

Introduction to Robotic Gynaecology

What is robotic surgery?

Robotic or robotic assisted surgery uses the DaVinci system, produced by the company Intuitive Surgical (Sunnyvale, California). The system was originally developed with the intention of performing remote-from-site surgery in the battlefield. Although this has been done on occasion, it will remain a rarity for technical reasons but surgeons in the USA who seek a more technically advanced platform to perform their regular surgeries have rapidly adopted the system. **In the future, all laparoscopic surgery will be performed this way.**

Does a robot actually perform my surgery then?

Not at all. The operation is similar to conventional laparoscopic (keyhole) surgery but simply uses much more advanced equipment. The instruments, rather than being simply graspers and scissors around 45 cm long, which can only be moved in one axis, are jointed like a human wrist allowing much more dextrous and finely controlled movements. The instruments and the operation are completely controlled by the surgeon. In the robotic surgery world, the term "straight stick" has been coined to describe conventional laparoscopy.



What are the advantages compared to conventional laparoscopic surgery?

The following table summarises the key differences:

	"Straight stick"	Robotic assisted
Vision	Monocular, frequently fogs	Stereoscopic, rarely fogs
Instruments	5mm, less rigid Single axis of movement	7mm, rigid 5 axis "wristed" instruments
Movements	Hands move opposite direction to instruments	The instruments are the surgeons hands
Visual safeguards	Instruments can be moved when surgeon is not looking, diathermy (cautery) can be activated	The system can only be used if the surgeon is actively watching them and is in control
Fatigue	Surgeon stands, sometimes for hours	Surgeon sits at console, facilitating prolonged concentration in long cases
Suturing	Detailed and multi layer suturing even for the very experienced, is difficult to achieve	Fine detail work vastly superior and dexterity exceeds that of "open" suturing
Pain	Incisions are frequently "twisted" by the instruments contributing to post op pain	Greater economy of movement at skin level proven to reduce pain at port sites. This is quite a striking feature.

Any disadvantages?

Chiefly, cost. Currently there are no specific item numbers for robotic assisted operations, the equipment is very expensive to acquire and maintain and so an extra fee applies. Depending upon the reason for the surgery, the case only generates income to the hospital from the health funds similar to a less advanced operation.

Access to the system is limited and so this cannot be performed at all hospitals.

Conventional laparoscopic surgery is performed through four to five 5 mm incisions. The DaVinci system requires five to six 7 mm incisions, placed higher on the abdomen (closer to the rib cage). This may be less cosmetically acceptable to some.

What patients would benefit?

1. Those whose condition simply poses a real difficulty for straight stick laparoscopy due to limitations in dexterity or “mass effect”, for example with very large fibroids. These patients may otherwise have to undergo “open” surgery (large cut on abdomen).
2. Those who simply desire or require the best possible technical outcome, for example removing multiple or difficult fibroids from the uterus where subsequent child bearing is planned. The uterus must be reconstructed very precisely.

Where to go for further information.

www.davincisurgery.com

www.davincisurgery.com/gynecology/conditions/uterine-fibroids/

www.davincisurgery.com/assets/docs/871975_D_dVS_leaflet.pdf

www.davincisurgery.com/gynecology/gynecology-procedures/hysterectomy/

