



# Anatomically Ideal Phalloplasty: An Alternative to the Femoral System Approach



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## Abstract

Phallourethroplasty is often the final step of physical transition in transgender men. This is typically preceded by a minimum one year of social transition and hormone therapy. To form a neophallus, a free flap is taken from a suitable donor site, commonly the patient's forearm and a "tube within a tube" is constructed to include a functional urethra (Morrison, 2005). The use of free-tissue transfer requires careful planning that involves connecting veins and arteries of the donor site to appropriate recipient vessels. The standard approach is to connect the radial artery and venae comitantes of the newly constructed neophallus to the femoral artery and saphenous vein, respectively. This technique has its limitations, however. Often the donor vessels have a drastically different diameter than their recipient vessels, leading to a non-anatomic pressure gradient within the vessels and flap. This problem, coupled with a large groin scar and potential for recipient site complications (lymphatic leak, seroma, pain, vessel dilation) make it an imperfect option. Instead of using the femoral artery and saphenous vein as recipient vessels. Our results are very promising: there were no partial or full flap losses in any of our patients. This study suggests that this modified approach is a safer and more efficacious phalloplasty technique.

## Background

To understand the importance of transgender medicine and surgery, it is necessary to understand the clinical diagnosis that leads to this type of treatment –gender dysphoria. Recent studies suggest that the prevalence of self-reported gender dysphoria in children ranges from 0.5 to 1.3% (Zucker, 2017). Individuals with gender dysphoria have higher rates of discrimination, depression, and suicidality compared with the general population (Atkinson, 2015). Although the topic of gender dysphoria may be difficult to empathize with or understand for cis-gendered people, multiple studies have shown the positive effect of gender affirming surgery on quality of life of trans people, and several studies describe an increase in their psychological wellbeing, which has been shown to decrease suicidality in this vulnerable group. In addition, satisfaction rates after gender affirming surgery are high and surgery is rarely regretted (Justine, 2017).

## Objective

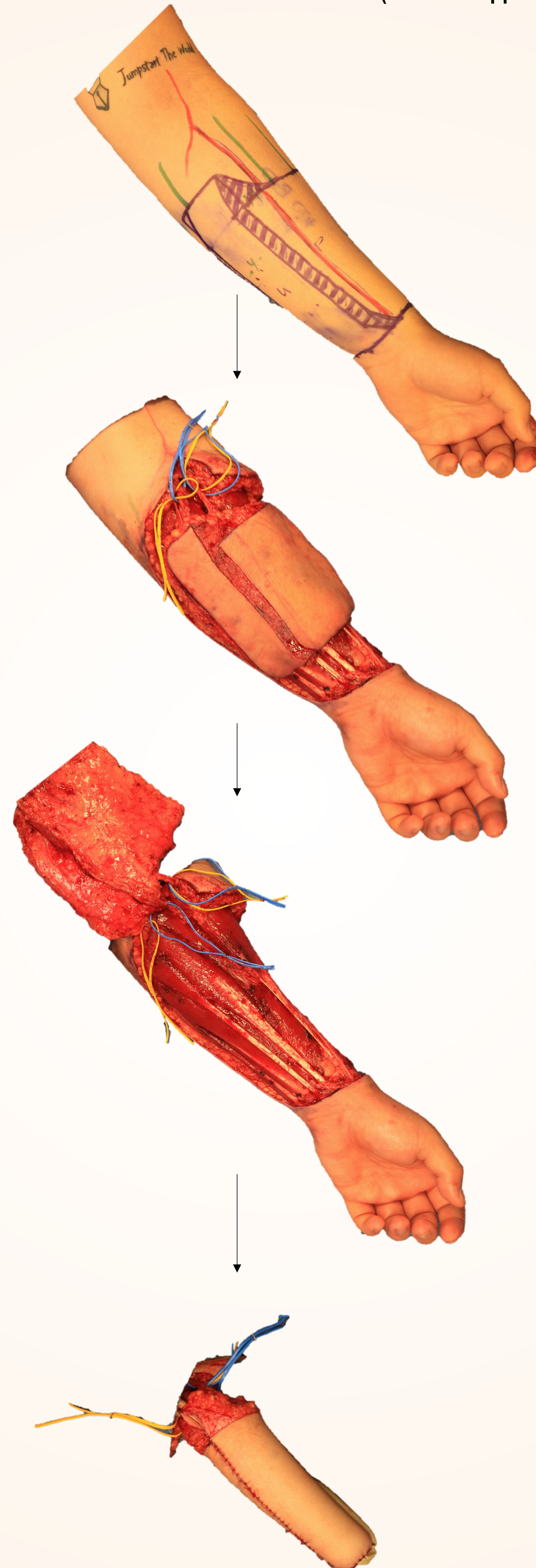
The purpose of this study is to evaluate the safety and efficacy of this modified approach to phallourethroplasty.

