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Positive surgical margins after robotic assisted radical prostatectomy: a multi-institutional study

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Purpose: Positive surgical margins are an independent predictive factor for biochemical recurrence after radical prostatectomy. We analyzed the incidence of and associative factors for positive surgical margins in a multi-institutional series of 8,418 robotic assisted radical prostatectomies.
Materials and Methods: We analyzed the records of 8,418 patients who underwent robotic assisted radical prostatectomy at 7 institutions. Of the patients 323 had missing data on margin status. Positive surgical margins were categorized into 4 groups, including apex, bladder neck, posterolateral and multifocal. The records of 6,169 patients were available for multivariate analysis. The variables entered into the logistic regression models were age, body mass index, preoperative prostate specific antigen, biopsy Gleason score, prostate weight and pathological stage. A second model was built to identify predictive factors for positive surgical margins in the subset of patients with organ confined disease (pT2).
Results: The overall positive surgical margin rate was 15.7% (1,272 of 8,095 patients). The positive surgical margin rate for pT2 and pT3 disease was 9.45% and 37.2%, respectively. On multivariate analysis pathological stage (pT2 vs pT3 OR 4.588, $p < 0.001$) and preoperative prostate specific antigen (4 or less vs greater than 10 ng/mL OR 2.918, $p < 0.001$) were the most important independent predictive factors for positive surgical margins after robotic assisted radical prostatectomy. Increasing prostate weight was associated with a lower risk of positive surgical margins after robotic assisted radical prostatectomy (OR 0.984, $p < 0.001$) and a higher body mass index was associated with a higher risk of positive surgical margins (OR 1.032, $p < 0.001$). For organ confined disease preoperative prostate specific antigen was the most important factor that independently correlated with positive surgical margins (4 or less vs greater than 10 ng/mL OR 3.8, $p < 0.001$).
Conclusions: The prostatic apex followed by a posterolateral site was the most common location of positive surgical margins after robotic assisted radical prostatectomy. Factors that correlated with cancer aggressiveness, such as pathological stage and preoperative prostate specific antigen, were the most important factors independently associated with an increased risk of positive surgical margins after robotic assisted radical prostatectomy.

Editorial Comment

Despite advances in technology and surgical techniques the promise of a complete negative surgical margin for radical prostatectomy seems to be a Chimera. Recent reports demonstrate stable results for positive surgical margins in large series of radical prostatectomies but it seems always intimately related to surgeons experience and performance rather than the surgical technique utilized. Patel and colleagues should be commended for their effort of demonstrating a multi-institutional study which the common factor is the use of robotic technology to perform radical prostatectomies for prostate cancer. The PSMs are comparable to open series and conclusions about the superiority of the robotic technology were not noted in the conclusion by the authors. On multivariate analysis pathological stage and preoperative prostate specific antigen (4 or less vs greater than 10 ng/mL OR 2.918, $p < 0.001$) were the most important independent predictive factors for positive surgical margins after robotic assisted radical prostatectomy. Curiously, heavier prostates were associated with a lower risk of positive surgical margins after robotic assisted radical prostatectomy and a higher body mass index was associated with a higher risk of positive surgical margins. For organ confined disease preoperative prostate specific antigen was the most important factor that independently correlated with positive surgical margins.

Studies have demonstrated that even after approximately 3 decades of research trying to achieve the perfect radical prostatectomy seems to be a daunting task due to lack of complete understanding of the surgical landmarks and the suboptimal imaging and diagnostic tests to pre-operatively evaluate the true localization of the cancer in the prostate.

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IMAGING

Incidence of Nephrogenic Systemic Fibrosis after Adoption of Restrictive Gadolinium-based Contrast Agent Guidelines

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Purpose: To retrospectively determine the incidence of nephrogenic systemic fibrosis (NSF) in a large academic medical center after the adoption of restrictive gadolinium-based contrast agent (GBCA) administration guidelines.

Materials and Methods: For this retrospective HIPAA-compliant study, institutional review board approval was obtained and the requirement for informed consent was waived. Restrictive GBCA guidelines were adopted in May 2007. The guidelines (a) require a recent serum creatinine level measurement in any patient who is aged 60 years or older and/or at risk for renal disease, (b) limit the maximal weight-based GBCA dose administered to any patient with an estimated glomerular filtration rate (eGFR) lower than 60 mL/min/m(2)