

A Friend or Foe? Evaluating Mesh Usage, Implant Location, and the Timeline of Capsular Contracture Development

Yunchan Chen BS¹, Marcos Lu Wang BA¹, Grant G. Black BA¹, Jaime L. Bernstein MD¹, Malini Chinta MD¹, David M. Otterburn MD¹

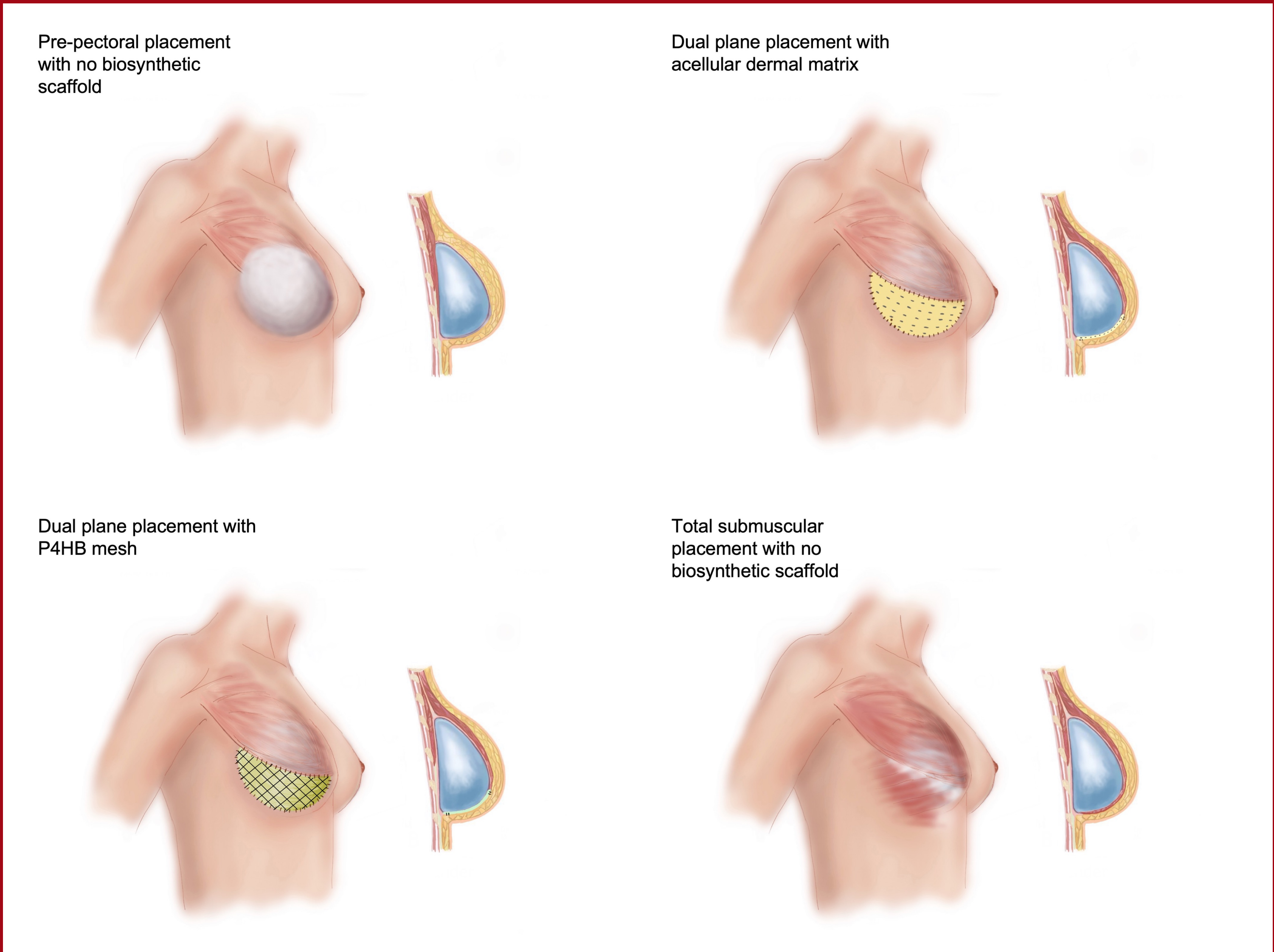
¹Weill Cornell Medicine, New York City, NY, United States

Background

Acellular dermal matrix (ADM) and synthetic meshes are commonly used to improve inframammary-fold definition, minimize muscle excision, and allow for greater control over surgical techniques in implant-based reconstruction. The aim of this study is to compare no mesh usage to the use of biological matrices (ADM) or synthetic mesh (P4HB) in conjunction with various placement locations (pre-pectoral, retro-pectoral, total sub-muscular), and further examine the respective incidences and timelines of capsular contracture development within each subgroup.

