

Profiling Breast Implant Rupture: A Systematic Review and Meta-analysis of Patient, Surgical, and Device Characteristics.

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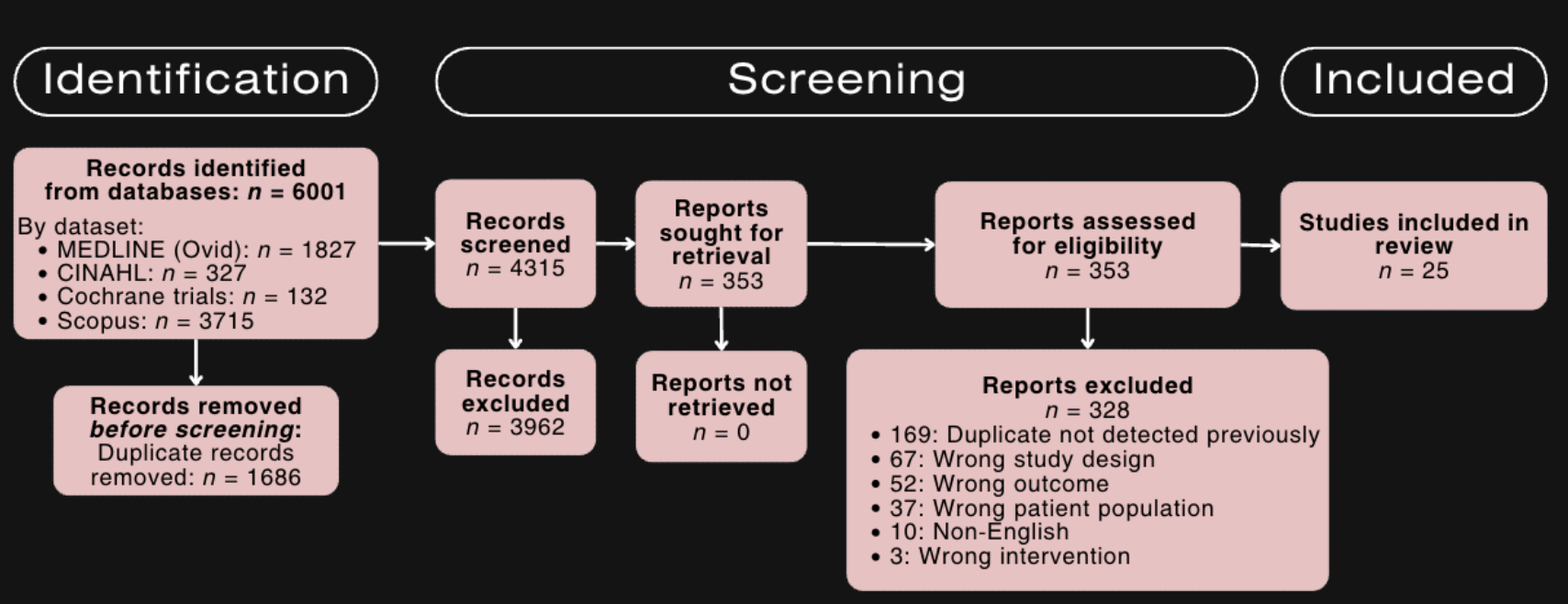
Background

- Rupture is the most common reason for breast implant removal with potential consequences for patient health and aesthetic outcomes.
- The 2010 recall of the Poly Implant Prothèse (PIP) silicone breast implants underscored the potential dangers of substandard devices and heightened public awareness.
- The long-term effects of silicon— even medical grade— are not still fully understood.
- The goal of this study is to provide a comprehensive synthesis of the evidence to assess patient, surgical, and implant characteristics associated rupture of silicone breast implants.**

