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GENERAL, ONCOLOGICAL & MINIMALLY INVASIVE UROLOGIC SURGEON

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Introduction

The daVinci® robotic surgery system, introduced in 1999, is currently used for an increasing number of radical prostate surgeries. Robotic technology allows surgery to be carried out through keyhole incisions, but provides improved vision and more dextrous instruments compared to conventional laparoscopic (keyhole) surgery. Therefore, robotic surgery affords the potential for more precise surgical dissection, in addition to the benefits of minimally invasive surgery in terms of reduced bleeding and blood transfusions, reduced post-operative pain, shorter hospital stay and quicker recovery

The da Vinci robot

The daVinci® robot consists of the surgeon's console, the surgical cart and connections between the two.

The surgical cart is located beside the patient, and utilises a central robotic arm to control the laparoscope (which provides stereoscopic or 3-D vision of internal structures) and two or three additional robotic arms to control and manipulate various surgical instruments. The surgical instruments are designed with jointed wrists, which provide freedom of movement in multiple directions (in fact 7 degrees of freedom).

The surgeon's console includes a binocular eyepiece that provides optimal vision during surgery. Ergonomically designed finger controls transform the surgeon's hand movements into corresponding movements of the surgical instruments within the patient's body. It is important to note that the surgical instruments only move as and when controlled by the surgeon.

Robotic prostatectomy: description of the surgical procedure

Robotic prostatectomy starts with Dr Sengupta operating by the patient's bedside to make surgical incisions in the appropriate positions, place the operating ports and dock the surgical cart of the daVinci robot. Subsequently, Dr Sengupta operates from the robotic console, with a trained assistant surgeon helping at the bedside.

The actual surgery consists of the removal of the prostate with its surrounding layers, the seminal vesicles, the ends of the vas deferens (the tubes that carry sperm from the testicles into the back of the prostate) and (in some cases) draining lymph glands. In suitable cases, the cavernosal nerves (responsible for erectile function), which run on the undersurface of the prostate, are dissected and preserved to maximise recovery of post-operative sexual function.

Finally, the bladder and urethra (which are connected at either end of the prostate) are joined back together with a circumferential suture (called the anastomosis). Robotic surgery allows a very precise and watertight anastomosis, which minimises the risk of urine leakage and scarring in the area. A catheter is left to drain the bladder to allow the anastomosis to heal effectively. An additional drainage tube is placed through one of the operating ports to the space outside the bladder, in order to drain any fluid that collects post-operatively.

Who can have robotic prostatectomy?

Robotic prostatectomy is a suitable treatment for curable forms of prostate cancer. This means that if you have been diagnosed with prostate cancer, and there are no obvious signs of spread beyond the prostate, then you can be treated by robotic prostatectomy. Robotic prostatectomy may be ruled out if you suffer from some medical conditions such as emphysema, heart problems, bleeding problems etc, or have had a lot of abdominal surgery previously.

Pre-operative preparation

A week or two before robotic prostatectomy, patients need to meet a urology nurse who works with Dr Sengupta. At this visit, you will receive information and counselling regarding the procedure, pre-operative preparation and post-operative recovery. Pre-operative investigations such as blood tests and ECGs are also arranged.

A pre-operative consultation with a pelvic floor physiotherapist is also essential. This allows a thorough assessment of your pelvic floor strength, leading to instruction in pelvic floor exercises to improve this. This is an important factor assisting recovery of urine control (continence) post-operatively.

Admission to hospital is arranged for the evening before or morning of surgery - please check details with Dr Sengupta's office. You will be allowed a light diet and given some laxatives in the 24 hours prior to surgery. You will need to fast for a period of at least 6 hours prior to surgery (specific instructions will be provided from Dr Sengupta's office). In hospital, you will meet and be assessed by the anaesthetist and peri-operative physician.

Post-operative recovery

Following robotic prostatectomy, most patients can eat & drink and get out of bed within the first 24 hours. Injections for pain relief may be required for a day or two, beyond which

tablets are usually adequate. Discharge from hospital occurs after 2-3 days, with the catheter in place, but after removal of the drain tube.

The catheter is removed after about 10 days at Dr Sengupta's office, with an antibiotic given by injection. It is usual to have poor urinary control at this stage, and pads are often necessary. Pelvic floor exercises should be started 2-3 days after catheter removal, and will gradually lead to return of urinary continence over 6 to 12 weeks.

Return to driving, work and exercise can occur between 2 and 4 weeks under Dr Sengupta's advice. Follow-up including a PSA check (which should be undetectable, i.e. zero) will be arranged between 2 to 3 months post-operatively.

Glossary

Anastomosis A surgically created join between two structures (e.g. bladder and urethra)

Catheter A rubber or plastic tube that can be placed into the bladder to drain urine.

Laparoscopy A technique of surgery where keyhole incisions are made, and the inside of the body is visualized using a fibre-optic laparoscope. Surgery is carried out using specifically designed instruments rather than the surgeons hands.

Pelvic floor A collection of muscles which support the internal organs and help control urine flow from the bladder.

Prostate Accessory sexual gland in the male, which makes most of the seminal fluid. It is located immediately below and is attached to the opening of the urinary bladder. Urine flows through the prostate gland.

PSA Prostate specific antigen. A protein secreted by the prostate gland. Can be found in the blood stream, where increases in its level may be indicative of diseases of the prostate, including prostate cancer.

Seminal vesicles Accessory sexual glands in men, which are attached to the back of the prostate, and contribute fluid to semen.

Urethra The tube which carries urine from the bladder to the outside. This runs through the prostate and out at its lowermost tip or apex.

Vas deferens Muscular tubes which carry sperm from the testicles to the back of the prostate.