

National survey of surgeons' attitudes to laparoscopic surgical training in South Africa

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Summary

Aim. Laparoscopic surgery forms an integral component of modern surgical practice. The perception exists that laparoscopic training in South Africa has been unplanned and under-resourced. This study set out to assess the opinions of surgeons and surgical trainees with regard to the various facets of laparoscopic surgical training.

Methods. A national survey was conducted, using a questionnaire distributed to surgical staff of all academic surgical centres. Multiple variables were assessed, predominantly using the following numerical scoring system: 5 – strongly agree; 4 – agree; 3 – neutral; 2 – disagree; 1 – strongly disagree.

Results. There were 122 respondents: 77 trainees and 45 consultants. The majority strongly agreed that laparoscopic training is essential for local surgical registrars. Current laparoscopic training was assessed as being average. Cholecystectomy, diagnostic laparoscopy, antireflux surgery and appendicectomy were the laparoscopic procedures deemed most important in training. The average number of laparoscopic cholecystectomies respondents thought were required for competency was 24. The major hurdle to training was lack of equipment and equipment shortages, and the majority felt that laparoscopic skills facilities and laparoscopy seminars would optimally augment training.

Conclusion. Surgeons and trainees in academic units recognise the importance of laparoscopic training, but feel that it is currently not optimal. Consensus exists on appropriate procedures and what the hurdles are to training in our context. This knowledge can be applied to improve laparoscopic surgical training in South Africa.

Safe laparoscopy requires specific skills that differ from those needed for open surgery, and adequate training and experience with the procedure in question are essential to avoid complications.¹ Recognition of this has resulted in development of minimal access surgery training centres² and specific laparoscopic courses. Professional bodies in some countries have set up guidelines for laparoscopic training and even credentialling to maintain quality control.³

The perception is that laparoscopic training in South Africa has been unplanned and under-resourced, and that current economic restraints continue to stifle the growth of laparoscopic surgery, particularly in the public sector.

Aim

This study set out to assess the opinions of surgeons and surgical trainees in South Africa with regard to laparoscopic surgical training.

Methods

An attempt was made to canvass opinions throughout the country, at various levels of surgical expertise, and where possible to include surgeons from the private sector. A national survey was conducted using a questionnaire distributed to surgical staff of all academic surgical centres. Multiple variables were assessed, predominantly using the following numerical scoring system: 5 – strongly agree; 4 – agree; 3 – neutral; 2 – disagree; 1 – strongly disagree.

This market research-derived system allows numerical comparison of responses to variable questions (Annexure 1: questionnaire sample). The responders were anonymous.

Results

There were 122 respondents: 77 trainees and 45 specialists. All the respondents were in some way involved in state practice, the great majority in full-time public practice. The academic centre distribution was as follows (trainees/consultants): University of Cape Town 31 (20/11), University of the Witwatersrand 19 (9/10), University of the Free State 17 (12/5), Stellenbosch University 15 (10/5), University of Pretoria 12 (11/1) and University of KwaZulu-Natal 28 (15/13). In response to the question 'Do you feel laparoscopic training is essential for South African general surgical registrars?', the answer scores were 4.95 for trainees and 4.78

Laparoscopic surgery is an integral component of modern surgical practice, and minimal access techniques have become essential tools of the general surgeon's armamentarium, both in South Africa and throughout the developed world.

Many factors have influenced this process. Foremost among these are technological advances and commercial interests; patients too favour minimal access techniques, being easily enticed by the prospect of smaller scars, anticipated earlier recovery and less postoperative pain.

for consultants, with an average of 4.89. Responders noted laparoscopic surgery as the standard of care for certain procedures.

With regard to adequacy of laparoscopic training, when asked whether laparoscopic training was adequate in their respective institutions, the average score response was 2.9. Trainees and consultants anticipated that they would perform 19.2 cholecystectomies by the end of their training, and considered that an average of 24 cholecystectomies were needed to achieve competency.

Fig. 1 represents responses regarding which operations should be commonly taught to registrars. In descending order of perceived importance (combined score in brackets) these were cholecystectomy (4.93), diagnostic laparoscopy (4.81), antireflux surgery (4.19), appendicectomy (4.04), inguinal hernia repair (3.61), splenectomy (3.1), enteric biliary bypass for pancreatic carcinoma (2.87), and adrenalectomy (2.87).

