

Tuesday 24 June 15.15–17.00
Surgical Techniques
Chairmen: A. Joyce and G. Janetschek

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Learning radical perineal prostatectomy

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INTRODUCTION

In the treatment of organ-confined prostate cancer, radical perineal prostatectomy (RPP) is as therapeutically effective as open radical

retropubic prostatectomy but is associated with similar low levels of perioperative morbidity as the laparoscopic radical retropubic prostatectomy. RPP is regarded as difficult to master.

PATIENTS AND METHODS

We retrospectively reviewed 100 consecutive patients with localised adenocarcinoma of the prostate treated by RPP by one urologist

between 1996 and 2002. We compared the first 50 patients with the subsequent 50 and assesses staging before and after RPP, surrogate factors of the learning process, postoperative urinary incontinence and oncological outcome at 3 years.

RESULTS

The initial 50 patients had a significantly higher preoperative PSA level (median 9.3 vs

7.5 ng/mL, $P=0.03$) but there was no difference in preoperative clinical stage, and postoperative pathological stage or margin status between the groups. The initial 50 patients had a significantly higher estimated blood loss (600 vs 400 mL, $P=0.003$) and transfusion rate (seven vs one, $P=0.03$).

There was no difference in the length of hospital stay ($P=0.11$) or incidence of urinary incontinence ($P=0.66$). The Kaplan-Meier 3-year PSA recurrence-free survival estimates

for the first and subsequent 50 patients was 62% and 69%, respectively. This difference was not significant (exact Fisher's test $P=0.59$, log-rank hazard ratio 0.77, 95% CI 0.38–1.55).

CONCLUSION

The oncological outcome of RPP is not compromised by the difficulties in learning the procedure.

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Effectiveness and quality-of-life impact of local infiltration anaesthesia for extended (13-) core prostatic biopsy: a randomized study

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OBJECTIVE

To evaluate the effectiveness of local infiltration anaesthesia for extended (MD Anderson protocol) 13-core prostatic biopsy by evaluating pain, morbidity and quality of life (QoL) in a prospective randomized study.

PATIENTS AND METHODS

Sixty-four men suspected of having cancer of the prostate were randomized to receive 15 mL of local infiltration anaesthesia and a diclofenac suppository (no infiltration) before a the 13-core prostatic biopsy that sampled the peripheral (including anterior horn), transitional and central zones. All patients completed a questionnaire evaluating the intensity of the probe and needle biopsy pain using a visual analogue scale (VAS), and the psychological impact immediately after biopsy. The delayed impact of the procedure

on the domains of pain, physical and sexual function, and work performance, with the overall QoL was evaluated 4 weeks later. All patients completed the IPSS questionnaire at both times.

RESULTS

There were 32 patients in each arm (mean age 65.5 years). The mean VAS pain scores for the probe (1.8) and the needle biopsies (1.9) after local infiltration anaesthesia were significantly lower than in the diclofenac group (3.7, $P=0.002$; and 4.7, $P<0.001$ respectively); 86% of the patients felt that the pain of the procedure was less than expected after having local infiltration (24% diclofenac group, $P=0.001$). At 4 weeks after biopsy the overall pain intensity ($P=0.001$) and frequency ($P=0.006$) were lower in the local infiltration group. There was no difference in the incidence of dysuria, haematuria, or rectal bleeding for the two groups, but

haemospermia lasted longer after local infiltration. There was no difference after biopsy in the interference with sex life for the two groups. Three patients in the diclofenac group (none in the local group) lost working days after biopsy. There was no difference in the total IPSS and QoL from to urinary symptoms ($P=0.8$ and 0.9 respectively) scores for the two groups at 4 weeks after biopsy.

CONCLUSIONS

Local anaesthesia infiltration is a safe and effective form of analgesia for the extended (13-core) prostate biopsy. It results in a lower intensity, duration and frequency of pain, with no additional LUTS, sexual dysfunction or morbidity, than a diclofenac suppository. The results favour the routine use of infiltration anaesthesia during extended-core prostatic biopsy.

