

Laparoscopic Colorectal Surgery Course & Master Class

Dates: 26th and 27th September 2012

Venue: Prince Charles Hospital, Merthyr Tydfil, Wales

Course Manual

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Welcome



Dear Delegate,

Welcome to the third Laparoscopic Colorectal Course & Masterclass at Prince Charles Hospital in Merthyr Tydfil. This course is aimed at surgical trainees as well as consultants wishing to gain expertise in this field and has been very popular and very well received in previous years.

This two day event is designed to provide plenty of exposure to live operations for a range of indications, including colorectal cancer as well as benign conditions. In addition to the live links, there will be structured lectures/ presentations covering various aspects of the speciality, delivered by a faculty of experienced laparoscopic colorectal surgeons. The faculty/ delegate ratio is deliberately kept high to achieve a comfortable and friendly environment with plenty of opportunity for delegates to interact with the faculty and the organizers, both in the auditorium as well as during the course dinner.

Looking forward to meeting up with you during the course, which, I hope you will find both instructive and enjoyable.

Best wishes,

Prof. P. N. Haray
Course Convenor

Candidate List

Mr Daniel Thomas	Associate Specialist	Queen Mary's Hospital, Sidcup
Mr Chiaka Anthony Anozie	Consultant	Selkirk General Hospital, Canada
Mr Jay Nath	Specialist Registrar	Russells Hall Hospital, Dudley
Mr Ben Carrick	Specialist Registrar	Wansbeck General Hospital, Ashington
Mr Jonathan Wild	Specialist Registrar	Northern General Hospital, Sheffield
Mr Senthil Ganapathi	Specialist Registrar	University Hospital of Wales, Cardiff
Mr Alastair Brookes	Specialist Registrar	Queen Elizabeth Medical Centre, Birmingham
Ms Suchira Sarkar	Specialist Registrar	Eastbourne District General Hospital
Mr David Chan	Specialist Registrar	Wrexham Maelor Hospital
Mr Abraham Ayantunde	Senior Clinical Fellow	Southend Hospital, Westcliff-on-Sea
Mr Rajesh Chidambaranath	Trust Grade Doctor	Prince Charles Hospital, Merthyr Tydfil
Mr Pervez Akhtar	Senior Clinical Fellow	Lewisham University Hospital, London
Mr Neil Yeomans	Specialist Registrar	St James's University Hospital, Leeds
Ms Emma Collins	Specialist Registrar	Nottingham City Hospital
Mr Shahzad Ather	Associate Specialist	Morrison Hospital, Swansea
Mr Mubashar Hussain	Specialist Registrar	Wishaw General Hospital
Mr Buddika Jayathilaka	Specialist Registrar	Withybush General Hospital, Haverfordwest
Mr Kai Leong	Specialist Registrar	Russells Hall Hospital, Dudley, Birmingham
Mr Jun Cho	Specialist Trainee	University Hospital of Wales, Cardiff

CORE COMMITTEE AND FACULTY

Professor P N Haray Consultant Colorectal Surgeon Course Convenor	Prince Charles Hospital, Merthyr Tydfil
Mr Parin Shah Associate Specialist, Colorectal Surgery Chief Course Organiser	Prince Charles Hospital, Merthyr Tydfil
Mr Ashraf Masoud Consultant Colorectal Surgeon	Prince Charles Hospital, Merthyr Tydfil
Mr Jared Torkington Consultant Colorectal Surgeon	University Hospital of Wales, Cardiff
Mr Gethin Williams Consultant Colorectal Surgeon	Royal Gwent Hospital, Newport
Mr Umesh Khot Consultant Colorectal Surgeon	Singleton Hospital, Swansea
Mr Chelliah Selvasekar Consultant Colorectal Surgeon	Christie Hospital NHS Foundation Trust, Manchester

LOCAL ORGANISERS AND HOSPITALITY

Mr Nader Naguib Associate Specialist in General Surgery	Prince Charles Hospital, Merthyr Tydfil
Mr Mahmoud Abdel Dayem Speciality Doctor in General Surgery	Prince Charles Hospital, Merthyr Tydfil
Dr Rhys Thomas Core Trainee in General Surgery	Prince Charles Hospital, Merthyr Tydfil
Dr Eleanor Anwen Williams Core Trainee in General Surgery	Prince Charles Hospital, Merthyr Tydfil
Dr Elizabeth Goodchild Foundation year Trainee	Prince Charles Hospital, Merthyr Tydfil

Programme

Day 1

8.30 – 8.45

Coffee & Registration

8.45 – 8.50

Welcome & Introduction to the Course

8.50 – 9.10

Overview of Laparoscopic Colorectal Surgery

9.10 – 9.20

Case Presentation of 1st live link case

9.20 – 12.30

Laparoscopic Anterior Resection

Live link to Operation Theatre

Presentations by Moderators:

- o Relevant anatomy
- o Port Positioning
- o The Stepwise Approach to Anterior Resection
(Videos/ discussion around specific steps)

12.30 – 13.15 Lunch

13.15 – 13.25

Case Presentation of 2nd live link case

13.25 – 15.15

Laparoscopic Right Hemicolectomy

Live link to Operation Theatre

Presentations by Moderators:

- o Theatre Set Up
- o Relevant anatomy
- o Port Positioning
- o The Stepwise Approach to Right Hemicolectomy
(Videos/ discussion around specific steps)

15.15 – 15.30 Coffee

15.30 – 15.45

Anaesthetic and Peri-Operative considerations

15.45 – 16.00

Enhanced Recovery Concepts

16.00 – 17.00

Presentations/ video lectures by various faculty

19.00

Course Dinner at the Ty Newydd Country House Hotel

Programme

Day 2

8.30 – 8.45

8.45 – 9.00

Coffee & Registration

Case Presentation of 3rd live link case

9.00 – 12.30

Laparoscopic Multi Segmental Resection Live link to Operation Theatre

Presentations by Moderators:

- o Flexure mobilisation
- o Left hemicolectomy

(Videos/ discussion around specific steps)

12.30 – 13.15 Lunch

13.15 – 14.15

- o Pouch Surgery video presentation
- o Laparoscopy in IBD
- o Training in Laparoscopic Colorectal Surgery

14.15 – 15.15

Tips, Tricks and Potential Hazards
(Videos and Discussion)

15.15 – 15.30

Formal Feedback
Education Centre Manager + IT

15.30 – 16.00

**Coffee
Certification and Close**

Live Operating will be carried out by Prof. P. N. Haray with interactive moderating by experienced laparoscopic colorectal surgeons.

During Live Link – the moderators will give PowerPoint presentations/ video presentations on different aspects of laparoscopic colorectal surgery.

Selected Reading Material and Relevant Publications

Steps for Laparoscopic Anterior Resection of Rectum

1. Port positions and patient positioning
2. Omentum to supracolic compartment & small bowel stacking.
3. Identify right ureter.
4. Start medial dissection at the promontory.
5. Identify left ureter, then left gonadal, pelvic nerves.
6. Protect left ureter with surgical® and Pedicle dissection.
7. Identify ureter through both windows of mesentery either side of pedicle.
8. Transect pedicle, confirm haemostasis.
9. Left lateral dissection, identify left ureter and proceed up to peritoneal reflection; IMV high tie and splenic flexure mobilisation, if required.
10. Mesorectal Dissection - Prepare Rectum for Division
11. Intra-corporeal cross stapling of rectum at appropriate level protecting lateral and anterior structures & Grasp stapled end of specimen.
12. Left iliac fossa transverse incision for specimen delivery; protect wound and deliver specimen by the stapled end.
13. Complete mesenteric ligation, proximal bowel division and prepare proximal bowel for anastomosis.
14. Close wound, re-establish pneumoperitoneum
15. Intra-corporeal bowel anastomosis with no tension, no twist and vital structures protected.
16. Close incisions.
 - 10.a. Right mesorectal dissection up to peritoneal reflection.
 - 10.b. Posterior dissection (presacral plane down to levator), keep left ureter in view.
 - 10.c. Divide peritoneal reflection anteriorly and dissect till seminal vesicles/ vaginal fornix.
 - 10.d. Complete both lateral dissection, identify the ureters all the way.
 10. e. Anterior dissection keeping to the plane just posterior to the vesicles/ vagina
 - 10.f. Cross stapling deep pelvis
 - 10.g. Laparoscopic APER

Steps for Laparoscopic Right Hemicolectomy

1. Port positions and patient positioning.
2. Omentum to the supracolic compartment and small bowel stacking.
3. Identify ileocolic pedicle.
4. Start dissection at the lower leaf of ileocolic pedicle.
5. Identify duodenum through mesenteric window.
6. Protect duodenum with surgicel®.
7. Dissect upper leaf of ileocolic pedicle.
8. Identify duodenum through both mesenteric windows.
9. Transect pedicle.
10. Mobilise right colon & hepatic flexure from medial to lateral aspect. Protect Duodenum with surgicel®.
11. Start lateral mobilisation at distal ileum, then caecum and then ascending colon.
12. Mobilise hepatic flexure & confirm full mobilisation of the segment to be resected
13. Free up proximal transverse colon towards hepatic flexure protecting gallbladder & duodenum.
14. Free up omentum from transverse colon at planned site of resection.
15. Midline transumbilical incision for specimen delivery.
16. Protect wound, deliver specimen, complete mesenteric ligation.
17. Side to side ileo-transverse anastomosis and specimen resection.
18. Close incisions.

