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VIEWPOINT
Technology

Implementation of a Robotic System in Our Everyday Practice: Key Considerations Based on Preliminary Experience

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Robotic microsurgery may be one of the breakthrough technologies within the field of plastic surgery.[1–4] Although robotic microsurgery offers significant potential, its adoption and utilization are still evolving. Through the implementation of the Symani system [Symani Surgical System, Medical Microinstruments (MMI), Pisa, Italy] at our institution, we gained valuable insights on overcoming the difficulties encountered, which we present in this viewpoint (Fig. 1).

To establish a training center, we encountered a challenge with certain rooms having doorways that were too small to accommodate the robot. Overcoming this obstacle necessitated the collaboration and support of the clinic administrator, who needed to be informed and have a thorough understanding of the significance of the project.

One inevitable barrier to overcome is the skepticism within the group regarding the benefits of the new product. Surgeons often develop expertise in specific techniques through years of training and practice, and introducing new techniques may require additional training or relearning, which can be time-consuming and challenging. Mastering new techniques often involves a learning curve,[5] which can lead to potential errors or complications during the initial stages of implementation. It is understandable that the initial reaction may be reluctance, as surgeons have a responsibility to prioritize patient safety and ensure the best possible outcomes.

However, embracing new techniques and advancements in the field of plastic surgery is crucial for the evolution of the discipline in favor of patients. To strike a balance between these opposing forces, it is important to involve the entire team in the process. Informing them about the benefits of this progress for patients, the clinic, and their collective and individual growth is essential. Avoiding restrictions on the use of the system to a single individual allows for greater flexibility and utilization by the team. Developing a comprehensive plan for training a specific number of surgeons through repetitive use of the system and subsequently expanding the training to the entire group will ensure widespread adoption and competence. Clearly communicating the plan is necessary to encourage active participation and engagement in the procedure.

A surgeon's eligibility to conduct a surgery on a patient required a minimum proficiency in performing anastomoses on synthetic vessels. Conducting multiple training sessions to familiarize the team with the system will enhance their proficiency. When selecting the initial cases for system implementation, it is advisable to choose them conservatively. Although the advantages of the system were more pronounced in anastomoses involving small-diameter vessels, we recommend to begin using the system in the operating theater with a larger 2-mm anastomosis, as opposed to starting with the smallest perforator-to-perforator anastomosis. Engaging the expertise of an experienced microsurgeon for the anastomosis, rather than relying on a resident, will contribute to successful outcomes. Initiating surgery with a team you are comfortable working with facilitates the process. During the initial phase, which could vary among different teams, having a representative from the company present at the clinic to provide technical assistance, if needed, can be beneficial. After the initial phase, ensuring access to someone who can be contacted for assistance at any time is recommended.

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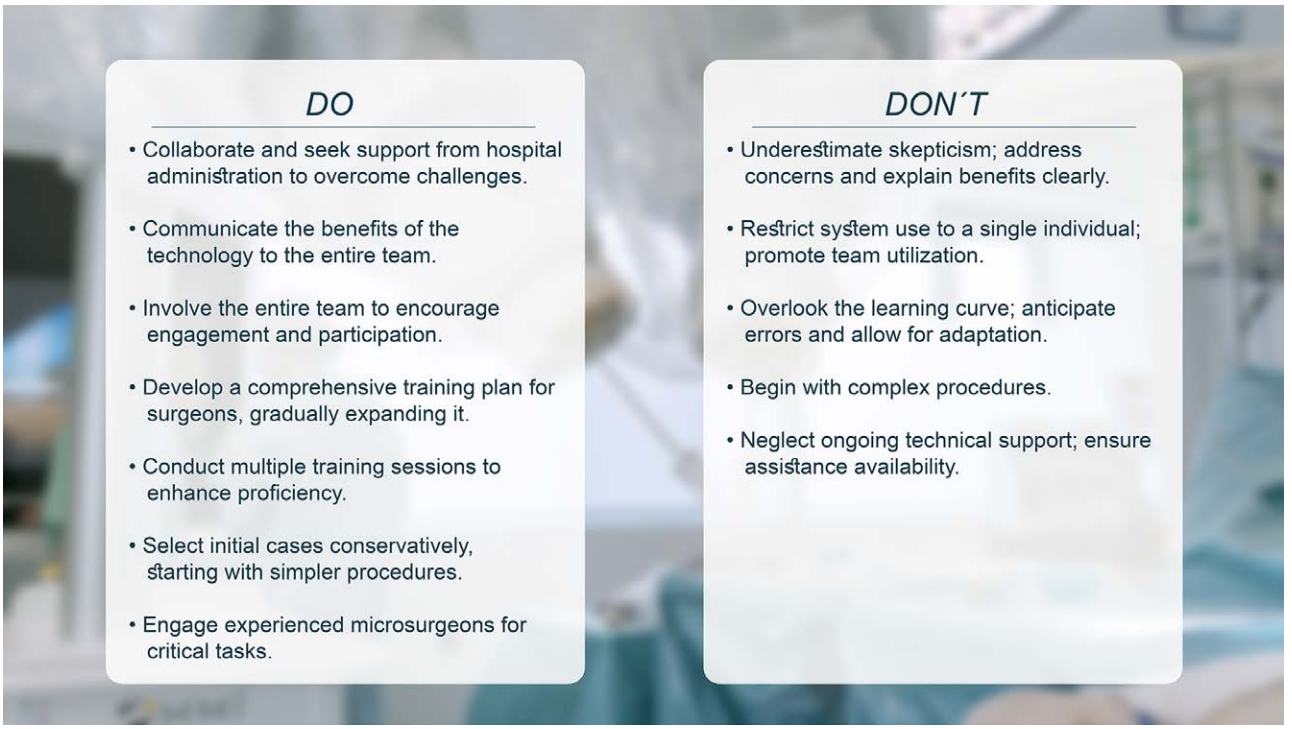

Fig. 1. Key considerations for implementing robotic microsurgery in plastic surgery.

REFERENCES

1. Innocenti M, Malzone G, Menichini G. First-in-human free flap tissue reconstruction using a dedicated microsurgical robotic platform. *Plast Reconstr Surg.* 2023;151:1078–1082.
2. Lindenblatt N, Grünherz L, Wang A, et al. Early experience using a new robotic microsurgical system for lymphatic surgery. *Plast Reconstr Surg Glob Open.* 2022;10:e4013.
3. van Mulken TJM, Schols RM, Scharmga AMJ, et al. First-in-human robotic supermicrosurgery using a dedicated microsurgical robot for treating breast cancer-related lymphedema: a randomized pilot trial. *Nat Commun.* 2020; 11: 757.
4. Dermietzel A, Aitzetmüller M, Klietz M-L, et al. Free flap breast reconstruction using a novel robotic microscope. *J Plast Reconstr Aesthet Surg.* 2022;75:2387–2440.
5. Barbon C, Grünherz L, Uyulmaz S, et al. Exploring the learning curve of a new robotic microsurgical system for microsurgery. *JPRAS Open.* 2022;34:126–133.