

3D Printing

3D printing is the development of 3D objects with an additive process in which successive layers of material are applied under computer control. Also known as desktop fabrication or additive manufacturing, it is a process wherein a real object is created from a 3D computer-created design. The digital 3D model file is sent to the 3D printer, which prints the design one layer at a time, creating a 3D object.

Researchers have replicated with sophisticated 3D imaging technologies complicated vascular systems such as kidneys and livers, allowing accurate recreation of the organs' internal characteristics. A biological blueprint is then formulated and a new organ printed, using the patient's own harvested cells. 3D is an exciting new technology that will make a difference to medicine, urologists, and patients.



A 3D printer model

UROLOGISTS OF THE WORLD, AT SIR HNRH HOSPITAL

Dr Shlomo Raz

Dr Raz is considered one of the leading uro-gynaecologists in America and has been a promoter of using autologous tissue for stress urinary incontinence in females. He has stopped using synthetic grafts since four years now and sent a strong message to the attendees to not consider synthetic graft as their first choice.



Dr Monish Aron

"More and more newly diagnosed prostate cancer patients are undergoing surgical therapy," pointed out Dr Monish Aron, Professor of Urology at USC, LA. Studies have proven that locally advanced or even oligometastatic prostate cancer in relatively fit patients, if managed surgically, are less likely to develop local failure. He quoted several landmark studies to come to this conclusion.



Dr Inderbir Gill

Dr Gill is well known for pushing the boundaries in performing renal cancer surgeries. One of his pioneering work is 'Minimal Access Nephron Sparing' surgery for renal tumor. He has popularised the technique. His current fascination is doing complex renal cancer surgery and level-3 IVC thrombectomy, which is a robot-assisted procedure. So far, Dr Gill's unit has the largest experience in performing robotic assisted neobladder with the results equivalent if not better, than open surgery.

Dr Santoshi Nagaonkar

Dr Nagaonkar said almost 50% of newly diagnosed prostate cancers are being over-treated. Several new diagnostic modalities are on the horizon such as mpMRI prostate, various bio-markers (ki 67, pro NPY), and genetic tests like Prolaris. Pointing out that this science is at a crossroads, he said urology experts should be in a position to decide the optimal treatment modality for prostate cancer patients.

Dr Makrand Khochikar

Dr Khochikar stressed that adrenal tumour of any size should be treated with a respect. Surgically managing a relatively small-sized tumour, which has been deemed 'non functional', may turn out to be pheochromocytoma. Adrenal glands diseases need complete clinical, biochemical, and radiological evaluation. If an aforementioned trifecta is missed, a doctor may find it difficult to effectively manage adrenal pathology.



Dr Rajeev Kumar

Dr Rajeev Kumar from AIIMS, New Delhi, spoke about the importance of training the "bedside surgeons" of robotic surgery. He pointed out the importance of having good bedside assistance during any surgery, more so for robotic surgery, because in case of unexpected emergencies, the assistant would be closest to the patient.



Dr Rajesh Ahlawat

Dr Ahlawat, a leading robotic surgeon and a trendsetter in performing robot-assisted renal transplantation, demonstrated his technique at the symposium. He also provided a comparative analysis of conventional open surgery and robotic transplant surgery. He further said that any kidney transplant surgeon with adequate robotic surgical exposure should be able to perform this surgery with a little training.



FIRST INTERNATIONAL UROLOGY SYMPOSIUM

'We seek to create a partnership of learning'

DR INDERBIR GILL

Chairman & Professor, USC Institute of Urology, University of Southern California, Los Angeles, USA
Chairman, Department of Urology, Sir HNRH Hospital, Mumbai



Welcome to the inaugural issue of Sir HNRH Hospital Urology Newsletter, a new periodical offering from the hospital's Department of Urology.

