were able to walk without support and a stable gait. In one case treated with unilateral gastrocnemius, the patient suffered from recurrence. He underwent the opposite gastrocnemius transfer and was ultimately able to walk without support. Active dorsiflexion in patients treated in group A was 17.1 ± 1.3 as opposed to 8.8 ± 1.9 in group B; this difference was significantly better in group A ($P < 0.01$). Similarly mean active range of motion in group A was 47.2 in group A compared with 38.6 in group B, the difference being significant ($P < 0.01$). Mean American Orthopaedic Foot & Ankle Society scores significantly improved from 63.4 to 87.8 in the group A and from 65.4 to 70.2 points at final follow-up, denoting that the results were significantly better in the former group ($P < 0.001$).

**CONCLUSIONS:** Surgical failure and recurrence in patients undergoing standard procedures for foot drop is a commonly found problem. Transferring gastrocnemius muscle to the tendons of anterior compartment not only improves postoperative dorsiflexion with good range of motion, but also provides a stable ankle that allows the patient to walk without a splint or support. This technique should be utilized more often in treating patients with foot drop because it gives better long-term results with no postoperative complications.

**Secondary Surgery following Lower Extremity Free Tissue Reconstruction**

**Presenter:** Frankie Wong, MD

**Co-Authors:** Joani M. Christensen, MD, Mara Z. Meulendijks, MD, Leah Ahn, MD, David Iskhakov, BA, Kyle R. Eberlin, MD

**Affiliation:** Harvard Plastic Surgery Residency Training Program, Boston, MA

**BACKGROUND:** Microsurgical free tissue transfer may be the only reconstructive option for lower extremity limb salvage. However, the functional and aesthetic results following free tissue reconstruction after initial salvage may be suboptimal requiring secondary procedures to facilitate wound healing and refinement.$^{1,2}$

**PURPOSE:** The authors studied the rate of secondary surgery after lower extremity free tissue reconstruction and identified associated factors for secondary surgery

**METHODS:** A multi-institutional retrospective cohort study was performed, including patients who underwent lower extremity free tissue transfer from January 2002 to December 2019. The median follow-up time was 17 months. Our primary outcome variable was the presence of secondary surgery after free tissue transfer for lower extremity reconstruction. Independent variables (wound etiology, flap, donor type, recipient, co-morbidities, etc.) were collected. Secondary surgery was categorized as (1) wound closure procedures and (2) refinement procedures. Multivariable logistic regression was performed to determine which variables were independently associated with the outcome.

**RESULTS:** In total, 420 free tissue transfers for lower extremity reconstruction were identified. Secondary surgery was performed in 57% of the patients who underwent free tissue reconstruction to the lower extremity. Wound closure procedures comprised 43% of the cohort, and refinement procedures 14% of the cohort. Patients with a myocutaneous free flap were found to be more likely to undergo secondary surgery (OR: 2.2, $P: 0.045$, 95% CI: 1.02–4.9) and oncologic patients who underwent chemotherapy were more likely to undergo a secondary procedure when compared with oncologic patients who did not undergo chemotherapy (OR: 2.9, $P: 0.048$, 95%, CI: 1.01–8.1). Patients with the ankle as recipient site were less likely to undergo a secondary procedure compared with patients with a recipient site other than the ankle (OR: 0.60, $P: 0.022$, CI: 0.39–0.93).

**CONCLUSIONS:** The majority of lower extremity free tissue reconstructions underwent secondary procedures to provide definitive wound closure and/or refinement. Overall, patients who underwent a myocutaneous lower extremity free flap were found to be more than twice as likely to undergo secondary procedures than patients with other flap types.

**REFERENCES:**

1. Kotsougiani D, Platte J, Bigdeli AK, et al. Evaluation of 389 patients following free-flap lower extremity reconstruction with respect to secondary refinement procedures. *Microsurgery*. 2018;38(3):242–250.

2. Cho EH, Shammas RL, Carney MJ, et al. Muscle versus fasciocutaneous free flaps in lower extremity traumatic reconstruction: a multicenter outcomes analysis. *Plast Reconstr Surg*. 2018 Jan;141(1):191–199.