Methods

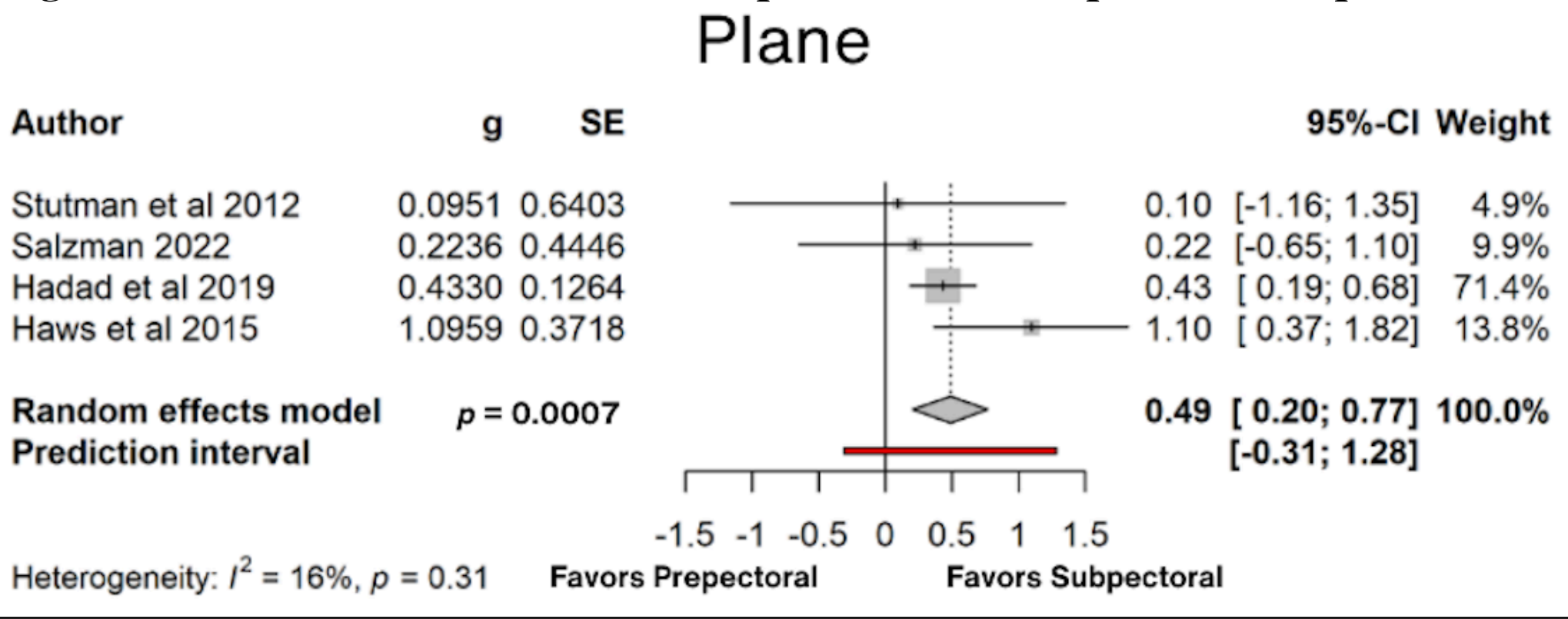
- Articles were searched on PubMed, CINAHL, Scopus, and Cochrane Library databases on October 10, 2024.
- This systematic review includes observational studies involving adult females who experienced implant rupture following breast augmentation or reconstruction.
- Results were synthesized using random-effects models to generate pooled risk ratios (RRs) with 95% confidence intervals.

