

# A Comparison of Medium-weight vs Heavy-weight Mesh in Minimally Invasive Extraperitoneal Ventral Hernia Repair

## Introduction

- Minimally invasive (MIS) extraperitoneal ventral hernia repair (VHR) has become increasingly common
- Limited data exist comparing outcomes of medium-weight (MW) versus heavyweight (HW) mesh.
- Hypothesis:** HW mesh would be associated with decreased rates of 1-year hernia recurrence

## Methods

**Design** - Retrospective analysis of prospectively data from the Abdominal Core Health Quality Collaborative (ACHQC), an international, hernia-specific registry

**Population** -- Elective, MIS extraperitoneal VHR with ≥1 year follow-up (2016 ► July 2024)

### Groups

- MW mesh (40–60 g/m<sup>2</sup>)
- HW mesh (>75 g/m<sup>2</sup>)

**Primary outcome** – Pragmatic hernia recurrence at 1 year

- Incorporates available elements of
  - Patient-reported recurrence – positive response to Hernia Recurrence Inventory questionnaire
  - Surgeon-reported recurrence

### Secondary outcomes

- 30-day
  - surgical site occurrence (SSO)
  - surgical site infection (SSI)
  - SSO requiring procedural intervention (SSOPI)
  - Readmission
  - Reoperation
- Baseline, 30 day, and 1-year PROMIS Pain & HerQLes quality-of-life scores
  - ↓ PROMIS → ↓ pain
  - ↑ HerQLes → ↑ quality-of-life

### Statistical analysis

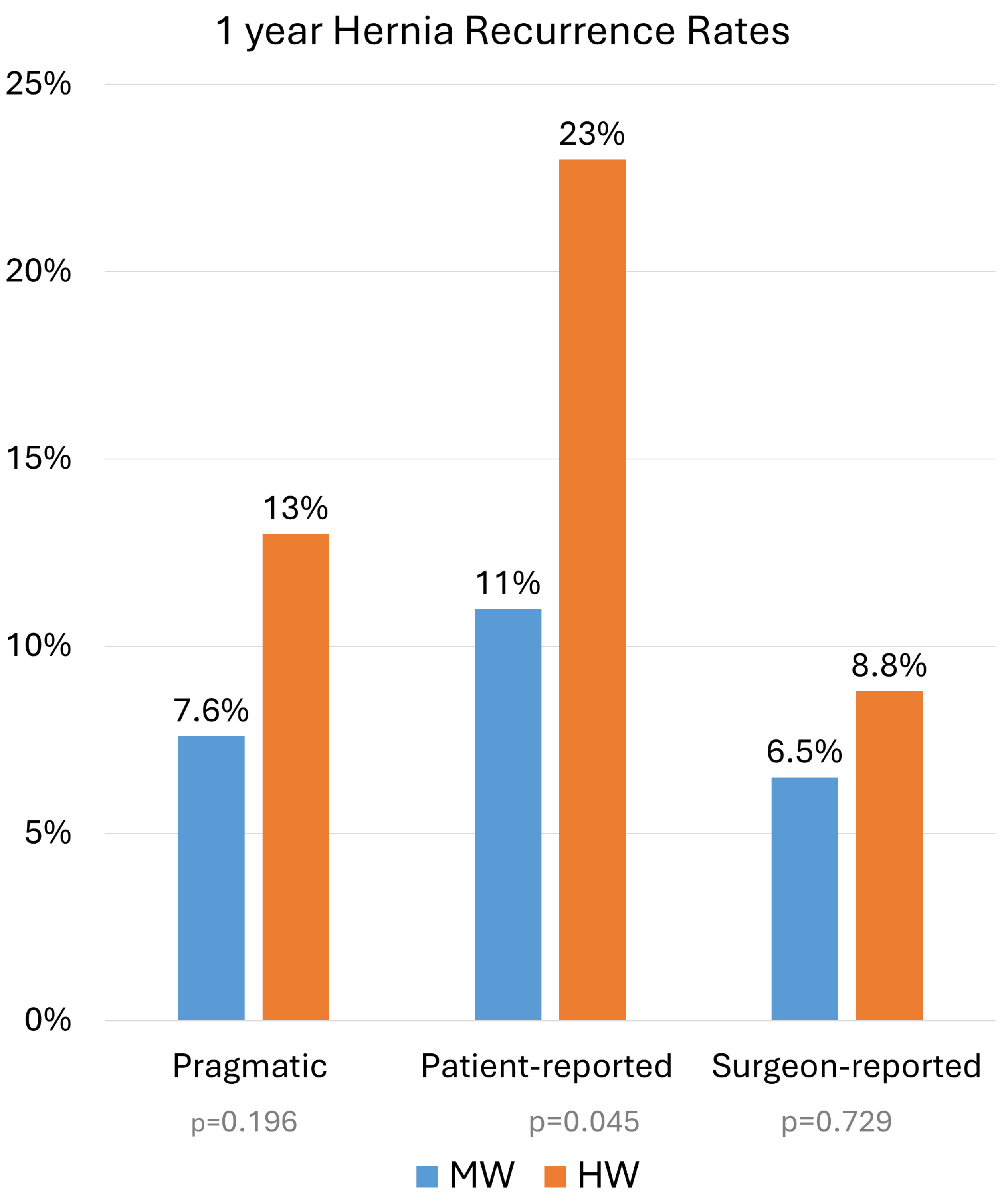
- 1:1 propensity score matching
- Variables matched : age, BMI, diabetes, smoking status, immunosuppression, ASA class, primary vs recurrent hernia, hernia width, EHS classification, myofascial release, drain usage.