The Merthyr Coaching Tool for Laparoscopic Colorectal Surgery

Mr. P. R. Shah, Professor P. N. Haray

Abstract:

Laparoscopic surgery is being increasingly offered to patients across the world for benign and malignant colorectal disease. National Training programmes are being developed in some countries to improve standards and train surgeons. Meanwhile, many surgeons have been and continue to be trained thorough a variety of mechanisms. Currently there appear to be no publications in the international literature suggesting a standard format for the provision of such training. We present here a coaching tool that we have developed and used effectively to provide targeted training for laparoscopic colorectal surgery.

Introduction:

Laparoscopic surgery for colorectal disease is becoming increasingly used across the world following the publication of the results from the CLASICC trial as well as NICE guidance (1, 2). In the UK, more and more surgeons are beginning to be trained through a variety of channels to undertake these procedures. National training programmes are being set up in some countries and it is envisaged that training will be imparted through regional centres (3). In addition, there are a considerable number of experienced surgeons providing training informally as well as formally through structured preceptorship programmes (3, 4). There is, therefore, an urgent need for a standard format for the provision of this training.

Aim:

To develop a coaching and assessment tool to aid the provision of training in laparoscopic colorectal surgery.

Methods:

We have been undertaking laparoscopic colorectal surgery at our Hospital since 1998 (5). Our initial experience was with benign disease and participation in the CLASICC trial. Since 2006, our range of laparoscopic procedures has expanded to include the majority of elective colorectal surgery for both benign and malignant pathology. The unit has been training Middle grade and consultant surgeons (preceptorship) and to support this training, we have developed a simple tool which we have used very effectively to provide targeted training for laparoscopic colorectal surgery. Various factors used to assess a trainee are case selection, safe access, exposure, port positioning, patient positioning, small bowel stacking, use of retraction, awareness, identification & protection of vital structures, safe vascular pedicle dissection & division, various aspect of bowel handling & mobilisation, Bowel division & anastomosis, use of energy devices, extra- corporeal component, team Working & communication. To support this training, we have developed a simple tool (appendix I), which we have used very effectively over the past 3 years.

Results:

This tool has been used initially in self assessment by the two authors over 225 cases. Subsequently, it has been used on 8 trainees of varying levels of experience and 11 consultant colorectal surgeons over a total of 66 cases to assess the performance as well as provide targeted feedback.

The Merthyr Coaching Tool for Laparoscopic Colorectal Surgery

Discussion:

Unlike laparoscopic cholecystectomy, the laparoscopic colorectal operation has a higher level of complexity because of several factors including multiple quadrant working, several intra-corporeal instruments (some of which will be out of the field of vision), care during bowel handling, the use of high energy devices for dissection and a rapidly expanding range of instrumentation etc (6). Furthermore, the majority of such procedures involve resections for malignancy and it is imperative that good technique and adherence to oncological principles are adopted.

Laparoscopic surgery lends itself very well for a structured approach to training because of the fact that the trainee and the trainer have the same view of the procedure and the trainer can be actively involved without even being scrubbed in as an assistant. Like all surgical procedures, the laparoscopic colorectal operation can be conveniently broken down into individual components and training imparted either for the entire procedure or for specific sections, depending on the expertise of the trainee.

The tool that we have developed (Appendix 1) has been invaluable as a coaching aid in identifying specific areas for targeted training and for providing constructive feedback. It has also been an effective tool for self assessment. There are several publications outlining different ways of assessing and evaluating laparoscopic cholecystectomies. Some of these have detailed weighted scoring systems which have been carefully developed (7, 8) and have been found to be useful mainly in trainees (9). However, because of the complexity of laparoscopic colorectal procedures and the fact that the majority of surgeons being trained in this technique are likely to be either consultants or senior trainees, we feel that such an approach with a graduated scoring system would not be suitable. We have therefore, deliberately adopted a simpler approach and each step that is assessed is marked simply as either 'needing improvement' or 'competent'. We have used this effectively as a coaching tool in over 225 cases for self assessment, for surgeons in training as well as for consultants who are being preceptored.

Conclusion:

This paper has demonstrated an easily reproducible tool for standardising the assessment and providing feedback for laparoscopic colorectal surgery. Preliminary results have been encouraging though formal validation has yet to be completed. In due course, this tool can be developed into a weighted scoring system for accreditation and revalidation.

The Merthyr Coaching Tool for Laparoscopic Colorectal Surgery

References

1. NICE, Colorectal cancer - laparoscopic surgery (review). <http://www.nice.org.uk/Guidance/TA105>, 2006.
2. Guillou PJ, Quirke P, Thorpe H, et al., Short-term endpoints of conventional versus laparoscopic-assisted surgery in patients with colorectal cancer (MRC CLASICC trial): multicentre, randomised controlled trial. *Lancet*, 2005. 365(9472): p. 1718-26.
3. ACPGBI, National Training Programme in Laparoscopic Colorectal Surgery. http://www.acpgbi.org.uk/assets/documents/Newsletter_June_2008.pdf, 2008.
4. ALS, Laparoscopic Colorectal Surgery Preceptorship Programme. <http://domain1686280.sites.fasthosts.com/index.php?page=preceptorship-programme>, 2008.
5. Shah PR, Joseph A, and Haray PN, Laparoscopic colorectal surgery: learning curve and training implications. *Postgrad Med J*, 2005. 81(958): p. 537-40.
6. Hubner M, Demartines N, Muller S, et al., Prospective randomized study of monopolar scissors, bipolar vessel sealer and ultrasonic shears in laparoscopic colorectal surgery. *Br J Surg*, 2008. 95(9): p. 1098-104.
7. Taffinder N, Sutton C, Fishwick RJ, et al., Validation of virtual reality to teach and assess psychomotor skills in laparoscopic surgery: results from randomised controlled studies using the MIST VR laparoscopic simulator. *Stud Health Technol Inform*, 1998. 50: p. 124-30.
8. Grantcharov TP, Bardram L, Funch-Jensen P, et al., Assessment of Technical Surgical Skills. *The European Journal of Surgery*, 2002. 168(3): p. 139-144.
9. Torkington J, Smith SG, Rees BI, et al., Skill transfer from virtual reality to a real laparoscopic task. *Surg Endosc*, 2001. 15(10): p. 1076-9.

Appendix I: Coaching Tool for Laparoscopic Colorectal Surgery

Date:	Procedure:	Trainee:	Trainer:
1.	Case Selection	N/A	Needs Improvement Competent
2.	Safe Access	N/A	Needs Improvement Competent
3.	Exposure		
	Port positioning	N/A	Needs Improvement Competent
	Patient positioning	N/A	Needs Improvement Competent
	Small bowel stacking	N/A	Needs Improvement Competent
	Use of retraction	N/A	Needs Improvement Competent
4.	Vital Structures		
	Awareness of.....	N/A	Needs Improvement Competent
	Identification of	N/A	Needs Improvement Competent
	Protection of	N/A	Needs Improvement Competent
5.	Vascular Pedicle		
	Dissection of vascular pedicle	N/A	Needs Improvement Competent
	Division of vascular pedicle	N/A	Needs Improvement Competent
	Protection of vital structures	N/A	Needs Improvement Competent
	Selection of appropriate instruments	N/A	Needs Improvement Competent
6.	Bowel Mobilisation		
	Bowel handling	N/A	Needs Improvement Competent
	Handling of pathology	N/A	Needs Improvement Competent
	Medial dissection	N/A	Needs Improvement Competent
	Lateral dissection	N/A	Needs Improvement Competent
	Superior dissection	N/A	Needs Improvement Competent
	Combination.....	N/A	Needs Improvement Competent
7.	Bowel Division – Intra-Corporeal/ Extra-Corporeal		
	Appropriate instrumentation	N/A	Needs Improvement Competent
	Dissection of mesentery	N/A	Needs Improvement Competent
	Protection of vital structures	N/A	Needs Improvement Competent
	Division of bowel	N/A	Needs Improvement Competent
8.	Anastomosis – Intra-Corporeal/ Extra-Corporeal		
	Technique	N/A	Needs Improvement Competent
	Instrumentation	N/A	Needs Improvement Competent
9.	Use of Energy devices		
	Appropriate settings	N/A	Needs Improvement Competent
	Spatial awareness of instruments	N/A	Needs Improvement Competent
	Awareness of residual energy	N/A	Needs Improvement Competent
10.	Extra- corporeal component	N/A	Needs Improvement Competent
11.	Team Working & Communication	N/A	Needs Improvement Competent
12.	Overall Performance	N/A	Needs Improvement Competent

Preceptorship Programme for Laparoscopic Colorectal Surgery

Prof Haray has established a structured programme to train other consultant surgeons in Wales since May 2008. This includes demonstration 'Master Classes' to consultant surgeons and their teams at Prince Charles Hospital and then visiting them at their base hospitals to provide on site (outreach preceptorship) training. Though often challenging, this has proved an excellent programme, imparting advanced surgical skills to senior colleagues.