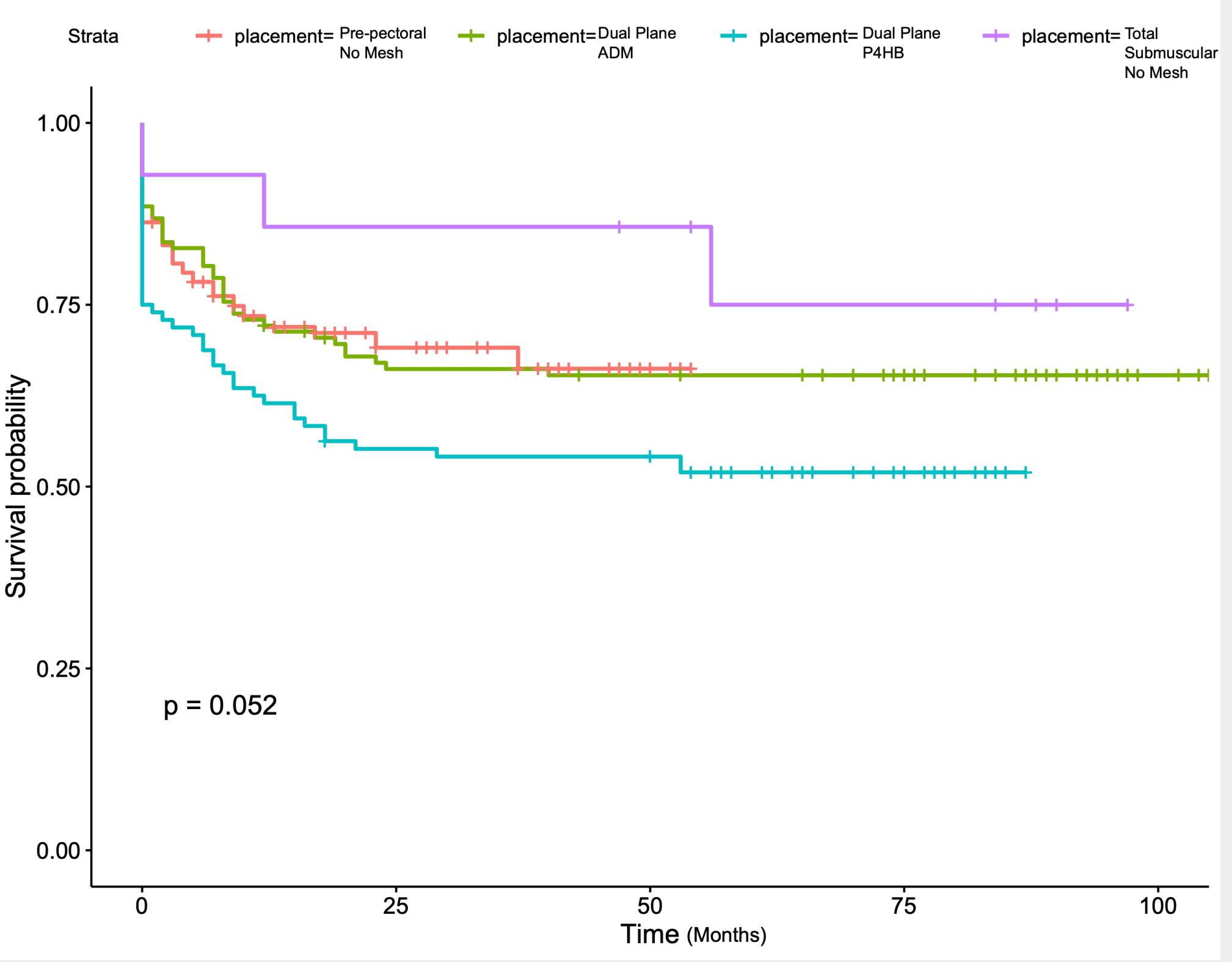
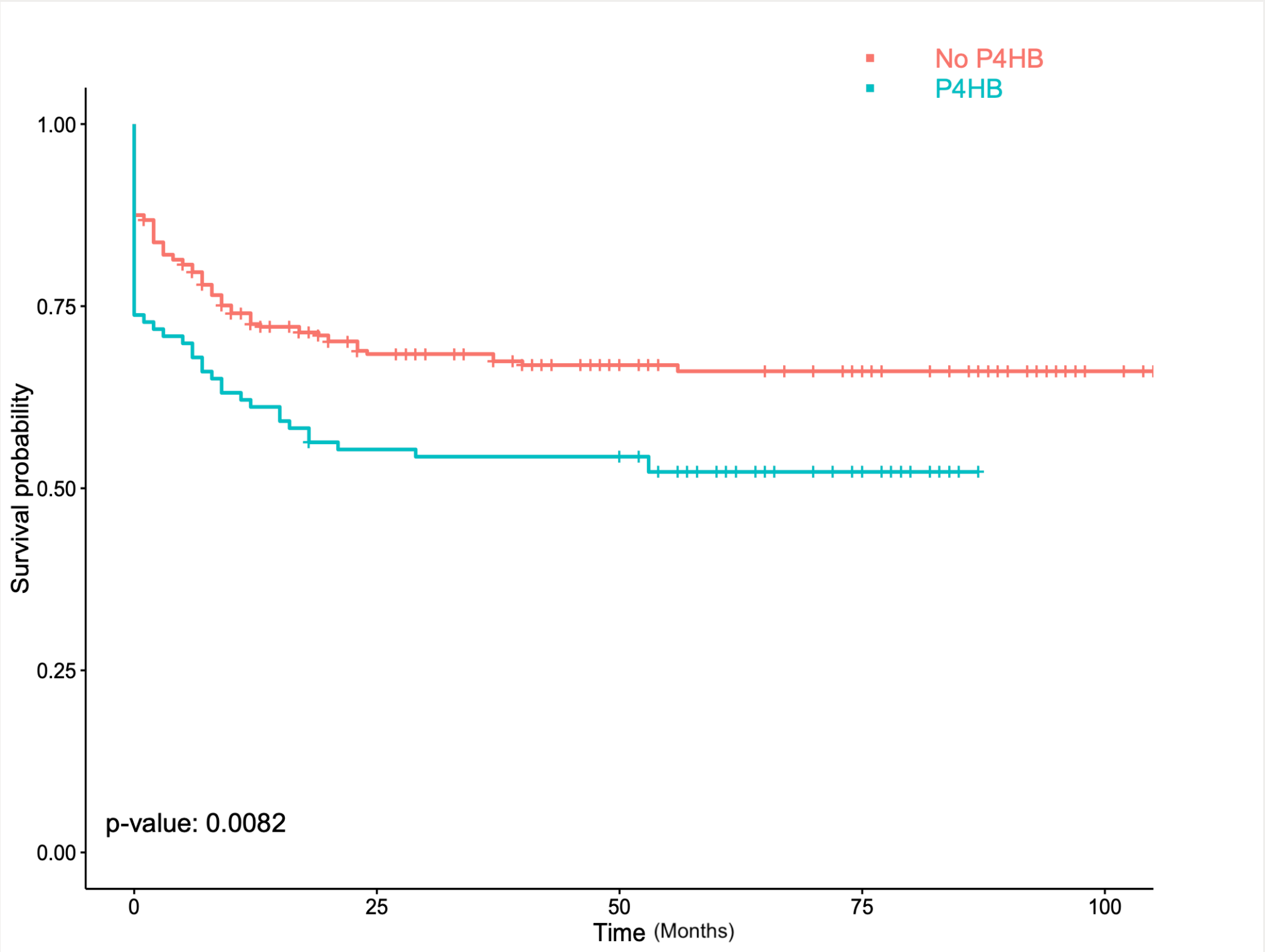
Methods

A dataset consisting of 209 patients (406 samples) who had undergone two-stage reconstruction between 2012-2021 was used in the study. Univariate logistic regression was used for statistical analysis. Kaplan-Meier estimator was used to plot the survival curve for the various conditions.



Results

On univariate logistic regression (OR 1.95, p-value 0.004) and survival analysis (p-value 0.0082), P4HB mesh usage was linked to an increased risk and earlier timeline of capsular contracture development (Left). Out of the various placement modalities, retro-pectoral with P4HB yielded the highest contracture rate. Pre-pectoral placement with no mesh and retro-pectoral placement with ADM showed similar timelines of capsular contracture development (Right). The lowest incidence of capsular contracture occurred in the pre-pectoral placement and no mesh subgroup (49/161, 30.4%).



Conclusion

- The use of P4HB mesh in two-stage breast reconstruction is correlated with a statistically significant increase in capsular contracture.
- Pre-pectoral tissue expander and no mesh led to the lowest rate.
- There did not appear to be a significant difference in the timeline of contracture formation between retro-pectoral with ADM and pre-pectoral with no mesh usage.