

Key Determinants of Immediate vs. Delayed Diagnosis in Trauma-Related Breast Implant Complications: Insights from the Nationwide Readmission Database

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Introduction

- Breast implants are increasingly common.
- Many spontaneous ruptures are 'silent', leading to delays in diagnosis and management.
- Trauma-related breast implant complications remain understudied.

Objective: Identify factors associated with immediate versus delayed diagnosis or intervention following trauma-related breast implant injuries.

Methods

Dataset: Nationwide Readmissions Database (NRD), 2017-2020.

Patient Population:

- Trauma admission preceding or accompanying breast implant complications (rupture, displacement) or related surgical procedures
- Identified using ICD-10/CPT codes

Definitions:

- “Immediate”: diagnosed/treated during index admission
- “Delayed”: diagnosed/treated during subsequent readmission

Analysis:

- Descriptive characteristics of immediate and delayed groups
- Cox regression → independent predictors of earlier diagnosis/intervention:
 - Age, sex, ZIP income quartile
 - Trauma mechanism
 - Rib/clavicle fractures, thoracic wounds, hemothorax or pneumothorax, breast symptoms
- Odds ratios to identify predictors of surgical intervention

Results

- N = 573; Mean age: 61 years; 99.3% female

Independent Predictors of Earlier Diagnosis

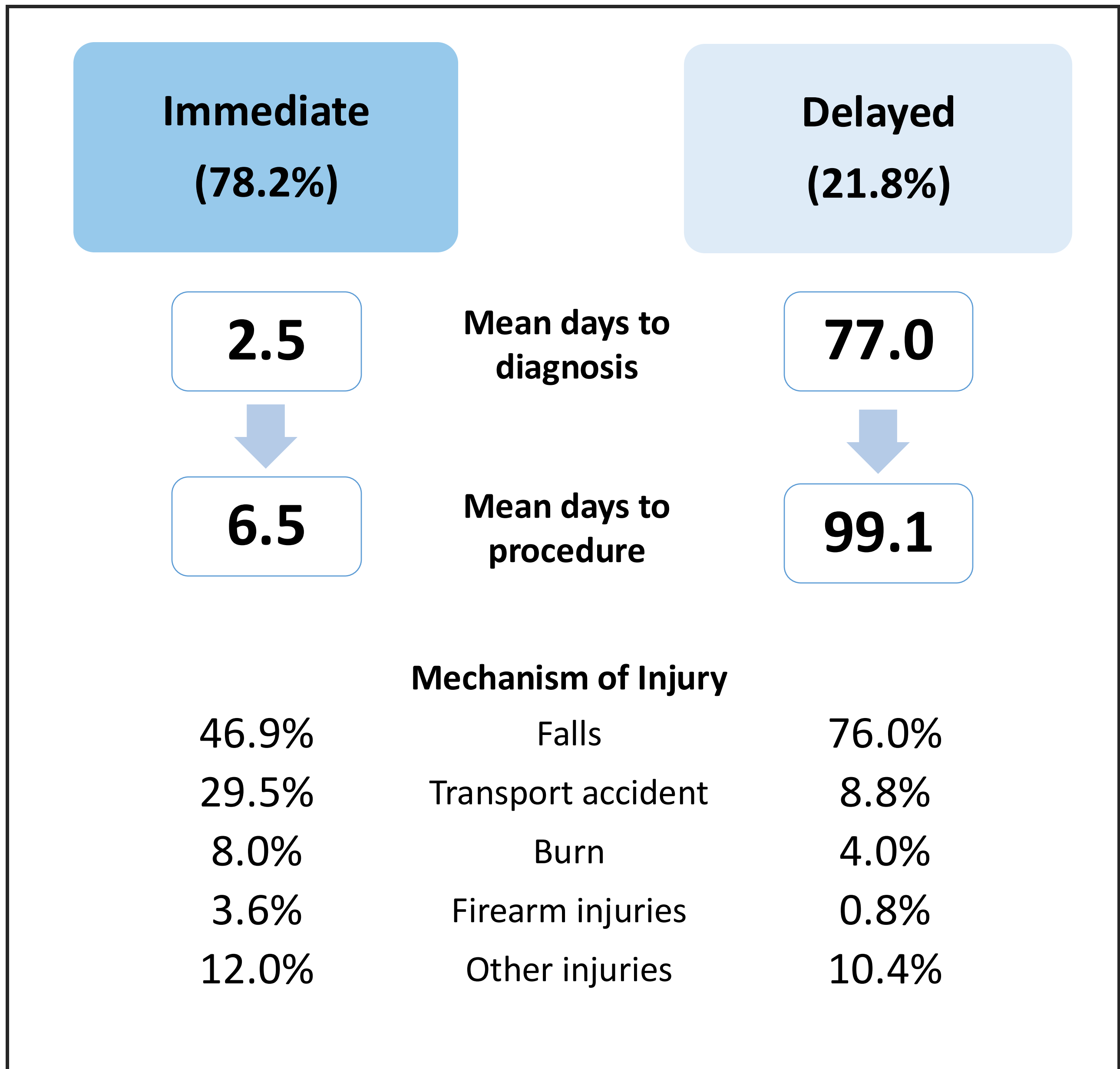
- Rib/clavicle fracture (HR=1.50, p<0.001)
- Breast signs and symptoms (HR=1.74, p=0.044)
- Age, sex, and income quartile were not significantly associated with timing

Predictors of Undergoing Breast Implant Procedures

- Thoracic wounds (OR=18.8, p<0.001)
- Rib/clavicle fractures (OR=0.25, p<0.001)
- Plastic surgery consult shortened time to surgery (p<0.001)
- Breast symptoms and hemothorax were not predictive of surgical intervention

- Majority (78.2%) diagnosed during index trauma admission
- Falls made up more of the delayed diagnosis/intervention group (76.0% vs 46.9% vs 76.0% in the delayed group), while transport accidents made up more of the immediate group (29.5% vs 8.8%)

Figure 1. Timing of Implant-Related Diagnosis and Procedure



Conclusions

- Post-traumatic breast implant complications are often diagnosed during trauma admission
- Diagnostic delays may result from under-recognition when breast-specific signs are absent
- Transport injuries prompted faster diagnosis than falls, likely due to imaging protocols
- Plastic surgery consultation during initial admission improves management timing
- Initial breast symptoms were not predictive of subsequent procedures → future research needed to determine motivations for explantation after trauma

References

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