# Case Report: Gelfoam and Coil Embolization for Hemorrhage Control Prior to Resection of a Pleomorphic Liposarcoma

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## Introduction

- Soft tissue neoplasms are a heterogenous group of benign, intermediate and malignant tumors and are differentiated into different subtypes based on histologic similarities.
- Pleomorphic liposarcomas (PLS) are the rarest form of liposarcomas and are considered extremely rare in the thoracic region.
- PLS are high-grade tumors with high local recurrence (LR) rates after resection. However, surgical resection remains the best treatment for PLS, as conventional chemotherapy and stereotactic body radiation (SBRT) have demonstrated no improvement in survivability [1].
- Prior literature has reported pre-operative embolization to limit hemorrhage during resection [2,3]. In addition, preoperative embolization can decrease tumor dimensions and improved the surgical ability for en bloc resection [3]. Also, embolization causes tumoral edema which allow for better surgical visualization of tumor margins [3].
- Catheter directed intra-arterial bland embolization (CDBE) is a safe procedure with minimal complication risk. CDBE has been utilized for various hypervascular tumors, especially osseous and soft tissues lesions.
- We present a case of preoperative endovascular embolization with gelatin slurry and coils for hemorrhagic control and to limit operative hemorrhage for a large chest wall pleomorphic liposarcoma.

## Case Description

- A 69-year-old male presented to the emergency department (ED) by ambulance for an actively hemorrhaging right protruding chest mass (Figure 1).
- The patient was tachycardic with a hemoglobin level of 6.7 dl/mL, for which he was transfused with packed red blood cells (pRBC).
- CT chest with IV contrast demonstrated extensive exophytic right chest mass (Figure 2).
- Interventional radiology was consulted for endovascular management for hemorrhage control and pre-operative embolization prior to planned radical excision.
- Via the right common femoral artery, a 5 French pigtail flush catheter (Angiodynamic, Latham, NY) was placed and an ascending arch aortography demonstrated the predominant vascular supply to the tumor originating from the right subscapular artery (Figure 2, 3).
- A 5 French angled Glidecath catheter (Terumo, Somerset, NJ) was used to perform a right axillary angiogram demonstrating hypertrophy of the right subscapular artery with tumoral blushes, venous pooling, and early venous shunting. The right subscapular artery was catheterized with the Glidecath catheter.
- Surgifoam (Ethicon, Raritan, NJ), mixed with Omnipaque-300 (GE Healthcare Chicago, IL) was used to perform embolization until stasis of antegrade flow within the subscapular artery and no perceived tumoral enhancement was seen. Then, an Azur Hydrocoil (Terumo Somerset, NJ) was placed within the right subscapular artery. Final angiogram demonstrated cessation of antegrade flow within the targeted vessel (Figure 3). The right common femoral arteriotomy was closed with Angioseal device (Terumo Somerset, NJ).
- The patient demonstrated no hemorrhage or blood transfusion requirements after embolization. A few days later, the patient underwent radical resection of the right chest mass. Operative blood loss was reported to be less than 100 cc, which was predominately seen during resection of the adjacent osseous and soft tissue structures. Surgical pathology confirmed recurrence of a high-grade PLS.

## Discussion

- Resection of superficial LPS can be quite difficult due to the priority to obtain negative margins with minimal complications, including blood loss. The current standard remains surgical resection without chemoradiation. However, PLS local recurrence rates are reported in 30% to 40% of tumors, but superficial PLS have reported less LR, nearing 10% [4]. PLS have lesser tendency for local invasion, despite its aggressive nature, but poorer outcome is seen with central body location, large (>10 cm) size, and the presence of necrosis [4].
- Pre-operative embolization has shown to limit hemorrhage during resection and improve survival rates after resection in renal cell carcinoma undergoing nephrectomies [5]. Theoretically, preoperative embolization can decrease tumor dimensions and improved the surgical ability for en bloc resection. Also, embolization causes tumoral edema which allow for better surgical visualization of tumor margins [3].
- Catheter-directed intra-arterial bland embolization (CDBE) is a well-tolerated and safe procedure. Typically, more serious complications are seen during embolization tumors with blood supply from primary aortic branches and/or close proximity to the spinal column. For example, 9% of patients undergoing embolization for metastatic renal cell to the spinal column suffer paraplegia (either transient and/or permanent) and aortic dissection [5].
- Our case demonstrates an emergent and pre-operative embolization of uncommon thoracic PLS assisting with safe surgical resection without complication. CDBE had been shown to facilitate treatment of osteosarcomas and should be investigated for PLS.

