EP-133

미세수술에서 혈관경 식별 및 모니터링을 위한 휴대용 초음파의 임상적 핵심 요점

(Clinical Pearls of Portable Ultrasound for Pedicle Identification and Monitoring in Microsurgery)

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Purpose: Intraoperative and postoperative vascular assessment is critical in microsurgical reconstruction. High-frequency ultrasound provides real-time image with high portability. This study highlights the clinical utility of portable ultrasound for intraoperative guidance and postoperative monitoring in microsurgery.

Methods: Portable high-frequency ultrasound was utilized during microsurgical breast reconstruction procedures and postoperative follow-up. Intraoperatively, ultrasound was applied during flap elevation and secondary flap debulking to identify and trace the vascular pedicle. Postoperatively, ultrasound was used for monitoring.

Results: Intraoperative ultrasound enabled precise localization and continuous visualization of the vascular pedicle during flap debulking, minimizing the risk of inadvertent pedicle injury. In DIEP flap procedures, ultrasound facilitated rapid identification of the deep inferior epigastric pedicle which is unclear due to scarring. Postoperatively, ultrasound provided reliable bedside evaluation of pedicle patency where direct clinical monitoring can be limited due to preserved skin envelopes and buried flaps.

Conclusion: Extremely portable, handheld ultrasound enables immediate, real-time pedicle visualization across intraoperative and postoperative settings. Its bedside accessibility and dynamic imaging capability enhance surgical precision during flap debulking pedicle identification, while providing reliable monitoring supporting safer decision-making without interrupting workflow.

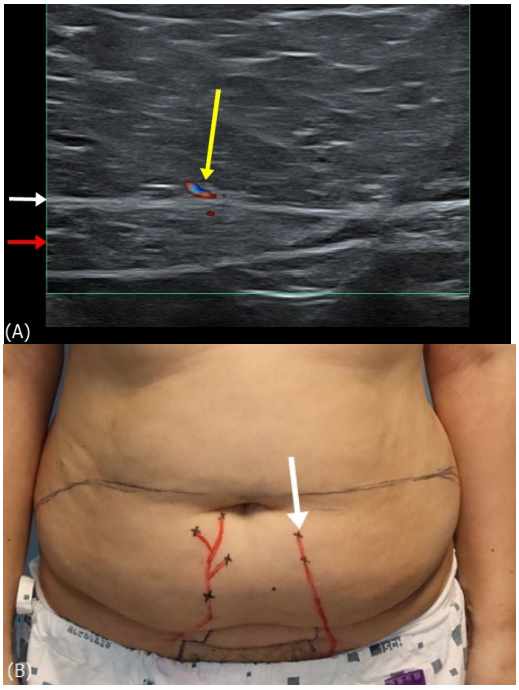

Fig 1. **(A)** Preoperative ultrasound identified the presumed vascular pedicle within the flap. Arrow; *Yellow*: Deep inferior epigastric artery perforator, *Red*: Rectus abdominis muscle, *White*: Rectus sheath
(B) The corresponding surface point was marked preoperatively(white arrow) to guide surgical planning for secondary debulking.

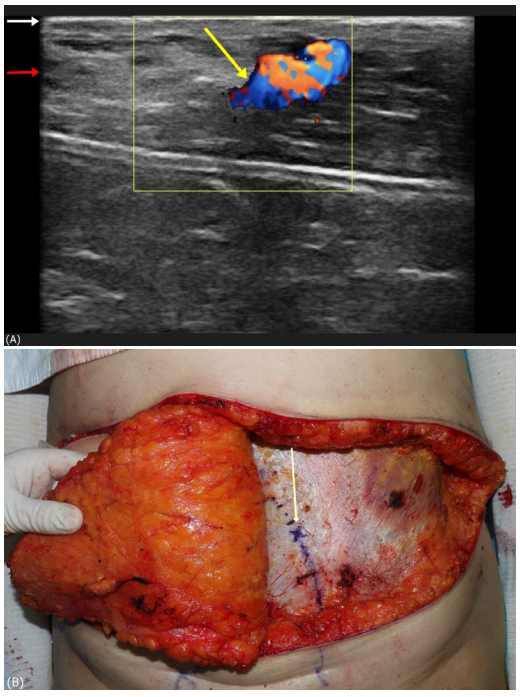

Fig 2. **(A)** Portable color Doppler ultrasound visualized the vascular pedicle beneath the flap tissue. Arrow; *Yellow*: Deep inferior epigastric artery perforator intramuscular course, *Red*: Rectus abdominis muscle, *White*: Rectus sheath
(B) Gross intraoperative view showing the elevated flap and marked presumed pedicle course. Reduced overlying tissue thickness during debulking improved ultrasound visualization, allowing safer tissue reduction and helping prevent pedicle injury.