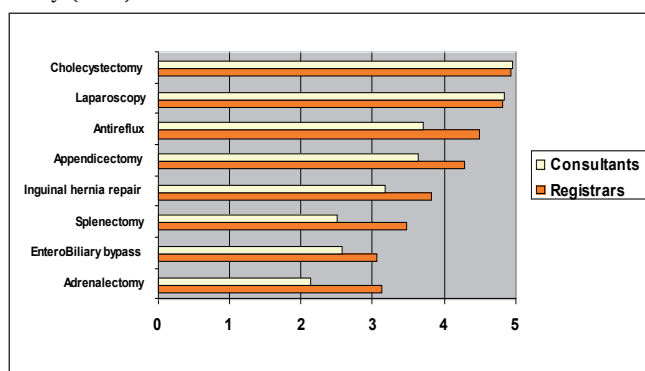


Fig. 1. 'Should the following laparoscopic operations be routinely taught to registrars?'

The most significant hurdle to laparoscopic training was perceived to be lack of equipment (score of 3.77), followed by theatre time constraints (3.61) and finally lack of encouragement from seniors (3.02). The factor most likely to encourage laparoscopic training was felt to be availability of a laparoscopic skills laboratory (4.66), followed by laparoscopy seminars (4.41), a target number of laparoscopic cases defined by the local department (4.18), laparoscopy in basic surgical skills courses (4.16), and number of cases defined by the college (4.06).

Sixty per cent of respondents (73) reported that the majority of laparoscopic training takes place after surgical specialisation (F.C.S./M.Med.), and 68% (50) of these respondents felt this was not appropriate. Suggestions from surgical trainees included the need for dedicated laparoscopic rotation during training, and inclusion of other relevant laparoscopic procedures such as thoracoscopic sympathectomy, laparoscopic oesophageal myotomy, and laparoscopic colorectal and bariatric surgery. Suggestions from consultants included the need for quality equipment and dedicated specialist units, exposure of trainees to thoracoscopic sympathectomy and laparoscopic rectopexy.

Discussion

Laparoscopic surgery differs from conventional open surgery in a number of critical ways: the absence of tactile feedback and 'hands-on' feeling reduces appreciation of tensile strength and nature of tissues, and the ability of the surgeon to fully evaluate the extent and stage of the pathology. Image

projection on a screen leads to the loss of the three-dimensional view of the operating field: this requires astute depth and spatial readjustment, which is best learned through experience of various procedures. The effort or attention required varies from the novice to the more experienced surgeon, with the latter being able to expend significantly less of their attention capacity, reserving resources for more challenging and complicated cases.⁴ The high-quality close-up views afforded by laparoscopic cameras result in the loss of peripheral vision: inability to survey the periphery of the surgical field can lead to iatrogenic events caused by instruments, ports or diathermy going unnoticed with dire circumstances. Port insertion is a most hazardous time, and it is essential that it be performed with great proficiency in order to avoid major complications, such as injuries to the bowel and major intra-abdominal vessels. Successful laparoscopic surgery relies on technology: this requires the surgeon to be familiar with all the needed equipment and to be able to 'trouble shoot' confidently the inevitable niggling problems that may occur throughout the procedure.

Appreciation of the above factors is critical for the practice of safe laparoscopy, and they should be taught in basic laparoscopy courses, and be re-emphasised at all opportunities. High-quality training is intuitively useful and has been shown to shorten the learning curve in acquiring new technical skills related to spatial cognition of laparoscopic surgery.⁵

It is evident that specific training in laparoscopic techniques is essential before unsupervised clinical exposure. The majority of responders strongly agreed with this, yet felt that current laparoscopic training was at best average.

Appropriate training rests on two key components: specific laparoscopic workshops followed by adequate and ongoing clinical exposure and supervised practice.

The most widely available training programmes for junior doctors in the country are the Basic Surgical Skills Courses, which have a day dedicated to teaching the core laparoscopic principles; these are commonly followed by Intermediate Laparoscopic Courses, which focus more on cholecystectomy, diagnostic laparoscopy and appendicectomy. These courses are essential for anyone interested in a surgical career, are regularly run in the various academic centres throughout the country and should be available to all trainees.

Relatively inexpensive laparoscopic training modules/boxes, also known as 'lap trainers', are available in some academic departments to provide 'dry lab' exposure to laparoscopic skills, such as basic hand-eye co-ordination skills, grasping and cutting as well as more specific techniques including the use of diathermy on animal tissue, clip application and suturing. Animal laboratories and mechanical simulators have been used early in residency programmes in the USA in an attempt to shorten the learning curve when performing actual procedures,⁶ but are not available at any facility in South Africa.