## Methods

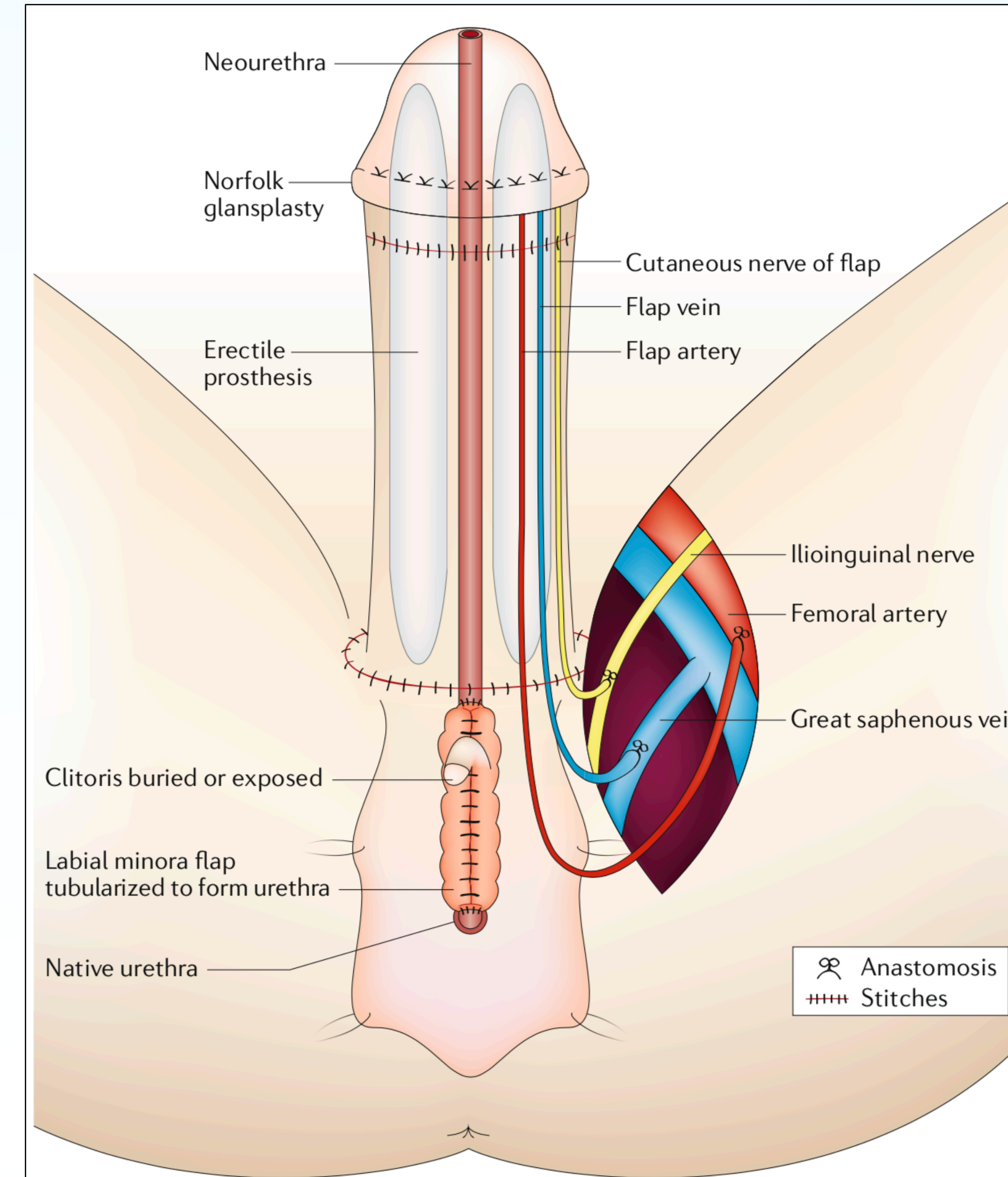
- **Study Type:** Case series with a qualitative comparison to standard approach outcomes written in the literature.
- **Data Collection:** Recorded outcomes from the files of 14 transgender patients who received a radial forearm free flap using the modified approach at Cedars-Sinai from Drs. Ray and Garcia over the last two years.
- **Primary outcome recorded:** % flap loss
- **Literature search terms for comparison:** "Phalloplasty technique", "Neophalloplasty transgender", "Neophalloplasty technique", "Phalloplasty transgender"

## The Radial Forearm Free Flap

Diagram 1: Sequence of steps for the formation of the neophallus via the radial forearm free flap. (standard approach)



