**Comparison of Donor-Site Morbidity, Functional Outcome, and Pain Following Abdominal Autologous Breast Reconstruction**

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Purpose:

Abdominal flap reconstruction is the most popular form of autologous breast reconstruction given its superior long-term aesthetic outcomes. Options include pedicled TRAM (PTRAM), free TRAM (FTRAM), DIEP, and SIEA flaps. Prior studies comparing outcomes among these modalities have often produced contradictory results. The current study aims to compare abdominal donor-site morbidity, functional outcome, and patient satisfaction among these autologous flap reconstructions.

Methods:

Drawing from the practices of 11 centers and 57 surgeons, patients undergoing PTRAM, FTRAM, DIEP, SIEA, or mixed MS-FTRAM+DIEP flaps were prospectively evaluated for abdominal donor-site complications and patient-reported outcomes (PROs). The PROs were measured by BREAST-Q survey to assess breast satisfaction and well-being-abdomen, and PROMIS survey to assess physical function and pain, pre-operatively and at one and two years post-operatively. Mixed effect regression models were used to assess the effects of procedure type on outcomes, controlling for a range of demographic and clinical variables.

Results:

One year follow-up data were available for 693 patients, including 90 PTRAMs, 104 FTRAMs, 398 DIEPs, 62 SIEAs, and 39 Mixed flaps. Among these, 463 patients had two year data (56 PTRAMs, 76 FTRAMs, 261 DIEPs, 44 SIEAs, and 26 Mixed flaps). In the regression model, DIEPs and SIEAs were associated with higher donor-site complication rates at both one (OR=2.2, p=0.03; OR=5.1, p<0.001, respectively) and two years (OR=3.3, p=0.004; OR=7.3, p<0.001), compared with FTRAMs. Analysis of BREAST-Q results at one year showed higher levels of physical well-being-abdomen for DIEPs (Beta=5.6, p=0.02) and SIEAs (Beta=9.3, p=0.007), compared with FTRAMs. Bilateral reconstructions were associated with significantly lower scores on BREAST-Q physical well-being-abdomen (p<0.0001) and with higher PROMIS pain scores (p=0.005), compared with unilateral procedures. Although no procedure effects were seen in physical function or pain on the PROMIS survey at one or two years, older age and higher BMI were associated with lower physical function at two years.

Conclusion:

Our findings suggest that although DIEP and SIEA flaps are associated with higher risks of complications, they may have less impact on abdominal well-being in the short term, compared with TRAM flaps. Further research is needed on the long-term impacts of these procedures.