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The Changing Scene in a Decade of Laparoscopic Surgery in Singapore

T Ravintharan

Eleven years ago, when Dr Mohan Chellappa presented the first series of laparoscopic Cholecystectomy done in Asia at the Chapter of Surgeons meeting in mid 1990, there were many at the meeting who voiced their concerns about Laparoscopic Surgery (LS) and that it may not last the trial of time. Have things changed today? When I was invited to write this editorial, my first reaction was to reflect back to the types of LS or Minimal Access Surgery (MAS) I had done in the past two weeks, to give me a perspective. Those that came to mind were Appendectomy in a five months pregnant lady, Cholecystectomy for acute gangrenous gall bladder in a 28-year-old man, Adrenalectomy for a pheochromocytoma in a 36-year-old man, large ventral hernia repair with a mesh in a 60-year-old lady, Laparoscopic Adjustable Gastric Band Surgery for morbid obesity in a 19-year-old girl weighing 121 kg and a 5-year-old girl who had Cholecystectomy and Splenectomy for congenital spherocytosis⁽²⁾. These, in addition to the routine procedures like elective cholecystectomy, were all done laparoscopically. Have things changed today? Yes they certainly have since the early days, and yet there is a feeling of underachievement as far as Singapore is concerned.

Before proceeding further, let us examine briefly, the difference between open surgery (OS) and laparoscopic surgery (LS). The main difference is the manner in which access into the abdominal cavity is obtained. In open surgery, a large 5 to 30 cm incision is made to gain access and this involves a muscle or fascial incision, which needs to be repaired. In laparoscopic surgery, several small 0.3 to 1.0 cm muscle-splitting stabs are made into the abdominal cavity to allow the procedures to be carried out. This is done with the aid of a computer chip controlled camera with close circuit monitor, a light source, carbon dioxide insufflator and specialised long instruments for laparoscopic surgery. The actual surgery for e.g. Cholecystectomy is the same as in open procedure. It is now realised that the advantage of doing laparoscopic surgery is mainly due to the access, i.e. the lack of a large painful incision. This allows the patient to recover faster, go home and to return to work earlier and have less wound complications. The stress response is also less with laparoscopic surgery⁽³⁾.

Compared to open surgery, LS is very much dependent on the use of electronic and other equipment. In the early days, many practicing surgeons were reluctant to struggle with LS when they could easily do with OS. So why did MAS like laparoscopic cholecystectomy (LC) catch on quickly in such a dramatic fashion? The answer to this was in the huge benefits that patients gained from undergoing MAS. It made common sense for the informed patient to have this type of surgery rather

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Cover Picture:
 Right hydronephrosis. Abdominal radiograph shows staghorn renal calculi and focal bulging of upper pole of right kidney (arrowheads). (Refer to page 280-285)



OS. But were we prepared for this revolution in patient knowledge and demand brought on by the media initially and later by the Internet?

When the laparoscopic revolution swept the world in the late 80s & early 90s, not many were trained in MAS. Many surgeons experienced in OS, felt that performing LS was far more cumbersome than OS. Some found it difficult to acquire laparoscopic skills. The older surgeons had trouble with eye-hand coordination and found LS to be time-consuming and tedious. In addition to losing visual and tactile feedback, to rely on a number of electronic equipment to perform keyhole surgery was a whole new ball game to learn. It boiled down to those who had it in them and persisted to pick up these skills versus those who did not have the hands for these new skills and gave up trying.

During the early days, restrictions were placed to limit the initial exposure to common procedures, like LC for Gallstones. It was rightly intended to define the place of LS in general surgery. The realisation of patient benefits, surging demand and the immense impact to the health economics, forced many a willing surgeon to learn this new skill by attending two or three day local or overseas courses. However the initial rush to perform LS, after going through a short learning period, was thought to have resulted in higher than expected complications⁽⁴⁾. The probable reason was the lack of exposure and experience in MAS skills, which could not be adequately attained from such workshops. The increased scrutiny that a new type of procedure attracted and the increased incidence of complications from the initial experience, reinforced the initial fears and led to the suspect reputation that still saddles LS to this day among part of the medical fraternity. It also didn't help having high profile court cases played out in the media.

There was also a serious mismatch among the surgeons. The older more experienced surgeons who had difficulty performing LS and the young inexperienced surgeon who was able to quickly pick up the required skills in laparoscopic surgery. A good analogy would be how a father gets to lose to his teenaged son when playing a computer game. Instead of working together to develop this new avenue of surgery, there was resistant to change and a lack of experienced laparoscopic surgeons to pass the skills on. In the institutions where most of the training was done, there was a seeming lack of leadership in the conduct of training. Protocol for supervision, credentialing and audit of procedures were drawn up. But in reality, there was weak implementation and enforcement of safe practices. This situation, to a certain extent, was aggravated by the uncertainty and the resulting lack of commitment in the era of restructuring of the institutions. The leadership and training of the specialists' services were thus affected by the ongoing rapid changes that affected the medical service in Singapore.

The redeeming factor was the Health Manpower Development Programme (HMDP), which allowed our younger specialists to go overseas for training attachments. Many went to centers, which by the mid 90s had developed good training facilities with structured courses. Unfortunately in Singapore we have not been able to duplicate these efforts, as the culture of supervised training and credentialing practices is still not strong. Preceptorship is not sufficiently established to allow skills of a surgeon, to be evaluated and corrected at an early stage of training. We have a few good overseas trained laparoscopic surgeons who have spearheaded development of laparoscopic skills. But the drain of surgeons to the private sector does not help the training of surgeons in institutions.

