A prospective, randomised controlled study to compare intraperitoneal onlay mesh (IPOM) plus repair versus transabdominal preperitoneal mesh(TAPP) plus repair for patients with primary ventral hernia- Interim results

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Introduction

- Optimal minimal invasive technique for ventral hernia repair is still lacking
- Laparoscopic IPOM-
  - Most commonly performed technique
  - Associated with significant mesh induced complications
  - Chronic post operative pain & Higher material cost

Maatouk M, Kbir GH, Mabrouk A, Rezgui B, Dhaou AB, Daldoul S et al. Can ventral TAPP achieve favorable outcomes in minimally invasive ventral hernia repair? A systematic review and meta-analysis. Hernia. 2023 Aug;27(4):729-739. doi: 10.1007/s10029-022-02709-4. Epub 2022 Nov 15. PMID: 36378412.

- Extraperitoneal repairs are gaining popularity
  - Pre-peritoneal
  - Retromuscular
- IEHS (2019)- recommends both pre-peritoneal and retromuscular repair for small to medium sized hernial defects
- Comparative studies and meta analyses comparing IPOM, eTEP and TAPP show conflicting results
  - No RCT comparing TAPP and IPOM

Bittner R, Bain K, Bansal VK, Berrevoet F, Bingener-Casey J, Chen D et al. Update of Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS))-Part A. Surg Endosc. 2019 Oct;33(10):3069-3139. doi: 10.1007/s00464-019-06907-7. Epub 2019 Jun 27. Erratum in: Surg Endosc. 2019 Oct;33(10):3140-3142. doi: 10.1007/s00464-019-06977-7. PMID: 31250243; PMCID: PMC6722153.

Aim

- To compare early postoperative complications between IPOM Plus and TAPP Plus for patients with primary ventral hernia

Outcomes

Primary outcome measure:

- To compare postoperative pain scores at 6hr, 24hr, 72 hr and then at 7, 30, 90, 180 and 360 days

Secondary outcome measure:

- To compare length of hospital stay, surgical site infection (SSI), hernia recurrence, mesh infection, seroma rate, cost and operative time

Study Design

- **Prospective randomised trial-** CTRI/2023/06/015191
- **Study period** - June 2023 to June 2025
- **Sample size** – 90
- **Study Population** - Patients with primary ventral hernia planned for laparoscopic ventral hernia repair
- **Randomization** - Block randomization
- **Allocation concealment** - Sealed opaque envelope
- CONSORT guidelines were followed

Inclusion & Exclusion Criteria

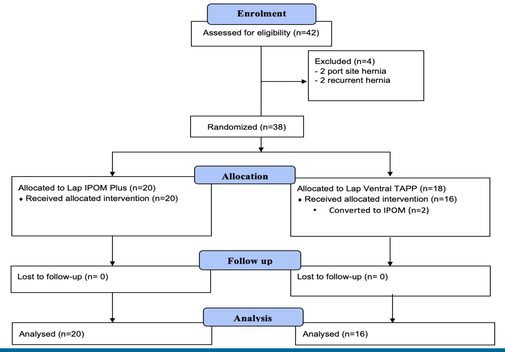
- **Inclusion criteria**
  - Age ≥ 18 years
  - Primary Ventral hernia
  - Defect size 2-4 cm
- **Exclusion criteria**
  - Patients undergoing emergency surgery
  - Parastomal or recurrent hernias
  - Unfit for General anaesthesia and Laparoscopy

Randomisation

- **Group I - IPOM PLUS –**
  - Reduction of hernial contents
  - Closure of fascial defect
  - Intraperitoneal onlay placement of composite mesh
- **Group II - TAPP PLUS –**
  - Creation of peritoneal flap
  - Closure of fascial defect
  - Pre peritoneal placement of polypropylene mesh
  - Peritoneal flap closure

Material and Methods

- **Pre Operative Work Up:**
  - Detailed history and examination, baseline weight and BMI, routine blood investigations and Co-morbidities
- **Post-operative:**
  - PCM 1 gm iv 8 hourly given as standard
  - Inj. Ketorolac iv 30 mg as rescue analgesia if VAS score >5 at rest



Operative Technique

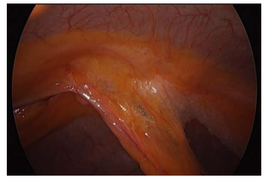


Figure 1: Capnodissection of pre peritoneal space

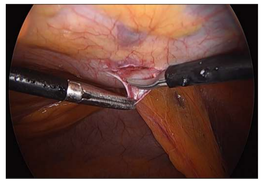


Figure 2: Creation of peritoneal flap

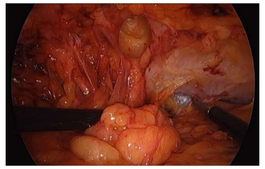


Figure 4: Reduction of hernial contents

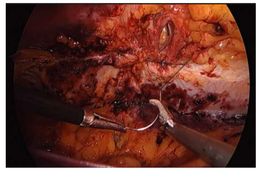


Figure 5: Primary closure of the hernial defect



Figure 6: Placement of polypropylene mesh

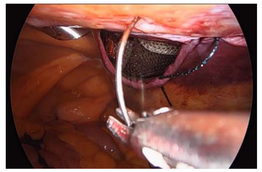


Figure 6: Closure of the peritoneal flap

Observations

Baseline parameter	IPOM Plus (Mean ± S.D)	TAPP Plus (Mean ± S.D)	P value
Female (%)	43.67	45.91	0.31
Age (yrs)	27.63 ± 10.84	28.16 ± 11.89	0.94
Height (cm)	157.21 ± 9.69	158.67 ± 9.07	0.45
Weight (kg)	72.05 ± 22.95	73.44 ± 22.75	0.61
BMI (kg/m2)	29.21.40 ± 8.44	29.41 ± 7.22	0.95
Smoking (%)	24.13	26.36	0.28
Defect size	2.8	2.6	0.70

Intra-op parameter	IPOM Plus (Mean ± S.D)	TAPP Plus (Mean ± S.D)	P value
Operative time (minutes)	85.61 ± 23.42	120.71 ± 26.89	**0.01**
Cost of consumables/ procedure	50k	5k	**0.001**

Parameter	IPOM Plus (Mean ± S.D)	TAPP Plus (Mean ± S.D)	P value
VAS (6 hrs)	6.24 ± 2.47)	2.68 ± 1.47	**0.0005**
VAS (24 hrs)	5.24 ± 2.28	2.32 ± 1.14	**0.0001**
VAS (72 hrs)	4.84 ± 1.95	1.76 ± 1.13	**0.0091**
VAS (7 days)	3.36 ± 1.55	1.24 ± 1.39	**0.0002**
VAS (30 days)	2.48 ± 1.12	0.32 ± 0.9	**0.0261**
VAS (90 days)	0.14 ± 0.53	0	>0.5

Parameter	IPOM Plus	TAPP Plus	P value
Length of hospital stay (days)	2.5	1	**<0.01**
Surgical site infection (SSI)	NA	NA	
Hernia recurrence	NA	NA	
Mesh infection	NA	NA	
Seroma rate	NA	NA	

Strengths and limitations

- **Strengths of study:**
  - Randomized control trial
  - Single surgeon
- **Limitations of the study:**
  - Quality of life not assessed
  - Long term follow-up is lacking

Summary

- **TAPP plus-**
  - Lesser acute post operative pain (30 days)
  - Lower costs
  - Shorter hospital stay
  - Longer operative time