Retrograde versus Antegrade Nerve-Sparing During Robot-Assisted Radical Prostatectomy: Which Is Better for Early Functional Outcomes?

Introduction and Objectives: To evaluate the impact of the antegrade (from base to apex) and retrograde (from apex to base) nerve sparing (NS) approaches on functional outcomes after robot-assisted radical prostatectomy (RARP).
Materials and Methods: From January 2008 to January 2011, a total of 2267 RARPs were performed by a single surgeon who graded the extent of NS as a percentage of nerve bundle preserved (100%, 75%, 50%, 25%, and 0%) on each side. From a cohort of 1118 preoperatively potent men (SHIM>21), 793 patients had a sum of 200% of NS from each side (full NS), and 501 patients had at least one year of follow up. After propensity matching, 344 patients were finally selected, and these patients were categorized into two groups according to whether NS was conducted by antegrade (Group 1, n=171) or retrograde (Group 2, n=173). Validated questionnaires were used for assessment of continence and potency recovery at 1 month, then every 3 months, up to a year.
Results: Groups 1 and 2 were similar in all preoperative baseline characteristics, including age, body mass index, gland size, preoperative AUA and SHIM score, serum PSA level, clinical stage, biopsy Gleason score, D'Amico risk stratification, and presence of diabetes mellitus, hypertension, hyperlipidemia, and coronary artery disease. Intraoperative, while operative time, hospital stay, catheter indwelling period, complication and transfusion rate were similar, blood loss (119.6±34.2 vs. 111.6±31.6 ml, p=0.027) was increased in Group 1. Overall positive margin rates were similar (11.1% vs. 6.9%, p=0.192), and no correlation with NS approach was found in multivariate analysis regarding margin status. Potency rates at 1 month, 3 months, 6 months, 9 months, and 12 months were 39.7%, 73.3%, 81.4%, 89.5%, and 93.8%, respectively. At 3, 6, and 9 months, it was significantly higher in Group 2 (65.5% vs. 80.9% [p=0.001], and 72.5% vs. 90.2% [p<0.001], and 85.8% vs. 93% [p=0.048], respectively). Multivariable analysis using all preoperative variables also indicated that NS approach was an independent predictor for potency regain along with age, gland size, and concomitance of hyperlipidemia, at 3 and 6 months. After adjusting for other predictors, the hazard ratio for potency recovery for Group 2 relative was 2.264 (95% CI: 1.372 – 3.736, p=0.001) at 3 months, and 3.605 (1.951 – 6.661, p<0.001) at 6 months. The NS approach also affected the recovery of continence at 1 month using same model; the hazard ratio for continence recovery for Group 2 at this time point was 1.581 (1.001-2.496, p=0.049).
Conclusions: In patients with normal preoperative erectile function and who had full bilateral NS, a retrograde NS approach facilitated early recovery of potency and continence compared with an antegrade approach without compromising cancer control.