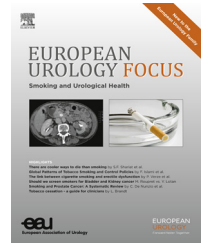


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Prostate Cancer

Patient-reported Functional Outcomes Following Open, Laparoscopic, and Robotic Assisted Radical Prostatectomy Performed by High-volume Surgeons at High-volume Hospitals

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Abstract

Background: Functional outcomes following radical prostatectomy (RP) have received increased focus with dissemination of minimally invasive approaches.

Objective: To examine contemporary patient-reported functional outcomes following open RP (ORP), laparoscopic RP (LRP), and robotic assisted RP (RARP) performed by high-volume surgeons at high-volume hospitals.

Design, settings, and participants: This was a retrospective cohort study of 1686 men with cT1–cT2 prostate cancer treated with ORP ($n = 441$), LRP ($n = 156$), or RARP ($n = 1089$) by high-volume surgeons (annual volume ≥ 25 cases) at two academic centers from 2009 to 2012. Surveys containing the Expanded Prostate Cancer Index Composite urinary and sexual domains were administered at a median of 30.5 mo postoperatively.

Interventions: ORP, LRP, and RARP.

Outcome measurements and statistical analysis: Bother with overall urinary and sexual function was examined and stratified by surgical technique. Logistic regression models evaluated the associations of clinicopathologic features with survey responses.

Results and limitations: In total, 6.4% of men reported a moderate or big problem with overall urinary function (ORP 5.8%, LRP 5.1%, RARP 6.8%; $p = 0.62$), whereas 37.3% reported a moderate or big problem with overall sexual function (ORP 37.2%, LRP 36.1%, RARP 37.5%; $p = 0.95$). On multivariable analysis, older age at surgery (odds ratio [OR]: 1.08; $p < 0.0001$) was associated with overall urinary bother, whereas older age at surgery (OR: 1.03; $p = 0.005$), preoperative erectile dysfunction treatment (OR: 2.22; $p < 0.0001$), greater prostate volume (OR: 1.01; $p = 0.02$), and RP Gleason score (7 vs 6: OR: 0.96; $p = 0.004$; 8–10 vs 6: OR: 2.25; $p = 0.0006$) were associated with overall sexual bother. Surgical technique was not associated with either functional outcome. Limitations included selection bias and a retrospective design.

Conclusions: In this study of high-volume surgeons at high-volume hospitals, patients reported excellent functional outcomes independent of surgical technique. These results have implications for patient counseling.

Patient summary: In this study of high-volume surgeons at high-volume hospitals, patients reported excellent outcomes for urinary and sexual function following radical prostatectomy regardless of surgical technique.

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1. Introduction

Although prostate cancer is the most common malignancy in men, responsible for an estimated 27% of new cancer cases in 2014, it accounts for only 10% of cancer deaths [1]. Given the discrepancy between incidence and mortality, emphasis has shifted from improving cure rates to minimizing treatment-related morbidity [2,3]. Open radical prostatectomy (ORP) has long been established as a first-line treatment for localized disease, and its effects on urinary and sexual function have been well described [4,5].

In recent years, rapid dissemination of minimally invasive radical prostatectomy (MIRP)—accounting for nearly 60% of prostatectomies in 2009, up from 5% in 2003 [6,7]—has renewed interest in the adverse effects of surgery on functional outcomes and the comparative effectiveness of surgical techniques [8]. One recent population-based survey of Medicare beneficiaries noted that an alarming 31% and 88% of men reported significant bother with urinary incontinence and sexual dysfunction, respectively, following radical prostatectomy (RP) [9]. Although such figures represent a departure from historical experience with ORP [4], no consistent differences have been demonstrated when comparing surgical techniques [9,10].

To reconcile such findings, it is essential to consider the volume–outcome relationship for RP when examining functional outcomes. A robust body of literature supports the relationship between improved oncologic outcomes

when RP is performed at high-volume hospitals or by high-volume surgeons [11], and several studies have observed similar associations for urinary outcomes [12–14]. Consequently, we evaluated contemporary, patient-reported, functional outcomes following ORP, laparoscopic RP (LRP), and robotic assisted RP (RARP) performed by high-volume surgeons at two high-volume centers. Specifically, we examined whether functional outcomes would be improved when RP was performed by a high-volume surgeon at a high-volume hospital relative to population-based reports and, furthermore, whether any differences existed across surgical techniques.

