Positive Surgical Margins in Radical Prostatectomy for Localized Prostate Cancer: Is the Risk Increased by Nerve-Sparing Surgery?

Introduction and Objective: A proper performed radical prostatectomy (RP) ensures complete surgical removal of intraprostatic cancer tissue. Nerve-sparing (NS) technique is used to reduce the risk of erectile dysfunction. A positive surgical margin (PSM) is defined as the presence of tumor cells at the inked margin of resection in RP specimens. In principle, NS surgery will not increase the risk of PSM in truly organ confined prostate cancer (PCa). We have investigated how NS surgery affects the risk of PSM in a large cohort of patients with clinically localized PCa.
Material and Methods: The study includes 1148 consecutive patients who underwent RP from 2006 to 2011. Patients and pathology specimens were handled according to standard protocols. Patients selected for NS surgery had biopsy Gleason score ≤3+4, T1-cT2a/b, PSA<10 ng/ml and no positive apical biopsies. The location of PSM were categorized as apical (PSMs found exclusively at the apex) or non-apical (PSM found at all other locations). The primary endpoint of the study was to assess the impact of NS surgery on the odds for PSM.
Results: The overall PSM rate in all patients (NS + non-NS) was 31.4%. Reflecting criteria for NS, significant differences in PSA, biopsy Gleason score, and cT-category were found in favor of the nerve-spared patients. In multivariate analysis, the odds of having PSM depended on cT-category, PSA, percent positive cores of PCa in biopsies, and NS surgery. NS surgery independently increased the odds for PSM with 50% (odds ratio= 1.5, 95% CI: 1-2.1; p=0.03) compared to wide resection. NS surgery had no impact on the location of PSM. Robotic prostatectomy increased the odds for non-apical PSMs with 60%.
Conclusion: Both preoperative and surgical parameters affect the odds of having PSM after RP. It is of concern, that patients who undergo NS surgery during RP have at least the same or increased odds of PSM compared wide resection, even though they are carefully selected based on clinical, histopathological and biochemical parameters before surgery.