

Absence of a Robotic Bedside Assistant Impedes Robotic Surgical Training for Senior Surgical Residents

James J Whitbread Jr MD^{1,2}, Bryan Szeglin MD¹, Miloslawa Stem MS¹, Peter Najjar MD MBA^{1,2}, John Migaly MD¹, Alodia Gabre-Kidan MD MPH¹
<1> Colorectal Research Unit, Department of Surgery, Johns Hopkins University School of Medicine; <2> Armstrong Institute for Patient Safety & Quality, Johns Hopkins Medicine



COLORECTAL RESEARCH UNIT
JOHNS HOPKINS
MEDICINE

Background

Robotic surgery is ubiquitous, and robotic skill acquisition is central to modern general surgery training. Safe, efficient robotic surgery requires a skilled bedside assistant, yet bedside staffing is increasingly constrained in both academic and community settings. For senior residents [post-graduate year (PGY) 3–5], robotic console time is a critical educational resource that supports progression along learning curves and competency milestones. When junior residents (PGY1–2) or physician assistants (PAs) are unavailable to bedside assist, senior residents may be required to bedside assist for robotics cases, reducing console exposure and limiting training opportunity.

Why it matters for competency-based education.

Even modest decrements in console case counts may materially affect progression toward competency because published learning curves for robotic procedures can be achieved in relatively small numbers of cases (often on the order of tens of cases).

Methods

- Design/setting:** Retrospective review at Johns Hopkins Hospital (the primary training hospital in the Johns Hopkins General Surgery Residency).
- Study period:** January 2021–June 2025.
- Population:** Robotic general surgery cases at Johns Hopkins Hospital
- Exposure:** Bedside assistant availability—junior resident (PGY1–2) or PA present vs absent.
- Primary outcome:** “Lost console case” = senior resident present but reassigned to bedside assist due to no robotic bedside assistant.
- Analysis:** Descriptive counts/proportions; annualized loss per senior resident using an average of 21 senior residents/year.

Results

Case volume: 3,986 robotic general surgery cases were performed during the study period; 2,360 cases included a senior resident.
Bedside assistant gap: In 583 cases (14.6%), no robotic bedside assistant was present, and the senior resident served as bedside assistant. This was a consistent trend across years by chi square analysis ($p < 0.05$)
Impact: Senior residents participated in an average of 850 robotic cases/year but lost on average about 100 console cases/year due to bedside assistant unavailability.
Per-Resident Impact: Senior residents lost ≈ 16.8 cases over training per resident, representing $\sim 10\%$ of their total robotic case exposure.

