Surgical margin length and location affect recurrence rates after robotic prostatectomy.

Dev HS, Wiklund P, Patel V, Parashar D, Palmer K, Nyberg T, Skarecky D, Neal DE, Ahlering T, Sooriakumaran P.

Abstract

BACKGROUND: Robotic-assisted laparoscopic radical prostatectomy is a current standard treatment for localized prostate cancer, with treatment failure defined by biochemical recurrence (BCR). Open radical prostatectomy series have identified the presence of a positive surgical margin (PSM) as a predictor of long-term recurrence, a measure that is affected by the surgeon’s skill. We evaluate the effect of PSM parameters on BCR rates from robotic-assisted laparoscopic radical prostatectomy, across 3 high-volume institutions.

METHODS: De-identifiable clinicopathological and histopathological data were prospectively collected for 4,001 patients with at least 3 years of follow-up. Kaplan-Meier plots and 3 statistical models were used to evaluate the effect of margin parameters on BCR, via crude rates, traditional multivariable Cox regression, and a propensity-adjusted Cox regression model.

RESULTS: Overall, 37% of men with a PSM developed BCR compared with 10% of men with negative margins (hazard ratio [HR] = 1.81, 95% CI: 1.47-2.22). Length ≥3mm or a multifocal positive margin was associated with a higher risk of BCR compared with negative margin cases. On multivariable Cox regression analysis of the positive margin cohort, only apical margins significantly predicted BCR relative to basal margins (HR = 2.03, 95% CI: 1.01-4.09), whereas there was no significant difference in BCR rates for posterolateral margins relative to basal margins (HR = 1.62, 95% CI: 0.84-3.11). Propensity-adjusted modeling confirmed a greater effect of apical compared with posterolateral PSM.

CONCLUSIONS: A PSM length ≥3mm is predictive of BCR, as is to a lesser extent multiple positive margins. In contrast to open prostatectomy series, posterolateral margins carry a smaller risk of BCR compared with apical margins.

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KEYWORDS: Biochemical recurrence; Length; Location; Positive surgical margin; Robotic-assisted prostatectomy

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