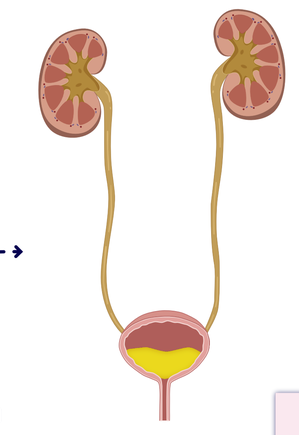
Rapid dissociation of primary tissues for autologous surgical procedures

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1. Introduction

- Pediatric urogenital reconstructive surgery faces challenges due to **limited native tissue**
- Traditional in vitro expansion remains too **costly**, **time-consuming**, and **heavily regulated**
- **Congenital urogenital malformations:**
  - Up to **5%** of all pregnancies
  - **20 - 30%** of developmental anomalies

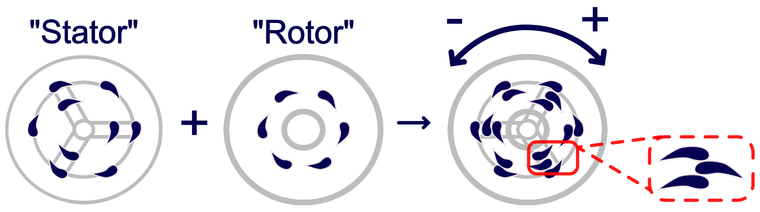


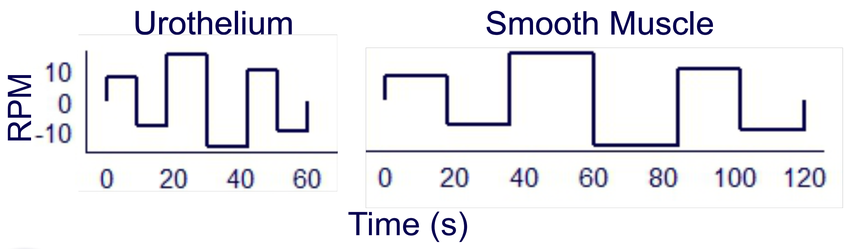
Aim: Develop and compare a **rapid**, **automated tissue dissociation** method to the established, fully manual procedure to generate **viable**, **reproducible** tissue fragments for **intraoperative use**

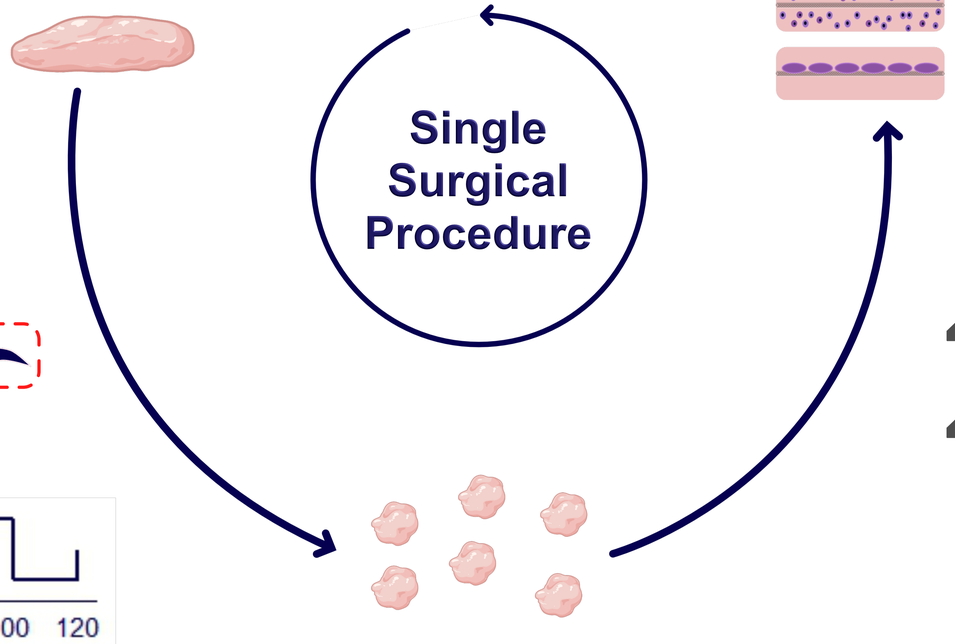
2. Methods

AUTOMATED DISSOCIATION

- Porcine bladder biopsies (n=6) were manually dissected into urothelium and smooth muscle and dissociated using the FFX TissueGrinder
- Processed tissue fragments were cultured and analyzed for purity, viability, and proliferation

