Robotic DIEP Flap Harvest: A Multi-Disciplinary Approach to Minimizing Donor Site Morbidity

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BACKGROUND

Reducing donor site morbidity after deep inferior epigastric artery perforator (DIEP) flap harvest relies mainly upon maintaining integrity of the anterior rectus sheath fascia. Robotic DIEP flap harvest has only been recently described, but minimally-invasive techniques pose a potentially critical advancement in DIEP flap breast reconstruction.

METHODS

A retrospective review of four patients undergoing seven robotic-assisted DIEP flaps from 2019 to 2020 was conducted. Robotic flap harvest technique is described, and data was collected on demographic information, perioperative characteristics. Primary outcomes included flap failure as well as donor site morbidity (e.g., abdominal bulge, hernia, bowel obstruction, etc.).

RESULTS

All 4 patients underwent bilateral abdominally-based free flap reconstruction. Three patients received bilateral robotic DIEP flaps, and one patient underwent unilateral superficial inferior epigastric artery perforator (SIEA) flap reconstruction followed by contralateral robotic DIEP flap reconstruction. The da Vinci Xi robot was used in all cases. Average patient age was 52 years and average BMI was 26.7 kg/m2. Average flap weight was 522g, and average pedicle length was 11.2cm. Average length of hospital stay was 3.7 days, and regular diet was resumed postoperative day 1 without incidence of postoperative ileus or bowel obstruction. There were no flap failures, and no patient experienced abdominal wall donor site morbidity, with an average follow-up of 6.31 months.

CONCLUSION

Robotic DIEP flap harvest is a microsurgically sound technique that can limit abdominal donor site morbidity via minimal anterior rectus fascia incision burden. A multi-disciplinary approach merging plastic microsurgical expertise with extensive robotic expertise (i.e., with reconstructive urology) can optimize outcomes. While further studies are needed to validate its use, this study

represents the largest series of robotic DIEP flap harvests to date and is a valuable addition to the literature.