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Robotic Assisted Laparoscopic Surgery



Dr Karim Nawfal
obstetrician gynecologist with a specialty in Minimally Invasive, advanced laparoscopic and Robotic gynecologic surgery at Clemenceau Medical Center-Affiliated with Johns Hopkins International- Beirut, Lebanon

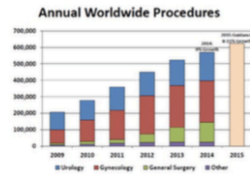
How did Robotic Surgery Develop?

Initially, Robotic surgery was developed in collaboration between the Stanford Research Institute, the United States Department of Defense, and the National Aeronautics and Space Administration (NASA). The aim was to provide surgical operative care to soldiers remotely on the fields or to astronauts by using robotic telepresence surgery.

Currently there is only one surgical robot available for clinical use: **"The da Vinci Robot®"**, manufactured by Intuitive surgical®, a U.S company based in Sunnyvale, California. It received the FDA approval in 2000 for the use of the robotic platform in laparoscopic surgery and has since then been exponentially adopted in medical centers in the United States, Europe and then worldwide.

Robotic assisted laparoscopic surgery is used in multiple disciplines ranging from Urology, gynecologic surgery, general surgery, cardio-thoracic and pediatric surgery. To date there are more than 3300 robotic platforms installed worldwide.

An estimated 200 000 robotic procedures were performed worldwide in 2009, a number that is close to 600 000 procedures per year by 2015. Robotic surgery has changed patient care and established itself as one of the most important and promising breakthroughs in medical innovation.



What is the da Vinci Robotic Platform?

The da Vinci Robot is a system that is attached to the laparoscopic trocars allowing the surgeon to perform a laparoscopic surgery with added advantages.

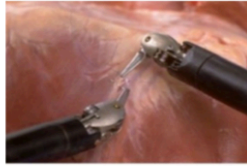
It is comprised of **3 main elements (Picture 1)**

- The surgeon console where the surgeon sits and operates. It has 3 dimensional High Definition view of his surgical field where he inserts his fingers into manipulators allowing him to perform very precise and complex movements. (Picture 2)



Picture 1 - Elements of the da Vinci Robotic platform

- The patient bedside cart contains either 3 or 4 arms that are attached to the patient, an endoscope (camera) and 2 or 3 micro instruments according to the surgery performed.
- A tower that has the main computer and ancillary equipment needed like an energy source, the computer mainframe, cable connections, etc.



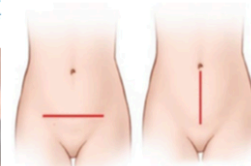
Picture 2 - Translations of the surgeon's movements into robotic arms movements

What are the Advantages of Robotic Surgery?

The correct term for Robotic surgery is: **Robotic assisted Laparoscopic surgery**, an advanced form of laparoscopic surgery.

The benefits can be divided into advantages over the traditional **"open" surgery**: translating into **less pain, better cosmetic outcomes** (small 8mm incisions instead of one large 8-10 cm incision) **less blood loss and risk of blood**

transfusions and shorter hospital stay: less than 24hrs compared to the 3 or 4 days of open surgery. (Picture 3)



Open incision hysterectomy incisions



da Vinci® hysterectomy incision

Picture 3 - Comparison of the incisions of traditional open surgery to robotic surgery

Advantages over laparoscopic surgery include: **better ergonomics, more precise movements, endowrist movements and tremor reduction, improved 3D HD endoscopic view**; all allowing the surgeon to perform the most complex surgeries in a more precise way without compromising on the cosmetics and the minimally invasive approach. (Picture 4)



Picture 4 - Endwrist function of the 8mm robotic instruments

On What Types of Gynecologic Surgeries can you use the da Vinci Robot?

When a surgery is indicated in addition to treating the disease, the final cosmetic result is also a very important parameter.

Now with robotic surgery, the most complex gynecological surgeries can still be performed with very small (8 mm) incisions leaving very little to no surgical scars.

Some of the procedures that can be performed using the da Vinci Robot are **removal of the uterus** (hysterectomy); **removal of uterine fibroids** (myomectomy); **surgeries for endometriosis or the ovaries**, some types of **gynecological cancers** and surgeries for **pelvic organ prolapse**. (Picture 5)



Picture 5- Use of the da Vinci Robot during a hysterectomy.

What Types of Surgeries in other Specialties are performed using this Technology?

One of the most common indications for robotic surgeries is in Urology. **90% of radical prostatectomies** in the United States are performed using the da Vinci robot. This has become the standard of care due to the advantages in terms of **preservation of urinary continence and sexual function**. It is also used for nephrectomies and for colorectal resections and abdominal wall hernias in general surgery.

This field is rapidly developing to other sub specialties and it is being used in cardiac surgeries, pediatric surgeries and ENT surgeries.

Since when has this Technology been available in Lebanon?

We installed the **first da Vinci Robotic platform** in Lebanon at **Clemenceau Medical Center in July 2012**. A multispecialty team of already specialized surgeons in Robotic surgery moved back to Lebanon from the United States and Europe to provide patients in Lebanon with the expertise and the quality of care they would have received in the most specialized centers in the West.

This team consists of myself as a Robotic gynecologic surgeon, a general surgeon and two urology surgeons. We have performed over 150 procedures to date in all specialties with excellent results and outcomes.

This surgical innovation has changed how surgeons look at the treatment of disease. Patients do not only deserve the best surgical outcomes, they also deserve to have the best recovery and functional outcomes at the same time.

Are these Procedures covered by Insurance Companies in Lebanon?

International insurance companies in Lebanon do cover these surgeries at full cost because of their experience with the results and patients satisfaction. The cost in Lebanon is a fraction of the cost for a similar procedure whether in the United States or Europe.

Local insurance companies have been exposed in the past few years to these procedures and have seen the excellent outcomes they provide to patients. Therefore, we have been in discussions with these companies in order for them to fully cover these procedures and allow patients to benefit from this medical innovation.