To date, this service has facilitated either the commencement of a laparoscopic service for colorectal cancers or extended existing levels of service at a total of seven hospitals across South and West Wales. Eleven Consultants have been trained across these hospitals and several more have attended Masterclasses. 2/3 consultants are currently still in the programme and 2 more have expressed an interest in joining soon.

Structured Preceptorship Programme for Consultant Surgeons:

1. Mr. A. Masoud Consultant Colorectal Surgeon, Prince Charles Hospital, Merthyr Tydfil - January to June 2008.
2. Mr O. Umughele, Consultant Colorectal Surgeon, Withybush Hospital, Haverfordwest – May to October 2008.
3. Mr S. McCain, Consultant Colorectal Surgeon, Royal Gwent Hospital, Newport – September 2008 – Feb 2009.
4. Mr K. Swarnkar, Consultant Colorectal Surgeon, Royal Gwent Hospital, Newport – September 2008 – Feb 2009.
5. Mr. C. Arun - Consultant Colorectal Surgeon, Nevill Hall Hospital, Abergavenny – Jan - October 2009.
6. Mr.W. Sheridan, Consultant Colorectal Surgeon, West Wales General Hospital, Carmarthen – November 2009 – on going.
7. Mr A. Woodward, Consultant Colorectal Surgeon, Royal Glamorgan Hospital, Llantrisant – November 2009 – March 2010.
8. Mr J. Mathias, Consultant Colorectal Surgeon, Withybush Hospital, Haverfordwest – January to May 2010.
9. Mr. A. Joseph, Consultant Surgeon, Prince Charles Hospital, Merthyr Tydfil – September 2010 - January 2011.
10. Mr. A. Saklani, Locum Consultant Colorectal Surgeon, Princess of Wales Hospital, Bridgend – November 2010 – on going
11. Mr. G. Pritchard, Consultant Colorectal Surgeon, Princess of Wales Hospital, Bridgend – December 2010 – on going.
12. Mr. S. Harries, Consultant Surgeon, West Wales General Hospital Carmarthen – February 2010 – Masterclass only.
13. Mr. M. Henwood, Consultant Surgeon, West Wales General Hospital Carmarthen – February 2010 – Masterclass only.
14. Preceptorship for Mr O. Nur, Locum Consultant Surgeon, Withybush Hospital, Haverfordwest – Masterclass completed, Preceptorship to be booked.
15. Ms D. Clements, Consultant Colorectal Surgeon, Royal Glamorgan Hospital, Llantrisant – to be booked.
16. Mr A. Selvam, Consultant Surgeon, West Wales General Hospital Carmarthen – to be booked.

The entire programme has been funded through educational grants from Johnson & Johnson (Ethicon Endosurgery®) Ltd.

Laparoscopic Colorectal Surgery Training/ Research

Contributions of Prince Charles Hospital, Merthyr Tydfil

Faculty Member/ Course Convenor:

- European Surgical Institute – Hamburg, Laparoscopic Colorectal Training Course: Prof Haray has been on the faculty since 2008
- Prof Haray is a registered preceptor for Laparoscopic Colorectal Surgery, ALS and Ethicon Endosurgery® Ltd
- Laparoscopic Colorectal Surgery Course and Masterclass, PCH–Convenor-annual since 2010
- Laparoscopic Left Side Resection Course–Wales Deanery
- Association of Laparoscopic surgeons of Great Britain and Ireland, Annual Meeting in Cardiff – November 2011 – faculty for laparoscopic colorectal surgery workshop
- Several Masterclasses at Prince Charles Hospital for consultant surgeons; many live-linked demonstrations to Surgical Registrars, Junior Doctors, Medical & Nursing students etc.
- Minimal Invasive Course for surgical care practitioners– Convenor – 2010, due again in 2012
- Colorectal Cancer Course–Nurses & Jr Doctors, PCH- Convenor-2010, due again Oct 2011
- Faculty at various international conferences - India and Ghana 2003 – 2011
- Teaching Day for Surgical and Gastroenterology SpRs – Convenor (several 2005-2011)

Laparoscopic Colorectal Surgery teaching DVD

A highly specialized teaching aid has been developed by Prof Haray and his team at PCH in the form of an interactive training DVD. This has been designed to assist senior trainees or established consultants wishing to undertake laparoscopic colorectal surgery. Colorectal resections have been broken down into modules offering the option of either watching the procedure in its entirety or of selecting individual 'steps' to view. Many of the steps have additional video clips highlighting challenges/ potential hazards/ technical tips/ alternative approaches etc. A PDF button provides access to a printable summary of the steps.

Other Training/ Teaching Audio-visual Aids

- Anaesthetic techniques in Laparoscopic Colorectal Surgery – Spinal opioid & TAP blocks Film for anaesthetic education.
- Laparoscopic Abdomino-Perineal Excision of the Rectum Film for nurse education.
- Training the Trainer in Laparoscopic Colorectal Surgery Film aimed at helping consultants become good trainers. In progress.

Publications

PEER REVIEW REFERENCED PUBLICATIONS (Laparoscopic Colorectal Surgery only)

ORIGINAL ARTICLES

A Tool-kit for the Quantitative Assessment of Proficiency in Laparoscopic Colorectal Surgery

P R Shah, P N Haray

Colorectal disease, 2011; 13(5): 576–582.

A Unique Approach To Quantifying The Changing Workload And Case Mix In Laparoscopic Colorectal Surgery

P R Shah, V Gupta, P N Haray,

Colorectal disease, 2011; 13(3): 267 – 271.

Laparoscopic Colorectal Surgery: Learning Curve and Training Implications

P R Shah, A Joseph, P N Haray

Postgraduate Medical Journal, 2005; 81: 537 – 540

Adhesive Intestinal Obstruction In Laparoscopic Versus Open Colorectal Resection

A P Saklani, N Naguib, P R Shah, P Mekhail, S Winstanley and A G Masoud

Colorectal disease, 2012 accepted

Short-term outcomes of Laparoscopic colorectal resection in patients with previous abdominal operations

N Naguib, A Saklani, P R Shah, P Mekhail, M Alsheikh, M AbdelDayem, A G Masoud

Journal of Laparoendoscopic & Advanced Surgical Techniques, 2012 - accepted

Laparoscopic Colorectal Surgery in Great Britain and Ireland – Where Are We Now?

G Harinath, P R Shah, P N Haray, M E Foster

Colorectal Disease, 2005; 7, 86 – 89.

Preceptorship In Laparoscopic Colorectal Surgery

M Rees, P R Shah, A saklani, P N Haray – submitted

The Merthyr Coaching tool for Laparoscopic Colorectal Surgery

P R Shah, P N Haray - submitted

CASE REPORTS

Laparoscopic drainage of retroperitoneal abscess secondary to pyogenic sacroiliitis

D Chan, A Saklani, P R Shah, P N Haray

Annals of Royal College of Surgeons of England, 2010; 92(4): W32-34

Publications

TECHNICAL TIPS

Trans-anal division of the ano rectal junction followed by Laparoscopic low anterior resection and colo-anal pouch anastomosis, a technique facilitated by a balloon port

A Saklani, P R Shah, N Naguib, N Tanner, P Mekhail, A Masoud
Journal of Minimal Access Surgery, 2011; 7(3): 195-199

Port Site Closure in Laparoscopic Colorectal Surgery

P R Shah, K Thippeswamy, N Naguib, A G Masoud, Journal of Minimal Access Surgery, 2010; 6(1): 22-23

Use of uterine manipulator in laparoscopic colorectal surgery

P R Shah, J Rogers, S Chawathe, P N Haray, Journal of Minimal Access Surgery, 2010; 6(4): 125

ABSTRACT PUBLICATIONS

The Unique Tool-kit for Quantitative Proficiency Assessment in Laparoscopic

P R Shah, P N Haray, Colorectal Disease, 2011; 13(s4): 31

Quantifying The Changing Workload And Case Mix In Laparoscopic Colorectal

P R Shah, V Gupta, P N Haray, Colorectal Disease, 2011; 13(s4): 31

Laparoscopic Rectal Excision Made Easy: A stepwise Approach – Video Presentation

P R Shah, P N Haray, Surgical Endoscopy, 2011; 25(s1): S167

Laparoscopic Restorative Proctocolectomy With Ileal Pouch Anal Anastomosis

P R Shah, A Saklani, K Thippeswamy, D Chan, P N Haray, Surgical Endoscopy, 2011; 25(s1): S167

Perineo-abdomino-perineal excision for low rectal cancers. A new technique in selected cases

P R Shah, A Saklani, N Naguib, K Thippeswamy, A Masoud, Surgical endoscopy, 2010; 24(S1): S190

Complex Colorectal Operations are Feasible Laparoscopically

P R Shah, J Cowland, V Gupta, P N Haray, Colorectal disease, 2009; 11(s2): 38

Developing Parameters for Assessing Proficiency in Laparoscopic Colorectal Surgery

P R Shah, J Cowland, V Gupta, P N Haray, Colorectal disease, 2009; 11(s2): 39

Learning Curve in Laparoscopic Colorectal Surgery – Single Surgeon Experience

P R Shah, J Cowland, V Gupta, P N Haray, Colorectal Disease, 2009; 11(s1): 24

Training in Laparoscopic Colorectal Surgery – Potential Problems

P R Shah, A Joseph, P N Haray, Colorectal Disease, 2004; 6(s2): 23

Laparoscopic Colorectal Surgery – Is All The Effort Worthwhile?

