Torsion Does Not Affect Early Vein Graft Patency in the Rat Femoral Artery Model

Amro Harb
Maxwell Levi
Rowan University
Akio Kozato
Robert J. Strauch MD

Follow this and additional works at: https://rdw.rowan.edu/stratford_research_day
Part of the Surgical Procedures, Operative Commons

This Poster is brought to you for free and open access by the Conferences, Events, and Symposia at Rowan Digital Works. It has been accepted for inclusion in Stratford Campus Research Day by an authorized administrator of Rowan Digital Works. For more information, please contact brush@rowan.edu.
**Torsion Does Not Affect Early Vein Graft Patency in the Rat Femoral Artery Model**

Created by: Maxwell Levi  
Rowan University School of Osteopathic Medicine

---

**Abstract**

- **Background**: Torsion of microvascular vein grafts (1 mm diameter) is a commonly cited reason for graft failure in the clinical setting.
- **Methods**: Microvascular vein graft torsion is a common technical error made by the surgeons in microsurgery training courses.
- **Objective**: The objective of this study was to determine if torsion would lead to early vein graft failure in non-survival surgery rat models.

**Results**

- All vein grafts were patent 2 and 24 hours post-operation.
- Average blood flow rate measurements for 0, 45, 90, 135, and 180 degrees of torsion were: 0.94 ± 0.02 mL/min, 1.03 ± 0.15 mL/min, 1.41 ± 0.33 mL/min, 0.37 ± 0.01 mL/min, and 0.22 ± 0.10 mL/min respectively.

**Discussion & Conclusion**

- Torsion of up to 180 degrees does not affect early vein graft patency in rat models.
- In human patients, it is common to minimize torsion to reduce tissue damage and the potential of scarring, yet for interpositional vein graft exercises in rat models, the entire femoral artery is dissected, which significantly mobilizes the artery.
- Torsion becomes widespread distributed along the graft and artery and is quite difficult to appreciate visually.
- Torsion is a potential risk factor for vascular thrombosis in the clinical setting.
- To improve the clinical reproducibility of practicing vein graft procedures in rat models, we suggest that instructors of microsurgery training courses assess the success of a completed vein graft not only on patency but also on the basis of any torsion in the vein graft prior to clamp release.

**Acknowledgements**

This study was funded by an Orthopaedic Scientific Research Foundation grant to the Microsurgery Training and Research Laboratory at the Columbia University Irving Medical Center.

Authors: Amor Holb, Maxwell Levi, Akiko Kosatsu, Robert J. Strauch, MD

---

**References**