Depressive Symptoms and Low Sexual Desire after Radical Prostatectomy: Early and Long-Term Outcomes in a Real-Life Setting

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Abbreviations and Acronyms

BDI = Beck Depression Inventory

ED = erectile dysfunction

EF = erectile function

IIEF = International Index of Erectile Function

MVA = multivariable analysis

ORP = open RP

PCa = prostate cancer

PDE5I = phosphodiesterase type 5 inhibitor

RARP = robot-assisted RP

RP = radical prostatectomy

UC = urinary continence

UVA = univariable analysis

Purpose: We assessed the rate and predictors of depressive symptoms and impaired sexual desire in patients who underwent open or robot-assisted radical prostatectomy.

Materials and Methods: A total of 811 patients completed IIEF (International Index of Erectile Function) and BDI (Beck Depression Inventory) preoperatively, and 6, 12, 24 and 36 months postoperatively. Rates and predictors of depressive symptoms and impaired sexual desire were assessed with descriptive statistics and logistic regression models.

Results: We analyzed data on 416 patients treated with robot-assisted radical prostatectomy and 395 who underwent open radical prostatectomy. Overall the incidence of patients with postoperative BDI scores suggestive of depressive symptoms ranged between 26.3% at 6 months and 36.7% at 36 months. BDI scores were significantly higher in open than in robot-assisted radical prostatectomy cases at every analyzed postoperative time point (all $p < 0.01$). Patients treated with robot-assisted radical prostatectomy showed higher IIEF-EF (Erectile Function) domain scores and a greater proportion of them experienced erectile function recovery at each time point compared to those treated with open radical prostatectomy (all $p < 0.005$). Postoperatively the rate of impaired sexual desire ranged between 40.9% at 6 months and 34.1% at 24 months. IIEF-SD (Sexual Domain) scores were significantly lower in open radical prostatectomy cases at every followup (all $p < 0.02$). Age, open radical prostatectomy and postoperative erectile dysfunction were independent predictors of BDI scores and impaired sexual desire.

Conclusions: One of 3 men surgically treated for prostate cancer still report depressive symptoms months after surgery. Patients who undergo robot-assisted radical prostatectomy reported lower depressive symptoms than those treated with open radical prostatectomy. Sexual desire was highly affected after radical prostatectomy with greater impairment reported by patients who underwent open radical prostatectomy.

Key Words: prostatic neoplasms; prostatectomy; robotic surgical procedures; depression; sexual dysfunctions, physiological

RADICAL prostatectomy is one of the recommended treatment options in patients with localized PCa.[1] However, RP has been invariably associated with a well-known risk of postoperative functional sequelae, including ED and an overall negative impact on sexual functioning.[2,3] While previous groups have extensively investigated the potential detrimental impact of RP only on EF,[2-4] male sexual functioning is multifaceted and the effect of every treatment on each specific domain deserves attention.[2,3] Overall RP may impact sexual desire, orgasm and ejaculation,[2,3,5] and overall postoperative sexual desire issues have been given little attention.[6,7] In men who undergo RARP postoperative sexual health has been given even less attention.[2,3,8,9]

The association between ED and depressive symptoms is well established in the literature.[10] Conversely given the high prevalence of PCa in the contemporary population and the reported significant impact of RP in terms of sexual function, relatively few studies have analyzed the psychological impact of PCa and its different treatments.[11-14] For instance, Gandaglia et al observed that depression should be considered when counseling patients with PCa on the long-term sexual side effects of RP because of its potential detrimental effect on postoperative EF recovery.[13] Despite this, the psycho-oncologic research in the area of ED associated bother after RP does not show unanimous results.[15] Moreover, all available data on the psychological impact of RP on patient well-being come from open surgery series.

Therefore, the primary aim of this study was to assess the rates and predictors of depressive symptoms and impaired sexual desire at early and long-term followup in patients who underwent ORP or RARP for PCa. Moreover, prompted by the idea that the minimally invasive nature of the robot-assisted technique is associated with fewer postoperative functional sequelae and, thus, can result in lower rates of depressive symptoms and impaired sexual desire compared to ORP, we also tested potential differences in outcomes according to surgical technique.

MATERIALS AND METHODS
We report findings of a retrospective analysis of 999 patient charts that were prospectively collected and retrieved from the institutional database at a single tertiary referral academic center. All identified records consisted of sexually active individuals treated with bilateral nerve sparing RP (ORP or RARP) for clinically localized PCa between January 2003 and October 2016. To exclude the potential impact of the learning curve of each technique on surgical outcomes we considered only patients who underwent bilateral nerve sparing RP (ORP or RARP) performed by 1 of 3 high volume surgeons who had performed more than 100 cases of each surgical approach using a standardized technique.

Patients were included in study if they were sexually active and had UC (defined as no pad use at baseline), and if complete clinical data were available, including body mass index, health significant comorbidities scored with the Charlson comorbidity index,[16] preoperative prostate specific antigen, biopsy Gleason score, nodal invasion[17] and a detailed description of the surgical technique.[18] The 19 patients (1.9%) with a known history of depression or depressive symptoms and those receiving any antidepressant therapy were excluded from study.

Preoperative EF was assessed by the EF domain of IIEF. Thereafter EF was categorized according to the classification suggested by Cappelleri et al.[19] Similarly patients completed BDI at baseline.[20] Depressive symptoms were defined as a BDI score of 11 or greater.

Patients were evaluated at 3, 6 and 12 months of followup during postoperative year 1 and yearly thereafter. To this end at each assessment patients completed IIEF, considering EF, sexual desire, orgasmic function, intercourse satisfaction and overall satisfaction,[21] and BDI. Postoperative EF recovery was defined as a IIEF-EF score of 22 or greater.[22] Conversely normality for the other IIEF domains was arbitrarily defined as values of the median or greater for each domain. Patients were encouraged to attempt sexual intercourse as soon as possible after catheter removal and also encouraged to use a full dose of PDE5I on demand or a low dose of PDE5I once daily postoperatively for 3 to 6 months.

Postoperative UC was assessed by patient reported 24-hour pad use. Postoperative UC was defined as no pad use during a 24-hour period.

Overall 62 (6.2%) and 70 men (7.0%) in the RARP and ORP groups, respectively, were excluded from analysis because of incomplete data collection, resulting in a cohort of 848 patients eligible for statistical analysis. Moreover, to control for measurable baseline differences among patients in the 2 treatment groups we made an adjustment using 1:1 propensity score matching.[23] We performed multiple logistic regression analysis to determine the propensity score using the variables age, Charlson comorbidity index, pathological stage, preoperative IIEF-EF and BDI score. Propensity score matching was performed by Greedy matching using a caliper of 0.1 SD of the logit of the propensity score. After matching we considered 811 individuals for the final analysis.

Data collection was done according to the principles outlined in the Declaration of Helsinki. Prior to participation all patients provided informed consent to agree to share their anonymous information for future studies. This study was approved by the San Raffaele Hospital ethical committee.

Data are presented as the mean ± SD and range. The statistical significance of differences in means and proportions was tested by 1-way ANOVA and the Pearson chi-square test, respectively. The 95% CI was estimated for the association of categorical parameters. Descriptive statistics were used to assess the rate of pathological psychometric scores in the whole population. As a sensitivity analysis, pairwise comparisons of outcomes were adjusted for multiple comparisons using the Tukey correction. Univariable and multivariable logistic regression analyses were used to test potential clinical predictors of BDI and impaired sexual desire, namely age, marital status, surgical approach, postoperative ED and