



To Medical Oncologists: Can We Safely Trust and Recommend the Robot Assisted Radical Prostatectomy?



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Opinion

Widespread screening using serum prostate specific antigen (PSA) and digital rectal exam (DRE) resulted in an increased incidence of early diagnosis of prostate cancer. The surgery remains the mainstay treatment of early localized prostate adenocarcinoma, especially in young population. Radical prostatectomy can be performed via an open surgery requiring a large vertical incision or via a minimally invasive technique consisting of laparoscopic radical prostatectomy (LRP) or robot assisted radical prostatectomy (RARP). The main risks and complications of any radical surgical procedure are the bleeding and infectious risks, the post-operative recovery (pain, hospital stay) and most importantly the oncologic outcomes (to have negative margins and complete radical excision of the tumor, to avoid recurrence, to improve survival). Besides, radical prostatectomy has other specific complications related to the anatomic localization of the prostate gland: erectile dysfunction, urinary incontinence, urethral strictures and impotence. Thus, the least debilitating surgical procedure associated with an excellent oncologic control without affecting the quality of life remained a challenge for many years especially that the results of the minimally invasive LRP weren't so promising at the beginning.

In this perspective, the United States (US) was the first to develop the computer-assisted technology, initially used in military battlefield applications then adapted for civilian use. This technique consists of inserting the "robotic-assisted instruments" through several small abdominal incisions. The surgeon will control these devices assisted by a computer system, which is a sophisticated device allowing a high dexterity and intuitive movements, as well as an excellent 3-D vision with increased precision due to filtration of the hands' tremors. So, the procedure is performed by a surgeon, not a robot, using a computer-assisted device. The term robotic surgery is only used in place of "computer assisted". Initially, the publications concerning RARP were limited, until it has become a well-known technique and gained a higher acceptance in the US and Europe [1]. When it is performed by a well-experienced and trained surgeon, RARP has many advantages over radical

prostatectomy that are similar to LRP: smaller incisions, faster healing time, less pain and less risk of infections. However, the robotic surgery has also advantages over the laparoscopic intervention: more precise, more comfortable for the surgeon, less intra-operative time, shorter hospital stay, less bleeding and transfusion requirements, better functional outcomes including a better recuperation of the continence and erectile functions [2-5]. Novara et al. underwent a systematic review and meta-analysis of studies reporting the oncologic outcomes after robot assisted radical prostatectomy: the positive margins rate (PMR) was similar following open radical prostatectomy, LRP and RARP [6]. The PMR was identical between LRP and RARP in a study done by Rozet et al. [7]. The problem is that the studies directly comparing LRP vs RARP are few in the literature because it is difficult to perform a prospective randomized trial for minimally invasive prostatectomy. Although most studies were designed as case-matched control studies, the RARP showed promising results concerning the biochemical recurrence free survival (BCR). Porpiglia et al. [8] published in 2013 their randomized controlled trial comparing laparoscopic and robot assisted radical prostatectomy revealing a better potency and continence control in the RARP group [8]. Thereafter, they reported the 5-year outcome of their prospective trial confirming the better functional control and patient satisfaction with RARP with similar survival results: no difference in terms of survival and BCR [9]. All the previously reported benefits were once more seen in the results of the large systemic analysis done by Basiri A et al. [10] Nevertheless, the main disadvantages of the robotic surgery are the high costs of the procedure itself and of the computer devices maintenance. Moreover, it remains operator dependent and is being only available in high volume centers with multi-disciplinary robotic usage. This problem was well addressed by Peter Albertsen [11] when he published a manuscript entitled "Robot-assisted Radical Prostatectomy-Fake Innovation or the Real Deal?", emphasizing on the new healthcare costs and the new practice changing economies [11].

In conclusion, the robotic - computer assisted radical prostatectomy is becoming more and more popular. It is a

promising technique with excellent functional results and excellent oncologic outcomes. Further trials and prospective studies are essential to confirm its survival equivalence-benefits. Despite its rapid propagation, it is still a highly expensive procedure where the successful results depend on the surgeon's skills in large volume centers. As oncologists, I think we can approve the RARP indication during the multidisciplinary team discussion in tumor boards. If the patient is a candidate for mini invasive procedure, two other main conditions should be fulfilled to undergo "a safe" robotic surgery: to have a skilled well trained colleagues' urologist and to be able to afford the procedure financially.

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