P R Shah, A Joseph, P N Haray, Colorectal Disease, 2004; 6(s2): 23

Publications

A Survey of Laparoscopic Colorectal surgery in the UK and Ireland

P R Shah, G Harinath, P N Haray, M E Foster, Colorectal Disease, 2004; 6(s2): 23

Patience, Not Just Patients In Laparoscopic Colorectal Surgery: An Extended Learning Curve

P R Shah, A Joseph, P N Haray, Colorectal Disease, 2003; 5(S2): 47

Single Surgeon Learning Curve - Training Implications

M D Rees, P R Shah, P N Haray, Surgical Endoscopy, 2012; 26(s1): s183-s184

A 12-year experience of laparoscopic colorectal surgery (LCS): Does more experience mean better results?

M D Rees, P R Shah, P N Haray, Colorectal Disease, 2011, 13(S4):6

Surgicel[®] to protect vital structures during laparoscopic colorectal surgery

P Mekhail, P R Shah, A Saklani, P N Haray, Surgical Endoscopy, 2011; 25(s1): S167

Perineo-abdomino-perineal excision for low rectal cancers. A new technique in selected cases

N Tanner, A Saklani, P R Shah, N Naguib, P Mekhail, A Masoud, Surgical Endoscopy, 2011; 25(s1): S165

Trans-Anal Division Of The Ano-Rectal Junction Followed By Laparoscopic Low Anterior Resection And Colo-Anal Pouch Anastomosis.

A Saklani, N Tanner, P R Shah, N Naguib, P Mekhail, A Masoud, Surgical Endoscopy, 2011; 25(s1): S165

Laparoscopic Total Colectomy And Ileorectal Anastomoses In A Patient With Multiple Previous Surgeries: A Surgical Strategy.

A Saklani, P R Shah, N Tanner, P Mekhail, N Naguib, A G Masoud, Surgical Endoscopy, 2011; 25(s1): S165

Effect Of Previous Abdominal Surgery On Laparoscopic Colorectal Procedures

N Naguib, P Mekhail, A Saklani, N Tanner, P R Shah, A Masoud, Surgical Endoscopy, 2011; 25(s1): S26

Appraisal Of Laparoscopic Versus Open Colorectal Surgery: A Prospective Study.

P Mekhail, N Naguib, A Saklani, N Tanner, P R Shah, A G Masoud, Surgical Endoscopy, 2011; 25(s1): S27

Evaluation Of Laparoscopic Versus Open Colorectal Oncologic Resection

N Naguib, P Mekhail, A Saklani, N Tanner, P R Shah, A Masoud, Surgical Endoscopy, 2011; 25(s1): S100

Postoperative Adhesive Intestinal Obstruction In Laparoscopic Versus Open Colorectal Surgery

N Naguib, P Mekhail, A Saklani, N Tanner, P R Shah, A Masoud, Surgical Endoscopy, 2011; 25(s1): S100

Pros and Cons of Laparoscopic versus Open colorectal resection.

N Naguib, N Tanner, P Mekhail, P R Shah, A Saklani, KM Thippeswamy, A Masoud, Colorectal Disease, 2010; 12(s1): 22

A Comparative Study Between The Outcomes Of Laparoscopic Versus Open Colorectal Surgery

N Naguib, P Mekhail, P R Shah, N Tanner, A Masoud, British Journal of Surgery, 2010; 97(S2): 144

Patient expectations during the learning curve of laparoscopic colorectal surgery

N Naguib, V Gupta, L Dafydd, P R Shah, A Masoud, Colorectal disease, 2009; 11(s2): 34

Publications

A Survey of Laparoscopic Colorectal surgery in the UK and Ireland

G Harinath, P R Shah, P N Haray, M E Foster, Colorectal Disease, 2004; 6(s1): 82-83

DVD PRESENTATIONS

Incisional Hernia Defect May Be Convenient For The Delivery Of The Specimen In Laparoscopic Colectomy

P R Shah, N Naguib, S Winstanley, A G Masoud

European Association of Endoscopic Surgery, Brussels, June 2012

Laparoscopic Pan-Proctocolectomy - A Modified Technique to Preserve the Infradentate Anal Canal

P R Shah, N Naguib, N Tanner, S Winstanley, A G Masoud

European Association of Endoscopic Surgery, Brussels, June 2012

Three stage restorative proctocolectomy: Stepwise approach

P R Shah, N Naguib, S Winstanley, A Watkins, A G Masoud

- Association of Surgeons of Great Britain and Ireland, Liverpool, May 2012
- European Association of Endoscopic Surgery, Brussels, June 2012 (2nd Author)

Laparoscopic Rectal Excision Made Easy: A stepwise Approach – Video Presentation

P.R. Shah, P.N. Haray

- Association of Laparoscopic Surgeons of Great Britain & Ireland, Kent November 2009
- European Association of Endoscopic Surgery, Geneva, June 2010
- Welsh Surgical Society, Saunderfoot, May 2009

Laparoscopic Restorative Proctocolectomy With Ileal Pouch Anal Anastomosis

P R Shah, A Saklani, K Thippeswamy, D Chan, P N Haray

- Association of Laparoscopic Surgeons of Great Britain & Ireland, Kent November 2009
- European Association of Endoscopic Surgery, Geneva, June 2010

Perineo-abdomino-perineal excision for low rectal cancers. A new technique in selected cases

P R Shah, A Saklani, N Naguib, K Thippeswamy, A G Masoud

- Association of Laparoscopic Surgeons of Great Britain & Ireland, Kent November 2009
- European Association of Endoscopic Surgery, Geneva, June 2010 (2nd author)

Surgicel® to protect vital structures during laparoscopic colorectal surgery

P Mekhail, P R Shah, A Saklani, P N Haray

European Association of Endoscopic Surgery, Geneva, June 2010

Laparoscopic Total Colectomy And Ileorectal Anastomoses (Tc And Ira) In A Patient With Multiple Previous Surgeries: A Surgical Strategy.

A Saklani, P R Shah, N Tanner, P Mekhail, N Naguib, A G Masoud

European Association of Endoscopic Surgery, Geneva, June 2010

Trans-Anal Division Of The Ano-Rectal Junction Followed By Laparoscopic Low Anterior Resection And Colo-Anal Pouch Anastomosis.

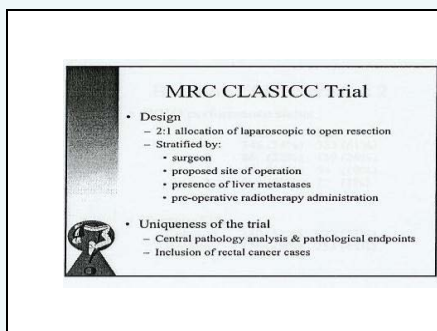
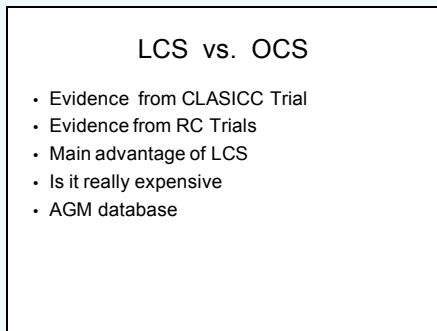
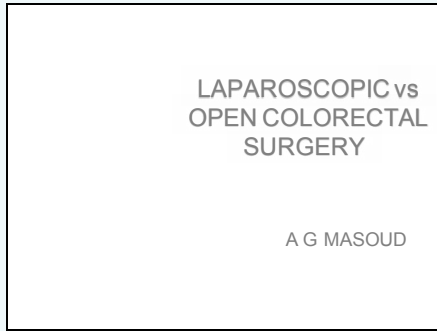
A Saklani, N Tanner, P R Shah, N Naguib, P Mekhail, A Masoud

