MINIMALLY INVASIVE TOTALLY EXTRAPERITONEAL (TEP) REPAIR WITH DISSECTION AND MESH DELIVERY TECHNIQUES BASED ON INGUINAL FASCIAL ANATOMY

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Introduction:

Laparoscopic totally extraperitoneal (TEP) inguinal hernia repair is inferior to transabdominal preperitoneal (TAPP) repair from the perspective of minimal invasiveness and fascial anatomy clarity.
To overcome these issues, we devised a TEP procedure that uses 5-mm ports.

Methods:

At the lower umbilical region, a small incision was made to the anterior lobe of the rectus abdominis sheath. A 5-mm visualizing trocar with a balloon was advanced, laterally avoiding the rectus abdominis (fig. 1, 2, 3, 4).
Confirmation of the characteristic pattern of the attenuated posterior rectus sheath (APRS) facilitated instantaneous access to its anterior aspect(fig. 4). .
A second 5-mm port is inserted at the lower abdominal midline after insufflation.

In unilateral cases, an approach from the lateral aspect is taken. With a one-handed operation, the front aspect of the APRS is dissected to the side, up to the Spigelian line (SL) (fig.5, 6).
Further dissection in the direction of internal inguinal ring (IR) along the SL reveals a membrane-like structure that runs ventromedially between the inferior epigastric vessels and IR. The APRS, which is thin and translucent around the structure, is incised to enter the preperitoneal space up to the level of the anterior superior iliac spine along the SL.
A third port is then inserted and the hernia sac is treated with a two-handed operation.
After parietalization of the spermatic cord components, the inner fascia is treated, as minimally as possible, to match the prosthetic mesh (fig 7, 8, 9, 10, 11).

For bilateral cases, an approach from the medial aspect is taken. From the second port inserted at the level of the arcuate line, the APRS near the white line is incised using an electric scalpel. Subsequently, with a camera inserted from the second port, the preperiponeal apace is bluntly dissected to the lower umbilical region. The umbilical trocar is advanced dorsal to the APRS. Thereafter, preperitoneal space dissection is performed to treat the hernia sac (Fig 12).
The mesh is rolled and stored in the Penrose drain, and is pulled into the dissected cavity with care from the 5-mm port wound (Fig13, 14).

Conclusion:

Different optimal routes for unilateral and bilateral cases and novel mesh delivery techniques enabled a minimally invasive TEP with 5-mm ports.
Also demonstrated were the convenience of a 5-mm camera that can be used with any port and the usefulness of keeping the surgical invasiveness to a single side.

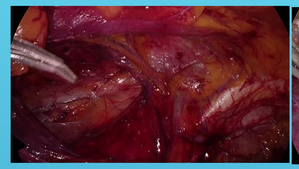


Fig. 12 Left groin region

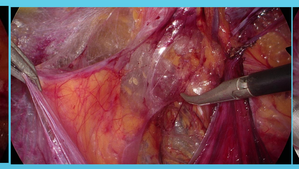


Fig. 11 Right direct hernia



Fig. 10 Right groin region

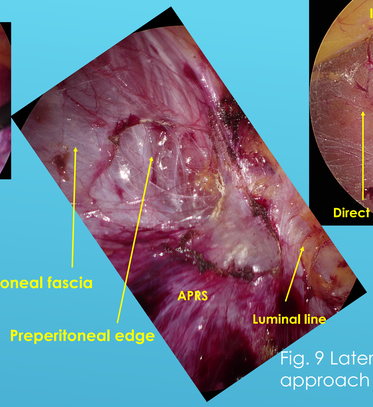


Fig. 9 Lateral approach

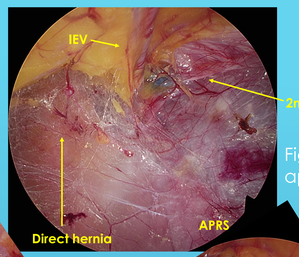


Fig. 8 Lateral approach

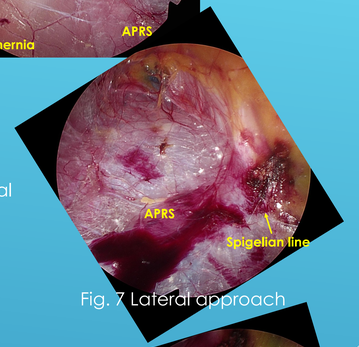


Fig. 7 Lateral approach

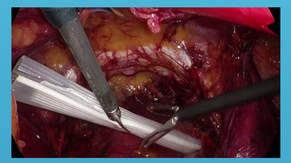


Fig. 13 SURGIMESH® is rolled up and stored in a Penrose drain.