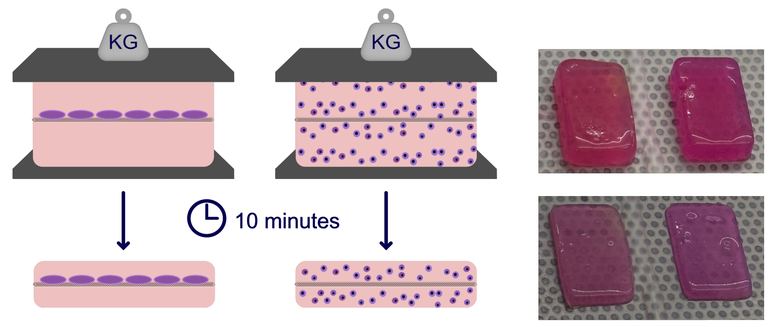






GRAFT FABRICATION

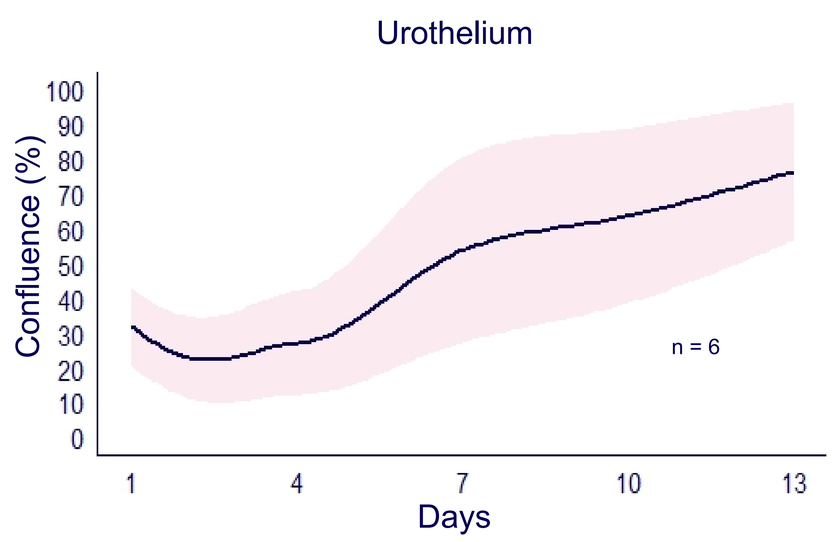
- Automatically dissociated tissue fragments were embedded into collagen via a clinically approved protocol (PLATE)
- Compared to the manually-minced standard
- Cultured for up to 4 weeks and analyzed for viability using Hematoxylin + Eosin

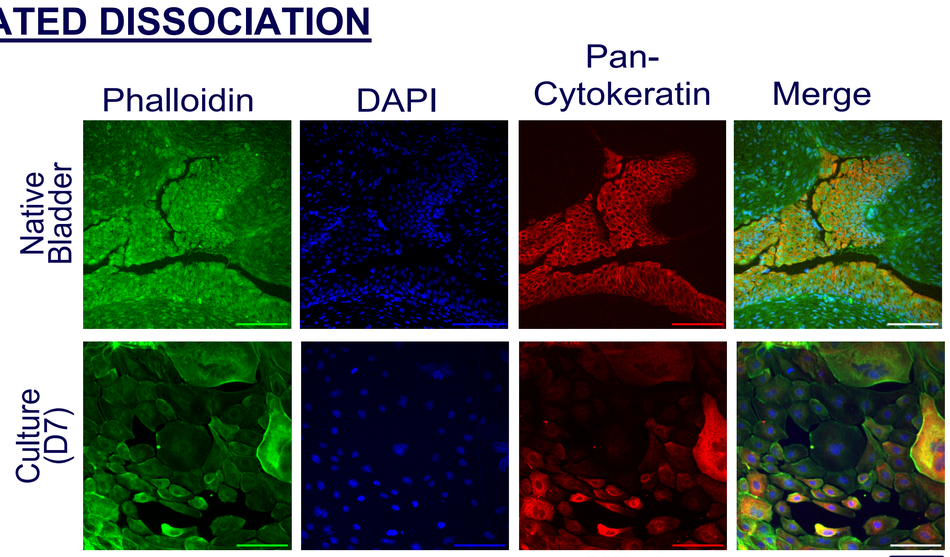


Fabricated samples are roughly 1 cm x 0.75 cm x 2 mm (l x w x h) patches of 6.67 mg/mL collagen and reinforced with Vicryl mesh.

