Mutual mentoring in laparoscopic urology – a natural progression from laparoscopic fellowship

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ABSTRACT

INTRODUCTION The objective of this study is to report a novel system of 'mutual mentoring' that overcomes the limited availability of laparoscopic mentors and allows progression from laboratory and fellowship experience into independent clinical practice.

PATIENTS AND METHODS A total of 88 laparoscopic cases were performed during the fellowship. In the first 2 years as consultants, we (AJ and MS) performed 151 cases with mutual mentoring (simple nephrectomy [$n = 28$], radical nephrectomy [$n = 35$], nephro-ureterectomy [$n = 19$], pyeloplasty [$n = 31$], pelvic LND [$n = 21$], others [$n = 17$]).

RESULTS Mutual mentoring has resulted in the successful introduction of laparoscopic services to two hospitals, allowing an exposure to an average of two cases a week. Complication rates are acceptable and objective measures such as conversion rates, operative time and blood loss appear to be improving.

CONCLUSIONS Mutual mentoring allows for a greater through-put of cases, a high level of assistance, advice with intra-operative decisions and the potential to 'share' cases, reducing fatigue and increasing experience. It provides significant moral support in the difficult early days of starting the service. Its disadvantages are that it is time consuming and is geographically restrictive. Mutual mentoring has allowed us to introduce a laparoscopic service at our respective hospitals with high case-load acceptable complication rates.

KEYWORDS

Laparoscopy – Training – Mentoring

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In little more than a decade since the introduction of laparoscopic nephrectomy and laparoscopic radical prostatectomy, laparoscopic urology has firmly established itself as an additional tool for the urologist. Whilst there is still some debate over the exact role of laparoscopic versus open prostatectomy, there are good arguments for laparoscopic nephrectomy and laparoscopic pyeloplasty being the treatment of choice in most cases. One of the current major difficulties, however, has been provision of training in laparoscopic urology. The British Association of Urological Surgeons (BAUS) and the Specialist Advisory Committee in Urology¹ have developed a training pathway consisting of a basic skills course, independent dry-laboratory experience followed by a wet-laboratory course. Assisting and observing at various laparoscopic urological procedures is then followed by mentored operating until the individual surgeon appears competent for independent practice. One

of the biggest hurdles is making the transition from observation and assisting to starting cases with a mentor. Several factors account for this: first, there is still, in the UK, a relatively small pool of experienced laparoscopic surgeons and, hence, limited availability of mentors. Even where mentors are available, it is a huge commitment on their behalf to take surgeons through enough cases to get them in the position for independent practice. Each mentored case would take many hours, there is no clear idea on how many cases need to be performed and, lastly, there may be a reluctance by some possible mentors to participate because of concerns over the ability of the trainee and also concern over their own results. Unlike general surgery where laparoscopic cholecystectomy is an ideal training operation, no such operation exists in urology. Laparoscopic radical prostatectomy is technically very difficult, laparoscopic radical nephrectomy is technically easier but, in inexperienced

hands, there is always a significant worry over a major vessel injury and the suturing in laparoscopic pyeloplasty can be technically challenging. Lastly, the training pathway advised does not guarantee surgical competence.

Two of the authors undertook the same laparoscopic fellowship concurrently with the senior author, attending the same wet laboratories and were appointed to geographically adjacent hospitals at the same time with a remit to introduce laparoscopic urology. In this article, we described how we continued a process of mutual mentoring which has eliminated the problem of ready availability of experienced mentors and inexperienced assistants and has allowed us to introduce laparoscopic urology to both our hospitals. We believe that, with planning, mutual mentoring may be a model that could work within many regions. Undoubtedly, future service provision has to be co-ordinated on a geographical basis so as not to dilute experience with reduction in operative outcomes, thus avoiding a prolonged learning curve and the potential adverse effects on operative outcomes.

Patients and Methods

Laparoscopic fellowship

Having attended the BAUS basic laparoscopy dry-laboratory course we (AJ and MS) undertook a laparoscopic fellowship for 6 months after completion of CCST. During this fellowship, we regularly practised in the pelvi-trainer (about 3 h/week), attended a 3-day wet-laboratory course in Denmark and either assisted at, or participated in, an average of four major laparoscopic cases a week. During the fellowship, we were, therefore, exposed to over 80

cases, mostly laparoscopic radical prostatectomy ($n = 40$), laparoscopic nephrectomies ($n = 20$) and laparoscopic pyeloplasties ($n = 18$). For the kidney cases, we operated under supervision; generally, this consisted of each of the two fellows and the main surgeon operating for 20 min in rotation. This seemed to be a good compromise between training on our side without excessively prolonging the operation to the detriment of the patient. Towards the end of the fellowship, we arranged for theatre nursing and ODA staff from our respective next hospitals to attend and observe the set up and running of the laparoscopic theatre.

Early experience

After beginning consultant jobs, we arranged our timetables so that we would be available to travel to the other consultant's hospital when there was a laparoscopic case. Initially, we would share the cases doing 20 min each in rotation and then, with increasing experience, the 'home' surgeon would largely complete the case. For pelvic lymph node dissections, we perform one side each; for laparoscopic pyeloplasty, we share the suturing as this is the technically most difficult part.

Centre of excellence

At different times during our first year of appointment but after completing approximately 15 and 25 laparoscopic cases, respectively, we attended the Cleveland Clinic to visit Dr Gill's department for 1 month, generously sponsored by the British Urological Foundation. This was an excellent experience and, having already undertaken a small number of cases at this stage, came at about the right time to identify areas of difficulty and has significantly helped our practice.

