Robotic Surgery: A Mini-Review from a Middle Eastern Perspective

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Abstract

Robotic Surgery (RS) is a minimally invasive surgery that has the advantage of less post-operative pain, shorter hospital stays, minimal incision, and early return to normal daily activities. Although RS was introduced initially for robotic radical prostatectomy in 2002, RS has increased exponentially in all specialties.

Robotic surgery was established in the Middle East more than a decade ago, and it is expected to be launched soon in the other countries of the region, however, its development is going slowly. From 2003 to 2010, a total of only 930 robotic procedures were performed in SA, and 23 cases in Kuwait in 2014. Moreover, RS was established in Qatar in 2010, and in Emirates in 2014 with no reports been released. On the other hand, in Israel and in 2013 only, a total of 975 RS were performed. RS procedures exceeded 6,000 in Italy in 2011. These numbers drove us to further review what might have contributed to the slowing down of RS in the Middle East.

We highlighted in this report the possible reasons that may explain this issue; lack of the disease, lack of surgical expertise, or/and financial issues. People in our region may not fully understand or have misperceptions about RS.

Keywords: Robotic surgery; Health care; Patients; Hospital stay

The Article

Minimally Invasive Surgeries (MIS) have the advantages of less post-operative pain, shorter hospital stays, minimal incision, and early return to normal daily activities. Recently, there has been a noticeable decline in the number of open surgical procedures with the marvellous significant increase in endoscopies and minimally invasive surgeries [1].

More than Laparoscopic Surgery (LS), Robotic Surgery (RS) has introduced the EndoWrist® technology with seven degrees of freedom. This eliminates the surgeon's tremors and, fatigue, and improves ergonomics. Robot has a 3-D camera that provides 6–10X magnification with a more clear, precise and natural view [2]. Also, RS has a shorter learning curve than LS. Although RS was introduced initially for robotic radical prostatectomy in 2002, the use of RS has shown increased exponentially, not only in urology, but also in general surgery, gynecology, ENT and other surgical subspecialties [3,4].

Despite its effectiveness, it is still a very expensive technology. One robot normally costs $1,390,000. The disposable supplies costs $1,500 per procedure on average [5], and there are additional costs for annual maintenance. Furthermore, it requires a wider operating room, lacks the tactile feedback, and reduces the opportunity for surgical trainees to practice open surgery.

Based on the Intuitive Surgical Inc. report, the USA has the highest number of da Vinci robotics, more than in Europe. As of June 30, 2014, there were 3,102 units installed worldwide, a significant rise from the 2,000 units at the same period in 2013. The locations of these units are as follows: 2,153 in the United States, 499 in Europe, 183 in Japan, and 267 in the rest of the world [6].

Robotic surgery was established in the Middle East/Arab Gulf more than a decade ago, and it is expected to be launched soon in other countries in the region. RS was first introduced in SA in 2003, where 10 da Vinci robotic systems have been installed. Between 2003 and 2010; a total of only 930 robotic procedures were performed in SA, 339 in urology, 231 in gynecology, and the rest were as in general, pediatric and cardiothoracic surgeries [7]. In the whole year of 2014 Kuwait operated only 23 cases with employed use of RS [8], Robotic Surgery was established in Qatar in 2010 [9], and Emirates [10] with no reports released to date. On the other hand, in 2008, RS was launched in Israel, where currently there are six machines and in 2013, a total of 975 RS were performed, 52% was in urology [11]. RS procedures exceeded 6,000 in Italy in 2011.

Many reasons may contribute to the low-volume usage of robotic surgery in the Middle East: lack of disease, lack of surgical expertise, or/and financial issues. Moreover, people in our region may not fully understand or have misperceptions about RS.

Our locality exhibits a strong laparoscopic contribution in all specialties, including in advanced laparoscopic procedures, so those operations could be operated conducted by robots [12]. Of relevance, radical prostatectomy has grown to become the prototypical application for the robot, and the incidence of prostate cancer in our locality is lower than in the US. As for the incidence in Middle Eastern Arab men, the age-standardized incidence rate (ASIR), is as low as 3 per 100,000, was recorded in Qatar in 2006, [13] as compared with 147.8 per 100,000 in the US, according to the Surveillance, Epidemiology, and End Results (SEER) database [14].

Financial or economic issues may contribute to this problem. Unlike in the USA, where most of the robotic surgeries receive reimbursement from insurance companies, robotic services in our locality are publicly funded, which could slow development of this costly industry in our locality. Patients' copayment could be an option for such highly expensive surgeries.

In Western countries, patient education and awareness campaigns play an important role in community appraisal and knowledge. Massive marketing of RS, as a cutting-edge tool for surgery with minimal complications may give patients false expectations resulting in patient regret and a decrease in satisfaction after RS [15]. The health care sector and physicians are responsible for delivering accurate and realistic information to the community. Media seems to be the fastest and most effective method of communication. In addition, health campaigns in public hospitals are good channels for achieving this result.

Our review was limited by lacking of more detailed data about the factors that may be associated with this slow adoption of robotic surgery in the region. Also, we reported a presumptive data about the financial issues in view of lacking of a solid data on this issue from government reports.
Certain measures should be taken to resolve this matter, and to put in place the necessary regulations to improve this service in our region. We hope for further investigation to ascertain the possible causes, the current number of robotic expertise, and the expected number of robots needed in the future. We would benefit by exploring this innovative technology in our locality.

References


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