2. Patients and methods

After obtaining institutional review board approval at each study site, we identified consecutive men aged 40–74 yr with cT1–T2 prostate cancer who underwent ORP, LRP or RARP at the Massachusetts General Hospital (MGH) or the Mayo Clinic by 1 of 10 high-volume surgeons (defined by an average per-surgeon case volume of ≥25 cases per year) and provided survey responses (Fig. 1). At the Mayo Clinic, patients underwent surgery from 2009 to 2011 and were administered the Expanded Prostate Cancer Index Composite short form (EPIC-26) [15] questionnaire prospectively at 1 and 2 yr postoperatively; those who were lost to follow-up or who died prior to survey administration were not mailed a survey. Patients who completed a 2-yr survey were included in this study, and a baseline questionnaire was available for a subset of patients who underwent surgery at later dates. At MGH, patients underwent surgery from 2010 to 2012 and were mailed a survey instrument that included the EPIC

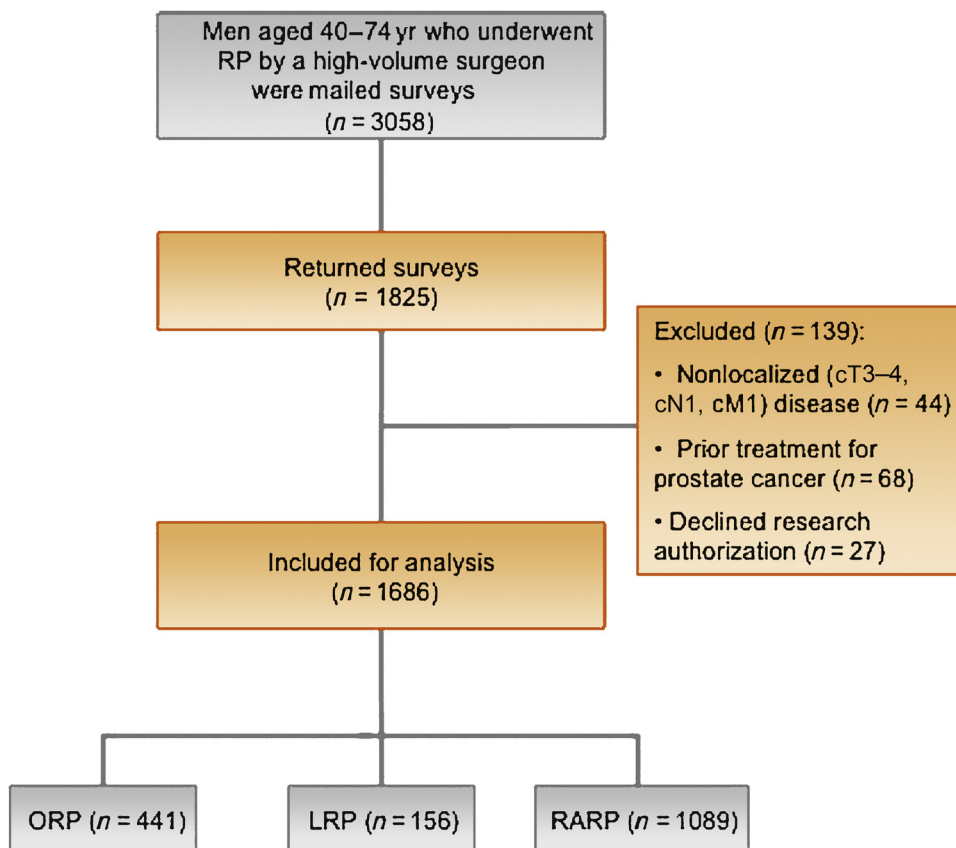


Fig. 1 – CONSORT diagram. LRP = laparoscopic radical prostatectomy; ORP = open radical prostatectomy; RARP = robotic assisted radical prostatectomy; RP = radical prostatectomy.

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