In the subsequent issues we will try to cover four to five interesting, real-life clinical cases, straight forward and complex, and how we managed them. The entire field of urology will be covered. Recently, we held the 1st International Minimally Invasive Urology Symposium on February 20-21, 2016. Some of the most prominent urologists from India were joined by Prof Shlomo Raz and Prof Monish Aron from the USA as faculty. The live surgeries performed included robot-assisted partial nephrectomy, robotic radical cystectomy with intra-corporeal orthotopic neobladder, robotic prostatectomy and complex PCNL. Excellent state-of-the-art presentations were delivered. More details are enclosed herein. Moving forward, we seek to create, within these pages, a collegial and friendly partnership in India and across the globe, wherein we all learn from each other. Our patients will be the ultimate beneficiaries.

'A blend of academia and live surgical demonstration'

DR SANTOSHI NAGAONKAR

MB, MS, DNB (Surgery), DNB (Urology), FRACS, FEBU, Head of Department of Urology and Renal Science
Robotic and Urological Cancer Surgeon



As has been rightly quoted by someone, this was our first attempt at hosting an international conference, and which was accomplished.

The experience of having the "Who's who" in the Urology fraternity at the Sir HNRH Hospital was splendid. It turned out to be a complete blend of academia and live surgical demonstration, which is the soul of any medical conference. You offer these two ingredients to any medical person, and they would feast on it thoroughly. And that is what we experienced over the weekend of February 20-21.

As usual, Dr Inderbir Gill, Chairman, USC Institute of Urology, LA, USA, took the "Show on the horse!" Dr Gill demonstrated two live surgeries – robot-assisted partial nephrectomy, and robot-assisted radical cystoprostatectomy pelvic node dissection with intracorporeal neobladder.

In the years to come, you will see more of such events and we shall strive to improve. I thank all the faculty and the delegates who took time off to make this event a huge success. Thank you.

'Robotic surgery is the future'



DR GUSTAD DAVER

Medical Director, Sir HNRH Hospital

For the First International Urology Symposium, our hospital had the privilege of having more than 200 distinguished delegates from the urology, gynaecology, general surgery and other faculties from across the world.

We thank the renowned international faculties Dr Inderbir Gill, Dr Monish Aron, Dr Shlomo Raz and Ms Kavita Munjal for sparing their time to help organise this symposium and demonstrate robotic surgeries.

During the two-day workshop, the delegates benefited a lot from the surgical demonstrations and presentations by various Indian and international speakers.

Robotic surgery has come to India in a small way, but it is the future, which will make most of the difficult and major minimal access surgeries smoother and faster, leading to speedy recovery of the patients. This is in tune with the vision of Smt Nita Ambani, Founder & Chairperson, Reliance Foundation: to provide affordable international quality health-care to the citizens of India. And with every step, we are moving towards this goal.