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Acquiring surgical skills: is the 'learning curve' different for open surgery and laparoscopy?

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INTRODUCTION

Mastering a procedure could be defined as the time taken and the number of procedures required to be able to confidently perform the procedure independently with a reasonable outcome. We compared the 'learning curve' for laparoscopic and open surgery by training a group of medical students to perform the same procedure by two different methods.

METHODS

Thirteen pre-clinical medical students with no previous surgical training were given intensive coaching for 4 h/week for 12 weeks in knot-tying, tissue handling, tissue dissection and cholecystectomy in pig liver,

performed by open and laparoscopic methods. At the end of this period, their open and laparoscopic skills were assessed by three examiners using seven criteria, including dissection of the cystic artery, cystic duct, instrument handling, knot tying/clipping, tissue dissection, tidiness of the gall bladder specimen and liver bed, and the time taken for the procedures. Average scores for each criterion and aggregate scores for each candidate in the two methods were calculated. The scores and the time taken were compared using Student's *t*-test.

RESULTS

Comparing the overall scores showed no significant difference in the two techniques

($P=0.057$) but the difference between the techniques was significant for tissue dissection ($P=0.024$), tidiness of gall bladder ($P=0.034$) and liver ($P=0.016$) specimens, and the time taken for the two techniques ($P<0.001$).

CONCLUSION

Our study showed that the overall 'learning curves' for open and laparoscopic surgery are similar. However, for finer dissection, identifying the correct planes and two-dimensional perception, laparoscopy requires more experience and more operative time. Overall, with equal experience, laparoscopy takes more time to finish the same level of task by open surgery by a proportion of 1.5.

041

Augmentation cystoplasty: comparison between open and laparoscopic approaches

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INTRODUCTION

Augmentation cystoplasty (AC) is used to reconstruct a bladder with various disorders affecting compliance or capacity when conservative measures fail. This study compares the open and laparoscopic approach.

PATIENTS AND METHODS

Between 1999 and 2002, 31 patients underwent AC with or without catheterizable stoma, either by open (16) or laparoscopic (15) approaches. Comparisons between the

approaches included operative duration, blood loss, time to oral intake afterward, time to discharge, hospital stay and quality of life using the Bladder and Bowel Control Scales before and 6 months after AC.

RESULTS

The respective means for the open and laparoscopic procedures were: operative duration, 7.5 h and 4.2 h; blood loss 212 and 242 mL; time to oral intake 4.8 and 3.2 days ($P<0.004$); time to discharge 6.5 and 3.6 days ($P<0.001$); and hospital stay 7.4 and 5.4 days ($P<0.002$). Bladder control was

improved after both open ($P<0.002$) and laparoscopic AC ($P<0.001$) with no effect on bowel function ($P=0.9$). Bladder function improved more after laparoscopic than open AC ($P<0.04$).

CONCLUSION

The laparoscopic approach has measurable advantages over open surgery although the operative duration is longer. These differences identified in a retrospective series ideally should be compared in patients prospectively randomized to either method.

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The impact of previous intra-abdominal surgery on laparoscopic renal surgery

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*Freeman Hospital, Newcastle upon Tyne, UK***INTRODUCTION**

Adhesions are a well recognized complication of intra-abdominal surgery. Laparoscopic renal surgery is becoming increasingly common in the UK, but there are concerns about the potential complications in patients with a history of abdominal surgery. We examined the effect of previous intra-abdominal surgery on patients undergoing laparoscopic renal surgery.

PATIENTS AND METHODS

From our database, 82 patients were identified who underwent the following laparoscopic procedures: simple nephrectomy

(27), radical nephrectomy (26), pyeloplasty (20) and nephro-ureterectomy (nine), between March 2001 and September 2002. Pneumoperitoneum was established using Hasson's technique. A transperitoneal approach was used with a standard three-port technique. In right-sided cases a 5 mm epigastric port was placed for liver retraction if required.

