I am not ready for robots

Abdullah BJJ

University of Malaya Research Imaging Centre and Department of Biomedical Imaging, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia.

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Over the years I have been fascinated by the increasingly sophisticated role robots have been playing in surgery. I even championed the cause of the surgeons who have been struggling to get our hospital to purchase a surgical robotic system. We came very close to achieving our goal, but failed as the circumstances were not in our favour. And I left it at that.

I pride myself on being open to technological advances, which are able to push the frontiers of the interventional therapies we are able to offer, in terms of scope and sophistication. I believe I am a cross between Sherlock Holmes and a carpenter; Sherlock Holmes because I need to look for clues to make the best possible decision/diagnosis and a carpenter because I want to build beautiful “furniture”. To be a skillful carpenter I need to have a wide range of tools to choose from. I do not wish to fall into the trap described by the common saying, “if all you have is a hammer, then everything becomes a nail”. Instead, I exploit the capabilities of each of these interventional tools and often use them in combination to achieve a synergistic effect.

In the last 9 months, I have been involved in developing a robot (Robio Ex, Perfinc, Chennai, India) to assist in CT-guided biopsies and radio frequency ablation (RFA). I was thrilled to be given another opportunity to push the frontiers of my work and increase my capabilities. I immediately recognised that this robot would be able to level the playing field between novices and the more experienced interventionalists. Novices would quickly gain the necessary skills to do complicated procedures, which had taken me years to master. This development would make CT-guided procedures more readily available in Malaysia and would be just what we need to increase the pace of interventional radiological services, especially since a majority of healthcare facilities do not have CT fluoroscopic capabilities. There is also the added benefit that it could potentially reduce the radiation dose significantly when these procedures need to be done using repeated CT scans. The development of this robot would also provide training to our young radiologists so that they can then use it when they return to the Ministry of Health hospitals.

On the downside, it dawned on me that all my years of honing my skills could go to waste with the introduction of the robot, as my capabilities would be undermined. More importantly, I also realised that if I were to start using the robot myself, I would have to change my entire workflow. With free-hand CT-guided procedures, I would have viewed the images prior to having the patient on the CT table, so that I could decide on the patient’s position. The radiographer would have done the baseline CT scan and we would then decide on the best approach. Once that was done we would localise the entry point using a laser and conduct the procedure under fluoroscopic guidance. The procedure would be over in less than 10 minutes, in most instances. With the robot, we would have to import the images into the workstation, plan the entry and target points, input the length of the biopsy and guiding needles, and then send the information to the robot. The robotic arm would then swing into its target position for the needle to be deployed manually.

A few days before launching the robot, we had to clearly redefine the roles of the different members of the team. We developed flow charts and impressed on them the need to be well-versed with the robot and its
operation. The night before we were scheduled to start using the robot, I also mentally rehearsed the changes I needed to make to my technique so that I could reduce the procedure time, while optimising use of the robot and minimising any “screw-ups”. To say that I was stressed was an understatement.

When the day finally arrived for us to do our first robotic-assisted RFA, the system suffered a technical glitch! I was quite disappointed but secretly pleased, as I was not ready to let go of “my way” of carrying out the RFA under my total control. Not yet anyway. Was I just protecting my turf? It is not easy to accept that some of your skills can so easily be replaced by a machine. Our resistance probably has a lot to do with an innate evolutionary discomfort with things that carry out human functions but are not quite human. We are now finding that acceptance of technology is dependent on the human-technology interface.

I realise that I have bought myself some time but in reality, there really is no running away from robots. Robots are here and they have become an integrated part of surgical and image-guided therapies. Like any disruptive technology, their capabilities can only improve. However, I believe that acceptance will only increase if we learn to manage this human–robot conflict better.

It is not the big that catches the small
It is the fast that catches the slow
So I need to keep running faster than the robot…
Or
I could be running faster while RIDING the robot!