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E-poster

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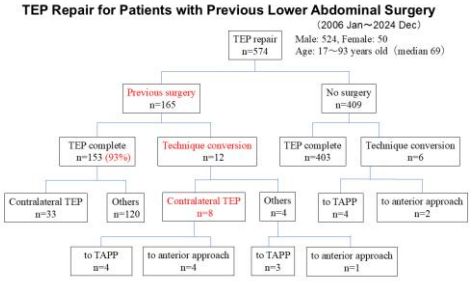
Title: EHS202500038 – Surgical Outcomes and Experience with 3D Mesh in the Introduction of Single-incision Laparoscopic Totally Extraperitoneal Inguinal Hernia Repair

Introduction

- Since the late 1990s, our institution has primarily utilized laparoscopic totally extraperitoneal (TEP) repair for inguinal hernia.
- Of the 574 TEP cases since 2006, the approach evolved from using a balloon dissector to balloon-free laparoscopic dissection in 2020, and then to single-incision laparoscopic surgery (SILS) in July 2022, with 90 cases, including bilateral repairs.
- This study investigates surgical outcomes and the use of 3D mesh in the introduction of SILS-TEP.

TEP Repair for Patients with Previous Lower Abdominal Surgery



Material and Methods

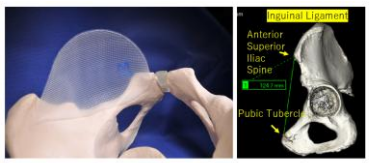
- A total of 151 TEP repair cases for inguinal hernia from March 2020 to December 2024 were reviewed.
- Outcomes of unilateral repairs were compared between 50 three-port balloon-free laparoscopic dissection TEP cases and 79 SILS-TEP cases. Bilateral repair cases were excluded.
- SILS-TEP utilized the glove method with Bard® 3D mesh (standard type, large size: 10.8×16 cm). Detailed surgical procedures for SILS-TEP are described in reference 1.
- Safety, operative time, and blood loss were retrospectively analyzed.

UNILATERAL CASES	SILS-TEP (N=79)	Three-port TEP (N=50)	P-VALUE
Gender			0.18
Male	69	47	
Female	10	3	
Age (years)	23-85 median 71	21-87 median 69	0.73
Hernia Side			0.4
Right	41	25	
Left	30	25	
EHS Groin Hernia Classification			0.13
Lateral (L)	59	44	
Medial (M)	17	5	
Femoral (F)	3	1	
Combined	7	1	

	SILS-TEP (N=79)	Three-port TEP (N=50)	P-VALUE
Previous lower abdomina surgery	23	20	0.2
Prostatectomy	1	2	
Appendectomy	8	9	
Contralateral TEP	5	3	
Ipsilateral anterior approach	4	5	
Operating time (min)	39-130 median 67	28-163 median 69	0.96
Blood loss (ml)	0-150 median 1	0-245 median 1	0.33
Technique conversion	1 to anterior approach	4 to TAPP	0.07
Recurrence	0	0	

Results

- No significant differences were observed in operative time or blood loss.
- Technique conversion occurred in 4 three-port cases and 1 SILS-TEP case (P=0.07).
- All 23 SILS-TEP patients with previous abdominal surgeries underwent repairs without complications.
- No recurrences were observed in SILS-TEP cases.

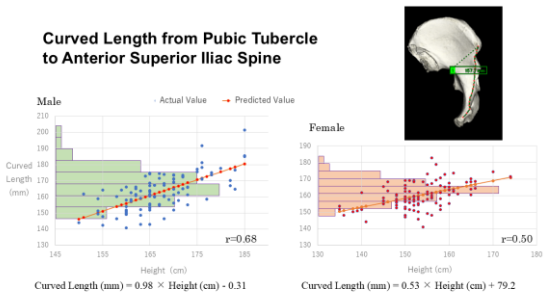


	Male (n = 104)	Female (n = 102)
Height (cm)	167.2 ± 7.6	153.2 ± 7.2
Inguinal ligament (mm)	138.0 ± 9.4	136.5 ± 7.2
Curved length from pubic tubercle to anterior superior iliac spine (mm)	163.0 ± 10.9	160.0 ± 7.7

The curved distance along the pelvic bone in the same cross-section as the inguinal ligament represents the maximum length of the long axis of the elliptical surface to be covered with mesh in unilateral inguinal hernia repair.

Discussion

- We have previously reported on the study of appropriate mesh size for TEP repair (EHS 2024).
- Tacking fixation was performed in M3 and bilateral simultaneous repair cases, but not in other cases.
- The IEHS guidelines recommend that even individuals with smaller sizes require a mesh of at least 10×15 cm, while large hernias require a mesh of 12×17 cm or larger[2].
- Optimal mesh sizes for TEP repair were determined by adding 2 cm in length and 3 cm in width to the 95th percentile of intraoperative MPO measurements: 10.4×13.2 cm for hernia orifices < 3 cm and 13.0×15.6 cm for those ≥ 3 cm²[3].



A standard 10.8×16cm 3D large-size mesh covers 98% of the average curved length in males.

A 3D large-size mesh can be positioned appropriately, even in smaller women.

Conclusions

- SILS-TEP was safely introduced, demonstrating outcomes comparable to those of the three-port TEP.
- Bard® 3D mesh is considered to support safe and effective hernia repair, providing improved maneuverability and minimal complications.

References

1. Single-incision totally extraperitoneal inguinal hernia repair technique using additional tumescent anesthesia at a day surgery clinic. Ikeda Y. Operation. 2016;70(11):1481-90 (in Japanese)
2. Guidelines for laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal Hernia [International Endohernia Society (IEHS)]. R. Bittner, et al. Surg Endosc. 2011; 25: 2773-843
3. Appropriate mesh size in the totally extraperitoneal repair of groin hernias based on the intraoperative measurement of the myopectineal orifice. Hiratsuka T, et al. Surg Endosc. 2021; 35: 2126-33
4. Comparison between single-incision and multiple-incision laparoscopic surgery for totally extraperitoneal inguinal hernia repair. Chueh KS, et al. Minim Invasive Ther Allied Technol. 2020;29(5):293-8
5. Single-incision totally extraperitoneal inguinal hernia repair: our initial 100 cases and comparison with conventional three-port laparoscopic totally extraperitoneal inguinal hernia repair. Wakasugi M, et al. Surg Today. 2015;45(5):606-10
6. Single-incision laparoscopic totally extraperitoneal inguinal hernia repair with tumescent local anesthesia: report of more than 2000 procedures at a day-surgery clinic. Wakasugi M, et al. Surg Today. 2021;51(4):545-9

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