Impact Surgery

Conference Abstract

e-ISSN: 3033-4470

Pioneering Robotic Microsurgery: The Symani Surgical System

Dale Adriana Lewis, Joan Tumaini Mchunga, Ashling Teniola Oladele, Sophia Marie Auger, Esther Amarachi Ojukwu, Olena Khomiak

Correspondence: Dale Adriana Lewis, Kyiv Medical University, Poland. Email: dalelewis2002@gmail.com

Introduction

The Symani Surgical System represents a significant innovation in robotic-assisted microsurgery. By minimising tremors and enhancing dexterity and precision, it enables surgeons to perform intricate procedures, including the placement of sutures between 8-0 and 12-0 size in even the smallest of vessels. Despite its promise, its clinical effectiveness and broader applicability remain underexplored. This study aims to evaluate the impact and effectiveness of the Symani Surgical System.

Methods: A systematic review of studies published up to 2024 was conducted using PubMed and ResearchGate. The keywords included "Symani Surgical System" and "robotic microsurgery." Studies were selected based on their focus on accuracy, tremor reduction, operative time, and postoperative recovery.

Results: The Symani Surgical System incorporates seven degrees of freedom for wrist flexibility and maintains 7-20x motion scaling, enhancing dexterity. Key findings include:

1. Precision and Tremor Reduction: All included studies reported a significant reduction in hand tremors, improving surgical accuracy. Enhanced precision was observed in procedures such as vascular anastomosis, lymphedema treatment, and reconstructive surgeries of the head, neck, and breast following tumour resections.
2. Operative Time: While setup times were reported to be longer, the critical aspects of procedures were completed more efficiently.
3. Postoperative Recovery Outcomes: The minimally invasive nature of the system resulted in reduced recovery times. However, limitations such as high costs and the learning curve for surgeons were noted. Future research should focus on long-term patient outcomes, cost-effectiveness, and the integration of advanced imaging technologies for real-time feedback.

Conclusion: The Symani Surgical System enhances surgical precision by improving dexterity and minimising tremors. However, challenges remain, including a steep learning curve, high costs, and extended setup times. Despite these hurdles, the system represents a transformative advancement in robotic microsurgery, with strong potential to become a standard tool for complex microsurgical procedures. Further research and technological refinements will be essential to its widespread adoption.

Kyiv Medical University

Cite as: Dale Adriana , L., Joan Tumaini , M., Ashling Teniola , O., Sophia Marie , A., Esther Amarachi , O., & Dr. Olena Khomiak. Pioneering Robotic Microsurgery: The Symani Surgical System. *Impact Surgery*, 2(7), 333. https://doi.org/10.62463/surgery.170