

**Title:** First profunda artery perforator flap for breast reconstruction performed at a VA Hospital  
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### **Introduction:**

The profunda artery perforator (PAP) flap for breast reconstruction originated by Dr. Robert J. Allen in 2010 after multiple failed attempts at using muscle-sparing transverse rectus abdominal muscle (MS-TRAM) flap and implants. This flap method was initially approached due to the patient's request for an autologous tissue graft that did not sacrifice muscle. The PAP flap has grown significantly in popularity and usage in breast reconstruction and makes up to about 16% of autologous breast reconstruction, coming second to DIEP flaps (76%). This well-tolerated, muscle-sparing approach is ideal for patients without sufficient abdominal fat (low BMI or previous abdominal liposuction) or those who prefer a non-abdominal donor site. In addition to its gained popularity for breast reconstruction, the PAP flap has also been utilized in defects reconstruction over the entire body such as the head and neck, lower extremities, vulva, and tongue. This is a sophisticated procedure and has never been performed at a VA hospital before this case.

### **Case Report:**

We present a 44-year-old female patient with intraductal carcinoma of the right breast, phenotype ER+/PR+/HER2+/BRCA-, whose imaging showed five suspicious axillary lymph nodes and possible liver metastasis. Upon surgical consultation, she completed six cycles of neoadjuvant chemotherapy TCHP (trastuzumab, carboplatin, docetaxel, and pertuzumab) with good response. After being given options of implant-based reconstruction versus autologous flap reconstruction, the patient opted to proceed with the autologous free flap reconstruction via the right profunda artery perforator flap. The PAP flap was then inserted into the breast defect and coned into a shape of a neo-breast. A new nipple and areolar complex region were simultaneously created. The flap remained viable throughout the procedure with no complications occurring. The patient healed well from the procedure and presented later in the year for breast revision to improve contour, symmetry, and volume, as well as a minor scar revision at the donor site due to residual dog-ear. The following procedure were performed: excision of the right posterior medial thigh scar, suction-assisted lipectomy of the anterior right thigh and anterior medial left thigh, fat grafting from bilateral thighs to the right breast, and left sided symmetrizing mastopexy. There was markedly improved breast symmetry, contour, and volume following the reconstruction revision.

### **Discussion:**

The PAP flap is an excellent surgical option in that it is a forgiving skin paddle that can range widely in dimensions and volume. Other notable advantages include the reliable blood supply, possibility of multiple perforators, and availability for bilateral reconstruction. It successfully forms a naturally uplifted and aesthetic breast shape and volume while simultaneously removing potentially unwanted posterior thigh fat with minimal postoperative pain and scar visibility. The success rate has been reported as high as 99% in some literature. Limitations to the PAP flap approach include wound healing complications (noted as high as 12% in a retrospective study evaluating PAP flaps), lack of fat volume requiring additional fat grafting, and caudal scar migration. The new availability for this procedure at a VA hospital is a huge step in the right direction; allowing veterans and their dependents to have access to this sophisticated procedure.