



A Comparison Of Postoperative Outcomes Based On Recipient Vessels In Scalp Free Flap Reconstruction:A Systematic Review And Meta-analysis

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Background

- Scalp reconstruction presents unique challenges due to the scalp’s distinct anatomical, physiologic, and aesthetic characteristics
- Recipient vessel selection is a critical aspect of scalp reconstruction, with the most utilized vessels being the **superficial temporal artery (STA)** and **facial artery (FA)**
- The decision between recipient vessels considers several factors, including **vessel caliber, accessibility,** and **reconstructive goals**
- This systematic review addresses a critical gap in the literature regarding the **impact of recipient vessel selection** on post-operative outcomes following scalp reconstruction

Methods

- The following **databases** were utilized:
 - PubMed, Scopus, Embase, Web of Science, Cochrane, and Medline
- Studies reporting outcomes of scalp reconstruction using either the STA or FA were identified
- Exclusion criteria consisted of non-English language articles, systematic reviews/case series’ with <6 patients, non-scalp reconstruction studies, and animal studies
- **Recipient vessel and outcomes of interest**, including flap loss, partial flap necrosis, wound dehiscence, venous thrombosis, and infection rates were collected
- **Quality evaluation** was performed using ASPS criteria and the ROBINS-I tool

Figure 1. Forest plot of wound dehiscence rates between STA and FA groups

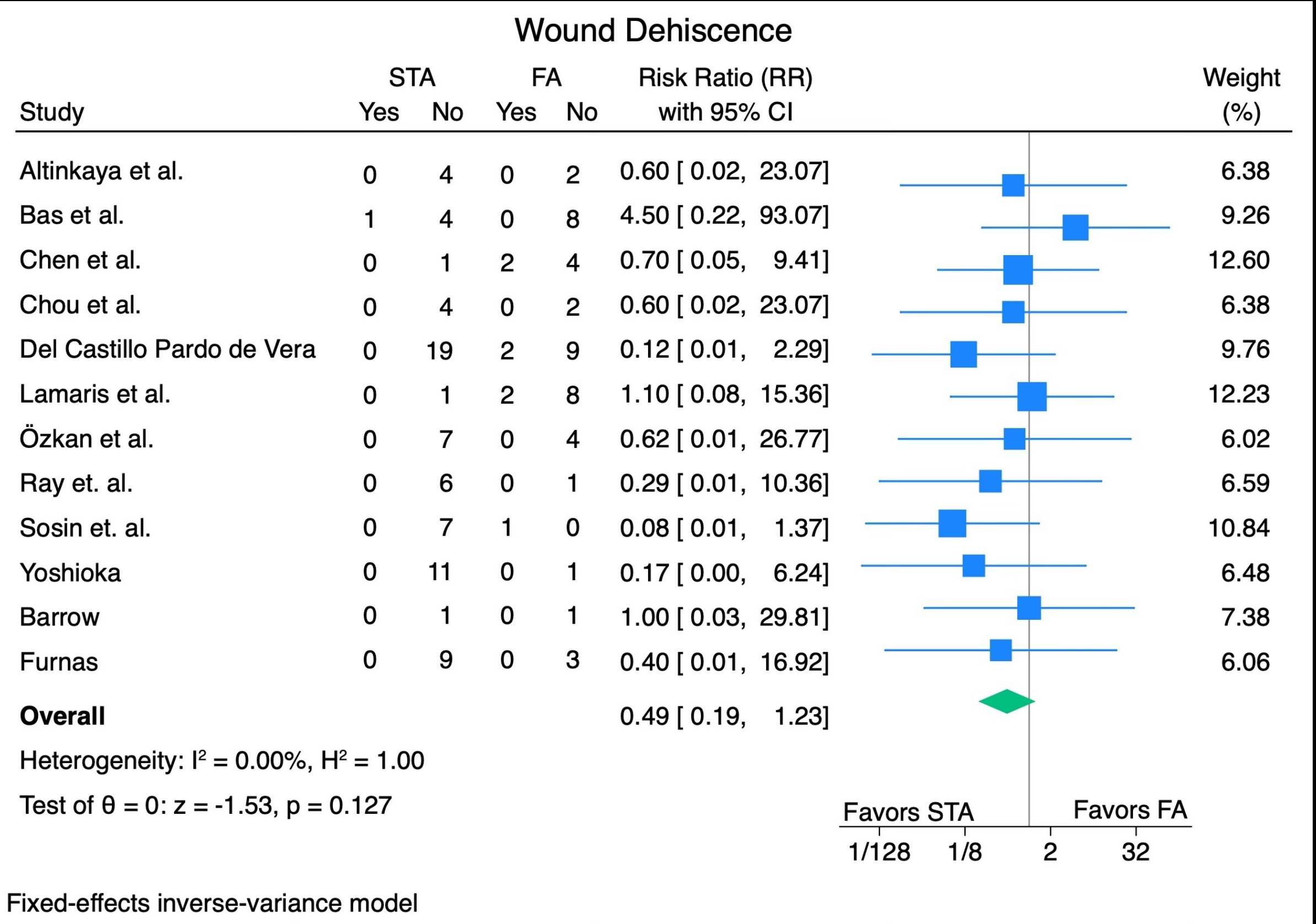
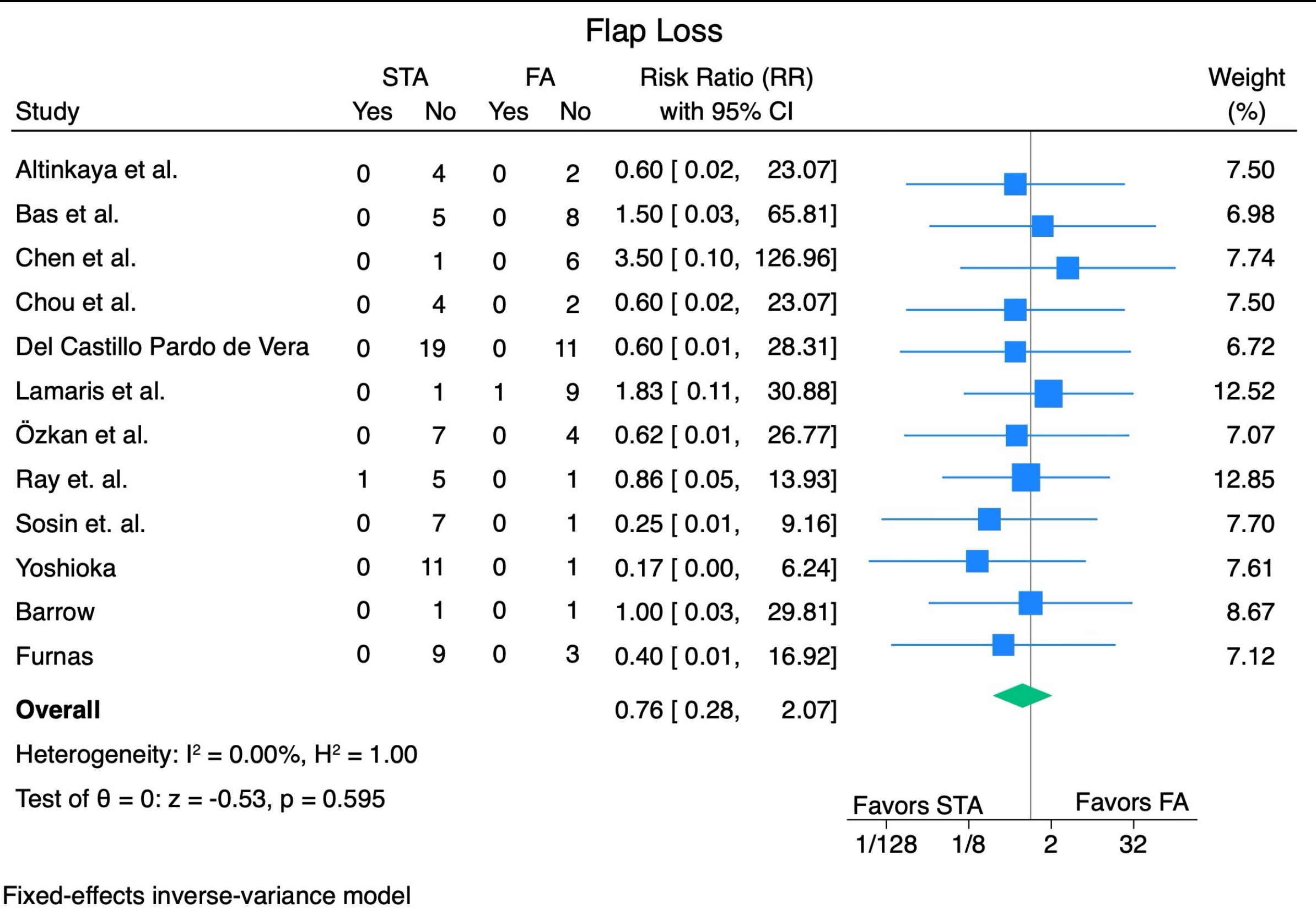