ROBOTIC SURGERY: EXCELLENT OUTCOMES, DECREASED MORBIDITY

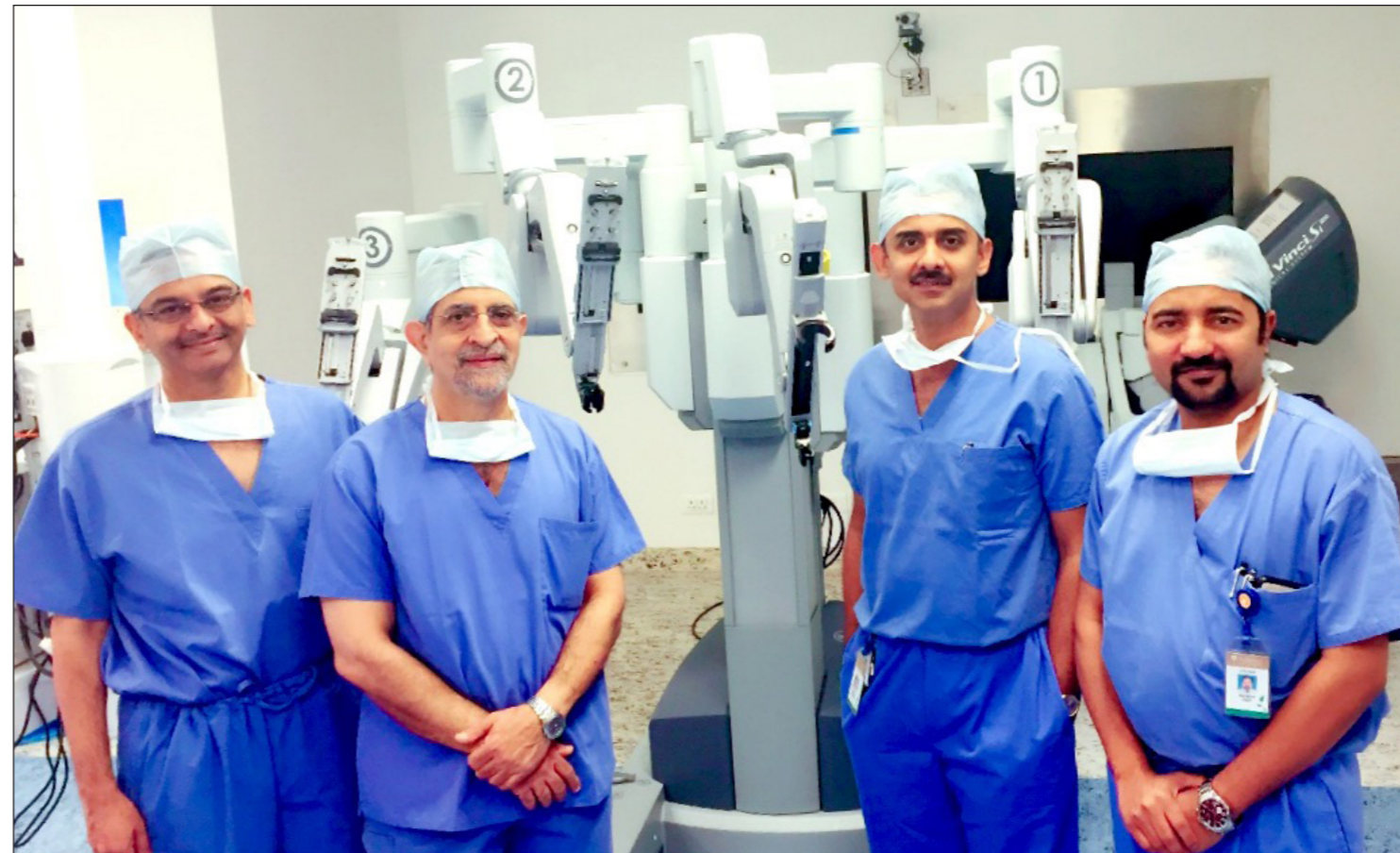
by Dr Mangesh Patil

The symposium concentrated mainly on the management of common genitourinary cancers like RCC, CA prostate, and CA bladder through minimally invasive method, robot-assisted laparoscopic surgeries. Dr Inderbir Gill is one of the finest and most renowned uro-oncologist in USA and well known for his acceptance of a new technology and its efficient use in practice.

He has experience of three decades in the field of uro-oncology and has persistently delivered results for patients.

Kidney cancer (most commonly renal cell carcinoma) is one of the commonly diagnosed cancers in men and women. Due to the availability of diagnostic tools like USG and CT scans, an increasing number of small renal masses (SRM) are

being diagnosed. As a result, a significant number of patients are diagnosed in the early stages, and undergo curative treatments. Robot-assisted laparoscopic partial nephrectomies are increasingly used for SRM with equivalent outcomes as compared to open and laparoscopic partial nephrectomies. To date, the vast majority of studies have shown equivalent cancer control in patients treated with complete removal of the kidney or removal of the tumor only, with improvements in robotic technology for surgery. Robotic-assisted partial nephrectomy (RAPN) has emerged as a preferred technique, with excellent short-term cancer and functional outcomes and decreased morbidity in selected patients.



