



# When To Skip the Ladder and Take the Elevator: Complex Reconstructions Predict Reduced Complication Rates Compared to Simpler Techniques after Resection of Soft Tissue Sarcomas Located in the Thigh

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## Purpose

We hypothesized that advanced reconstruction would yield lower complication rates compared to simple reconstruction for thigh Soft Tissue Sarcoma (STS) defects.

## Methods

This is a retrospective review of our sarcoma patients from 2019 to 2021. We recorded patients' demographics, sarcoma treatment, reconstruction technique, and outcomes. **Advanced reconstruction was defined as pedicled or free flaps.** Simple and Complex reconstructions were compared via parametric and non-parametric tests as appropriate.

## Results

We identified 177 patients (53.1% male), of whom 87% had prior radiotherapy. Medial thigh, in addition to being the most commonly involved (26%), was notably the highest in complication rates if approached by simple techniques ( $p<0.001$ ). Univariate analyses identified a significant association between limb segment width and postoperative complications, in particular, incisional dehiscence, seroma, and dressing changes beyond 6 weeks (all  $p<0.05$ ).

Multivariate regression identified simple reconstruction as an independent predictor of postoperative complications (OR = 5.7,  $p<0.001$ ). Most grafts were lost in the simple reconstruction group ( $p<0.001$ ). However, major complications and reoperation rates did not significantly differ between the two groups. Despite having a separate donor site, free flaps had the lowest complication rate, ( $p<0.001$ ).

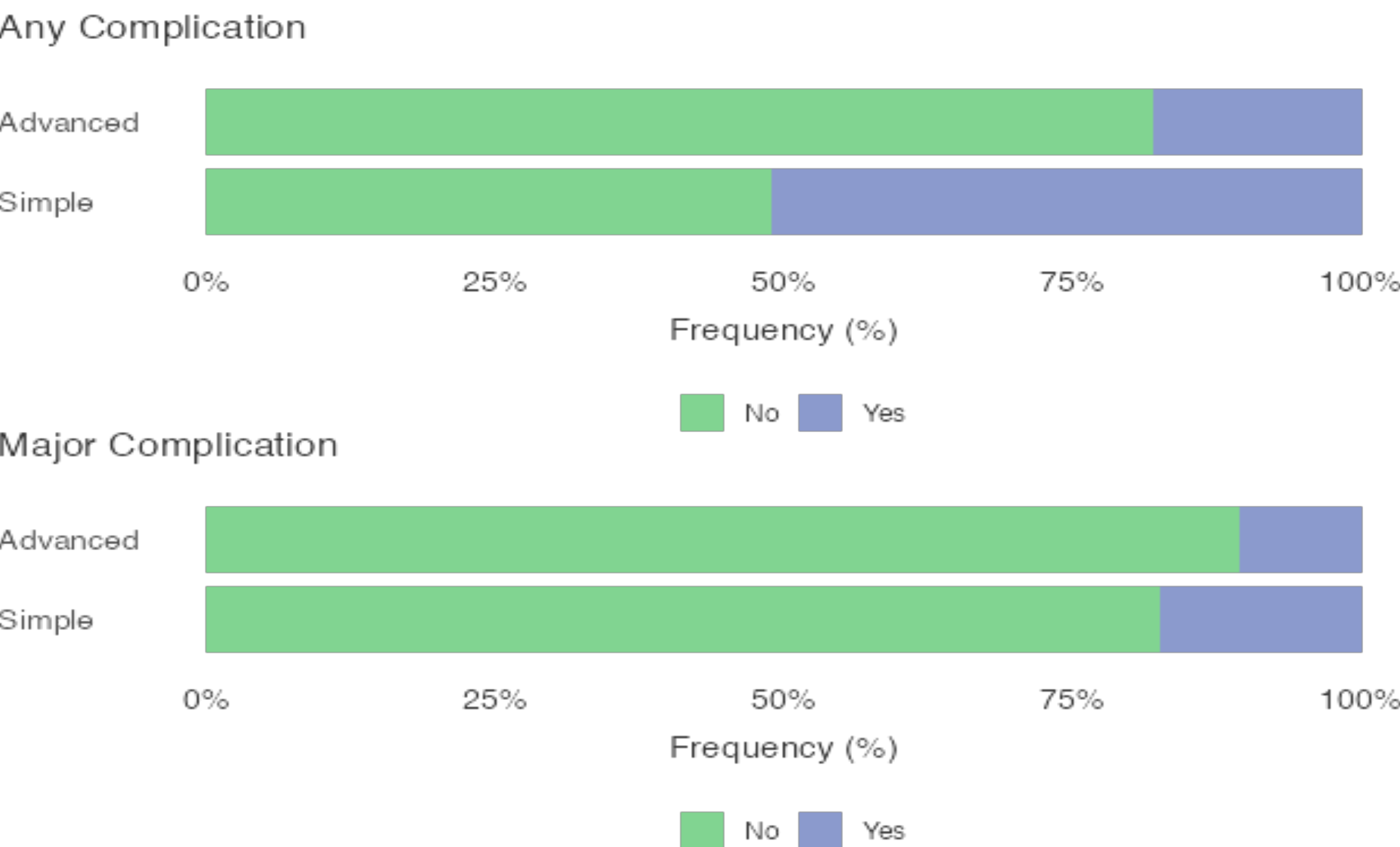


Figure 1. Overall and major complication rates stratified by type of reconstruction

