and the patient underwent preoperative radiation therapy with 5x5=25 Gy. It was decided to surgically resect this lesion with a limb-sparing resection and using pedicled DIEP flap coverage.

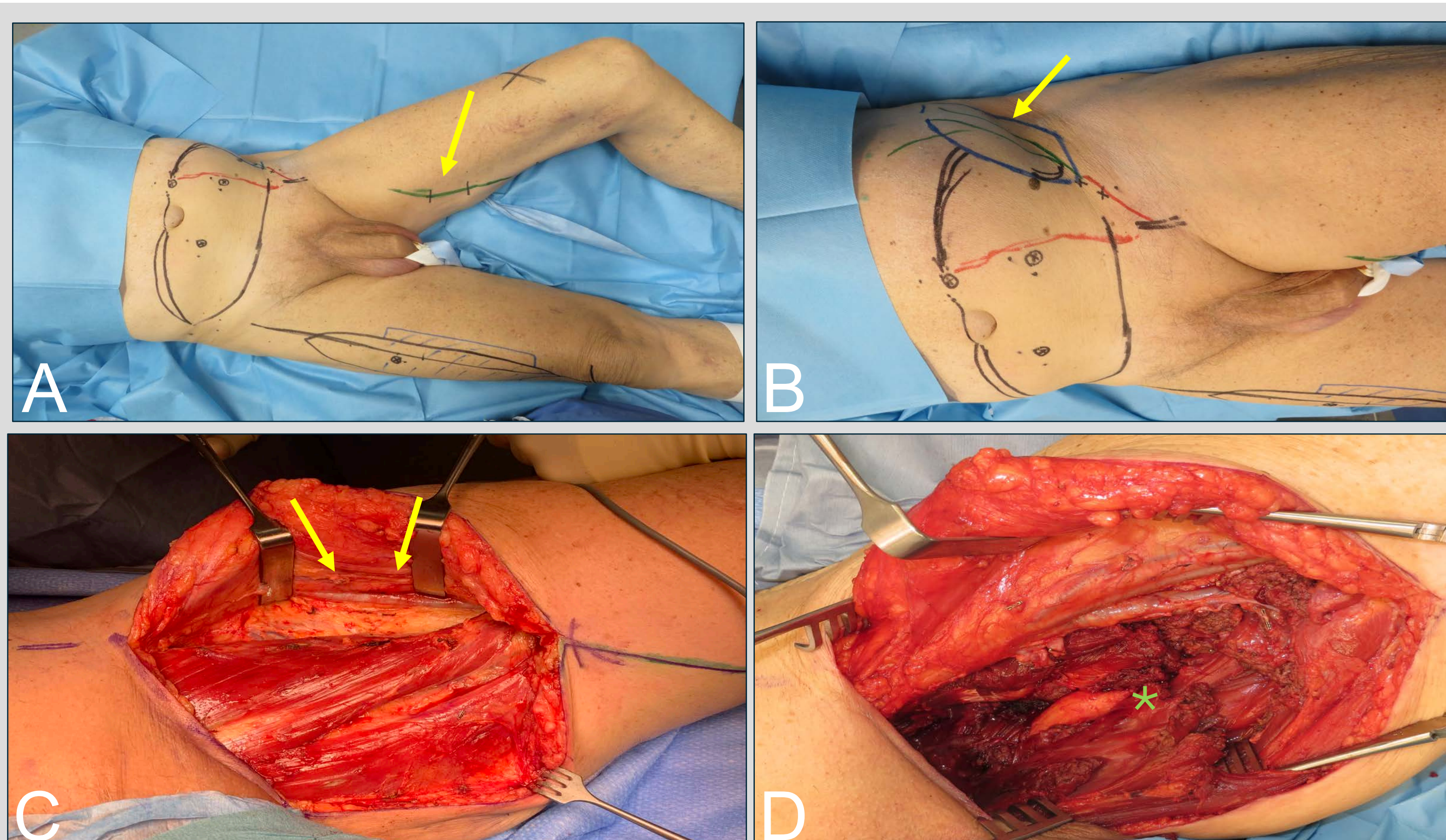


Figure 2: (A) Skin marking incision from posteromedial aspect of the thigh and (B) skin marking for the deep inferior epigastric (DIEP) flap (arrows). (C) Posteromedial approach to the left thigh with careful dissection. Femoral neurovascular bundle is identified and preserved (arrows). (D) Deep dissection of tumor adjacent structures underlying tumor (*).