3. Results

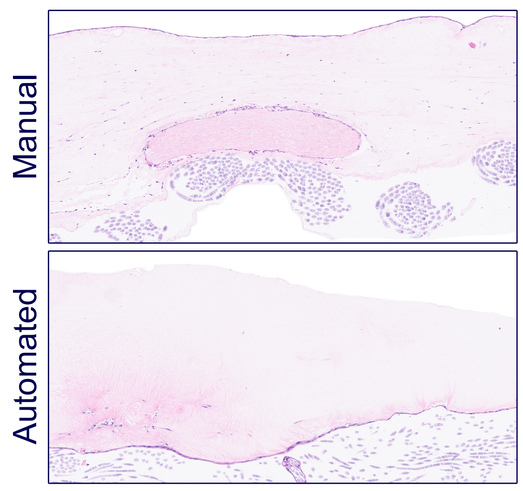
2D CULTURE: AUTOMATED DISSOCIATION

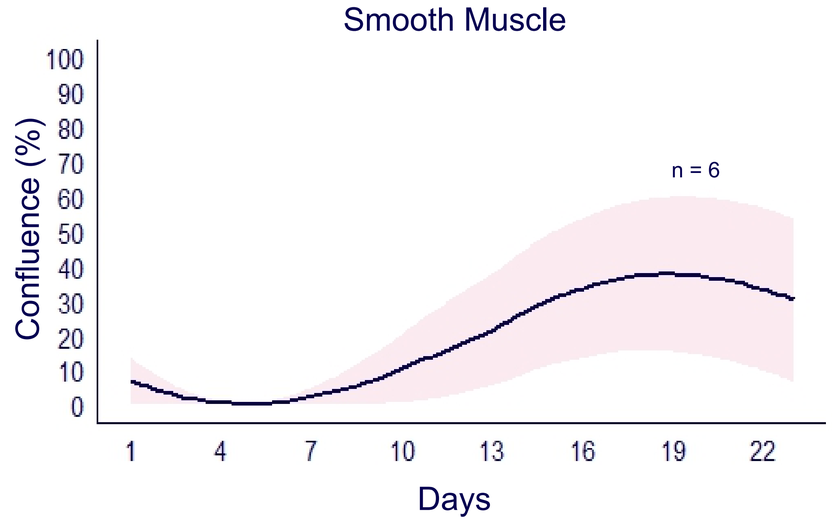


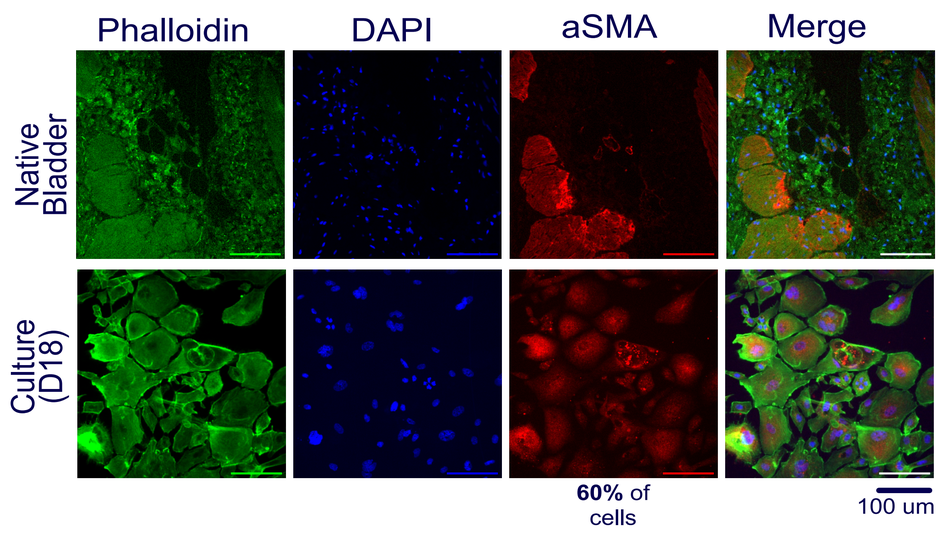


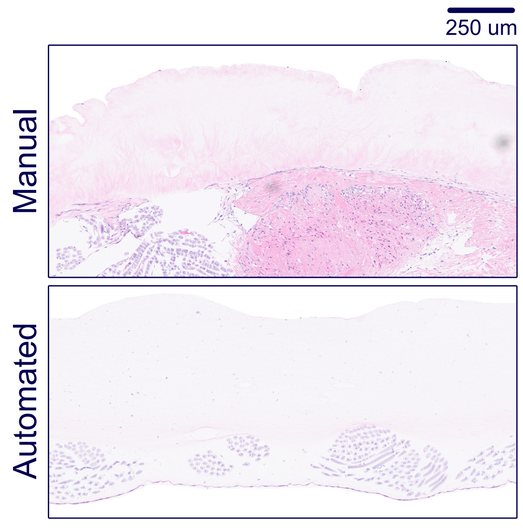
PLATE

Week 4 H+E









4. Conclusion

Rapid, automated dissociation of urothelial porcine tissues demonstrates re-epithelialization of grafts comparable to hand-minced methods. Additional work is required to optimize and validate these methods for smooth muscle dissociation across manual and automated protocols.

References:
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Willacy, Oliver et al. (2024). Heliyon. doi:10.1016/j.heliyon.2024.e25275

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