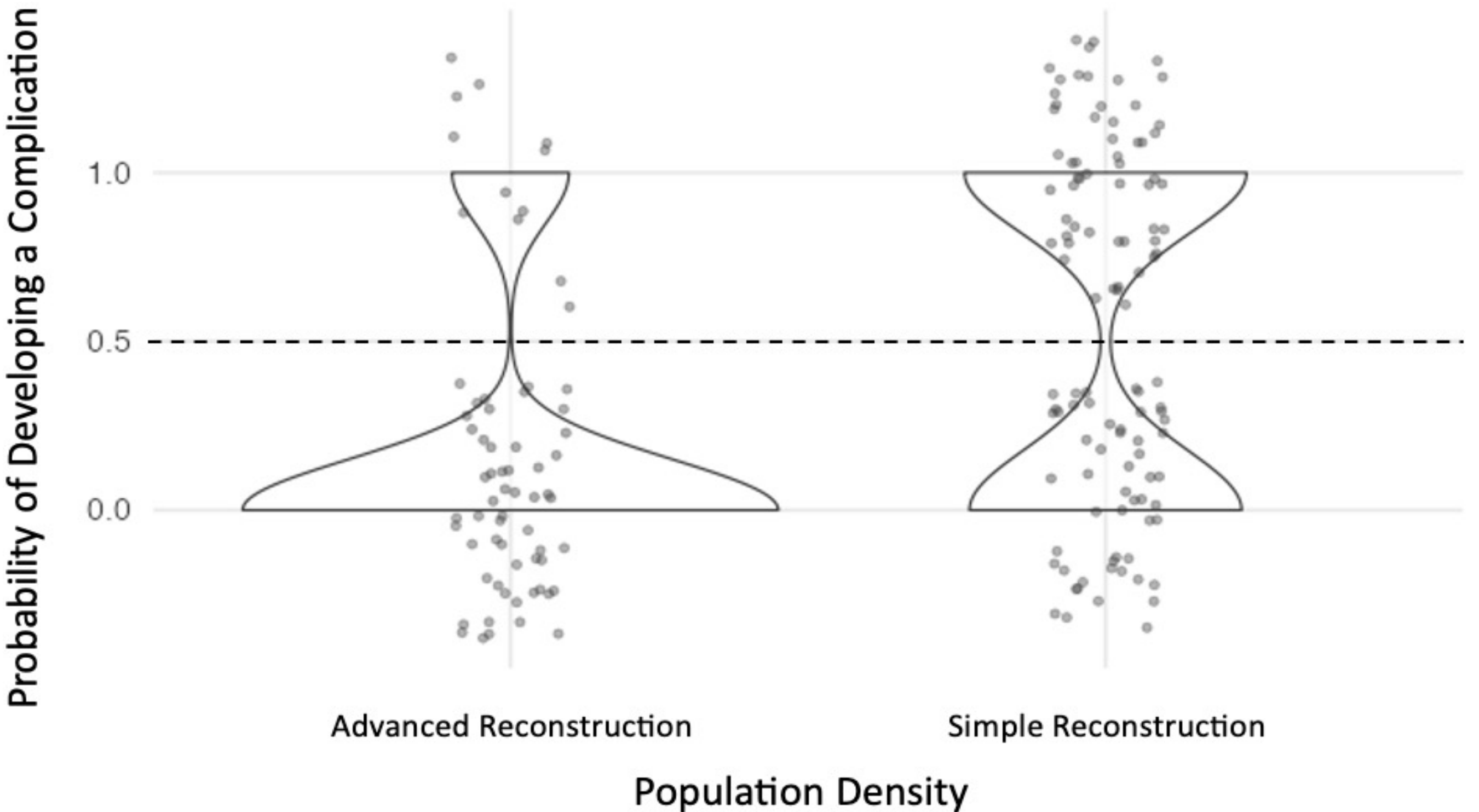


Figure 2. Violin and dots visualization of kernel density of complications by reconstruction type. Wider violins represent more frequent events.

## Conclusions

Simple reconstruction appears to be associated with more wound healing complications compared to more advanced methods in thigh STS reconstruction. This is likely related to the positive effect non-irradiated well vascularized tissue has on optimizing healing in an irradiated wound bed. Plastic surgeons should consider using a regional or free flap for thigh STS reconstruction even when simpler options appear technically feasible.



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