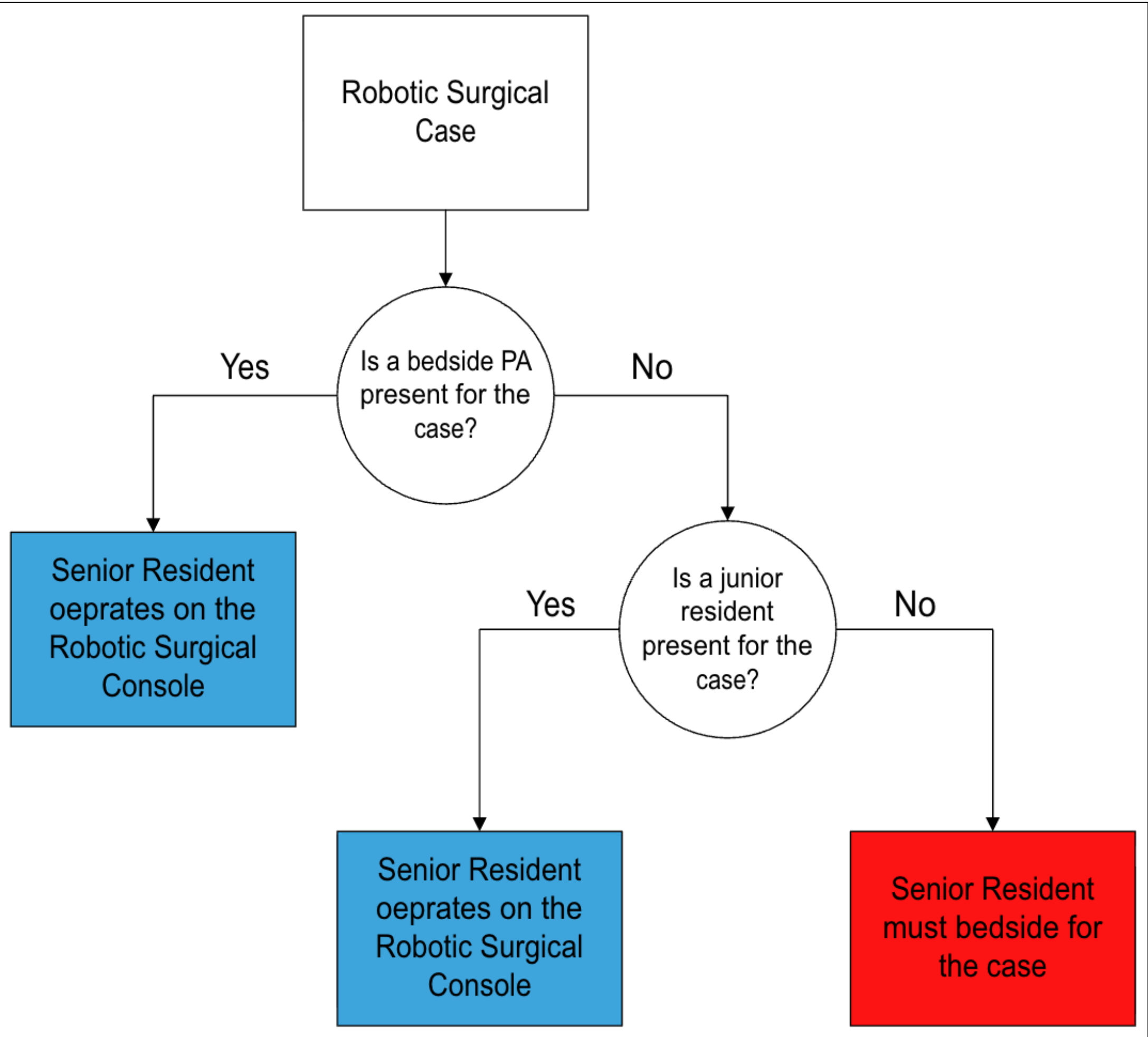


Figure 1: Conceptual staffing pathway for senior resident console participation in robotic surgery. In robotic general surgery cases, senior residents retain console time when a dedicated bedside assistant is available, either as a bedside PA or junior resident. When neither is present, the senior resident is reassigned to the bedside-assistant role, resulting in a lost robotic console training opportunity.

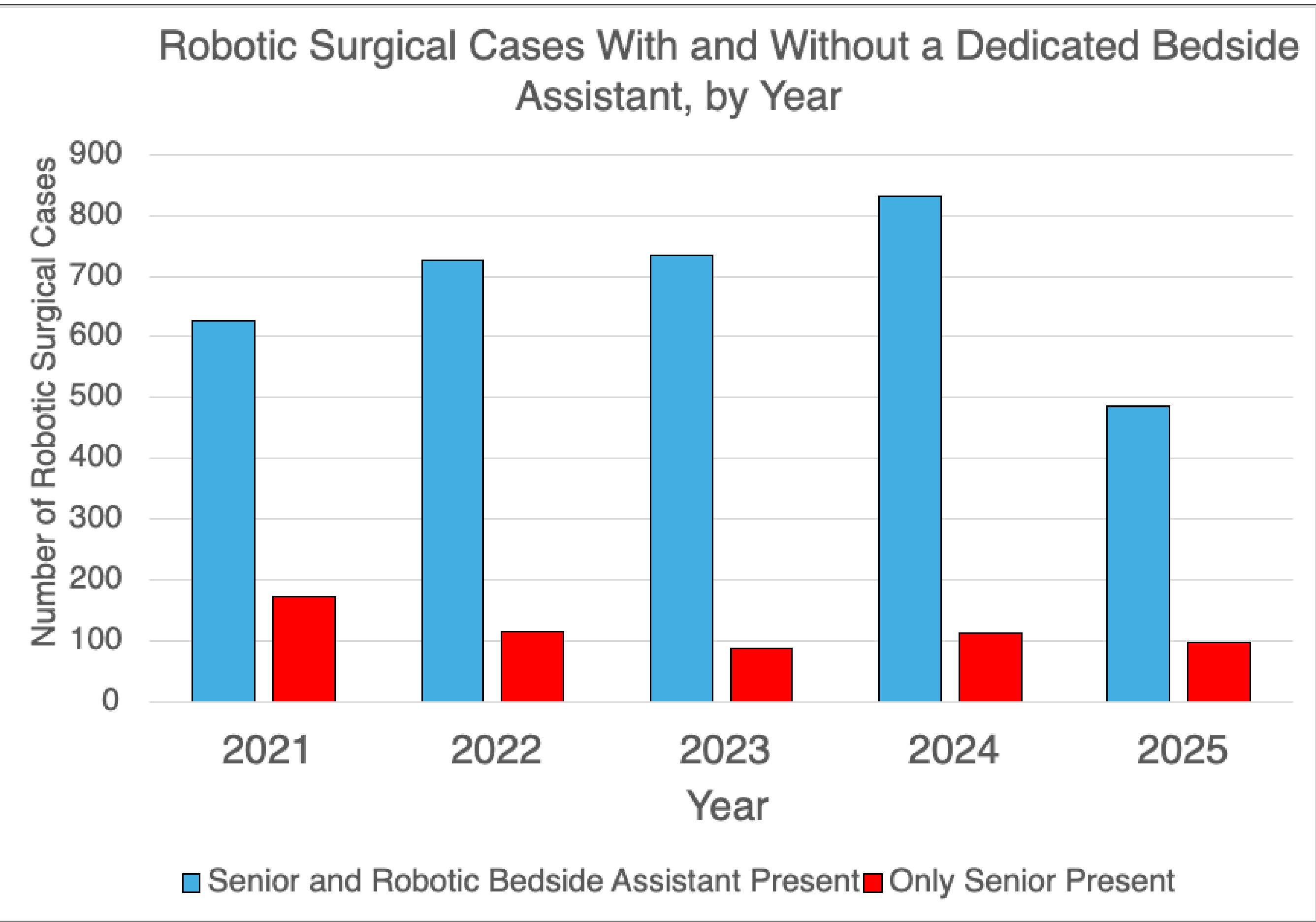


Figure 2: Robotic surgical cases performed at Johns Hopkins Hospital, stratified by presence or absence of a robotic bedside assistant with a senior resident. Senior residents lose console time on almost 100 cases per year out of 80–900 total robotics cases because of lack of a dedicated bedside assistant.

Discussion/Application

Bedside assistant unavailability is a frequent, operationally driven cause of lost senior resident robotic console experience, reducing console exposure by approximately one-quarter at a major academic training site. Given that competency for some robotic procedures may be achievable in 10–20 cases, these losses are plausibly large enough to impede attainment of robotic proficiency and threaten the goals of competency-based surgical education.

Actionable implication: Expanding dedicated robotic PA staffing (or equivalent bedside coverage models) for cases with a senior resident present may be a high-leverage intervention to preserve console time and prepare residents for independent robotic practice.