More advanced, procedure-specific courses are offered, mostly overseas, and the cumulative costs make these available only to dedicated and experienced laparoscopic surgeons. Occasional workshops with live demonstration and practical sessions are organised by commercial companies to promote new or existing technologies. These are predominantly aimed at surgeons in private practice, and while bias may exist due to their commercial nature, they allow exposure to different technologies and offer valuable ongoing training.

Annexure 1: Survey questionnaire

Laparoscopic Training in South Africa – Survey

1. Current position: Registrar Year of training
 Consultant Years post FCS under 5 years
 Intern/SHO over 5 years
 Student Year of M.B. Ch.B.

University :

Kindly grade the following questions from 5 (strongly agree) to 1 (strongly disagree)

2. Do you feel laparoscopic training is essential for SA general surgical registrars?

2a. Why?

2b. Why not?

3. Do you think laparoscopic training is adequate in your institution? (1 - 5)

How many lap. cholecystectomies (LCs) do you expect to perform by the end of your training?

How many LCs have you performed as primary surgeon up to now?

What do you think is a target no. of LCs to achieve competency?

4. Should the following **laparoscopic** operations be routinely taught to registrars? (1 - 5)

L. cholecystectomy Diagnostic laparoscopy

L. antireflux surgery L. splenectomy

L. appendicectomy L. hernia repair

L. adrenalectomy L. cholecystojeje/gastrojeje in pancreatic CA

Other _____

5. What do you think are the hurdles to laparoscopic training as a registrar in our setting? (1 - 5)

Lack of time Lack of equipment Lack in confidence

Lack of encouragement from seniors Theatre staff resistance

6. What would encourage laparoscopic training? (1 - 5)

Laparoscopy seminars Laparoscopy skills laboratory

Quota no. of laparoscopic cases defined by college local dept.

Laparoscopy in Basic Surgical Skills course

7. Post-FCS/fellowship training (Y or N)

Does the majority of lapsc. training occur in a post-F.C.S./M.Med. post in your institution?

Do you think this appropriate?

8. Do you have any other suggestions?

It appears that a basic network of training courses is in place in this country, and while some operations that are felt to be important by the respondents in the questionnaire, such as antireflux surgery, are not routinely taught, the core training subjects are covered.

The more significant hurdles to laparoscopic surgery training are identified as lack of operating time and equipment shortage in the state-funded teaching institutions. Trainees who have diligently attended all the prescribed courses may therefore find their practical application frustrated by limited access to operating opportunities, and very seldom achieve proficiency in anything other than a laparoscopic cholecystectomy. This deficiency in competence of advanced laparoscopic surgery has also been well documented in units abroad.⁷

There is no doubt that there is a need for formal training in this branch of surgery^{8,9} in South Africa, as is the case throughout the world, and that the current status quo has room for improvement. The way forward hinges on a number of factors. The existing laparoscopic courses need continued support from educators and from the industry. The most pressing addition to the current programmes is a laparoscopic suturing and fundoplication course. Simple dry lab simulators can be set up with little effort and cost and provide an adequate environment to practise basic and intermediate skills (i.e. suturing) on an ongoing basis.

Addressing lack of operating opportunity and equipment shortage in the public sector is obviously a more complex problem. It requires re-affirmation of the importance of training in laparoscopic surgery, perseverance, and commitment from senior surgeons and administrators. Imaginative co-operation with commercial companies and competitive pricing of consumables may go a long way towards ensuring that laparoscopic surgery is practised in teaching hospitals, and that newly qualified surgeons are appropriately trained.

Conclusion

The majority of responders strongly agreed that laparoscopic training is essential for local surgical registrars. Current laparoscopic training in South Africa was considered to be average.

The following laparoscopic procedures (in descending order of importance) were deemed most important in training: cholecystectomy, diagnostic laparoscopy, antireflux surgery and appendicectomy.

The average number of laparoscopic cholecystectomies believed to be required for competency was 24.

The major hurdle to training was identified as lack of equipment, followed by time pressure in the operating theatre. Both are directly related to the financial constraints of public hospitals and the unrealistic pricing of laparoscopic equipment.

The majority of respondents felt that laparoscopic skills facilities and laparoscopy seminars augment training.

Surgeons in academic units recognise the importance of laparoscopic training, but feel that this is currently not optimal. Consensus exists on what procedures should be taught, and what the hurdles to training are in our context. This knowledge can be applied to improve laparoscopic training in South Africa.

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