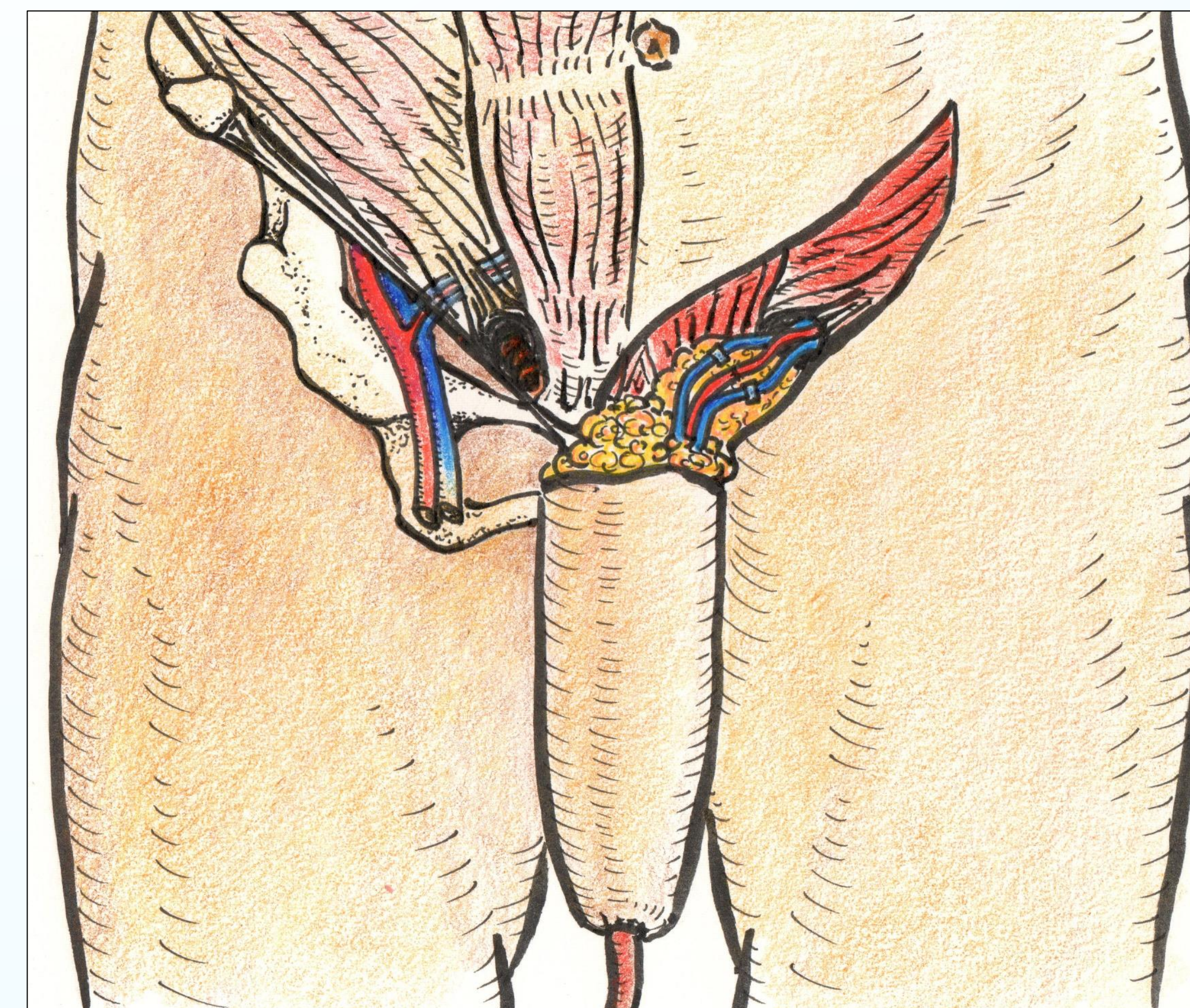
## The Standard Approach



The great saphenous vein is used to form an arteriovenous loop between the radial and femoral arteries. This connection may be the cause of the non-anatomic pressure gradient often seen in these cases.

Mean diameter of radial artery: 2.4 mm (Ashraf, 2010)  
Mean diameter of femoral artery: 8.2 mm (Sandgren, 1999)

## The Modified Approach



The inferior epigastric artery and vena comitantes is connected to the radial artery and venae comitantes. All are oriented through the inguinal canal (Brazio, 2019)

Mean diameter of radial artery: 2.4 mm (Ashraf, 2010)  
Mean diameter of DIEA: 3.2 mm (Rozen, 2012)

## Results



### The Standard Approach

- **Primary Outcome:**
  - Partial Flap Loss: 5.43% (Morrison, 2016)
  - Total Flap Loss: 1.69% (Morrison, 2016)

### The Modified Approach

- **Primary Outcome:**
  - Partial Flap Loss: 0%
  - Total Flap Loss: 0%
- **Relevant Secondary Outcomes:**
  - 100% of patients were able to void by post-operative day (POD) 14
  - Zero infections noted during the POD 14 and POD 28 follow-up appointments.
  - Dehiscence (suture separation) observed in 4 of 15 patients (26%) at POD 14. 2 of those along ventral shaft. 2 along the penis-skin anastomosis.
  - Patients spent an average of 6.8 days in hospital

## Discussion

Using the deep inferior epigastric vessels transposed through inguinal canal is safe, it provides an ideal size match, and is an anatomically ideal configuration. It is important to note the limitation of our relatively small sample size. However, our study demonstrates that the outlook for a safer and more efficacious approach to phallourethroplasty is available. We plan to continue this technique on patients and increase our sample size over time to provide more statistically sound results.

## References

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