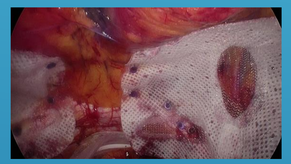


Fig. 14 Mesh: SURGIMESH®

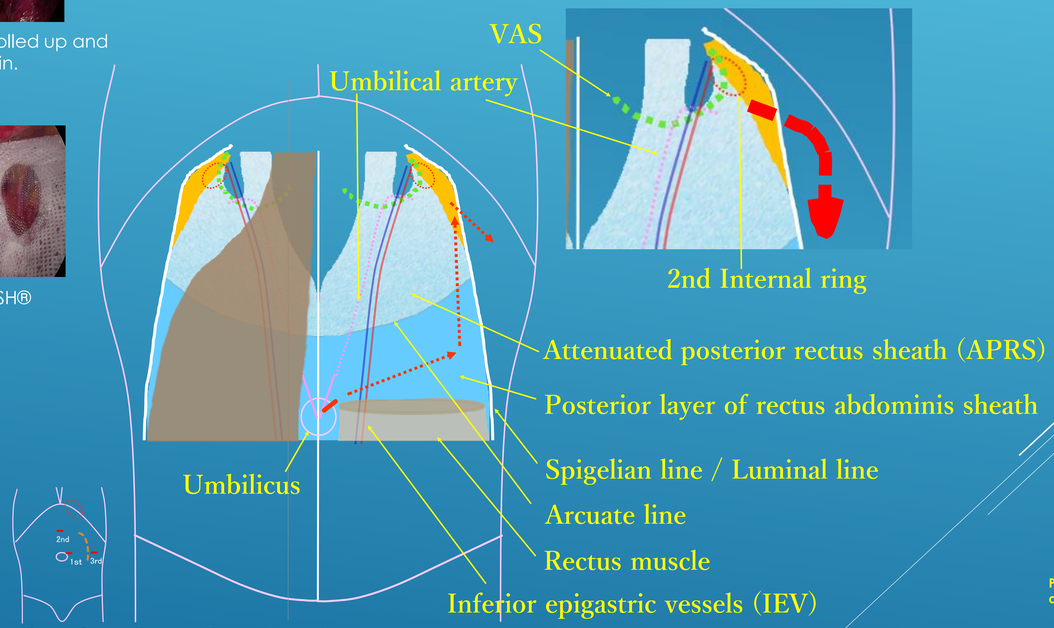


Fig. 1 Operative position and anatomy



Fig. 6 Lateral approach

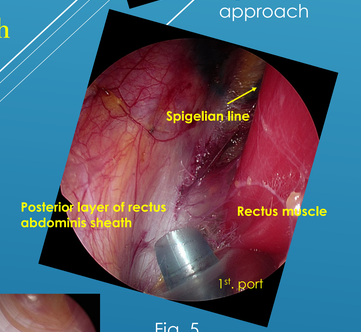


Fig. 5 Rectus abdominis sheath cavity

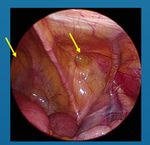


Fig. 2 Bilateral direct hernias

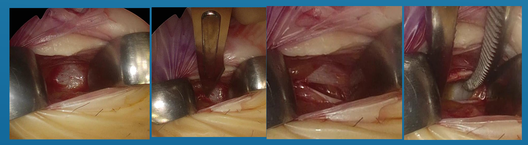


Fig. 3 Subumbilical small incision for the first port

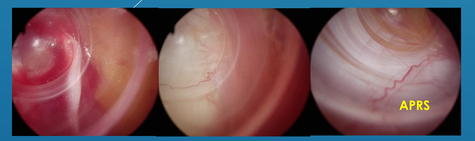


Fig. 4 Visible port - insertion