**Postoperative Outcomes after Penile Inversion Vaginoplasty: Prevention and Management of Rectal Injury**

**Presenter:** Martin Morris, MBE
Co-Authors: Chien-Wei Wang, MD, Cole A. Holan, BA, Megan E. Lane, MD, Shane D. Morrison, MD, MS, William M. Kuzon, MD, PhD

Affiliation: University of Pennsylvania Hospital, Philadelphia, PA

INTRODUCTION: In the United States, it is estimated that 0.39%–2.7% of the population identify themselves as transgender or gender non-binary, with an estimated 25%–35% of transgender or gender non-binary patients undergoing gender-affirmation procedures. Penile inversion vaginoplasty (PIV) is a common procedure for transfeminine patients, with the goal of creating a functional vaginal canal and clitoris, as well as natural-appearing vulva. PIV requires extensive tissue rearrangement, and the creation of the neovaginal canal has the greatest potential for rectal or urethral injury, due to the dissection of the bulbospongiosus muscle and development of a plane anterior to Denonvilliers’ fascia. Without proper care, intraoperative rectal injuries can lead to subsequent devastating complications such as rectovaginal fistulas. Here, we report on clinical outcomes in 146 patients who underwent PIV, with a focus on management of rectal injuries.

METHODS: All patients who underwent PIV by the senior author were identified by retrospective review. Demographics, operative information, and postoperative clinical outcomes were extracted from the electronic medical record. Chi-squared tests and wilcoxon rank sum tests were used for categorical and continuous variables, respectively.

RESULTS: An estimated 146 patients were included with a median age of 43.5 years (IQR 31–54) and median BMI 27.2 (IQR 24–32). The most common comorbidities were hypertension (21.3%) and asthma (21.3%). Sixty-five patients had a prior history of abdominal, pelvic, or rectal surgery (44.5%). Median length of stay was 6 days [IQR 6–6]. A total of 33 (22.6%) and 106 (74.7%) patients experienced a major or minor complication after PIV, respectively. A total of 25.3% of patients underwent a revision procedure, with urethroplasty being most common (n = 28, 19.2%) followed by posterior web release and/or labiaplasty (n = 17, 11.6% each). At a median follow-up of 8.6 months [IQR 4–19] after PIV, 88.9% reported improvement in direction of urine stream, 90.0% reported improvement in dilation, and 77.8% reported improvement in overall aesthetic appearance. In total, 10 patients experienced a rectal injury at the time of PIV (6.8%), and operative repair consisted of a 2-layer repair in eight patients (80%), two of whom required a muscle flap (25%). The remaining patients were repaired via 3-layer repair (n = 2, 20%). Four patients subsequently developed a fistula, with two patients requiring temporary fecal diversion. After rectal injury repair, median postoperative day until dilation was 14 (7–30).

CONCLUSIONS: Rectal injuries after PIV are an important complication to recognize. To reduce morbidity and development of a fistula, monitoring and management of rectal injuries should be approached algorithmically. At our institution, this includes: (1) preoperative bowel preparation by the patient, (2) consistent intraoperative monitoring, using rectal betadyne enemas and/or digital examination, and (3) consultation with colorectal surgery should a rectal injury occur. These steps, in conjunction with subsequent multi-layered repair and placement of local muscle flaps, may prevent progression to fistula.

REFERENCES:
1. Nolan IT, Kuhner CJ, Dy GW. Demographic and temporal trends in transgender identities and gender confirming surgery. Transl Androl Urol. 2019;8(3):184–190. doi:10.21037/tau.2019.04.09.
2. Pariser JJ, Kim N. Transgender vaginoplasty: techniques and outcomes. Transl Androl Urol. 2019;8(3):241–247. doi:10.21037/tau.2019.06.03.

Preservation of Deep Epigastric Perforators during Anterior Component Separation Technique Results in Equivalent Wound Complications Compared with Transversus Abdominis Release

Presenter: Sullivan Ayuso, MD

Co-Authors: Sharbel Elhage, MD, Bola Aladegbami, MD, MBA, Kent Kercher, MD, Paul Colavita, MD, FACS, Vedra Augenstein, MD, FACS, B. Todd Heniford, MD, FACS

Affiliation: Carolinas Medical Center, Charlotte, NC

BACKGROUND: In complex abdominal wall reconstruction, the use of CST increases fascial medialization and facilitates fascial closure; however, ACST has been