European Association of Endoscopic Surgery, Geneva, June 2010

Course Presentations

LAPROSCOPIC vs OPEN COLORECTAL SURGERY

AG MASOUD



Endpoints

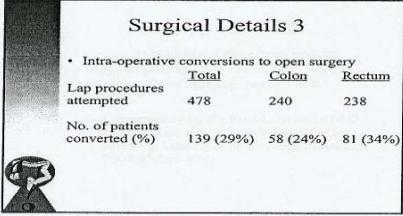
- **Primary**
 - Circumferential, longitudinal & high tie mesenteric resection margins (central review)
 - 30-day mortality
 - Local recurrence rate (3 years)
 - Disease-free & overall survival (3 years)
- **Secondary**
 - Disease-free & overall survival (5 years)
 - Port-site & wound-site recurrences
 - Complication rates
 - QOL and cost-effectiveness
 - Loco-regional, anastomotic & distant metastases
 - Blood transfusion requirements

Participating Centres

Airedale General	Princess Elizabeth, Guernsey
Bedford General	Queens Medical Centre
Bristol RI	Royal Glam
Castle Hill	Royal Liverpool
Colechester General	Royal United
Darent Valley	RVI, Newcastle
Edinburgh RI	St James's, Leeds
Freeman	St Peter's, Chertsey
Leeds General Infirmary	Stepping Hill
Leicester General	University Hospital, Wales
Mayday	Whipps Cross
Medway Maritime	William Harvey
Ninewells	Yeovil District General
Prince Charles	

Recruitment Summary

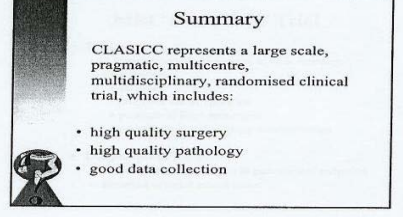
- 794 patients randomised
- 83% patients recruited by surgeons with >20 patients randomised
- Average no. of patients per surgeon = 25
- Ratio of Open: Laparoscopic
268 : 526
1 : 1.96



Surgical Details 3

- Intra-operative conversions to open surgery

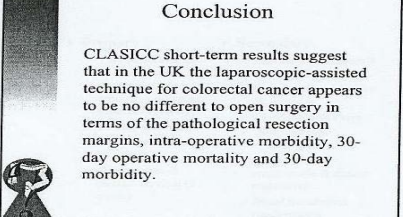
	Total	Colon	Rectum
Lap procedures attempted	478	240	238
No. of patients converted (%)	139 (29%)	58 (24%)	81 (34%)



Summary

CLASICC represents a large scale, pragmatic, multicentre, multidisciplinary, randomised clinical trial, which includes:

- high quality surgery
- high quality pathology
- good data collection



Conclusion

CLASICC short-term results suggest that in the UK the laparoscopic-assisted technique for colorectal cancer appears to be no different to open surgery in terms of the pathological resection margins, intra-operative morbidity, 30-day operative mortality and 30-day morbidity.

Long Term Results

- Equal oncological outcome
 - Survival
 - DFS
 - Local recurrence
- Equal quality of life

Why LCC if equal outcome

- High conversion in CLASICC
 - 24% colon
 - 34% rectum
- Better short term outcome in recent trials

Evidence from RC Trials

- 652 publications
- 12 RC Trials
- 2/3 with long term outcome

Advantages of LCS

- Less pain, 37% less analgesic
- Better pulmonary function and recovery
- Cosmetic benefit
- Faster return to N diet 37%
- Early bowel function 33%
- Shorter hospital stay 20%
- Less blood loss

LCS Equal to OCS

- Safety
- Morbidity
- Mortality
- Cancer related mortality
- Local recurrence
- Port/scar metastases

Disadvantages of LCS

- 14-87 minutes longer
- Cost cost effective
- Steep learning curve
- Debate about rectal cancer
 - especially in males

Conversion

- Colonic 7 - 25%
- Rectal 12% - 50%
- Worse outcome
- >30% unacceptable
 - economic
 - organisation disruption
 - worse outcome

Learning curve

- Swiss ALS database 1995 - 2006
- 3000 lap sigmoid colectomies for DD
- Conversion trends from 27.3% - 8.6%
- Local complications 23.6% - 6.2%
- General complications 14.6% - 4.9%
- Re-operation rate 5.5% - 2.6%
- Hospital stay 11% - 7%

Sub Group Short Stay Benefit

- < 60 1 or 2 days
- Elderly - no decrease in hospital stay
- 60 - 80 - most benefitted
- Australian colon study
 - 300 cases
 - benefit for over 70

Difficulties in Lap TME

- Narrow pelvis, gun at acute angle
- Most flexible 65
- Zigzag staple line and ischaemic zone
- Difficult tumour localisation
- Less resection from side and more from left side

Options and Alternatives

- Be selective or accept
 - APR rate
 - conversion rate
 - morbidity rate
- Alternative techniques
 - colo-anal hand sewn
 - Pfannensteil and Contour
 - open surgery

Laparoscopic colorectal surgery is expensive for hospitals; fact or fiction?

Introduction

- NICE Guidelines 2006
- Laparoscopic Colorectal Surgery (LCS) cost difference of zero cf Open Colorectal Surgery (OCS) provided:
 - conversion rate <10%
 - Hospital stay 4 days shorter than OCS

Cost Analysis

- Costs for LCS and OCS were estimated with assistance from the Trust's Finance Department and theatre database
 - General theatre costs
 - Length of stay
 - Critical care
 - Theatre time
 - Disposable instruments
 - Re-operation
- Fisher's exact & "t" tests were used for statistical analysis

Results

	LCP	OCP	P Value
Mean Operative Time	212 minutes (60-544)	163 minutes (38-354)	<0.001
HDU/ITU Admissions	31 days	131 days	NA
Median post operative stay	5 days (1-44) 46% \leq 4 days	10 days (2-104) 5% \leq 4 days	<0.001
Re-operation rate for	4.76% (6/126)	4.83% (10/207)	NS

Cost Analysis

• **Average extra-time per case: 49 min**

(= 0.2 Theatre session)
20% of £1,131.75 cost =
£226.35

Based on a 4 hour session, top of the scale	Normal working week
1 x Consultant surgeon	256.98
1 x Consultant anaesthetist	256.98
1 x SPR surgeon	172.66
1 x Band 7	113.37
1 x Band 6	96.03
2 x Band 5	76.87
1 x Band 4	60.84
3 x Band 3	51.66
2 x Band 2	46.36
Total	1131.75

Cost Analysis

• **Cost of lap. instruments = £957.23**

- £431.66 harmonic scalpel
- £305.57 gun + cartridge (average)
- £140 ports
- £80 Hassan port

Cost of reoperation for complications
No significant difference (4.76% V's 4.83%)

Cost Analysis

	LCS	OCP
General theatre	Similar	
Critical Care	£350.80	£907.60
Theatre time	+ £226.35	-
Lap Instruments	+ £957.23	-
Reoperation	Similar	
Total	£1,534.38	£907.60

• £631.49 difference = 1.3 days hospital stay

Conclusion

- If we exclude the length of hospital stay, LCS is more expensive by £631.49; equivalent to 1.3 days of hospital stay.
- Providing a Laparoscopic Colorectal Service should be cost effective provided that the hospital stay is shorter by 1.3 days.

Theatre set up and relevant anatomy

Gethin Williams MCh FRCS(GenSurg)
Laparoscopic Colorectal Masterclass



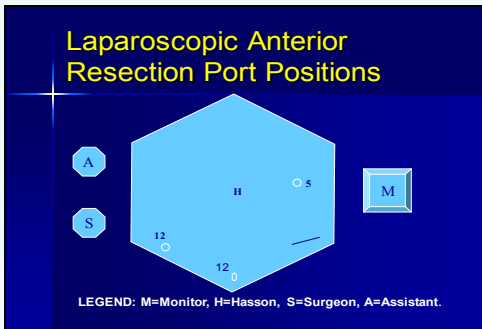


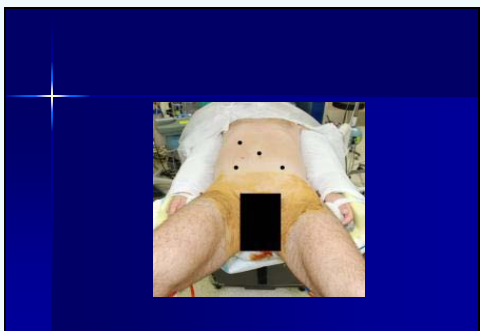
Patient set up

- Theatre TEAM
- Protect arms & thighs
- Radial N & B. plexus
- Warm patient
- Patient well supported
- Proximity of stack
- Tattoo of lesion?







