# Ultrasound Guided Optical Trocar (UGOT) Access for Totally Extra-Peritoneal Ventral Hernia Repair

Jonathan Douissard, MD; Monika Hagen, MD, MBA; Arnaud Dupuis; Julie Mareschal, BSc; Andrea Peloso, MD, PhD; Christian Toso, MD, PhD; Ihsan Inan, MD;
Geneva University Hospitals and Medical School, Geneva, Switzerland

## OBJECTIVE

Minimally invasive extended totally extraperitoneal (eTEP) approach is gaining traction in the field of ventral hernia repair (VHR). Subcostal access to the retromuscular space and ideal position of this first trocar can be challenging to reach. We designed a scalable and standardized ultrasound-guided optical trocar (UGOT) entry technique to be used during eTEP VHR to facilitate retromuscular laparoscopic access, avoid entry-related complications and improve the workflow.

## SURGICAL TECHNIQUE

Intra-operative abdominal wall mapping is performed to identify the most cranial and lateral point of the rectus sheath. Hydro-dissection is achieved through local anesthetic infiltration between the transversus abdominis muscle and the rectus muscle. A 5mm optical trocar is inserted at this point, and the correct plan of dissection is identified when encountering the hydro-dissected area. Retromuscular rectus sheath dissection is then completed as per standard through a combination of pneumatic and blunt dissection.

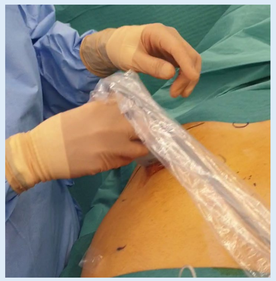
## PRELIMINARY RESULTS

Seven patients underwent complete eTEP procedure after UGOT access including 5 single docking eTEP of which 4 with unilateral transversus abdominis release (TAR), and 2 double-docking eTEP with bilateral TAR. Mean duration of the access from ultrasound mapping to retromuscular space insufflation was 2±1min., as compared to mean total operation duration of 245±79min. Position of the trocars was deemed optimal in all seven patients, with all trocars positioned less than 1cm from the rectus pedicle. No intra- or peri-operative complication was observed. Post-operative pain evaluation under a non-opioid regimen showed mean VAS of 1.2±1.5 at day 0 and 1.0±1.5 at day 1.

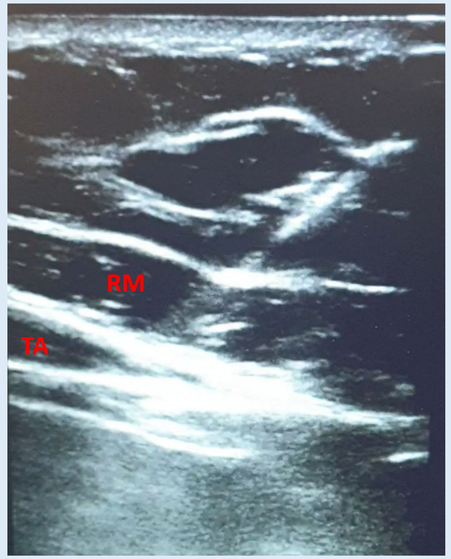
① **US-guided hydrodissection** between rectus muscle (RM) and transversus abdominis (TA)

② **Optical trocar direct entry** following the path of the infiltration

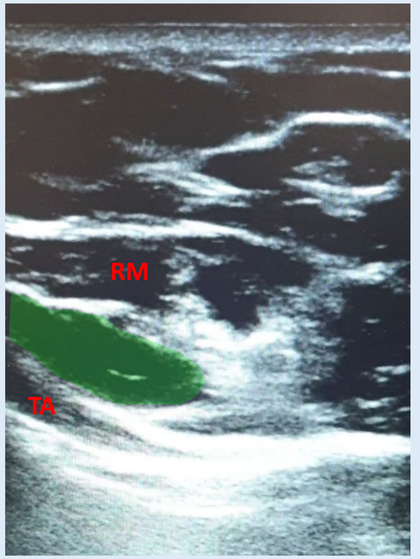




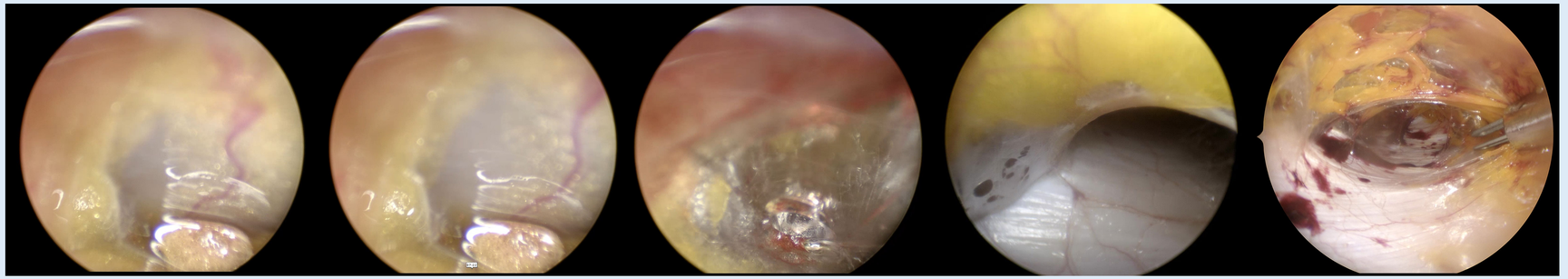
Installation and mapping




Needle insertion between RM and TA




Infiltration completed (in green)



Infiltration zone identified | Progression along the fascia | CO2 insufflation | Blunt dissection | 2nd trocar insertion

## CONCLUSIONS AND FUTURE DIRECTIONS

Ultrasound-guided optical trocar entry allowed fast and sure identification of the optimal entry point in this early experience, avoiding dissection plane mistakes and optimizing the first trocar position. Ultrasound guided optical trocar entry could improve eTEP access for VHR and is currently investigated in a prospective trial in our institution.