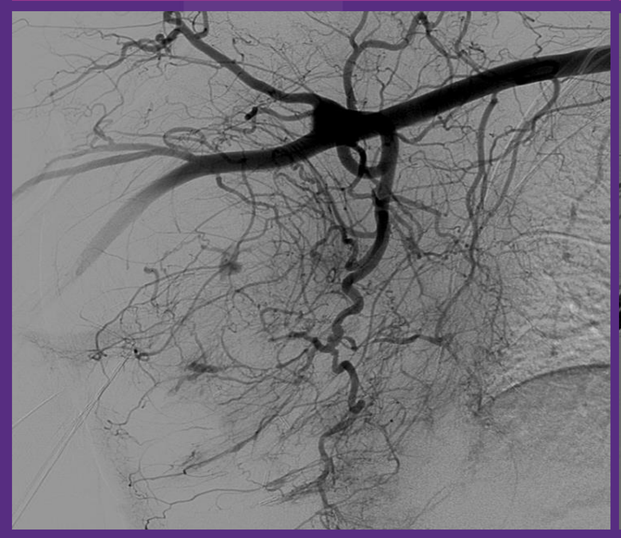
## Conclusion

- LPS is a rare subtype high-grade aggressive sarcoma.
- The current standard of care remains surgical resection.
- Resection of neoplasm can be complicated by severe blood loss and/or poor visualization secondary to surgical field hemorrhage.
- CDBE has demonstrated efficacy and safety in limited studies for various neoplasms.
- Our case demonstrates successful gelatinous and coil embolization of rare LPS of the chest wall with minimal blood loss, negative margins with en bloc resection, and uneventful post-operative recovery.
- CTBE can be a useful augmentative treatment for sarcoma, both for stabilization and operative planning.
- Investigations of pre-operative embolization for safety and efficacy for remission and palliative purposes, including laced embolic agent, are needed and may provide increased utilization for oncologic care of sarcoma.

## Figure 1

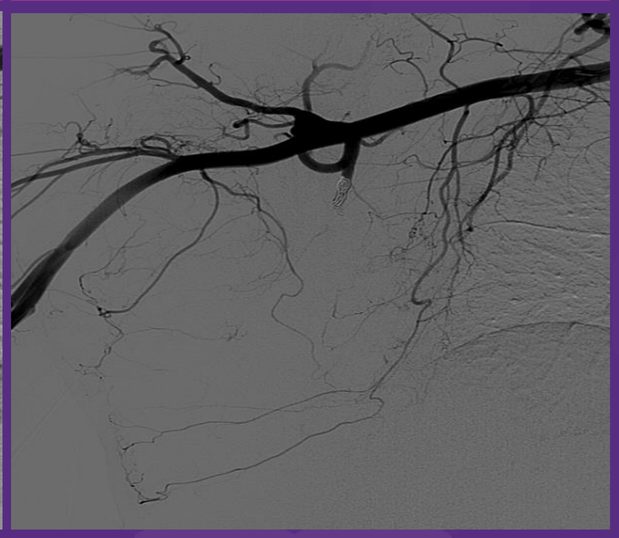
Intraoperative photograph of exophytic right chest wall mass with eschar and sloughing five days after endovascular embolization.

## Figure 2



Right anterior-posterior (AP) axillary angiogram demonstrating hypertrophic right subscapular artery with tumoral blushes, venous pooling, and early venous shunting

## Figure 3



Right AP axillary angiogram, post-embolization, demonstrating complete stasis of antegrade flow within the right subscapular artery and significant reduction in tumoral enhancement. With cessation of subscapular supply, the tumoral supply from the medial humeral circumflex and lateral thoracic artery have become more apparent. However, >90% of the vascular supply have been successful embolized.

## References

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