



Brachial Plexus Block for Lymphovenous Bypass Surgery: A Case report.

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INTRODUCTION

After mastectomy surgery, particularly those involving lymphadenectomy, patients may develop post-mastectomy lymphedema. In cases of significant swelling, this condition can be debilitating. Lymphovenous anastomosis bypass is a microsurgery technique where lymphatic channels in the affected arm are connected to suitable vein targets¹. This procedure is typically performed under general anesthesia at our institution due to its complexity and potential length of duration. As an alternative anesthetic modality, our team proposed the use of a surgical brachial plexus nerve block with sedation for these procedures. The use of regional anesthesia offers several potential advantages in this clinical scenario, including reduced induction and emergence time, enhanced surgical visualization for anastomosis and importantly, improved patient experience and satisfaction.

CASE REPORT

A 52-year-old female with a history of invasive ductal carcinoma and ovarian carcinoma positive for BRCA1 mutation had metastatic disease to her axillary nodes. She received neoadjuvant chemotherapy and eventually underwent bilateral total mastectomies with an axillary dissection involving the removal of 13 lymph nodes on the left side. The patient began noticing increased swelling in the left arm while lifting weights at the gym. Given the progression of her lymphedema, she elected to undergo lymphovenous anastomosis bypass surgery to improve her functional quality of life. Exam shows normal sensation and motor function in the left upper extremity (LUE). Mild generalized swelling is appreciated when compared to the right upper extremity. (Figure 1)

In the preoperative bay, the patient underwent supraclavicular brachial plexus and intercostobrachial nerve blocks using a total of 30 ml of 0.5% bupivacaine (Figure 2).

Intraoperatively, sedation was maintained with propofol at 100 mcg/kg/min without a need for additional opioids. The nerve blockade lasted through the five-hour surgery, and extended postoperatively, during which the patient did not require any further medications for pain. The block wore off appropriately after 16 hours with no residual numbness or weakness. She was satisfied with the avoidance of general anesthesia and endotracheal intubation, a shorter PACU stay, and excellent postoperative pain control. Likewise, the surgeon appreciated the improved workflow and improved anastomosis due to the vasodilation effects from the nerve block.



Figure 1:
Preoperative
swelling in LUE in
comparison to RUE

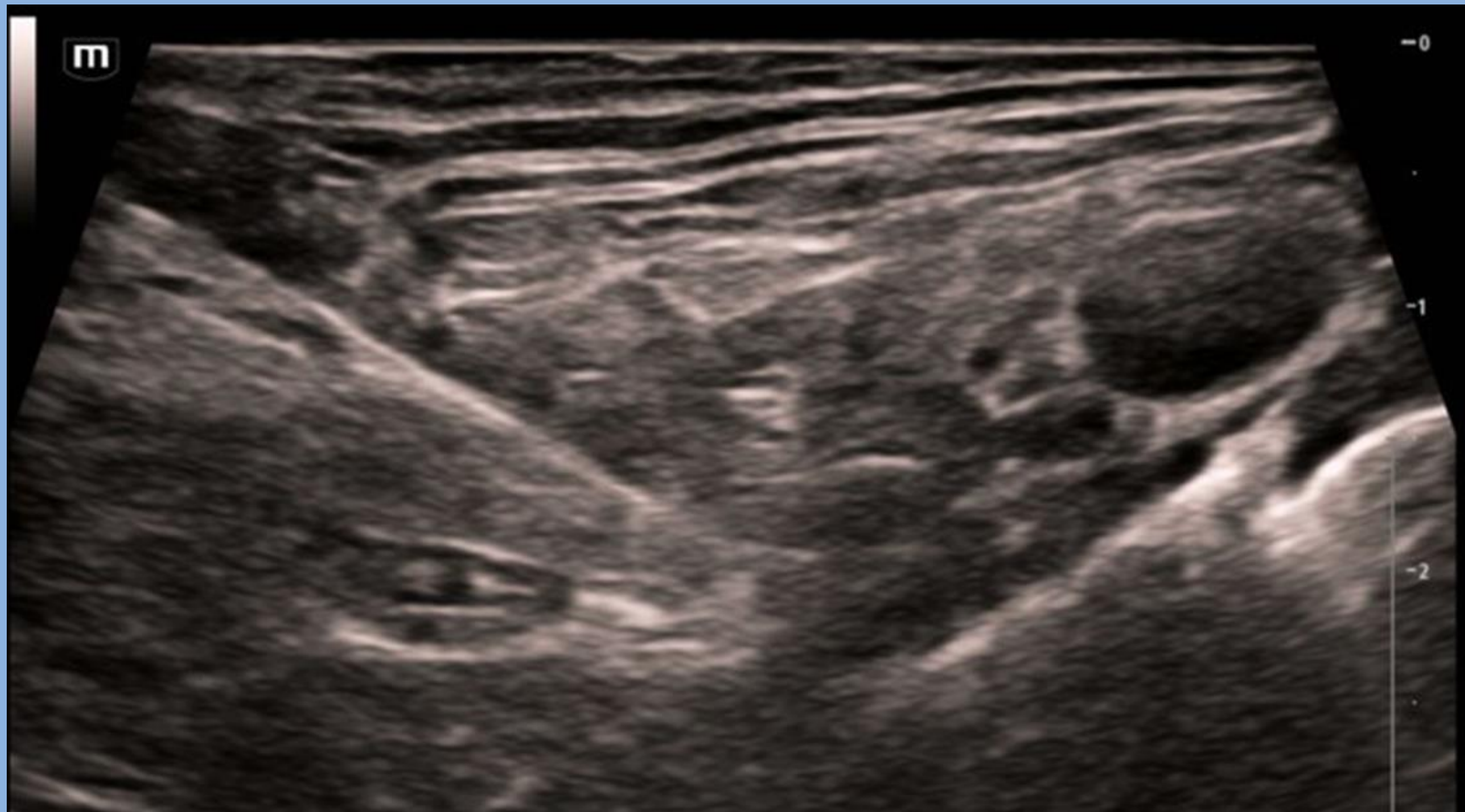


Figure 2: Supraclavicular Nerve Block

DISCUSSION

Brachial plexus nerve blocks are commonly used in vascular surgery for arteriovenous fistula creation. The resultant sympathectomy from the nerve block has demonstrated benefits of improved graft patency and reduced vasospasm, leading to potential reduced surgical failure rates ^{2,3}. These benefits could be applicable to lymphovenous anastomosis bypass surgery. The vasodilation resulting from the nerve block can assist the surgical team in identifying more optimal targets for the bypass⁴. In addition, vasodilation that persists for several hours postoperatively may enhance early lymphatic drainage, potentially promoting faster lymphedema resolution in the short term and improving long- term graft patency. There are case reports of stellate ganglion blocks being utilized in this manner to help with intractable lymphedema as sympathectomy reduces post capillary resistance to help the accumulated interstitial fluid better drain venously⁵. As we continue to perform more of these procedures under regional anesthesia with sedation, we aim to evaluate postoperative data to draw further conclusions and compare patient outcomes with those undergoing the same procedure under a standard general anesthetic.

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