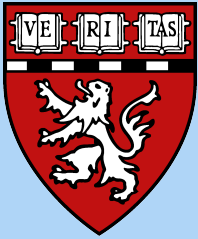




Association between Facility Volume and Survival Following Proctectomy for Rectal Cancer



Vanessa M. Welten MD MPH^{1,2}, Kerollos Wanis MD³, Adam C. Fields MD MPH¹, Pamela W. Lu MD MPH¹, Robert A. Malizia¹, James Yoo MD¹, Joel E. Goldberg MD MPH¹, Jennifer L. Irani MD¹, Ronald Bleday MD¹, Nelya Melnitchouk MD MSc^{1,2}

¹Division of General and GI Surgery, Department of Surgery, Brigham and Women's Hospital, Harvard Medical School, Boston, MA

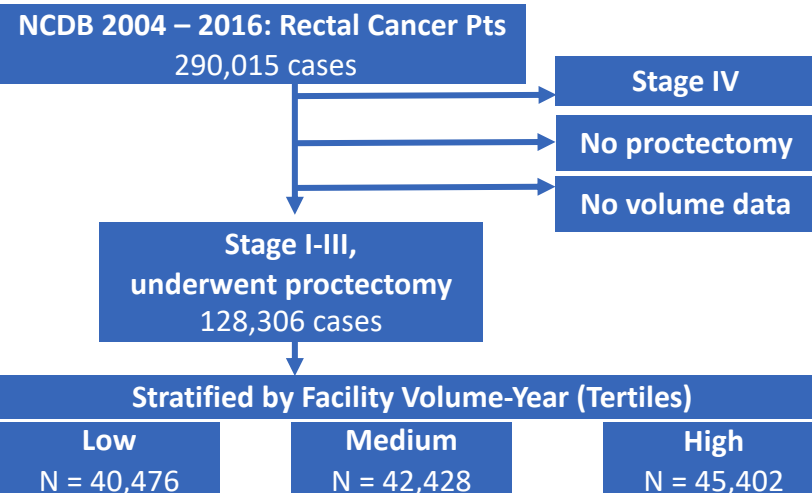
²Center for Surgery and Public Health, Brigham and Women's Hospital, Harvard Medical School, Boston, MA

³Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA

INTRODUCTION & OBJECTIVES

- Centralization of care may improve outcomes following high-risk cancer surgery. Lower complication and mortality rates have been demonstrated for colorectal cancer patients who underwent operations at high-volume centers.
- We examine the association between facility volume and survival following proctectomy for stage I-III rectal cancer.

METHODS



- Outcomes: Median, 1-, 5-year survival by facility volume
- Unadjusted Survival: Log rank tests, Kaplan-Meier statistics
- Multivariable analysis: Cox proportional hazard model

RESULTS

Facility Volume	Median Survival Months (95% CI)	1-year survival % (95% CI)	5-year survival % (95% CI)
Low	102.9 (100.4 - 105.1)	93.1 (92.9 - 93.4)	66.7 (66.2 - 67.3)
Intermediate	116.1 (113.2 - 118.3)	94.3 (94.1 - 94.5)	69.7 (69.2 - 70.2)
High	130.6 (126.3 - 134.7)	95.6 (95.4 - 95.6)	72.9 (72.4 - 73.4)

Table 1. Median, 1-year, and 5-year survival by facility volume-year tertile.

Unadjusted survival by facility volume-year tertile: $p < 0.001$

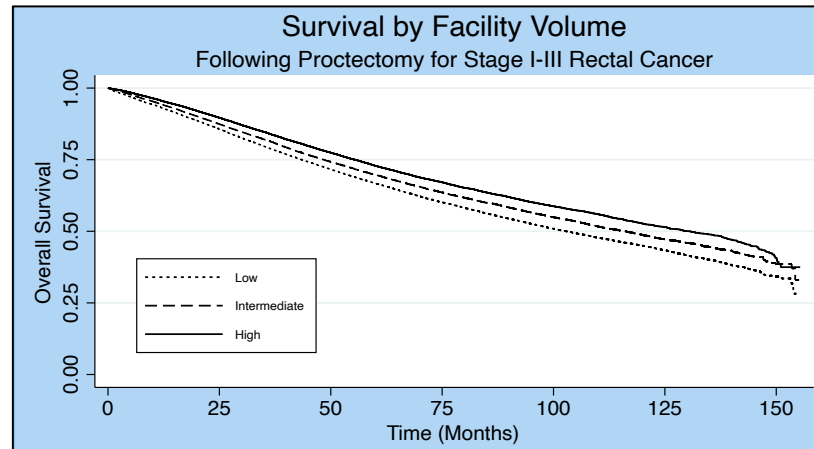


Figure. Overall survival following proctectomy for stage I-III rectal cancer, by facility volume-year tertile.

Variable	HR	95% CI	p-value
Volume Tertile (ref. low)			
Intermediate	0.92	0.89 - 0.94	< 0.001
High	0.83	0.80 - 0.85	< 0.001
Grade (ref. grade 1)			
Grade 2	1.02	0.98 - 1.06	0.325
Grade 3	1.39	1.33 - 1.46	< 0.001
Grade 4	1.65	1.51 - 1.81	< 0.001
Stage (ref. stage 0)			
Stage 1	1.16	1.03 - 1.31	0.012
Stage 2	1.90	1.69 - 2.14	< 0.001
Stage 3	1.84	1.62 - 2.08	< 0.001
Margins (ref. negative)			
Positive	2.18	2.11 - 2.26	< 0.001
Regional Lymph Nodes (ref. negative)			
Positive	1.57	1.49 - 1.65	< 0.001
Chemotherapy (ref. none)			
Neoadjuvant	0.76	0.72 - 0.80	< 0.001
Adjuvant	0.65	0.62 - 0.68	< 0.001
Radiation (ref. none)			
Neoadjuvant	1.00	0.94 - 1.05	0.894
Adjuvant	0.89	0.85 - 0.93	< 0.001

Table 2. Multivariable analysis of factors influencing survival.

CONCLUSIONS

- We identify a strong association between facility volume-year tertile and survival following proctectomy for stage I-III rectal cancer. Higher facility volume was independently and incrementally associated with lower risk of death.
- Further work is needed to evaluate potential drivers of this association, including surgeon volume, specialist expertise, and compliance with treatment guidelines.