



What role should technology play in surgery?

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Technology is transforming our lives.

Digital health, AI, TeleHealth, machine learning, all terms that excite individuals from pharmaceutical executives to venture capitalists.

But what if the advent of technology is actually hurting us? I'm referring specifically to technology in surgery.

Surgery for hundreds of years was a trial and error process of learning and developing through hands on skills and many challenging hours in the operating room. The growth of Laparoscopic (keyhole) surgery in the 90s saw a huge change in how surgery was performed. Laparoscopic surgery reduces infections (due to the keyhole incisions), improves outcomes and patients recover quicker than they would have with open surgery.

The developments powered by the advances in medical devices, to speed up procedures and increase capacity really did transform surgery. But there was a step change again when the robots arrived!

The DaVinci robot was first to market, and is now being followed by new players. A surgical robot is a huge investment for a hospital and with clear surgical benefits in visualisation, movement and access. Being able to turn a robot's "hand" 360 degrees in the surgical field laparoscopically is clearly an improvement to the movement of a human hand! I thought for some time that the robot was a natural progression in surgery. But then a coffee room conversation with an older surgeon, Mr X made me think rather differently about how technology is impacting us.

Mr X described his early career and surgical training, the very long hours he had to endure (prior to the European working time directive!), but that the investment in time during his training meant his understanding of the anatomy, the procedure and potential complications and how to manage them was outstanding. Mr X had put in long hours and had a huge amount of experience. Then laparoscopic surgery arrived and Mr X needed to re-train, he realised the "nintendo generation" of younger surgeons had the dexterity and ability to visualise on screen more quickly than he could but also recognised the benefits and the reduced infection rates, quicker recovery times etc.

Robots in the Surgery Room

And then came the robots, yes he acknowledged their benefits and ability to get into anatomical spaces and visualise areas that in open and basic

laparoscopic surgery were hard to access. But what happens when the robot stops working? Devices and machines break, and at that point one has to revert to basic training and open the patient to complete the surgery. This was the impactful part: Mr X admitted that some of the juniors that were joining his department didn't know how to do an open appendectomy or remove a gallbladder, two very basic procedures for a general surgeon. In fact the advent of progression in the form of the surgical robot had in fact de-skilled the junior Dr's and this concerned him greatly.

It makes me think, do we just get a bit carried away with "progress" and ignore the associated risks. An airline pilot still undertakes extensive training and can take full control of a plane if the autopilot fails. We think this is the same for surgeons, sadly it's not.

The medical device industry is rapidly becoming a commodity market place with open and laparoscopic instruments no longer competing in innovation but price. Traditional medical device companies need to innovate as their core business is getting swallowed up by the "me-to" products being produced at scale and significantly cheaper.

Innovation is being led by the robotic companies and a few niche start ups with a handful of products. More recently a new partnership Verb Surgical, a start up founded by Verily (Google/Alphabet) and Ethicon (Johnson and Johnson) is developing an intelligent digital surgery platform that will incorporate robotics, visualisation, advanced instrumentation, machine learning and connectivity. It's an interesting partnership and I'm looking forward to seeing what they bring to market, the partnership appears to be a good example of an extension of the product life cycle in the medical device industry.

The innovative products used to command a higher price tag, but with the increasing pressure on budgets it will be interesting to see how this plays out, particularly at scale. Can the system tolerate the innovation that is moving into the market? Having worked in this industry for over 20 years I will always keep a keen eye on how things are moving in medical devices. But I wonder if innovation in medical devices is really what's needed to fix a broken health system?

Original article can be found here: <https://www.healthcare.digital/single-post/2017/09/22/What-role-should-technology-play-in-surgery>