

## Robotics in Gynaecology: A Very Brief History

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The daVinci robotic surgical platform (Intuitive Surgical, Sunnyvale, CA) is the only FDA-approved robotic surgical system for use in humans. The daVinci first made its debut in 1999 when it was approved by the US Food and Drug Administration (FDA) for surgical prostatectomy and cardiothoracic applications. The growth of robotics in urology, especially for radical prostatectomies is well-documented and urology remains the largest single-specialty user of the daVinci.<sup>1</sup>

In comparison, gynaecologic robotic surgery is a relatively recent practice. The FDA approved the daVinci for gynaecologic surgery in 2005. Since its introduction, daVinci gynaecologic surgery continues to grow in the number of gynaecological surgical indications and procedures performed.<sup>2</sup> Robotic surgery and gynaecology are a natural fit. The daVinci is best suited to “compartmental surgery” where the surgical field is limited to an anatomical domain or compartment. This domain for most gynaecologists is the pelvis. This superior 3-D immersive visualisation, coupled with articulate and wristed instruments operating in the “local” environment of the pelvis make robotic surgery “the next big thing” in gynecological surgery.<sup>3</sup>

Although limited, a body of evidence is evolving that if the cost of disposables associated with robotic surgery is contained, the cost-benefit assessment favors robotic surgery over laparotomy.<sup>4,5</sup> Robotics is therefore the first viable surgical option that offers the advantages of minimally invasive surgery to women with conditions requiring complex pelvic surgery. Women with severe endometriosis and gynaecologic cancer are the main beneficiaries of the introduction of robotics to gynaecologic surgery. Outcomes data suggest that women with endometriosis and gynaecologic cancer who undergo robotic surgery have shorter hospital stays, suffer less blood loss, use less analgesia and have a better overall quality of life as compared to women who underwent the necessary laparotomies for these conditions.<sup>6-12</sup>

The introduction of gynaecologic robot-assisted surgery in Singapore could not be more timely as the national healthcare system struggles to increase capacity and augment capability. In this issue, we share a Singaporean

tertiary center’s experience and patient outcomes with gynecologic robotic surgery. The promise of daVinci surgery is that women with gynaecologic conditions necessitating surgery can now have the necessary surgical treatment without impacting inpatient resources, recover with less morbidity and expect a more rapid return to being productive member of the society.

### REFERENCES

1. Kumar R, Hemal AK. Emerging role of robotics in urology. *J Min Access Surg* 2005;1:202–10.
2. Dupont NC, Chandrasekhar R, Wilding G, Guru KA. Current trends in robot-assisted surgery: a survey of gynecologic oncologists. *Int J Med Robot* 2010;6:468-72.
3. Visco AG, Advincula AP. Robotic gynecologic surgery. *Obstet Gynecol* 2008;112:1369-84.
4. Davis MA, Adams S, Eun D, Lee D, Randall TC. Robotic-assisted laparoscopic exenteration in recurrent cervical cancer Robotics improved the surgical experience for 2 women with recurrent cervical cancer. *Am J Obstet Gynecol* 2010;202:663.e1.
5. Geisler JP, Orr CJ, Khurshid N, Phibbs G, Manahan KJ. Robotically assisted laparoscopic radical hysterectomy compared with open radical hysterectomy. *Int J Gynecol Cancer* 2010;20:438-42.
6. Cantrell LA, Mendivil A, Gehrig PA, Boggess JF. Survival outcomes for women undergoing type III robotic radical hysterectomy for cervical cancer: a 3-year experience. *Gynecol Oncol* 2010;117:260-5. Epub 13 February 2010.
7. Moy ML, Byun SY. Role of robotic surgery in urogynecologic surgery. *Curr Opin Urol* 2010;20:70-4.
8. Lowe MP, Johnson PR, Kamelle SA, Kumar S, Chamberlain DH, Tillmanns TD. A multi-institutional experience with robotic-assisted hysterectomy with staging for endometrial cancer. *Obstet Gynecol* 2009 Aug;114(2 Pt 1):236-43.
9. Bedient CE, Magrina JF, Noble BN, Kho RM. Comparison of robotic and laparoscopic myomectomy. *Am J Obstet Gynecol* 2009;201:566. e1-5. Epub 2009 Aug 15.
10. Geller EJ, Siddiqui NY, Wu JM, Visco AG. Short-term outcomes of robotic sacrocolpopexy compared with abdominal sacrocolpopexy. *Obstet Gynecol* 2008;112:1201-6.
11. Payne TN, Dauterive FR. A comparison of total laparoscopic hysterectomy to robotically assisted hysterectomy: surgical outcomes in a community practice. *J Minim Invasive Gynecol* 2008;15:286-91. Epub 6 March 2008.
12. Advincula AP, Xu X, Goudeau S 4th, Ransom SB. Robot-assisted laparoscopic myomectomy versus abdominal myomectomy: a comparison of short-term surgical outcomes and immediate costs. *J Minim Invasive Gynecol* 2007;14:698-705.

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