RESULTS

In group 1, 67 patients had had no previous surgery; five (7.5%) patients were converted to an open procedure for persistent bleeding (two), failure to progress (two) or duodenal

tear (one). In group 2, 15 patients had previous surgery. Four patients had other surgical complications: in group 1, haematoma and prolonged leak after nephrectomy (one each) and group 2, a diaphragmatic tear and prolonged leak after pyeloplasty (one each).

CONCLUSION

This study suggests that transperitoneal laparoscopic renal surgery is safe in patients with a history of previous intra-abdominal surgery, and is not associated with a significantly increased risk of surgical complications.

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Retroperitoneal laparoscopy: an acceptable 'learning curve' leads to low morbidity and the best approach to the retroperitoneal viscera

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*Departments of Urology, *Anaesthesia and, Royal Hallamshire Hospital, Sheffield, UK***INTRODUCTION**

Recent technological and surgical improvements have lead to the optimization and popularization of laparoscopic urological surgery. However, there is minimal formalized training and little is known about the reproducibility of published results. The retroperitoneal approach to the kidney has the potential advantage of avoiding a peritoneal breach, but is difficult to learn because there are no traditional landmarks. We review the learning process of a consultant urologist who developed retroperitoneal laparoscopy in a large teaching hospital.

PATIENTS AND METHODS

From April 2000, 130 patients underwent laparoscopic upper tract urological procedures. The clinical and surgical details, e.g. operative duration, complications and other variables, were compared over time; precise rehabilitative details were collected.

RESULTS

There were improvements in the operative duration, conversion rate and number of complications for all procedures. Nephrectomy (81, of which 50 were for benign disease) and pyeloplasty (36) were the

commonest procedures. The nephrectomy conversion rate was 11% and the mean operative duration decreased from 300 to 110 min. The overall mortality (none) and morbidity (10%) rates were low. Most patients (90%) were comfortable (free of opiates) and eating by 2 days after surgery; the median (range) time to discharge was 3 (2-10) days.

CONCLUSIONS

Although retroperitoneal laparoscopy is daunting to learn, with sufficient interest, workload and responsibility, good results can be achieved within a short period.

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Comparison of extraperitoneal and transperitoneal laparoscopic radical prostatectomy

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Extraperitoneal laparoscopic radical prostatectomy (ELP) developed from the transperitoneal approach (TLP); as we are already experienced in TLP, we evaluated ELP.

PATIENTS AND METHODS

One hundred consecutive patients underwent ELP, performed by two surgeons. This series was compared to the previous 100 TLP performed by the same surgeons.

RESULTS

The demographics were similar in both groups. Oncological variables were less

favourable in the ELP than the TLP group, with a mean (SD) PSA level of 10.4 (8) ng/mL vs 8.9 (4.7) ng/mL, and a lower proportion of T1c cancers, although the number of pT2 and pT3 tumours were similar (two-thirds vs a third). Of patients in the ELP and TLP groups, 77% vs 67% underwent nerve-sparing procedures, and the respective mean operative duration was 168 and 183 min. There were no major complications, with minor complications in 10% and 11%, respectively. The respective transfusion rates were 3% and 4% TLP. Two ELPs were converted to TLP, with no procedures converted to open surgery. Margins were positive in 21% ELP and 16% TLP; 10 of 21 (48%) of the positive margins in the ELP group occurred in the first 25 cases.

CONCLUSION

The two procedures involve similar steps in a different order, hence the similarities. The ELP avoids bladder dissection, perhaps explaining the time saved. The surgical perspective is different, being more vertical in ELP with less space in which to work. This may reflect the initial experience, which could explain the high proportion of positive margins in the early ELPs. The positive margins may also result from the higher proportion of nerve-sparing procedures in the ELP group. We conclude that the procedures are similar, and find them both useful.

