Robotic assisted surgery is now well established. In 2018, more than 5000 robots were used to treat more than one million patients worldwide.

The history of robotics dates back to 1495 when Leonardo da Vinci designed a prototype which actually worked. Research into robotic surgery received a boost in 1990 when the Pentagon funded private research companies to investigate the capabilities of robots in telesurgery.

In Urology, robotic assisted prostatectomy was first performed by Binder and Kramer in 2001. This technique was later refined by Mani Menon and group which led to earlier recovery, continence and potency.

In Malaysia, the role of robotic surgery was first mooted following the live transmission from Frankfurt at the AUA 2002 which spurred the government to purchase two robots in 2003 for two referral centres.

The da Vinci Robotic Surgical System was the pioneer in Urology, Gynaecology, General Surgery and in Ear, Nose and Throat surgery. It was designed to improve vision, augment strength, increase endurance and decrease tremors. This system is now facing competition from more than a dozen newcomers who are exploring various configurations and approaches to robotic assisted surgery.

The future of robotic surgery is exciting as AI and 5G cellular wireless technology are being implemented. AI provides instant advice via information exchange through cloud services. Several companies are now collaborating on new projects to bring in a new class of innovation to this market.

This will produce advancement in robotic visualization, instrumentation, data analytics and connectivity to enable greater efficiency and improve outcome across a wide range of surgical procedures. The robot of the future will assist the surgeon, warning of vital structures in real time, provide guidance and advice during procedures, view data animation, video simulation and real time images all applicable to a case. It may have personalized imaging of the patient, and allow surgeons to practise their procedures in advance. This will improve patient care and quality of life after surgery.

5G cellular wireless technology with its high speed and massive connecting power will transform healthcare delivery and impact the internet of medical affairs. It will facilitate augmented virtual reality, allowing telesurgery, telemedicine and remote medical learning. The 5G dimensions available today allows remote robotic surgery. This was demonstrated by Huawei 5G technology which was used in real time transmitted from Beijing to Sanya, which is 2500km apart, for brain surgery.

Haptics which is forced feedback by using sensors allowing the surgeon to be fully immersed in the surgery is being further developed.