

Voice of the Expert

The Technology must be Accessible and Affordable to All

(1) Now being a Robotic Surgeon, Do you feel Robotic Surgery is at all necessary ?

Certain operations cannot be done by conventional approach. Enhanced tissue detection particularly cancerous tissue and newer instruments for better manoeuvrability has essential for safe surgery. Robotic assisted surgery mean performing surgery using computer-technology enhanced device not by any kind of humanoid robots. Computer Programmed instruments with multiple joints like wrist provides wide range of instrument movements. Well controlled tip movements, Enhancing dexterity improves precision in surgery. Also enhances surgical skill otherwise limited in laparoscopy. Physiological tremor filtering effect improves safety. 3 D real time HD vision provides wider operating field.

(2) How technology improves Patient care?

Robotic assisted surgery allows perfect tissue identification enabling accurate surgery.

1. Improves radicality in cancer clearance.

2. Improved tissue detection reduces functional disability. 3 D vision and robotic assisted surgery prevents presacral nerves injury avoids urinary retention and sexual dysfunction during rectal cancer resection. During esophageal cancer surgery recurrent laryngeal nerve injury is minimised and loss of voice and need for tracheostomy are prevented.

3. Delicate reconstruction such as urethral and biliary reconstruction effectively can be done perfectly using robotic system.

(3) 'Machine' or 'Man behind the machine' which is more important ?

Robotic assisted surgery is purely depends on surgeon's skill and expertise. Surgical planning and execution of operative techniques purely by surgeon. Quality of surgery and type of surgery entirely left to surgeon skill and expertise. Robotic surgery only enhances surgical skill and precision in surgery. In oncological surgical procedures functional and oncological outcome are equally important.

(4) What is your opinion about necessity of clinical examination? Is technology can take all?

Clinical examination is very essential. Based on

clinical diagnosis specific investigations are done and planning of treatment is worked out. Making the patient understand the disease is very important to achieve the maximum outcome by making confident.

(5) Though Laparoscopy is gold standard and has changed surgical care, this is not accessible to all Indians. How we can achieve it?

Laparoscopy revolutionised the surgical approach. Laparoscopy has become the standard of care for many surgical diseases. Laparoscopy facility is available only in limited centres. Even in centres laparoscopy available due to lack of training many surgeons are not utilising laparoscopic surgery. Due to low socioeconomic strata also many are not affordable to get laparoscopic surgery in private institutions because of the higher cost. Cost effective methods have been developed, need structured training to surgeons both in basics and advanced laparoscopic procedures. Similar to other countries we need public insurance scheme.

(6) To adopt any technology do you feel it requires a structured training pathway ?

Laparoscopic surgery depends on endoscopic view totally different from conventional surgery. Newer instruments and advanced energy devices are available. Structured training enhances the safety of the procedures, reduces complications and thereby reduces overall treatment cost.

(7) Basic Laparoscopic Surgery can be trained in Medical Colleges during PG Course. Will you have any suggestions to implement this?

Basic laparoscopic surgery can be effectively



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implemented in MS training. all teaching institutions should have surgical skill lab. Step by step training in acquiring surgical skill should be part of the teaching curriculum. Laparoscopic surgery can be learnt using simulation models and working on animate tissue. Basic laparoscopic surgery has become the standard of care, lot of opportunities available for postgraduate trainees to assist and finally may be made to perform basic procedures before completing residency.

(8) Newer technology means escalation of cost of healthcare. How we can make technology affordable for all?

Capital cost and maintenance cost may add to cost of healthcare. But saved by reduced hospital stay, reduced medicine and more number of patients may be treated in the limited number of hospital beds. Enhanced utilisation of equipments and advanced devices save overall cost. Patients getting of faster recovery and resume routine work early. Newer technology reduces operation theatre time significantly saving overall operation cost.

(9) What are the upcoming technology that will change the present healthcare?

- a) Firefly technology using ICG aids in cancer tissue detection and enhances complete clearance there by reduces recurrence and improves survival.
- b) Single port surgery is becoming popular. By reducing ports pain is less and incision related problems are minimised.
- c) 3D print - pre operative print helps in surgical planning of tumor excision.
- d) Augmented Reality provides real-time imaging during surgery. Augmented Reality in Robotic surgery using Tile-pro to visualise the intraoperative anatomy overlapping the 3D models aids Navigational surgery.
- e) AI -Artificial Intelligence.
- f) Remote surgery- operating from distance using Robotic surgery.
- g) Intelligent Knife - recognising cancerous tissue during surgery.

AIM of surgery :

Future surgery is with new technology enhanced power, high precision in surgery and without functional disability.

**Prof. C. Palanivelu, thank you for the valuable insight into
New Technology of Robotic Surgery**