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Despite these, there has been progress in LS. New technology and instrumentation like the ultrasound scalpel, bipolar diathermy which cut and seal blood vessels, three chip camera systems with improved vision and better designed instruments like scissors and forceps, have made laparoscopic surgery much easier than 10 years ago⁽⁵⁾. Technology is what that made the difference in the evolution of MAS. More improvements are on the way to make MAS easier to perform like robotic surgery. MAS has been a very major change in the practice of medicine probably ranked on par with the discovery of antibiotics and anesthesia. However there are three important factors, which determine the safe and positive outcome; namely the patient, the disease and the surgeon.

With the increasing experience and knowledge of the effect of laparoscopic surgery, these days, practically all types of patient can undergo laparoscopic surgery. However there are some groups of patients who are best served by performing open surgery. These include patients with severe cardiopulmonary disease unsuitable for general anesthesia, grossly distended abdomen from bowel obstruction, bleeding diathesis and those with severe liver disease. Other relative contraindications to laparoscopic surgery depend on the type of surgery intended and the surgeon's expertise. Pregnant patients, those with previous abdominal surgery and other co-morbid conditions, which previously were ruled out, can undergo laparoscopic surgery by expert surgeons. Even intra-uterine fetal surgery has been carried out⁽⁶⁾.

Diagnostic Laparoscopy has been used for assessment of peritonitis, trauma or abdominal pain with great benefit.


Table I Table of Common and Accepted Laparoscopic Procedures.

Upper GIT	Hepatobiliary
Oesophagectomy	Cholecystectomy
Vagotomy	Exploration of the CBD
Reflux Surgery	Biliary Bypass
Hiatus Hernia Repair	Distal Pancreatic Resection
Gastric Resection for Ulcer/Cancer	Pseudocyst Surgery
Gastric Bypass	Liver Resection / Hepatectomy
Repair of PDU	Drainage of Liver Cysts / Abscess
Adhesiolysis of Small Bowel	
Lower GIT	Others
Appendectomy	Adrenalectomy
Right & Left Hemi-colectomy	Splenectomy
Total Colectomy	Nephrectomy
Anterior Resection	Lymph Node Biopsy / Excision
AP Resection	Diagnostic for Pain / Mass
Repair of Perforation	Staging for Cancer
	Lap-Band for Obesity Surgery

As for the types of disease, the list again has expanded greatly. Elective surgery for a wide variety of disease has been carried out as seen in Table I. The report on excision of a liver cyst in this issue is just one of the many procedures that can be done and demonstrates this with MAS. In patients presenting with acute diseases like acute appendicitis and perforated peptic ulcers, laparoscopic assessment is excellent in arriving at a diagnosis and in skilled hands appendectomy or suture closure is better than open surgery in terms of wound complications and patient recovery. This is also true for acute gallbladder conditions, which previously was a contraindication. Diagnostic Laparoscopy has been used for assessment of peritonitis, trauma or abdominal pain with great benefit. Selected types and stage of cancers can undergo laparoscopic surgery. There were initial worries of increased tumour spillage by doing LS but recent evidence points that such fears may have been overstated. Colorectal cancers have been resected with as good

an outcome as open resection but with the additional benefit of faster recovery and decreased stress response⁽⁷⁾. This obviously helps in the patients' overall battle against cancer. For advanced cancers where cancer seeding is not an issue, surgical resections and bypass procedures for obstruction can be carried out. The days of the 'open and shut laparotomy' for advanced cancers are out!

The most important factor in the outcome of performing laparoscopic surgery is the surgeon and his team. Over the last decade, there has been an increase in the knowledge and experience of our surgeons and this has led to an increased range of Laparoscopic procedures available to patients. LC is now an established procedure and in some centers appendectomy is also done this way. Advanced procedures are at present only done by experienced surgeons and this is rightly so. Just as in those days where the senior surgeons did the major procedures, such procedures are best left in the hands of surgeons with an expressed interest in advanced LS. There is an increasing trend towards subspecialisation and this has to a certain extent limited the exposure of specialised surgeons to other aspects of surgical practice. Currently a urologist, who wants to perform laparoscopic nephrectomy, will require the assistance of a trained laparoscopic surgeon. In future, the trainees coming through the ranks with adequate skills in LS should be able to perform complex LS within their own specialty.

The future growth of laparoscopic surgery depends on several factors. There must be a coordinated approach to training of surgeons in the skills of LS. Audit must be an important part of our practice to allow learning from our own experience. Review of outcome and credentialing are important in maintaining the standards of surgery and to ensure that the patient gets the best and safest treatment options. In the institutions where training takes place, the above practices need to be strengthened. These days, litigation for errors in surgical practice has made the practice of surgery an onerous one. Performing open surgery is easier on the part of the surgeon but difficult on the patient's part. To practice laparoscopic surgery is even more difficult as the surgeon bears upon himself a greater burden of having the relevant skills and ensuring a safe outcome. The onus for acquiring such skills is thus that of the surgeon and the opportunities for these must be developed to a greater degree if we are to have an excellent and modern surgical service. 

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