

HOSTED BY



ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/ajur



ASIAN FOCUS

The growth of computer-assisted (robotic) surgery in urology 2000–2014: The role of Asian surgeons



Deepansh Dalela^{a,*}, Rajesh Ahlawat^b, Akshay Sood^a,
Wooju Jeong^a, Mahendra Bhandari^a, Mani Menon^a

^a Henry Ford Health System – Vattikuti Urology Institute, Detroit, MI, USA

^b Medanta Hospitals – Medanta Vattikuti Urology Institute, Gurgaon, Haryana, India

Received 1 August 2014; received in revised form 28 August 2014; accepted 6 September 2014

Available online 16 April 2015

KEYWORDS

Asian;
IDEAL;
Kidney transplant;
Nephrectomy;
Radical cystectomy;
Radical
prostatectomy;
Reconstructive
urology;
Robotic surgery

Abstract *Objective:* A major role in the establishment of computer-assisted robotic surgery (CARS) can be traced to the work of Mani Menon at Vattikuti Urology Institute (VUI), and of many surgeons of Asian origin. The success of robotic surgery in urology has spurred its acceptance in other surgical disciplines, improving patient comfort and disease outcomes and helping the industrial growth. The present paper gives an overview of the progress and development of robotic surgery, especially in the field of Urology; and to underscore some of the seminal work done by the VUI and Asian surgeons in the development of robotic surgery in urology in the US and around the world.

Methods: PubMed/Medline and Scopus databases were searched for publications from 2000 through June 2014, using algorithms based on keywords “robotic surgery”, “prostate”, “kidney”, “adrenal”, “bladder”, “reconstruction”, and “kidney transplant”. Inclusion criteria used were published full articles, book chapters, clinical trials, prospective and retrospective series, and systematic reviews/meta-analyses written in English language. Studies from Asian institutions or with the first/senior author of Asian origin were included for discussion, and focused on techniques of robotic surgery, relevant patient outcomes and associated demographic trends.

Results: A total of 58 articles selected for final review highlight the important strides made by robots in urology, from robotic radical prostatectomy in 2000 to robotic kidney transplant in 2014. In the hands of an experienced robotic surgeon, it has been demonstrated to improve functional patient outcomes and minimize perioperative complications compared to open surgery, especially in urologic oncology and reconstructive urology. With increasing surgeon proficiency, the benefits of robotic surgery were consistently seen across different surgical disciplines, patient populations, and strata.

* Corresponding author.

E-mail address: ddalela1@hfhs.org (D. Dalela).

Peer review under responsibility of Chinese Urological Association and SMMU.

Conclusion: The addition of robot to the surgical armamentarium has allowed better patient care and improved disease outcomes. VUI and surgeons of Asian origin have played a pioneering role in dissemination of computer-assisted surgery.

© 2015 Editorial Office of Asian Journal of Urology. Production and hosting by Elsevier (Singapore) Pte Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

"If you always do what you always did, you will always get what you always got."-Albert Einstein

1. Introduction

When Dr Tom Lue asked us to chronicle the contribution of Vattikuti Urology Institute (VUI) in the field of robotic surgery, we knew we had two unique opportunities: one, to describe the development and progress of robotic surgery, and two, to convey the subliminal message of how VUI and urologists of Asian descent were instrumental in that process.

The foundation for robotic surgery was laid when Dr Mani Menon, then Chief of Department of Urology at Henry Ford Hospital (HFH), Detroit, USA set out to start an ambitious minimally invasive prostatectomy program at his center in 1999–2000. He set up a formal collaboration with the French group of Drs Vallancien and Guillonneau at Montsouris (the then leaders in laparoscopic prostatectomy), but was disillusioned with the inferior results and the cumbersome, counterintuitive approach of laparoscopy. It was somewhat serendipitous when the Food and Drug Administration (FDA), in the year 2000, approved the da Vinci robot for soft-tissue surgery. Even though its acceptance rate was rather slow in cardiac surgery (the initial *raison d'être* for the robot), it seemed to fill the voids in laparoscopy. There was minimal literature on its use in prostatectomy at the time when da Vinci was incorporated in HFH program. The first robot-assisted radical prostatectomy (RARP) was performed at HFH on November 29, 2000. Experience with laparoscopic and robotic prostatectomy accumulated quickly. A series of 50 RARPs performed at HFH was published in 2002 [1]. The rest is history.

While progression from radical prostatectomy to other pelvic surgeries was natural progression, robotic upper tract surgery evolved in parallel. Reconstructive techniques involved in these procedures were defined and refined. Robotic procedures in female and pediatric urology were planned and executed. Methods were adopted to safely transfer new surgical procedures from mere ideas to bench, and then to operating rooms.

In this review, we look back at the fascinating 15-year robotic journey from radical prostatectomy in 2000 to renal recipient surgery in 2014.

2. Evidence acquisition

2.1. Search strategy

A literature search was performed using PubMed/Medline and Scopus databases to identify the important publications

pertaining to robotic surgery (predominantly in urology) from January 1, 2000 through June 1, 2014. Two search algorithms were used. In the first search strategy, we sequentially combined the keyword "robotic surgery" with "prostate", "kidney", "adrenal", "bladder", "reconstruction", using the AND operator for each pair of keywords, to identify publications relating to the application of robotics in prostate, kidney, bladder, adrenal, and reconstructive urology, respectively. The second search was performed using the same combination of keywords but with the NOT operator, to identify the important non-urological publications of robotic surgery. Inclusion criteria used were published full articles, book chapters, clinical trials, prospective and retrospective series, and systematic reviews/meta-analyses written in English language. Next, results were screened according to the originating institution and the nationality of the first and/or senior author. Studies from Asian institutions or with the first/senior author of Asian origin were included for discussion (Fig. 1). The same search criterion was used for both the databases. Additional publications have been used to substantiate statement origins and help description as necessary.

2.2. Study selection

Included studies focused on one or more of the following areas: development/description of novel robotic surgical techniques, standardization/validation of a robotic surgical technique, important modifications in pre-existing surgical technique resulting in demonstrable benefit in patient outcomes, comparison of perioperative, short- or long-term outcomes of robotic vs. laparoscopic or open surgical approaches, and demographic and population trends associated with acceptance of robotic surgery. Although there was a preponderance of urological literature, a few important studies from other surgical specialties were also studied and discussed to highlight the position of robotic surgery in the said specialty.

2.3. Review methods

A total of 58 studies were included in the review, after preliminary screening of abstracts and exclusion of duplicate results. The searches were performed jointly by two co-authors (RA and DD), and a consensus on the relevance of the publication was arrived on by mutual discussion.

3. Evidence synthesis

3.1. Robotic prostatectomy

Dr Menon started the robotic prostatectomy program at the VUI at HFH in March 2001. Over the next few months, the

Download English Version:

<https://daneshyari.com/en/article/3853299>

Download Persian Version:

<https://daneshyari.com/article/3853299>

[Daneshyari.com](https://daneshyari.com)