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Charles Darwin (1809-1882)
(Refer to pages 320-321)

Minimal access surgery: are we doing it right in Singapore?

T Ravintharan

It has been 15 years since minimal access surgery (MAS) was first performed in Singapore and Asia. Since my last editorial for the Singapore Medical Journal (SMJ) about the changes after a decade of MAS⁽¹⁾, more developments like articulating and detaching instruments, three-dimensional (3D) camera systems, new modalities for dividing tissues and materials for sealing, image-guided and robotic surgery, have changed surgery in all fields⁽²⁾. Minimal access is the key to the advances sweeping the world of surgery.

In this issue of SMJ, Zhang et al report on gas embolism occurring during laparoscopic abdomino-perineal resection⁽³⁾. Even though this is a rare but often fatal complication, the outcome in this particular instance showed a keen awareness of the anaesthetic team in identifying and dealing with the complication. Complications are a risk that surgeons and patients must face in the course of any surgery, whether open or MAS. The recent death of a young kidney donor in a teaching institution raised further concerns in the medical and public circles about whether we can carry out safe and appropriate surgery.

This is a vexing question and requires comment. Could standards of training, audit, accreditation, health policies and leadership in our profession be reasons? To answer this, I am penning the concerns of fellow colleagues from various specialties, surgeons and heads of department around the region and locally, and my thoughts and experiences gathered over 15 years of teaching and performing routine and complex MAS. The common lament is of the deteriorating standards in surgery, training and discipline. Some comments may rile and I do apologise for that. It is done with a fervent hope of improving the practice of MAS.

In the past, the art of surgery was learnt as an apprentice by the side of an experienced surgeon⁽⁴⁾. Such practice was complemented by rotation of trainee surgeons among the public hospitals and further enhanced by an overseas attachment. This gave a broad overview of accepted surgical practice. Post-MBBS, it generally took another 10 to 15 years to complete surgical training and be a consultant, and a further 5 to 10 years to gain enough experience in order to be accomplished. Such an established system was changed in the 1990s with restructuring. Each public hospital became an island on its own and the coordination in training was replaced by competition. The rotation system was neglected, combined inter-hospital programmes replaced by competing intra-hospital activities and meetings, designed to promote individual hospitals. Avenues for the interchange of ideas, practices and personnel were lost.

The implementation of remuneration policies for surgeons, equating with volume of surgical output, reduced hands-on experience for trainees. The emphasis on the "publish or perish philosophy" led to a more academic and less hands-on training environment. Young consultants

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replaced senior surgeons as surgical heads, and became consumed by ever increasing administrative and healthcare issues. The long-term job security was replaced by contract-based employment. In this changed environment, experienced surgeons felt sidelined; and a loss of long-term job stability, control and status forced many to private practice. The wealth of surgical experience was gradually swept away.

This was also the era of MAS. Unfortunately, the experience from open surgery could not ensure competence in performing MAS, which was heavily dependent on electronic, optical, and specialised surgical equipment. The increasing patient demand compelled many surgeons to learn MAS. Surgeons had to re-train and acquire new knowledge of equipment and MAS techniques^(4,5). In many instances such retraining was inadequate. There were too few trained local surgeons to impart the skills. Many went for short 2- or 3-day workshops and performed MAS with no proctoring-content in the knowledge that if unsuccessful, conversion to open surgery was an accepted option. The real danger was the lack of experience in safe techniques, resulting in serious complications highlighted by the initial experience in New York, where higher incidence of bile duct injuries from laparoscopic cholecystectomy created an uproar about the training and safety of the new technique. Similar experiences were echoed in Singapore. Even today, many doctors are wary of MAS and doubtful of its use for major procedures. Such settings of the past unfortunately set the stage for the present.

So was it the technique (MAS), institution or the surgeon at fault here? In the past, the outcomes from open surgery were largely accepted, as there was no other option. 19 years ago, I presented a paper where a review of re-laparotomies for post-operative complications was conducted⁽⁶⁾. Approximately 45% of re-operations were the consequences of complications from poor assessment, skills and decisions i.e. surgeon-related factors. I suspect this figure may not have changed substantially today with both open and MAS procedures.

Training in MAS is increasingly being recognised as an important aspect of surgical residency. More importantly, it is not the number of cases done, as is the current practice, but rather the competence of the surgeons that is the important element in accreditation⁽⁷⁾. It is increasingly recognised that some 10% of trainees and surgeons just cannot be trained to perform MAS⁽⁸⁾. Despite such observations, poor accreditation and minimal action to correct, retrain or restrain surgeons with poor outcomes can be disastrous for the institution, profession and patients. In one instance, legal redress by patients, some highlighted in the media, forced an institution to review and suspend operating privileges of a surgeon. Even at present, accreditation processes are implemented with loose evaluation and ready acceptance. There are instances of surgeons with minimal experience in MAS being accredited to perform advanced procedures. The above scenario is partly to be blamed on a lack of will to review and evaluate the performance of MAS.

Regular evaluation and audit of technology and procedures, both old and new, must be carried out to safeguard the patients' welfare, and the institutions' and the surgeons' reputations. Even so, such events are sometimes marked by subdued discussion and critique. Fear of offending others by adverse comments often leads to tame acceptance of poor practices. This is not conducive for building good surgical practice and training. Evidence-based surgery is important, and surgeons should discuss options and debate on outcomes to allow best practices to develop within institutions.