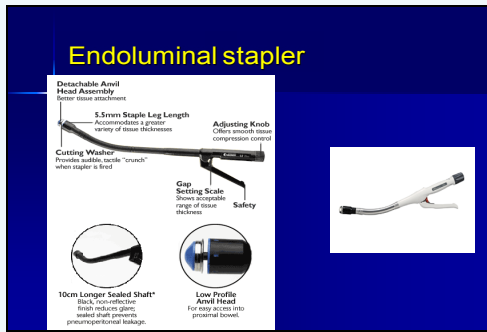


Essential Equipment

- High flow insufflator
- 30° angled 10mm scope & 5mm scope
- Good quality 5 and 12mm ports
- Atraumatic grasping forceps
- Harmonic scalpel / Ligasure / diathermy
- Endoscopic linear cutter stapling equipment
- Endoluminal circular stapler

Graspers







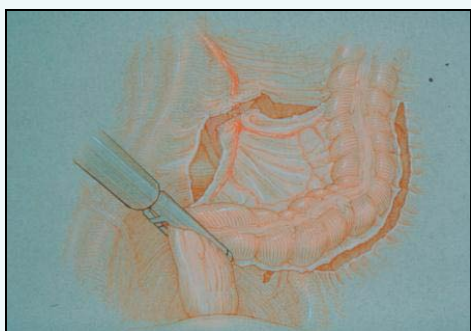




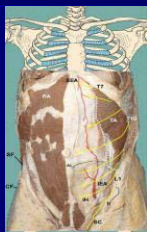
- Problems!**
- | | |
|--|--|
| <ul style="list-style-type: none"> ■ Respiratory ■ Atelectasis ■ Worsens compliance ■ Decreases FRC | <ul style="list-style-type: none"> ■ Cardiovascular ■ Increases CVP ■ Increases C.O ■ Increases cerebral circulation <ul style="list-style-type: none"> - Increases ICP - Increases IntraOcular Pressure |
|--|--|

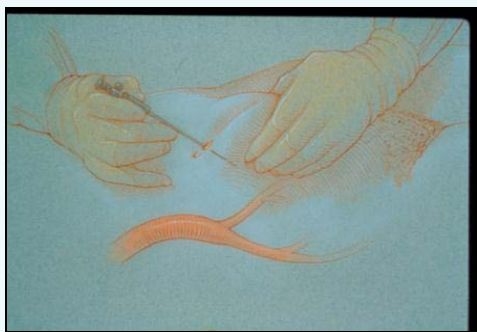


RELEVANT ANATOMY – LEFT SIDE



Inferior epigastric arteries





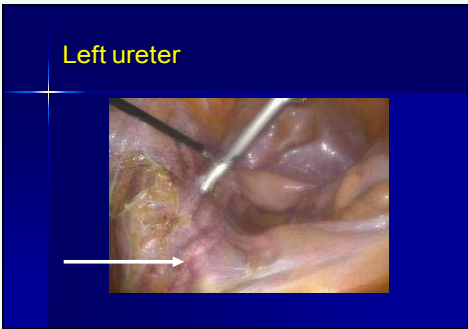
Ureter: key facts

- Crosses bifurcation of CIA at pelvic brim
- Gonadals are antero-lateral
- Covered by Toldt's fascia
- IMV medial
- Lateral pelvic side-wall to ischial spine

Stent all ureters?!

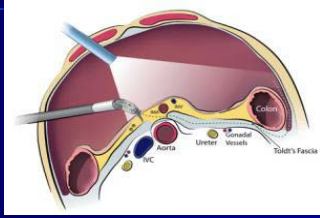






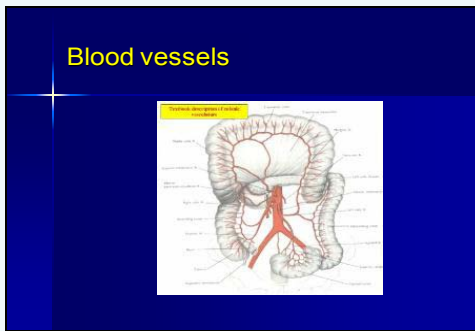
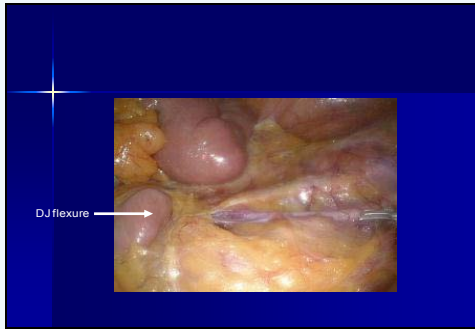


Medial to lateral approach



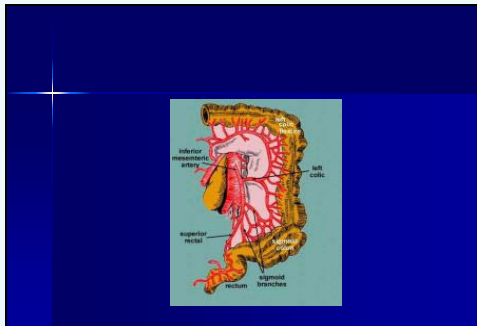
Mesenteric window





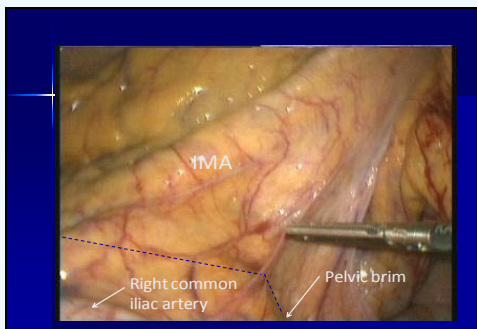
IMA: key facts

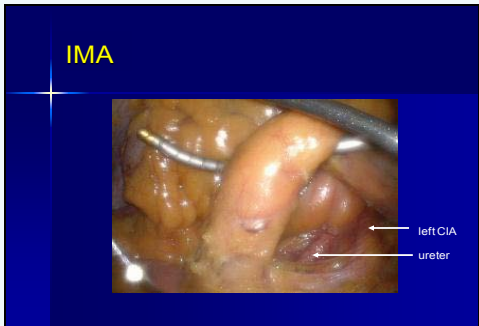
- Supplies hindgut
- Crosses left CIA
- Becomes superior rectal artery
- Left colic – ascending & descending
- Sigmoid branches

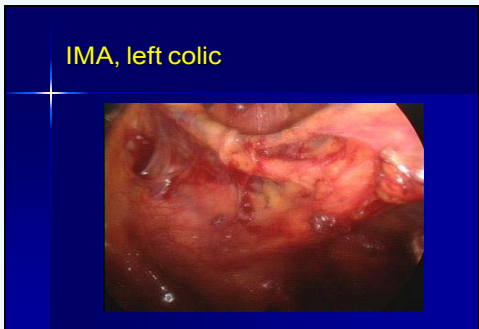


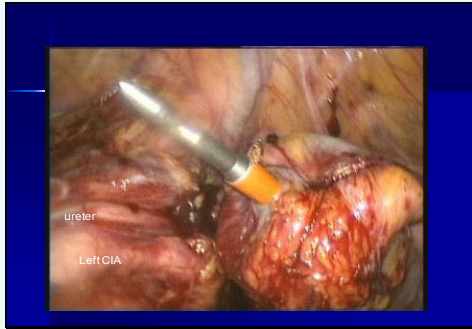
- Marginal artery
- Single arterial trunk
- Begins @ IC junction
- Joins Sup. Rectal artery
- Vital for anastomosis

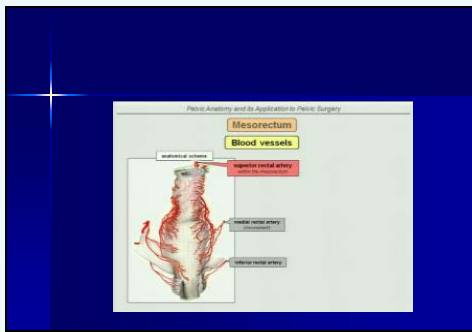
This diagram shows the relationship between the superior and inferior mesenteric arteries and the marginal artery. The superior mesenteric artery gives off the ileocolic artery, which joins the marginal artery. The inferior mesenteric artery gives off the superior rectal artery, which also joins the marginal artery. The diagram labels the ileocolic artery, superior mesenteric artery, inferior mesenteric artery, and marginal artery.











