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Platinum Priority – Collaborative Review – Prostate Cancer

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Costs of Radical Prostatectomy for Prostate Cancer: A Systematic Review

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Abstract

Context: Robot-assisted laparoscopic radical prostatectomy (RALP) has been rapidly adopted as a new approach for radical prostatectomy (RP) in patients with prostate cancer (PCa). The use of new technology may increase costs for RP.
Objective: To summarize data on direct costs of various approaches to RP and to discuss the consequences of cost differences.
Evidence acquisition: A systematic literature search was performed in March 2012 using the PubMed, Web of Science, and Cochrane Library databases. A complex search strategy was applied. Articles were selected according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses criteria. Articles reporting on direct costs of RP (open retropubic [RRP], radical perineal [RPP], laparoscopic [LRP], RALP) in men with clinically localized PCa were eligible for study inclusion.
Evidence synthesis: Of 1218 articles initially screened by title, the multistep, systematic search identified 11 studies presenting direct costs of different approaches to RP. Of the 11 studies, 7 compared the costs of different RP approaches. Minimally invasive RP (MIRP) (ie, LRP or RALP) was more expensive than RRP in most studies, mainly due to increased surgical instrumentation costs. In the comparative studies, costs ranged from (in US dollars) $5058 to $11 806 for MIRP and from $4075 to $6296 for RRP, with RALP having the highest direct costs. In one study applying standardized, health economic-evaluation criteria, RALP was not found to be cost effective. Limitations of this review include significant differences in observational study designs and an absence of prospective comparative studies. Moreover, there are limited post-RP data on the costs of adjuvant treatments and other health care–related expenses after PCa surgery.
Conclusions: Few studies compared direct costs of different approaches to RP. The use of new technology, particularly RALP, results in added costs for the procedure. Cost effectiveness of new technologies should be assessed before widespread adoption. To date, in the lone study to evaluate this, RALP was not found to be cost effective from a health care, economic standpoint. However, longer follow-up of patients is required to better evaluate its impact on overall costs and quality of PCa care.

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1. Introduction

The incidence of prostate cancer (PCa) is rising. In the United States, 217 730 men were newly diagnosed with PCa in 2010 [1]. The most common treatment for PCa with curative intent is radical prostatectomy (RP) [2]. New technology is increasingly applied to treat PCa, with a rapid uptake of da Vinci (Intuitive Surgical, Sunnyvale, CA, USA) robotic-assisted, laparoscopic, radical prostatectomy (RALP) [3,4]. In the United States, the majority of all RPs are currently performed robotically, with 2009 estimates ranging from 69% to 85% [5]. RALP may be costlier than conventional, open, retropubic RP (RRP) due to multiple factors, including higher costs for disposables, equipment, and longer operating room (OR) time [3,6–8] when medical staff are still gaining experience with the procedure. RALP has perceived advantages such as facilitating laparoscopic techniques for open surgeons, better magnification, and reduced blood loss, but there is a lack of evidence for clear superiority in functional or oncologic outcomes over conventional surgical approaches to RP [9–11].

The rapid uptake of RALP may be the result of aggressive direct-to-consumer marketing by surgeons, hospitals, and the surgical robot manufacturer, thereby creating a demand for RALP. However, RALP may also be attractive to surgeons on numerous levels. A short learning curve to complete cases relative to laparoscopic prostatectomy and an improved operative view due to magnification and carbon dioxide insufflation may reduce the risk of significant bleeding, potentially attracting less-experienced RP surgeons to perform RALP. This may shift RP practice patterns and affect the delivery, access, and cost of PCa care.

As male life expectancy increases, so does the probability of a PCa diagnosis. With a population of elderly men newly diagnosed with PCa, the shift to more expensive PCa treatments may have major public health implications. European studies found an increasing cost for PCa care caused by technological changes in the management of PCa [12,13], and economic considerations are increasingly important for reasonable health care resource allocation in light of budgetary constraints and limited resources. In the United Kingdom, for example, the National Institute for Health and Clinical Excellence requires high-level evidence for a new treatment before providing it to patients and paying for it. Therefore, health care systems must weigh the use of surgical robots against costs of other PCa therapies, as well as treatments of other maladies. There is demand for cost comparisons and comparative-effectiveness research to determine the clinical and economic efficacy of newly introduced surgical technologies. We aimed to summarize available data on costs of various surgical approaches to RP and discuss critical issues surrounding economic studies of RP. Comparative research on medical effectiveness is beyond the scope of this review but is vitally important to determine whether any added costs are worth it.

2. Evidence acquisition

The systematic literature research for full original articles was performed according to the Preferred Reporting Items

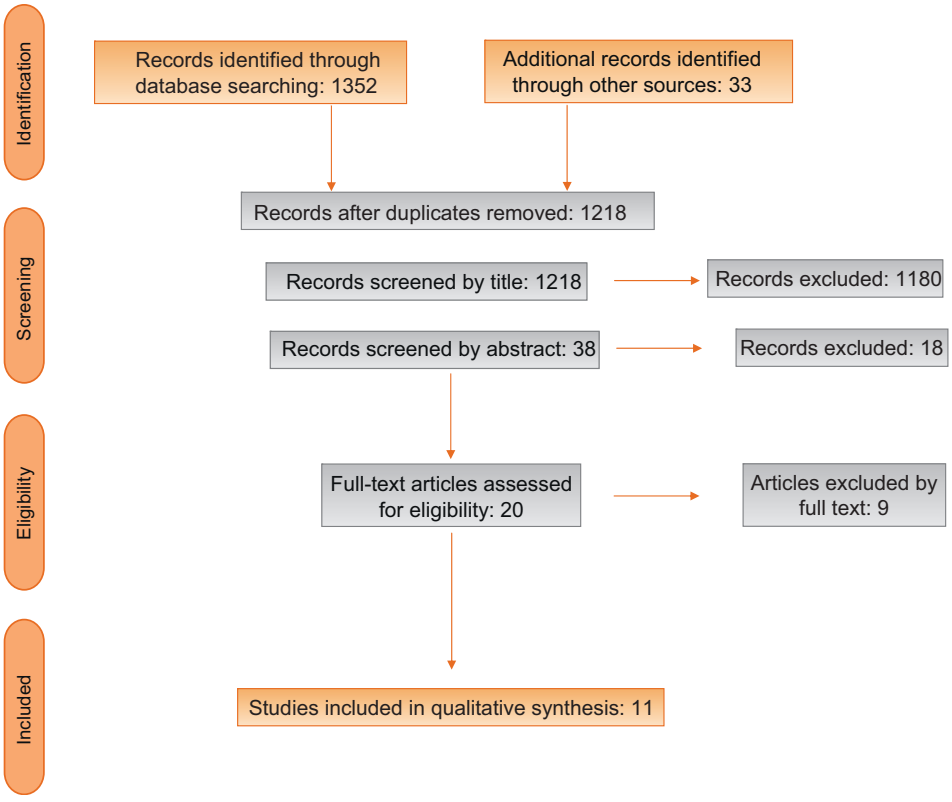

Fig. 1 – Flow diagram of the number of articles identified at each step of the systematic literature research according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement [14].