

A Systematic Review Examining Metaidoioplasty and Radial Forearm Flap Phalloplasty in Female-to-Male Genital Reconstruction: Is the Ideal Neophallus an Achievable Goal?

Introduction: The ideal neophallus in female-to-male genital reconstruction is achieved in a single-stage, is aesthetic, has tactile and erogenous sensation, achieves sexual intercourse and standing micturition with a functional neourethra, and has minimal complications and donor site morbidity. Metaidoioplasty and radial forearm flap phalloplasty (RFFP) are the most common procedures for neophallus construction despite no comparative studies of the procedures.

Methods: A MEDLINE search for metaidoioplasty and RFFP in female-to-male genital reconstruction was performed with outcomes compared.

Results: A total of 188 articles were identified; 7 articles related to metaidoioplasty and 11 articles related to RFFP met inclusion criteria.

In studies examining metaidoioplasty, average study size and follow-up was 50.9 patients and 4.6 years (2 studies did not report [NR] these metrics). 88% had a single-stage reconstruction (1 NR), 87% reported a satisfactorily aesthetic neophallus (4 NR), 100% reported erogenous sensation (3 NR), no studies reported tactile sensation (7 NR), 51% of patients were able to achieve sexual intercourse (4 NR), average strictures/fistulae per patient was 0.28 (0 NR), 75% achieved standing micturition (3 NR), average overall complications per patient was 0.43 (0 NR), and donor site morbidity was 6% (0 NR).

In RFFP, study size and follow-up was 60.4 patients and 6.23 years (6 NR). No patients had single-stage reconstruction (8 NR), 70% reported a satisfactorily aesthetic neophallus (4 NR), 69% reported erogenous sensation (6 NR), 77% reported tactile sensation (9 NR), 43% were able to achieve sexual intercourse (6 NR), average strictures/fistulae per patient was 0.51 (4 NR), 75% achieved standing micturition (6 NR), average overall complications per patient was 0.88 (3 NR), and donor site morbidity was 11% (3 NR).

Comparing the groups, sample size ($p=0.7722$) and follow up ($p=0.1798$) were similar. Compared to RFFP, metaidoioplasty was significantly more likely to be completed in a single stage ($p<0.0001$), have an aesthetic result ($p=0.0002$), maintain erogenous sensation ($p<0.0001$) and have lower overall complication rates ($p=0.02$). Outcomes for standing micturition ($p=1.000$), urethral stricture/fistulae ($p=0.08$), donor site morbidity ($p=0.11$), and ability for sexual intercourse ($p=0.1061$) were similar; tactile sensation could not be compared.

Conclusions: Current literature suggests metaidoioplasty may more successfully achieve an ideal neophallus than RFFP. High-quality studies with emphasis on patient-reported outcome measures are required to more critically evaluate female-to-male genital reconstruction.