Funding: Prostate Research Campaign UK

045

A randomized controlled trial of human vs telerobotic access to the kidney during percutaneous nephrolithotomy

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*Guy's and St Thomas' Hospitals, London, and *Johns Hopkins Hospital, Baltimore, USA***INTRODUCTION**

Although the first remote robotic surgical procedure was performed in 2001, there has been no scientific evidence to date to show that telerobotics is an effective surgical tool. We present the results of a trans-Atlantic telerobotic trial.

METHODS

Using a specially designed and validated kidney model, a percutaneous needle was inserted 304 times, by either a robotic arm (152) or a urologist (152). The order was decided by tossing a coin, except for a subgroup of 30 remote robotic procedures.

These were controlled by urologists at Johns Hopkins, via four ISDN lines. A successful needle insertion was confirmed by introducing contrast medium or a guidewire. For the trans-Atlantic phase the operators viewed real-time monitors showing the robotic arm and a fluoroscopy image of the model.

RESULTS

All procedures were successful within three passes, with a median (interquartile range) of 35 (25–52) s for the human and 56 (41–80) s for the robotic attempts. The robot was slower ($P < 0.001$ Mann-Whitney U -test and multivariate linear regression) than the human to complete the insertions, but was

more accurate ($P < 0.05$, chi-squared test and multiple logistic regression), as it made fewer passes (mean 1.138) than the human operator (mean 1.257). All surgeons required fewer passes when using the robotic arm. The mean time taken for trans-Atlantic robotic puncture (65.1 s) was equivalent to the time taken for local robotic puncture (65.9 s), with no difference in accuracy.

CONCLUSIONS

Telerobotics is an accurate and feasible tool for future minimally invasive surgery.

Funding: Grant from the Friends of Guy's & St Thomas' Hospitals

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Interim results of an ongoing audit on the indications, complications and outcome of suprapubic catheter insertion

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OBJECTIVE

To review of the indications, safety and outcome of complex suprapubic catheter (SPC) insertion.

PATIENTS AND METHODS

Between 1996 and 2002, 110 patients had a SPC inserted in theatre (median age 75 years, range 33–95; male to female ratio 1 : 1); 98% had significant comorbidity and 24% had had previous pelvic surgery. We retrospectively and prospectively reviewed the notes of 106 patients as part of an ongoing audit.

RESULTS

The results and complications are shown in Table 1. Most patients with neuropathic bladders (NB) had multiple sclerosis (34%) or cerebrovascular accidents (32%); BOO in 71% was caused by urethral stricture; 85% had previously had an unsatisfactory urethral catheter.

Group	n (%)	Mean (range) ASA grade	Complications*		Many A&E attendances*
			During	After	
NB	62 (58)	3.8 (1–4)	5(8)	11 (18)	35 (55)
BOO	39 (36)	3.3 (1–4)	3 (8)	6 (15)	10 (26)†
Incontinence	5 (5)	3.0 (1–4)	0	1	0
Total	106	3.4	8%	16%	40%

*n (%) of patient group; †P < 0.05 vs NB.

In 104 cases the procedure was undertaken either by a consultant (53%) or middle grade (46%); 69% of patients had general anaesthetic (41% sedoanalgesia with local anaesthetic) and 53% had antibiotic cover. Two deaths occurred after surgery, one related to postoperative infarction, the other a bowel perforation at the time of insertion by a middle grade clinician. The median length of hospital stay was 5.6 days and strongly correlated with ASA score ($P < 0.05$). Complications included SPC-related UTI (22%) and SPC site infection (18%), blockage

and bleeding (11%) and exacerbation of comorbidity (47%). Of the patients, 53% had perioperative antibiotics and 8.6% of these had symptoms of UTI. For the 47% with no antibiotics 41% had UTI. However, there was no correlation between perioperative antibiotics and long-term recurrent UTI.