Figure 2. Forest plot of flap loss rates between STA and FA groups



Results

- Of 3,270 records identified, **12 studies** were included
- 125 free flaps identified (75 STA, 50 FA)
- Pooled analysis demonstrated an overall flap survival rate of 98.4%
- The mean defect size was greater in flaps using the STA vs. FA ($223.7 \pm 119.4 \text{ cm}^2$ vs. $157.1 \pm 96.5 \text{ cm}^2$, $p=0.001$)
- The FA group had a higher rate of wound dehiscence than STA group
- **Meta-analysis** demonstrated **no significant differences** in rates of wound dehiscence, flap loss, partial flap necrosis, venous congestion, or postoperative infection between groups
- **Bias and Quality Assessment:**
 - All studies were classified as Level of Evidence III or IV and received a “low” GRADE level of evidence quality
 - Eleven studies had a “moderate” risk of bias using the ROBINS-I tool (inter-rater reliability: 97.5%, kappa statistic 0.952, $p<0.001$)

Conclusions

- The choice between the STA and FA for scalp reconstruction requires a **comprehensive assessment** of the defect, patient factors, and specific advantages of each vessel and donor site
- Surgeons should be mindful of the potential for wound dehiscence with FA reconstructions and plan postoperative care strategies accordingly
- Further research is needed to refine these choices, **optimizing care** for patients undergoing scalp reconstruction