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The introduction of MAS has been hailed as a revolution, an event that changed the landscape of surgery. Further developments can be only considered as evolution or refinement of the processes⁽²⁾. In this, robotic surgery, introduced into Singapore recently, is such an evolution. The da Vinci robot's advantage is its 3D vision for depth perception and versatile instruments for daunting tasks of dissection and suturing in confined spaces. The robot is best for complex MAS like radical prostatectomy, cardiac and major abdominal surgery. Having done complex robot-assisted laparoscopic gastric and liver surgery, and observed radical prostatectomy, my impression is that patients can benefit tremendously if complex open operations are done with robot-assisted MAS, despite the cost of using a S\$2.5 million machine. However, it can be prohibitive to do robot-assisted surgery for routine procedures like laparoscopic cholecystectomy and hernia repair. The current laparoscopic technique is faster, just as safe and half the cost to the patient.

The robot has also been used for open surgery like axillary dissection for breast cancer, the advantage being that the magnified 3D view allows sparing of intercostal nerves to preserve the sensation of the axillary skin and arm. Again, the use of simple cost-effective magnifying loupes affords similar visual magnification and cost benefits. Surgeons can use the robot for cholecystectomy as a training tool in preparation for complex procedures and unless subsidies or widespread use brings the cost down, the patient should be spared the additional cost. As with all new developments, there will be controversy, which should be openly discussed to allow better understanding about the value and place of any surgical technique.

Ethics and good personal attributes are important in being a good surgeon. Unfortunately, policies encouraging the "publish or perish" philosophy have let some surgeons to publish or organise workshops to gain recognition. In such instances, a few have succumbed to vanity and have overreached themselves. In a particular local surgical workshop for participants from the region, the young trainers had only done one operation and were now teaching others. This was akin to the old adage of "see one, do one, teach one"! There have been presentations at meetings where procedure-related major morbidity and mortality have been conveniently ignored or left out to make the outcome more impressive. Time and again, attempts through the media to promote one's abilities go against the grain of medical etiquette and ethics. Surgeons need to have integrity, be ethical, be skilled to train others, and help develop and protect the reputation of the profession.

Unlike the trainee, the consultant surgeon is the best person to decide for himself on what he can do. In most circumstances, this works well, as most surgeons know their strengths and weaknesses. There are guidelines and accreditation procedures, and the institutions generally do not interfere, as the surgeon is a valued employee (public) and customer (private). Unfortunately, questionable practices and adverse outcomes of a few bad apples can influence the image and the status of the whole group and undermine the public trust of doctors in general. It can reflect poorly on the institution and surgeons as a whole. Such pain and suffering of patients occasionally played out in the media create a public perception of the inability of the medical profession to monitor and correct itself.

Sub-specialisation is another issue that needs attention. In the past, a general surgeon could do procedures from the head to the toe! Generally, surgical subspecialties have evolved to bring better medical care to the patient. Specific subspecialty training has been limited to particular organ or system-focused training like breast, thoracic, endocrine, colorectal and other regions. This limits the training and exposure in other areas. For

example, in colorectal surgery, the training does not involve performing operations like laparoscopic cholecystectomy. This gives rise to the dilemma: should accreditation be given to subspecialty or general surgeons for procedures they are not trained for or have not done for a long time? It needs to be recognised that there are limits to the ability of surgeons to perform particular procedures other than those they are trained for.

Another recent problem facing Singapore is the increased exodus of senior specialists from the public to the private institutions. This brain drain unfortunately affects not only the quality of service but also the training, as this is where our future surgeons are groomed. Major teaching institutions should find a balance in providing service to the public, training and research. The emphasis among these three needs must be balanced. Training is a very important facet of public institutions. Trainees should have undergone workshops and observed video recordings as these document the surgery better than words or diagrams, and help in review of technique, safety issues and accreditation. Preceptorship is widely neglected in training and guidance, and is important in maintaining and improving standards of MAS. This impacts on the safety of surgical processes and procedures. The relevant expertise in the private sector can be used to bridge this gap.

The above changes would require a concerted attempt by the public and private institutions, the Academy of Medicine and the Ministry of Health to come together and formulate policies to improve the environment of training and accreditation of surgery, and MAS in particular. The leadership of private and public institutions should play a strong part in establishing guidelines and enforcing standards. The leadership of the public institutions and ministry should not ignore the potential role of the private sector in implementing policies such as recertification. It is important for the surgical fraternity to come together and re-establish these processes to ensure that surgical procedures are carried out with safe techniques.

Finally, in the drive to make Singapore a medical hub for the region, we are faced with competition offering cheaper alternatives. We cannot match these cost considerations but we must offer a safer, better, modern and a higher ethical standard than our competitors. Having modern buildings and state-of-the-art equipment are not enough. The software, i.e. the doctors and medical staff, must be able to match the hardware, delivering surgical care with best outcome indicators. This takes a lot of effort, time, training, and a leadership that is willing to act. Medium- to long-term well-thought policies and regular reviews will help to make progress in the medical field both useful and safe for the patient and to create a fulfilling working environment for the healthcare professionals. 

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