Table 1 Distribution of laparoscopic cases

	Number	Age (years)	Operative time (min)	Estimated blood loss (ml)	Length of stay (days)	Patients transfused (%) [*]	Conversions (%)
Radical nephrectomy	35	61 (37–80)	238 (135–355)	244 (15–2000)	6.1 (2–20)	3 (8.6)	5 (14.2)
Simple nephrectomy	28	42 (20–80)	203 (110–375)	184 (10–1000)	4 (2–8)	2 (7.1)	4 (14.2)
Nephro-ureterectomy	19	74 (49–89)	211 (110–330)	173 (10–750)	5.8 (3–10)	1 (5.2)	1 (5.2)
Pyeloplasty	31	30 (18–57)	215 (125–330)	41 (10–200)	3.9 (2–12)	0	1 (3.2)
Pelvic lymph node dissection	21	61 (50–73)	110 (30–195)	28 (5–100)	2 (1–6)	0	3 (14.2)
Others	17						

Results are means (ranges) where appropriate.

^{*}The average transfusion was 2 units.

Other cases were: orchidectomy (6), renal cyst excision (4), para-aortic lymph node dissection (2), partial nephrectomy (2), adrenalectomy (1), nephropexy (1), renal mobilisation (1).

Table 2 Comparison of year 1 and year 2 results

	Year 1	Year 2
Cases performed	66	84
Conversions (%)	11 (16.7)	3 (3.6%)
Mean operative time (min) (range)		
Laparoscopic radical nephrectomy	246 (135–335)	231 (150–340)
Laparoscopic simple nephrectomy	208 (110–375)	200 (150–290)
Laparoscopic pyeloplasty	238 (125–330)	198 (145–330)
Mean estimated blood loss (ml) (range)		
Laparoscopic radical nephrectomy	160 (15–550)	314 (25–2000)
Laparoscopic simple nephrectomy	220 (15–900)	153 (10–1000)
Laparoscopic pyeloplasty	39 (10–125)	42 (10–200)

None of the differences in operative time or estimated blood loss between year 1 and 2 results reached statistical significance ($P < 0.05$).

Later experience

After jointly performing about 50 cases, we have incorporated a senior specialist registrar into the team allowing them to participate in cases in much the same way that we did during our fellowship. We have prospectively audited peri-operative and outcome data from all the cases performed in our first 2 years as consultants.

Results

In the first 2 years, we have performed 151 cases (71 and 79, respectively). More than 75% were performed as mutually mentored cases. Table 1 shows the distribution of cases performed. For the laparoscopic radical nephrectomy cases, the final pathological stages were pT1a (6), pT1b (14), pT2 (6), pT3a (4), pT3b (4) and benign (1). Table 2 compares first and second year results illustrating the effects of the learning curve with a non-significant trend to improvement in operative times and blood loss. Eleven of the 14 conversions (failure to progress [7], bleeding [5], anastomotic difficulty [1], identification of reno-colic fistula [1]) were in year one. Seven of the 14 conversions were when one of us was not present and the assistant was a less experienced laparoscopist. Three patients have been returned to theatre (laparotomy for bleeding [1], repair of extraction site hernias [2]). An 82-year-old man died 5 days after laparoscopic nephro-ureterectomy from congestive cardiac failure. Other complications are listed in Table 3.

Discussion

It is difficult to establish and maintain the through-put to implement a laparoscopic urology service successfully. This

is easier having completed a formalised fellowship. This may be because surgeons then start higher up the learning curve resulting in fewer early complications² and a willingness to take on more difficult cases earlier. This may explain why the data in Table 2 show moderate, rather than excessive, improvements. Very few of these fellowships currently exist in the UK. In addition, early mentoring has been shown to be significantly beneficial both in terms of reduced complications⁵ and providing the impetus for

Table 3 Complications

	n (%)
Minor complications	
Pneumothorax (managed conservatively)	1 (0.7)
Wound infection	5 (3.3)
UTI	3 (2.0)
Pyelonephritis	1 (0.7)
Neuropraxia (transient)	4 (2.6)
Major complications	
Pneumothorax (chest drain)	1 (0.7)
Renal cyst recurrence	1 (0.7)
Recurrent nephroptosis	1 (0.7)
Extraction site hernia	2 (1.3)
Laparotomy (postoperative bleeding)	1 (0.7)
Pulmonary embolus	1 (0.7)
Urine leak*	3 (2.0)

*Two patients post pyeloplasty settled spontaneously at 5 and 7 days and one patient post partial nephrectomy settled with stenting.

continued and maintained practice.⁴ As discussed earlier, however, the limited availability of mentors reduces the amount of assistance to novice laparoscopists. By good fortune, we are at the same stage in our laparoscopic experience and geographically close; therefore, ideally placed to establish a system of mutual self-mentoring. This has had several advantages. First, the assistant in laparoscopic surgery is vital. In the mutual mentoring system, there is a guaranteed high level of assistance, a degree of moral support as many of the earlier operations take a long time, assistance with difficult intra-operative decisions and, lastly, by sharing some of the cases, a degree of fatigue with subsequent impaired performance can be reduced. The system also provides increased operative exposure both in terms of performing parts of operations and also seeing a wider range of complications and their management. Finally, there is an increased level of confidence which potentially allows difficult decisions, such as when to convert or when to continue, to be made with even more confidence. It has been shown that the operative results of two laparoscopic surgeons operating together are superior to one laparoscopic surgeon assisted by a more junior colleague.⁵

There are disadvantages to this system. First, it is time consuming. Under the new consultant contract, we have both included the travel time to the other's hospital to assist in supporting professional activity sessions. We have had good support from our respective trusts and from our colleagues who have referred appropriate patients to maintain the high through-put of cases.

Conclusions

The combination of laparoscopic fellowship and mutual mentoring provides a relatively short time-basis for setting up and developing a successful laparoscopic urological service. This approach could represent an alternative option for laparoscopic training.

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