

Investigating Ehlers-Danlos syndrome as a significant risk factor for postoperative complications of plastic and reconstructive breast surgeries: a multicenter propensity score-matched retrospective cohort study

Seungil Lee¹, BA, Manuela Neira¹, MD, Agustin N. Posso¹, MD, Charlotte Thomas¹, BS, Chanthia C. Ma¹, PhD, Sarah J. Karinja¹, MD, Bernard T. Lee¹, MD, MPH, MBA

¹Division of Plastic and Reconstructive Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School

BACKGROUND

- Ehlers-Danlos syndrome (EDS) is a heterogeneous group of heritable connective tissue diseases, which may interfere with wound healing.
- The extant literature remains ambiguous in evaluating EDS as a potential risk factor for postoperative complications of plastic and reconstructive surgeries.
- Much of the limitation of this body of literature concerns small sample sizes.
- We leveraged a large, multicenter repository of electronic health records to perform a propensity score-matched population-based study with sufficient statistical power.

METHODS

- Patients who underwent plastic and reconstructive breast surgeries were identified on the US Research Network of the TriNetX database.
- Those with EDS qualified for the exposure cohort; those without were stratified into the control cohort.
- Propensity score matching (1:1) was performed. Cohorts were matched for demographic variables, procedures, medications, comorbidities, and body mass index classifications.
- 744 patients were enrolled in each cohort.
- Short-term complications rates were assessed at postoperative days 30, 60, and 90. Long-term complications were assessed at postoperative year 2.

RESULTS

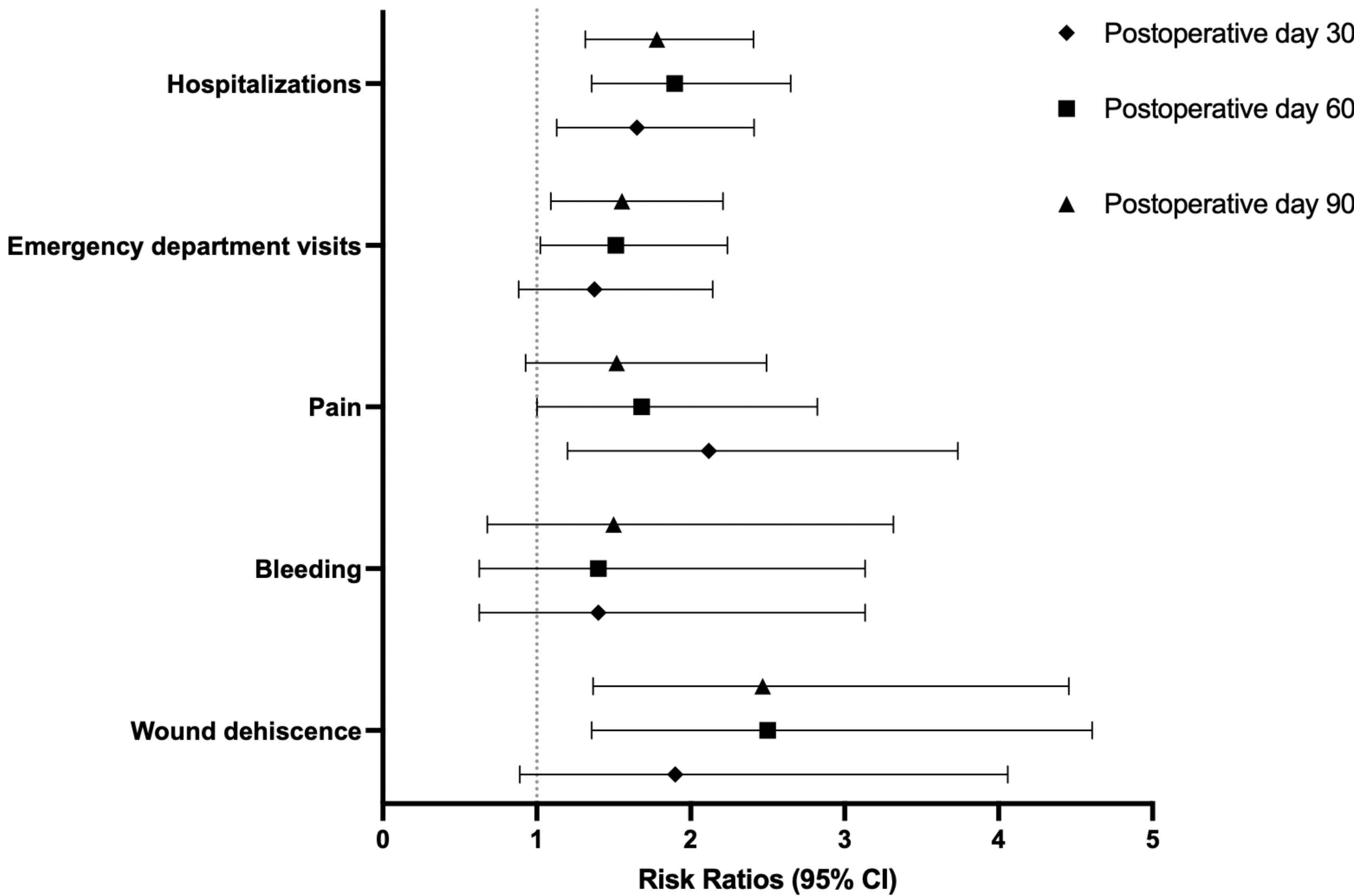


Figure 1. Short-term postoperative complication profile associated with Ehlers-Danlos syndrome (N = 1,488).

Postoperative complications	Exposure cohort: complication, N (%)	Control cohort: complication, N (%)	Absolute risk difference (95% CI)	Risk ratio (95% CI)	P-value
Wound dehiscence	37 (4.973)	15 (2.016)	2.957% (1.097%,4.817%)	2.467 (1.366,4.456)	0.0019
Bleeding	15 (2.016)	≤ 10* (1.344)	0.672% (-0.634%,1.978%)	1.5 (0.678,3.317)	0.3132
Pain	38 (5.108)	25 (3.36)	1.747% (-0.297%,3.792%)	1.52 (0.927,2.492)	0.0942
Emergency department visits	73 (9.812)	47 (6.317)	3.495% (0.733%,6.256%)	1.553 (1.092,2.209)	0.0133
Hospitalizations	105 (14.113)	59 (7.93)	6.183% (3.016%,9.35%)	1.78 (1.315,2.408)	0.0001

*To protect patient privacy, data were rounded up to 10 prior to analysis.

Table 1. Postoperative day 90 complications, comparison of patients with Ehlers-Danlos syndrome vs. health controls (N = 1,488).

CONCLUSION

- Patients with EDS were at significantly higher risks of wound dehiscence, pain, ED visits, and hospitalizations within 90 days of post-plastic and reconstructive breast surgeries.
- Long-term postoperative complication risks of capsular contracture and revisions were not significantly different.
- This study is, to our knowledge, the first population-based analysis of EDS in the plastic and reconstructive surgery literature to have been sufficiently powered to detect statistically significant elevation of postoperative complication risks.

Contact us

Seungil Lee, BA: Seungil_lee@hms.harvard.edu

Manuela Neira, MD: Mneira@bidmc.harvard.edu

Agustin N. Posso, MD: Aposso@hsph.harvard.edu

Charlotte Thomas: Charlottethomas@hms.harvard.edu

Chanthia C. Ma, PhD: Chanthia_ma@hms.harvard.edu

Sarah J. Karinja, MD: Skarinja@bidmc.harvard.edu

Bernard T. Lee, MD, MBA, MPH: Blee3@bidmc.harvard.edu