| <i><b>Patient characteristics</b></i> | <b>MW (n=119)</b> | <b>HW (n=119)</b> | <b>p-value</b> |
|---------------------------------------|-------------------|-------------------|----------------|
| n (%) or median (IQR)                 |                   |                   |                |
| <b>Age &lt;90</b>                     | 63 (53-69)        | 63 (52-70)        | 0.894          |
| <b>Female</b>                         | 60 (50%)          | 52 (44%)          | 0.299          |
| <b>Diabetes</b>                       | 26 (22%)          | 22 (18%)          | 0.518          |
| <b>Hypertension</b>                   | 74 (62%)          | 72 (61%)          | 0.790          |
| <b>COPD</b>                           | 7 (5.9%)          | 5 (4.2%)          | 0.554          |
| <b>Robotic</b>                        | 117 (98%)         | 115 (97%)         | 0.683          |
| <b>Laparoscopic</b>                   | 2 (1.7%)          | 4 (3.4%)          | 0.683          |
| <b>Midline only</b>                   | 99 (83%)          | 96 (81%)          | 0.840          |
| <b>Lateral only</b>                   | 17 (14%)          | 19 (16%)          | 0.840          |
| <b>Both Midline + Lateral</b>         | 3 (2.5%)          | 4 (3.4%)          | 0.840          |
| <b>Hernia length, cm</b>              | 10 (5-15)         | 8 (5-15)          | 0.411          |
| <b>Hernia width, cm</b>               | 5 (4-8)           | 5 (4-8)           | 0.799          |

| <i><b>Outcomes at 30 days</b></i> | <b>MW, n (%)</b> | <b>HW, n (%)</b> | <b>p-value</b> |
|-----------------------------------|------------------|------------------|----------------|
| <b>SSO</b>                        | 14 (12%)         | 16 (13%)         | 0.696          |
| <b>SSI</b>                        | 0 (0%)           | 0 (0%)           | >0.999         |
| <b>SSOPI</b>                      | 0 (0%)           | 2 (1.7%)         | 0.498          |
| <b>Reoperation</b>                | 0 (0%)           | 1 (0.8%)         | >0.999         |
| <b>Readmission</b>                | 3 (2.5%)         | 3 (2.5%)         | >0.999         |

## Results

- Cohort** - 238 post-match - 119 MW, 119 HW
- Baseline covariates were well balanced.
- 1-year pragmatic recurrence was similar between groups (7.6% vs 13%, p = 0.196).
- Patient-reported bulging at 1 year was higher in the HW group (11% vs 23%, p = 0.045).
- 30-day outcomes were comparable
- HerQLes and PROMIS scores improved in both groups, with no difference at 30 days or 1 year.