'Masters work robots'— Our robotic urology team: (L to R) Dr Vineet Shah, Dr Percy Chibber, Dr Santoshi Nagaonkar and Dr Mangesh Patil

First Surgery

Saving the kidney

The first surgery was a nephron preserving partial nephrectomy that saved the patient's normal kidney parenchyma, avoiding a potentially morbid condition of renal function impairment. The warm ischemia time was only 16 minutes.

Highlights | Case was done for a 5.5 cm right upper polar renal tumour. The tumour was endophytic and was invading into the renal hilum and PC system.

- Before commencing, a retrograde pyelography (RGP) was done which confirmed the tumor abutting against superior calyx.

- The RGP was important for planning the incision and predicting the need for PC system reconstruction.

- Intra-operatively, laparoscopic ultrasonography of the renal tumour and kidney was done to mark the exact site of incision on the renal surface to achieve a tumour free margin.

- The tumor dissection was performed by combination of sharp and blunt dissection. Due to polar vascular morphology, one could find natural planes within the kidney parenchyma to excise the tumor.

- Methylene blue injected through a ureteric catheter to identify any rents in the PC system.

- Super-selective clamping of the renal artery was done to minimize the ischemic damage to the residual kidney.

Follow up | Patient's first POD creatinine was 1.12mg% (preoperative 1.2mg%) and a stable haematocrit. Patient's urethral and ureteric catheter was removed after 48 hours. The drain was removed on 4th post-operative day and he was discharged thereafter.

Histology | Grade 2 clear cell renal cell cancer with negative surgical margins.

Second Surgery

Robot-assisted prostatectomy

Over the last decade, robot-assisted radical prostatectomy has gained popularity over traditional open prostatectomy.

The patient was a 62-year-old man with a T1b prostate cancer. His SHIM score was 18 with normal urinary function. He had a TURP about 4 months ago. His pre TURP mpMRI suggested a low intensity localised anteriorly located lesion. Dr Monish Aron performed bilateral nerve sparing robotic prostatectomy. Due to prior TURP, Dr Aron had anticipated a difficult dissection.

Highlights | In such surgeries, the anatomical landmarks could be significantly altered. One would expect significant peri-prostatic dense adhesions, bladder neck may not be clearly identifiable and the ureteric orifices could be drawn more towards the bladder neck. This patient underwent cystoscopy and bilateral ureteric catheterisation which certainly assisted in



securing the ureteric orifices.

Follow up | Patient's drain came out on day 2 PO. His urethral catheter was removed on 8th POD.

Histology | Gleason's 3+3 adenocarcinoma involving anterior zone, right side. Anteriorly tumor is abutting the capsule. No evidence of PSM or EPE. No involvement of pelvic nodes.

Third Surgery

Radical cystoprostatectomy + ileal new bladder

This 62-year-old man had a high grade TCC in the bladder diverticulum. At presentation, he also had bilateral pelvic nodes which had lit up on PET scan. He received 5 cycles of chemotherapy.

Highlights | 1) Full marks to appropriate port placement for such surgery as one has to anticipate the nature of extended node dissection and its cranial extent all the way up to inferior mesenteric vein.

2) Using the powered vascular stapler not only saved time but also avoided unnecessary movement of the tissue held, which otherwise could happen with the manual stapling gun.

3) Extended bilateral pelvic lymphadenectomy was a challenging task in a post-chemotherapy setting as there were significant adhesions encountered during node dissection. It involved dissection of external iliac, internal iliac, para aortic and paracaval nodal tissue all the way up to the origin of inferior mesenteric vein. In addition to improving staging and potentially offering a therapeutic advantage, many believe that extended lymphadenectomy indicates a "milieu of excellence" for the care of the advanced bladder cancer patient.

4) Dissecting the bladder diverticulum en-masse was a task.

5) Total intracorporeal neobladder creation – in robotic surgical fraternity, this is a hallmark of technically most challenging surgical step.

Follow up | Patient stayed in the ICU for 2 days. His pelvic drains have been removed and his urethral catheter was removed after 10 days. A cystogram showed no leak.

Histology | No residual invasive carcinoma. Carcinoma in situ. Incidental Gleason's 3+4, 16% specimen.