

## Using DIEP Flap Thickness As a Predictor of Fat Necrosis

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**Background:** Studies have previously shown that BMI may be associated with increased complication rates in abdominal-based breast free flap reconstruction. Flap weight has not been shown to correlate with increased complication rates. However, the effect of flap thickness has not yet been studied. Here we investigate the correlation between flap thickness and complication rates in breast microvascular reconstruction with DIEP flaps.

**Methods:** Retrospective chart review was performed for all patients undergoing microvascular breast reconstruction with DIEP flaps at a single institution from July 2016 to January 2018. Data included patient demographics, flap weight, flap thickness as measured from pre-operative CTA, and complication rates. Patients with incomplete data were excluded. Correlation was calculated using logistic regression.

**Results:** We identified a total of 59 patients who underwent reconstruction with a total of 94 DIEP flaps. The average age was 50. The average follow up was 12 months. 56% of patients underwent bilateral flap reconstruction, and 44% of patients underwent unilateral flap reconstruction. The average BMI was 28.7. The average flap thickness was measured as 3.2cm (range: 0.9 - 5.1cm). The average flap weight was 575g (range 100 – 1672g). A total of 15 flaps (16%) were noted to have post-operative fat necrosis. 11 patients (18.6%) were found to have abdominal dehiscence. Using student's t-test, we found that post-operative fat necrosis was associated with significantly higher flap thickness. ( $p=0.01$ ). Abdominal dehiscence had no correlation with flap thickness ( $p=0.41$ ). There was no significant correlation between flap thickness and any other complication. The presence of post-operative fat necrosis was not significantly associated with greater BMI or flap weight.

**Conclusion:** Increased flap thickness was found to be associated with increased rate of fat necrosis, and thus may be a better predictor of fat necrosis than either flap weight or BMI. Flap thickness was not associated with a higher rate of any other complications. Alternate donor sites may be considered in patients with thick abdominal tissue on pre-operative CTA.