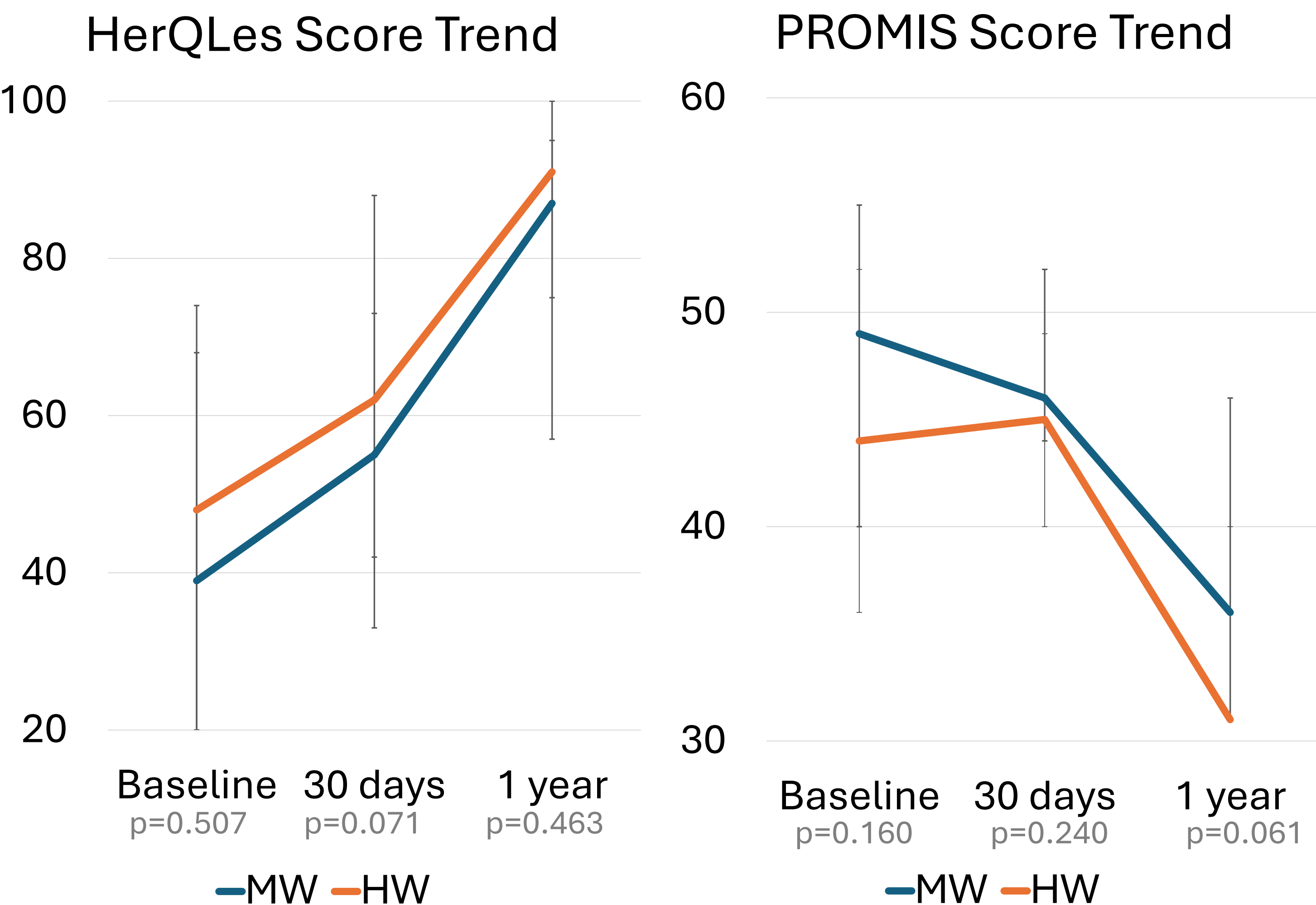


## Conclusions

- HW mesh was not associated with decreased 1 year recurrence in patients undergoing MIS extraperitoneal VHR
- Unmeasured confounders leading to use of HW mesh may have also influenced patient-reported bulging (e.g. preoperative nerve injury)
- Longitudinal follow-up is needed as these approaches become more common and are utilized for increasingly larger hernias

## Clinical Implications

- Emphasizes patient- and defect-specific mesh selection
- MW mesh may be used in this size range without compromising medium-term outcomes



### References

- Bhardwaj P, Huayllani MT, Olson MA, Janis JE. Year-Over-Year Ventral Hernia Recurrence Rates and Risk Factors. JAMA Surg. 2024.
- Remulla D, Fafaj A, Zheng Xpata DM, Petro CC, Prabhu A, et al. Comparing robotic to open retromuscular ventral hernia repair: a multi-center propensity-matched analysis. Surg Endosc. 2025.
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