Figure 1: Identification of Studies



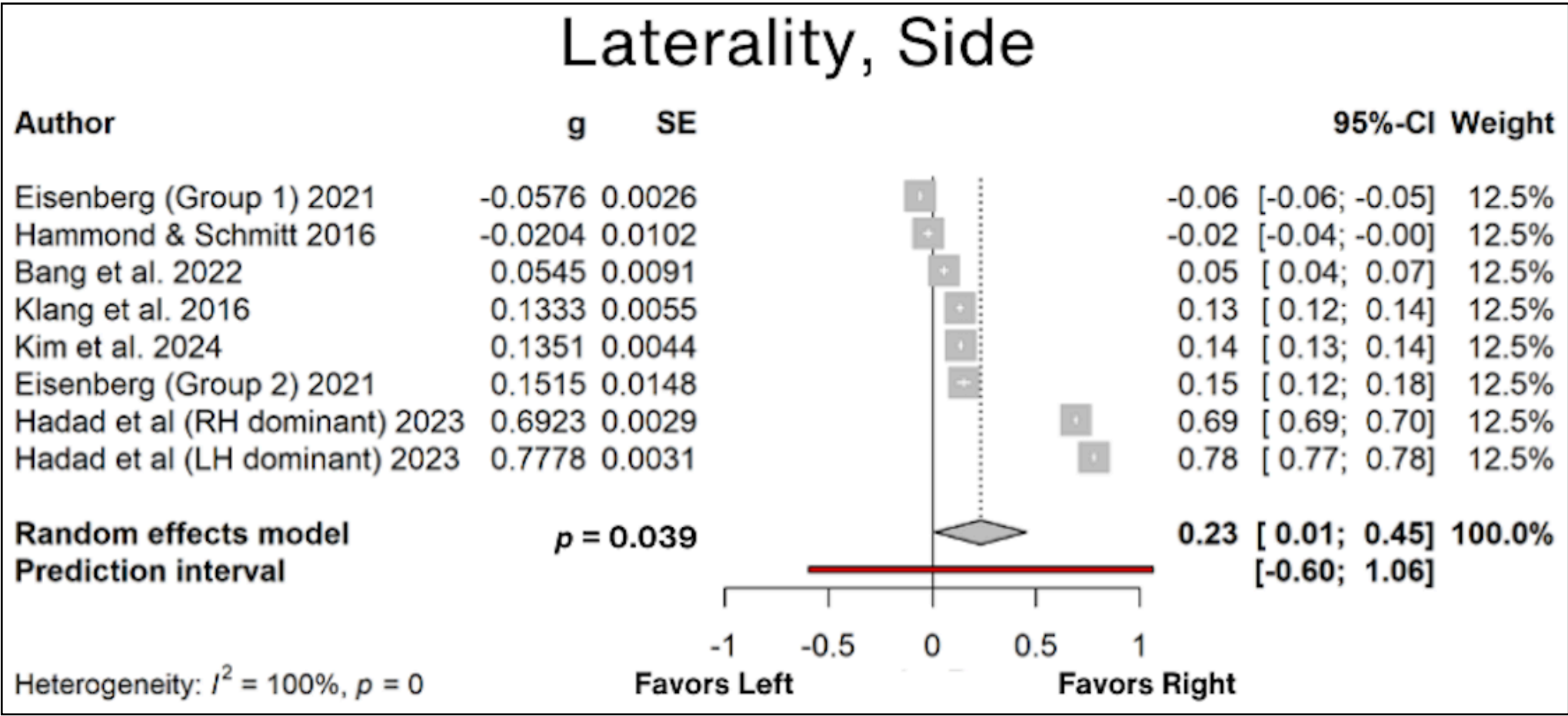
Results

Figure 2: Pooled Risk Ratio for Subpectoral vs. Prepectoral Implant Plane



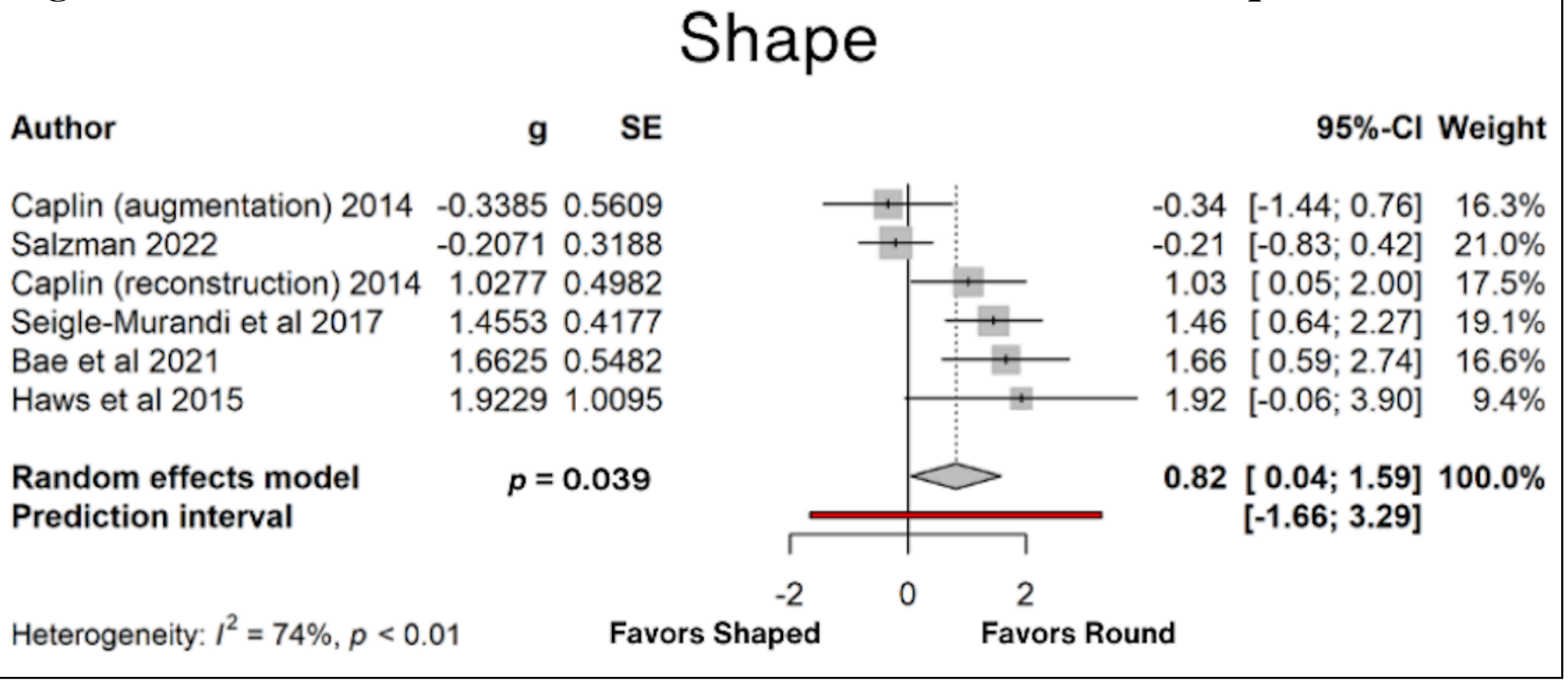
Implants placed in the **subpectoral plane** had higher risk of rupture compared to those in the **prepectoral plane** (log RR [95% CI] = 0.49 [0.20; 0.77], $p = 0.0007$).

Figure 3: Pooled Risk Ratio for Right vs. Left Side



Implants placed in the **right side** were significantly more likely to rupture than those placed in the **left** (proportion difference [95% CI] = 0.23 [0.01; 0.45], $p = 0.039$)

Figure 4: Pooled Risk Ratio for Round vs. Anatomical Shape



Round implants were associated with a significantly higher rupture risk compared to anatomically shaped implants (log RR [95% CI] = 0.82 [0.04; 1.59], $p = 0.039$).

No significant differences in rupture risk were found between saline and silicone implants, smooth and texture implants, aesthetic versus reconstructive patients, primary versus secondary procedures, or unilateral versus bilateral placement.

Conclusion

Implant shape, plane, and laterally may affect the risk of breast implant rupture, with round implants and subpectoral right-sided placement being associated with higher rupture rates.

These findings can inform clinical decision-making and surgical planning to minimize the risk of this complication.

References

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