**RESULTS:** A total of 780 autologous breast free flaps were reviewed, with 16 (2.0%), 369 (46.8%) and 291 (36.9%) receiving intraoperative epinephrine, phenylephrine, and ephedrine, respectively. Flap failure was observed in 15 (1.9%), venous thrombosis in 13 (1.6%) and flap congestion in 37 (4.7%) free flaps. Vasopressor use was not associated with flap failure (p = 0.345) or other complications, but was significantly associated with a decreased risk of postoperative flap congestion (p = 0.001). However, in a multivariate analysis, vasopressor use was associated with an increased risk of postoperative acute blood loss anemia (p = 0.012).

**CONCLUSION:** Consistent with previous clinical studies, there was no statistical difference in free flap failure between patients who received and did not receive vasopressors intraoperatively. In contrast to previous concerns that vasopressor use compromises flap viability, our study demonstrated intraoperative use of vasopressors was significantly associated with a decreased risk of postoperative flap congestion. These benefits must be balanced with the potential increased risk of postoperative anemia. Further research is necessary to elucidate the optimal type, dosing and schedule of vasopressor administration and which populations may benefit most from intraoperative vasopressor use.

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**PURPOSE:** Anastomotic microvascular devices have become increasingly popular in reconstructive microsurgery due to their high patency rates, reduced operative times, and comparable flap complication rates compared to traditional hand-sewn (HS) anastomoses. Several single-institution case series have demonstrated favorable outcomes with venous coupler (VC) use in autologous breast reconstruction. The purpose of this study is to systematically evaluate the literature on the use of VC and HS venous anastomosis in autologous breast reconstruction with regards to operative efficiency and clinical outcomes.

**METHODS:** A systematic literature review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). Three electronic databases (PubMed, MEDLINE, and EMBASE) were queried with the search terms “breast reconstruction,” “free flap,” “microvascular anastomotic coupler,” “anastomotic device,” and “venous coupler.” Studies were included if they indicated venous anastomosis method. Studies including non-breast categories of reconstruction (e.g., lower extremity, head and neck, etc.) were only included if breast reconstruction outcomes were explicitly reported. Anastomotic time and surgical outcomes, including venous complications, partial and total flap loss (due to both venous and non-venous etiologies) and re-operation and salvage rates were collected. Outcomes were pooled, and p-values were computed using Fisher’s exact test, with a value <0.05 considered statistically significant.

**RESULTS:** A total of 15 studies encompassing 5,471 free flaps for breast reconstruction met inclusion criteria. Of these, four studies directly compared VC and HS cases, seven reported on VC cases only, and the remaining four reported on HS cases, only. The median publication year of the VC and HS studies was 2009 and 2008.5, respectively. The VC device was used in 2,979 (54.4%) flaps, while 2,492 flaps (45.6%) utilized HS anastomoses. Deep inferior epigastric perforator (DIEP) flaps and transverse rectus abdominis muscle (TRAM) flaps were the most common reconstructive techniques in the VC group, accounting for...
47.6% and 42.0% of all flaps performed, respectively. In the HS group, TRAM flaps comprised the vast majority of free flaps (72.6%). Mean anastomosis time was reported in five VC studies (4.46 minutes, 1,573 flaps) and only in one HS study (21 minutes, 887 flaps). Venous complications occurred in 143 flaps (2.61%), overall. There was a significantly decreased venous complication rate in the VC group as compared to the HS group (1.54% vs. 3.89%, \( p<0.0001 \)). Venous complications were further categorized by etiology (e.g., thrombosis, mechanical kinking, insufficiency, etc.). Thrombosis accounted for the majority of venous complications in both the VC and HS groups (89.1% and 96.9%, respectively). The VC group experienced significantly reduced total flap failure rate (0.38% vs. 1.18%, \( p=0.0032 \)) and return to the operating room (1.58% vs. 3.90%, \( p=0.0001 \)) as compared to the HS group. Salvage rates in the VC and HS groups were 81.6% and 73.0%, respectively (\( p=0.7576 \)).

CONCLUSION: Evolutions in both microvascular technique and technology have improved safety and outcomes in autologous breast reconstruction. Our study demonstrates the benefits of using VC as opposed to HS anastomosis in this patient cohort due to its efficiency of use, favorable venous complication rate, reoperation rate, and overall flap survival rate.

Nipple-Sparing Mastectomy and Breast Reconstruction with a Deep Inferior Epigastric Perforator Flap Using Thoracodorsal Recipient Vessels and a Low Lateral Incision

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**BACKGROUND:** Increased incidence of nipple-sparing mastectomies poses challenges in providing aesthetically-pleasing and inconspicuous scars especially in the setting of autologous breast reconstruction. A unique technique of nipple-sparing mastectomy breast reconstruction using free flaps and the thoracodorsal (TD) system is described.

**METHODS:** Between December 2010 and 2016 December, patients who underwent autologous reconstruction using TD recipient vessels were investigated. Complication and revision rates were compared to using the internal mammary (IM) vessels. Patient reported outcomes were determined.

**RESULTS:** 79 nipple-sparing mastectomy reconstructions, 30 used TD and 49 used IM recipient vessels. There was not a significant difference in age, BMI, ischemia time, and specimen/ flap- harvested /flap-used weights between two groups. There was a statistically significant difference in artery size (\( p=0.01 \)), the IM artery 2.7 ± 0.43 large than the TD artery 1.8 ± 0.4. There was not a statistical difference with breast hematoma, infection, partial flap loss, re-open rate, flap failure, fat necrosis, abdominal site hematoma, hernia/bulge, umbilical wound dehiscence, or total complications between two groups. Breast-Q “psychosocial well-being” had a statistically significantly higher score in the TD group (\( p = 0.04 \)), the mean score was 83.9 ± 14.6 in the TD group and 72.8 ± 17.6 in IM group.

**CONCLUSION:** This technique provides a low lateral, and inconspicuous incision in nipple-sparing mastectomy with autologous breast reconstruction with a low complication and revision rate and higher psychosocial well-being scores than IM vessels.

Pre-Pectoral Vs. Sub-Pectoral Breast Reconstruction—a Matched-Pair Analysis of Clinical Outcomes

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**BACKGROUND:** The development of acellular dermal matrices (ADM) has revolutionized implant-based breast reconstruction. The most recent development has been the introduction of pre-pectoral breast reconstruction. While it is associated with decreased postoperative pain and prevention of animation deformity, concerns have been expressed related to the quality of soft tissue coverage as