IMV: key facts

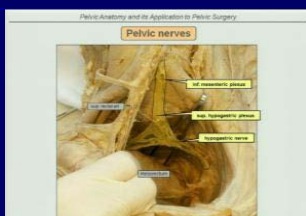
- Begins as superior rectal vein
- Lies on posterior abdominal wall
- On left side of IMA and D-J junction
- Joins splenic v. behind pancreas

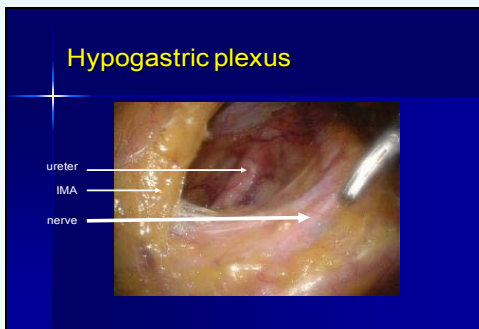
IMV - inferior edge of pancreas,
ligament of Treitz

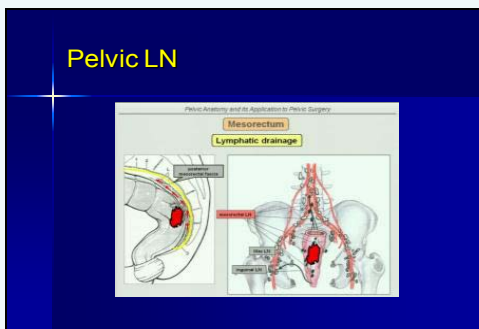


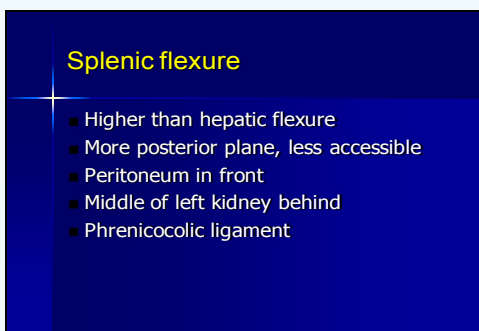
Pelvic nerves: key facts

- Autonomic fibres - Inferior mesenteric plexus
- Superior hypogastric plexus
- L & R hypogastric nerves ('erigantpillars') (s)
- Joined by pelvic splanchnic nerves
- Outside of mesorectal plane









Lateral dissection along white line



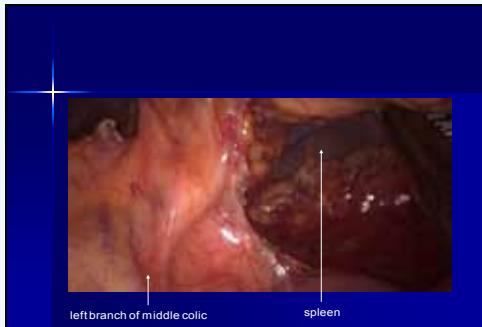
Approaching spleen

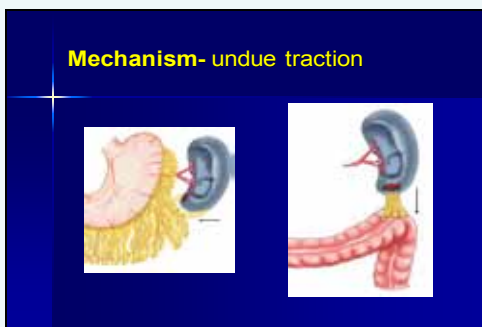


Lesser sac entered



divided gastrocolic omentum pancreas





Splenic trauma

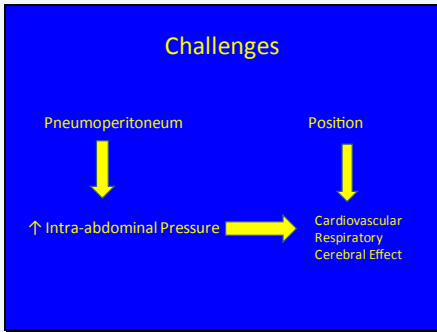
- 1-8% of left hemicolectomies
- Poor exposure, inadequate visualisation
- Obesity
- Capsular tears, avulsions, lacerations
- Lower pole usually

Laparoscopic Colorectal Surgery Anaesthetic Implications

Dr Moayed Aziz
Consultant Anaesthetist
Prince Charles Hospital

Laparoscopic Colorectal Surgery
Anaesthetic Implications

Dr Moayed Aziz
Consultant Anaesthetist
Prince Charles Hospital



Peri-operative Management

- Fluid Management

- Pain Relief

Fluid Management

- preoperative or operative hypovolaemia should be diagnosed by flowbased measurements wherever possible.
 - Doppler
 - LiDCO (Lithium Dilution Cardiac Output)

British Consensus Guidelines on Intravenous Fluid Therapy for Adult Surgical Patients

Fluid management

Intraoperative oesophageal Doppler guided fluid management shortens postoperative hospital stay after major bowel surgery

H.G. Wakeling, M.R. McFall, C. S. Jenkins, W.G.A. Woods, W.F.A. Miles,
Br. J. Anaesth. (November 2005) 95 (5): 634-642.



Fluid Summary

- Normal saline is not normal!
- Colloids are more efficient at resuscitating the intravascular space
Colloids increase COP and may reduce oedema
- Colloids improve microcirculatory flow and are more anti- than pro-coagulant
- Balanced Colloids may be the way forward

Pain Relief

- All patients:
 - Paracetamol 6 hourly starting peri-operatively.
 - NSAID if not contraindicated.
- Options
 - Epidural Analgesia
 - PCA + TAP Block
 - Intrathecal Opioid + TAP Block

Epidural Analgesia

- Epidural analgesia is considered by many as the gold standard analgesic technique for major surgery.
- Epidural analgesia with a combination of local anaesthetic and opioid can provide complete dynamic analgesia.
- Epidural analgesia obtunds the stress response to major surgery.

Epidural Analgesia

Respiratory effects:

- Epidural opioids and local anaesthetic infusions have been shown to:
 - Reduce the incidence of postoperative atelectasis
 - Reduce pulmonary infection
 - Improve postoperative oxygenation.

Epidural Analgesia

Cardiovascular effects:

- reduce postop.MI, improve demand/supply ratio through:
 - reduction of sympathetic activity;
 - improved postoperative pulmonary function;
 - reduced thrombotic tendency.

Epidural Analgesia

GIT effects:

- limiting systemic opioid use and
 - improving intestinal motility by blocking nociceptive and sympathetic reflexes,
 - reduces the duration of postoperative ileus, permitting earlier enteral feeding.
 - This in turn has a beneficial effect on postoperative catabolism.

Epidural Analgesia

- MASTER study
- no difference in overall mortality between the groups. However, they did show:
 - a reduced incidence of pulmonary complications
 - Reduced thromboembolic events
 - significantly better analgesia in the epidural group.

Epidural Analgesia

- Why?
 - Firstly, as a result of current surgical, anaesthetic and intensive-care practice, mortality rates from major surgery, even in high-risk patients, are small. Therefore, the use of mortality as an end-point may not be appropriate.

Epidural Analgesia

- Why?
 - Secondly, to provide the beneficial effects, epidurals have to work.
 - Technical problems (e.g. leaks, catheters falling out)
 - Lack of facilities to care for patients with epidurals.
 - Lack of acute pain management team

Complications of Epidural Analgesia

- Related to catheter insertion
 - Dural puncture 0.32–1.23
 - Neurological damage (usually transient) 0.016–0.56
- Related to catheter in situ
 - Epidural haematoma 0.0004–0.03
 - Epidural abscess 0.01–0.05
 - Catheter migration 0.15–0.18
- Related to epidural drugs
 - Drug errors Not known
 - Respiratory depression 0.13–0.4
 - Hypotension 3–30
 - CNS toxicity 0.01–0.12
 - Motor block 3

Intrathecal Opioid

- The physicochemical properties of intrathecal opioids determine their
 - onset time,
 - duration of action,
 - and potency.

Intrathecal Opioid

- In 1968, Melzack and Wall put forward their 'gate control theory' proposing that the spinal cord was a potential target site for modulation of pain signals.
- This led to the discovery of opioid receptors by Pert and Snyder in 1973
- Wang was the first to describe the intrathecal administration of morphine

Intrathecal Opioid

Site of action:

- Intrathecal opioids bind to a family of G-protein-linked pre- and postsynaptic opioid receptors in Laminae I and II of the dorsal horn.

Intrathecal Opioid

- Diamorphine is a lipid soluble prodrug with an octanol:water coefficient of 280 (Fentanyl 860, Morphine 1.4)
 - Slower to act than Fentanyl but longer duration of action
 - Shorter duration of action than Morphine

Intrathecal Opioid

- The side-effects of intrathecal opioids are:
 - sedation,
 - sweating,
 - delayed gastric emptying,
 - urinary retention,
 - pruritus,
 - nausea and vomiting,
 - and respiratory depression.