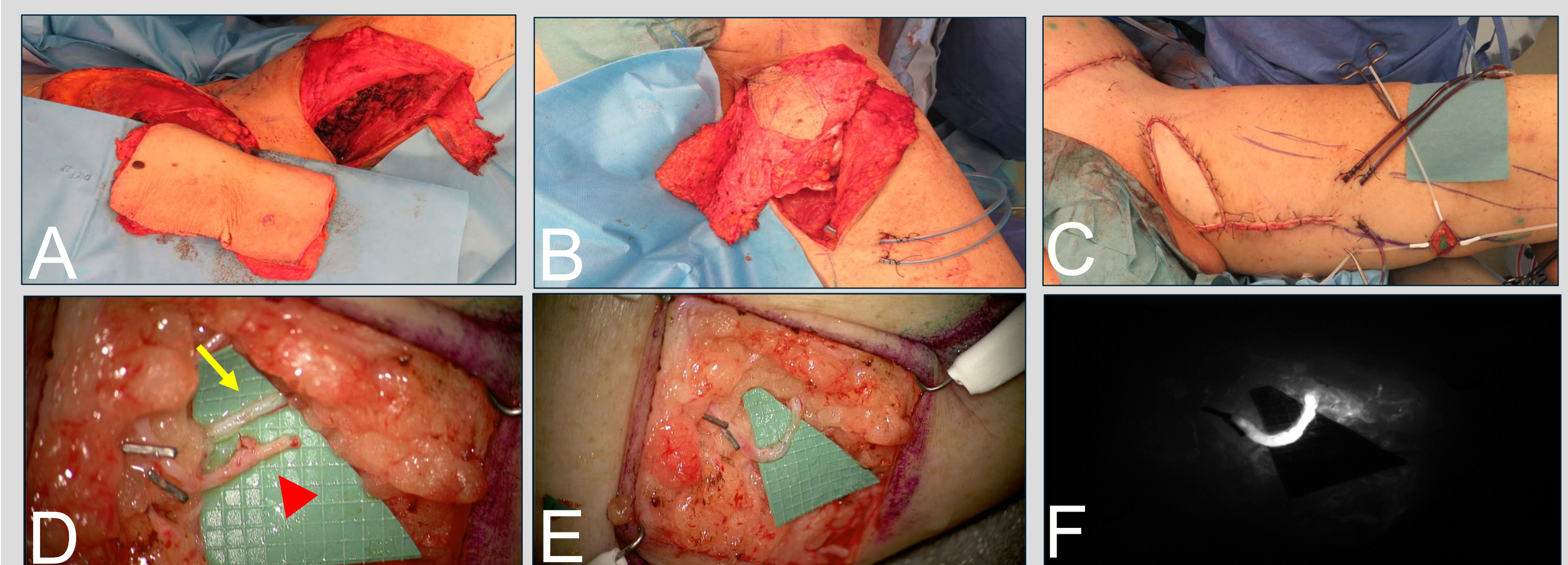


Figure 3: (A) Deep inferior epigastric flap (DIEP) preparation and (B) elevation to reconstruct the very large soft-tissue defect. (C) Note the tension free closure of the defect, the good color and texture matching. (D) Lymphovenous anastomosis (LVA) between vein (arrow head) and lymphatic duct (arrow). (E) The side to end anastomosis. (F) Intraoperative indocyanine green (ICG) angiography showing patent anastomosis.

RESULTS

We performed the incision from posteromedial aspect of thigh to the inguinal region; this is followed by careful dissection to identify pectineus, adductor longus muscles and then the interval between femoral vessels. The adductor longus, brevis and magnus muscles were carefully detached from their insertion on the femur throughout its length to the adductor hiatus. The sciatic nerve was identified and preserved. The tumor was exposed and completely removed after resection of adductor from their origin (superior and inferior pubic rami) and along the obturator foramen. The coverage of the inguinal region was created with a deep inferior epigastric (DIEP) flap; with a lymphovenous anastomosis (LVA) onto the flap with confirmation of its patency with ICG. Postoperative course was uneventful without any sign of infect. Postoperative underwent the patient adjuvant chemotherapy with Doxorubicin.