CONCLUSION

Even under optimal conditions, inserting a SPC in theatre is associated with significant comorbidity and mortality.

047

To knot or not to knot? Sutureless haemostasis compared with the surgeon's knot

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INTRODUCTION

The surgeon's knot has been held in the past as the most secure method of vascular haemostasis. Although it is still taught in basic surgical skills courses as the 'gold standard', no scientific evidence attests to its superiority over either new forms of haemostasis, or indeed the much maligned 'granny knot'. New haemostatic techniques confer a significant time advantage over sutured knots, but no non-commercial study

has compared the safety of these new methods with conventional sutures.

MATERIALS AND METHODS

A vascular ligation model was devised using *ex vivo* porcine carotid arteries. Coloured normal saline was infused via a pressure-monitoring device through the artery. The end lumen was occluded by five different techniques; braided suture in a surgeon's

knot, a monofilament suture in a granny knot, a metallic clip (Ligaclip®), a bipolar diathermy system (Ligasure®), and an ultrasonically activated scalpel (Ultracision®). The baseline diameter of the vessels was measured at an intraluminal pressure of 120 mmHg. The vessels were then subjected to 5 min of sustained pressures at 190 and then at 300 mmHg. The internal carotid artery was used as it does not have branches. Loss of haemostasis was evident by leakage of the coloured perfusion fluid.

RESULTS

Material	No. leaks at (mmHg)		Mean diameter of vessels, mm
	190	300	
Braided suture/surgeon's knot	0/32	0/32	5.34
Monofilament suture/granny knot	0/32	0/32	5.31
Metallic clip	0/32	0/32	5.32
Bipolar diathermy (Ligasure)	0/50	0/50	5.28
Ultrasonic scalpel (Ultracision)	5/50	6/50	5.18

All methods were haemostatic in vessels of <5 mm in diameter. All except the Ultracision were haemostatic in vessels of >5 mm; three

of 27 (11%) leaked at 5–6 mm, and three of five leaked at >6 mm. However, the manufacturer's recommendation is that it

should not be used in vessels of >5 mm, showing that for smaller vessels the ultrasonic scalpel is as safe as conventional methods.

CONCLUSION

If used in compliance with the manufacturer's recommendations, all the methods tested performed as well as the traditional surgeon's knot. Interestingly a 'granny knot tied with monofilament performed well at suprphysiological pressures, leading one to question further some of the traditional dictats in surgical training.

054

Conservative lymph node surgery for men with carcinoma of the penis

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INTRODUCTION

The treatment of lymph node micrometastases by radical groin dissection for men with carcinoma of the penis is known to improve survival at the expense of considerable morbidity. However, it is clear that all non-operative methods of diagnosis fail to detect micrometastases in 15–20% of men. We therefore investigated the value of a more conservative node dissection in managing these patients.

PATIENTS AND METHODS

After treating the primary lesion men with carcinoma of the penis and impalpable nodes

underwent conservative groin dissections confined to the superficial nodes medial to the femoral vessels, together with any deep nodes between the femoral artery and vein. The saphenofemoral junction was preserved in all cases.

RESULTS

Over a 36-month period we undertook 53 conservative dissections in 35 patients. The median number of nodes removed was eight and the mean follow-up 17 months. Two patients with palpable contralateral disease (13 dissections) and two with impalpable disease (20 bilateral dissections) had micrometastases (15% and 5%, respectively).

All the node-positive patients had stage T2 disease initially. Three of the four patients with micrometastatic disease underwent radical dissections and remain clear of tumour. One patient refused further surgery and has since died from recurrent disease. There were two minor wound complications but no leg lymphoedema after surgery.

CONCLUSIONS

In patients with T1 or T2 disease the risk of micrometastatic nodal disease is small. Conservative groin dissection will diagnose these patients with minimal risk of morbidity, potential benefit to some patients and no hazard to long-term outcome.