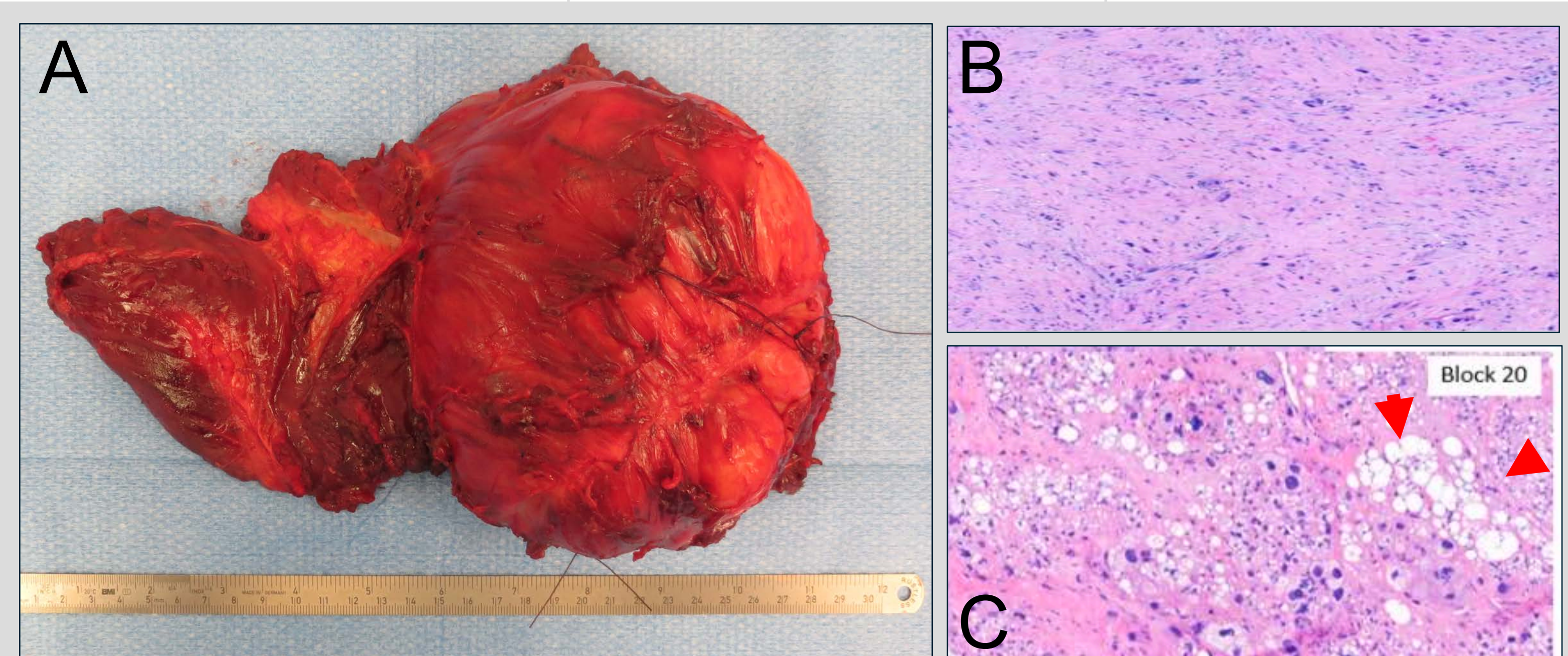


Figure 4: (A) In toto resected undifferentiated pleomorphic sarcoma (UPS). (B) Haematoxylin-Eosin (HE) staining of primary UPS with considerable fibrose and necrose after neoadjuvant radiathion therapy. (C) Multivacuolar lipoblasts are shown (arrow head).

CONCLUSION

Soft-tissue sarcomas arising within the adductor muscle group represent a specific challenge, and wound healing complications are frequently observed, reason why flap coverage is often used. Herein, we present the use of a pedicled DIEP sandwich technique in combination with LVA onto the flap. This represent a novel concept of coverage, not only addressing the coverage of a large defect but also simultaneously the reconstruction of lymph vessels.

HIGHLIGHTS

We present a new useful technique for reconstructive surgery aim to reduce the incidence of postoperative healing complications in adductor compartment region.