**Patient Controlled Analgesia
PCA**

- Opioid analgesia, Morphine most commonly used
- Provide a steady state plasma level of opioid used.
- Self administration of IV opioid
- Safety features integrated in the PCA pump

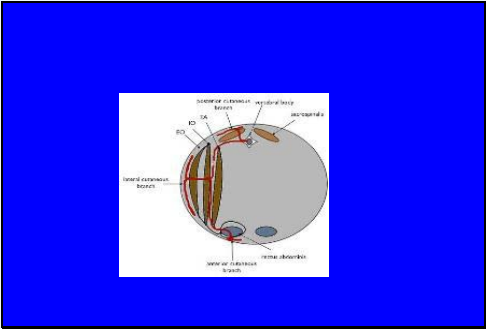
PCA

Side effects:

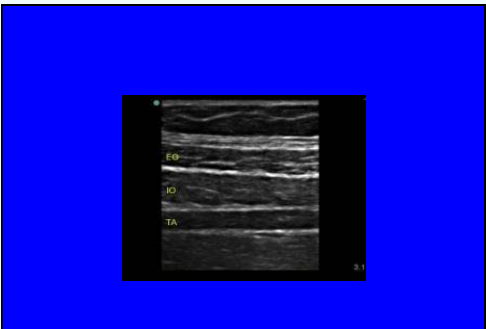
- nausea and vomiting,
- pruritus, sedation,
- respiratory depression,
- confusion.

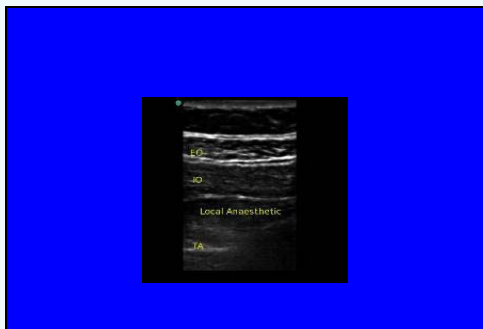
**The Transversus Abdominis Plane
Block**

- TAP Block:
 - Petit Triangle
 - Needle inserted perpendicular to skin
 - 2 pops
 - Local anaesthetics injected in TAP, between Internal Oblique and Transversus Abdominis muscle
 - High volume, low concentration LA for eg. Chirocaine 0.25% 30 ml each side









TAP Block

- In a small cadaveric study, T11, T12 and L1 were most consistently present in the transversus abdominis plane, while T10 was present in 50% of the cases
- It is reasonable to expect a good analgesic effect in the region between T10 and L1 following a single posterior injection.

Intrathecal opioid Vs Epidural analgesia

- Short-term outcomes with intrathecal versus epidural analgesia in laparoscopic colorectal surgery
I. Virlos, D. Clements, J. Beynon, V. Ratnalikar, U. Khot
British Journal of Surgery volume 97, issue 9, pages 1401–1406, September 2010
- Patients who had intrathecal analgesia had:
 - a reduced median postoperative pain score
 - and a shorter hospital stay (4 versus 5 days; P < 0.001).
 Return to normal gut function and postoperative nausea and vomiting were similar in the two groups.

Post-operative Pain Relief

- Regular simple analgesics
- Multimodal
- Local anaesthetics techniques for all patients (infiltration, TAP block) excluding Epidural analgesia (toxicity) or contraindications
- The choice of post-operative plan tailored to patients need.
- Spinal opioid provide superior analgesia compared with PCA and Epidural

Post-operative Pain Relief

- Pain management team
- Regular audit
- Patient education

THANK YOU

Any Questions
?

Anaesthetic implications of laparoscopic colorectal surgery

Laparoscopic surgery offer major benefits for the patient. Minimised incision size and trauma with reduced postoperative pain shortens recovery period and associated with lower wound infection rate. These factors lead to shorter hospital stay and reduced morbidity. Many surgical procedures that once required long hospital stay such as Anterior Resection of Rectum are now performed as laparoscopic approach with significantly reduced morbidity and hospital stay.

Laparoscopic surgery is not without risks. These risks (in addition to the risks associated with the individual procedure) associated with the physiological change caused by pneumoperitoneum and positioning of the patient.

A report by the National Patient safety agency (NPSA) has identified 48 serious incidents associated with laparoscopic surgery in 7 years period, including 11 deaths.

Table 1: Benefits and Risks of Laparoscopic Surgery.

Benefits

Reduced wound infection
Shorter recovery time
Decreased morbidity
Less postoperative pain
Shorter hospital stay

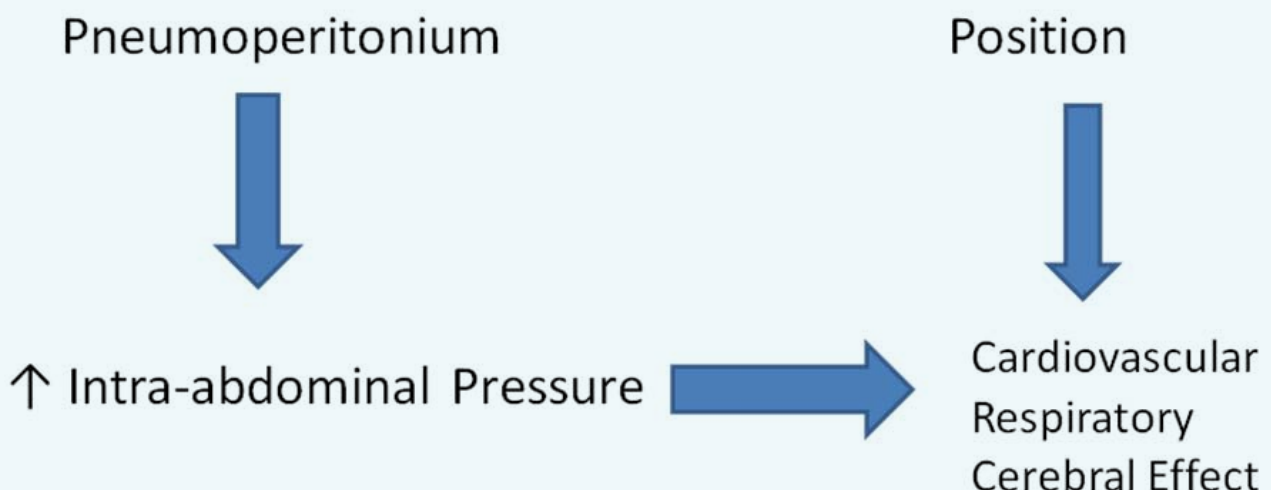
Risks

Vascular and visceral injury
Positioning
Cardiovascular instability
Respiratory insufficiency (atelectasis)
Gas embolism
Lower limb compartment syndrome

Challenges

The main challenges that are associated with colorectal laparoscopic surgery are:

- 1/ Pneumoperitoneum
 - 2/ Positioning
- Figure 1: challenges.



Positioning

Patient positioning represent an important part of laparoscopic procedure, as it facilitate and optimise surgical access. It often involves the extremes of Trendelenburg or reverse Trendelenburg position with significant physiological effects. Meticulous attention should be paid to securing the patient on the table, as peri-operative changes can put the patient at risk of movement on the table. Pressure points should be protected meticulously, to prevent pressure points during a prolong surgery.

Prolonged steep Trendelenburg position increase the risk of cerebral oedema, in addition to risk of pneumoperitoneum, and upper airway oedema which may cause stridor and difficulty in breathing postoperatively

Functional residual capacity and ventilation perfusion (V/Q) mismatch are worsened, and with cephalad movement of the lungs, the tracheal tube may migrate endobronchially.

Another rare but devastating complication of Trendelenburg position is the onset of **“well leg compartment syndrome”** induced by the combination of impaired arterial perfusion to raised lower limb, compression of venous vessels by lower limb supports, and reduced femoral drainage due to the pneumoperitoneum. The compartment syndrome presents after the operation with severe lower limb pain, rhabdomyolysis, and potentially myoglobin-associated acute renal failure leading to significantly increased morbidity and mortality.

Risk factors include surgery more than 4 hours duration, musculat lower limb, obesity, peripheral vascular disease, and steep Trendelenburg positioning.

Risks can be mitigated by avoiding intermittent compression stockings, moving patient`s legs at regular intervals, and the use of heel/ankle support inetead of calf/ankle supports (Lloyd-Davies stirrups). For prolong operations, the risks can be reduced by returning the patient to horizontal position every 2 hours with lower limbs massage for 10 minutes. The placement of pulse oximetry on the big toe through the surgery can be used to assess the perfusion and pulsatile flow of distal areas of the lower limb.

In the reverse Trendelenburg position, the extreme head up position results in reduced venous return, leading to hypotension and potentially myocardial ischemia and cerebral ischemia. Particularly vulnerable are the elderly, hypovolaemic patients, and those with pre-existing ischemic heart disease and cerebrovascular disease.

Table 2: Cardiovascular and respiratory changes associated with positioning.

	Trendelenburg	Reverse Trendelenburg
Cardiovascular		
• VR	↑	↓
• CO	↑	↓
• BP	↔	↓
Respiratory		
• Lung volumes	↓	↔
• V/Q mismatch	↑	↔
• Atelectasis	↑	↔

Pneumoperitoneum

Pneumoperitoneum is created using insufflated carbon dioxide to enable sufficient visualisation for the procedure to be performed. As the volume of the abdomen increases, abdominal wall compliance decreases and intra-abdominal pressure (IAP) climbs. When IAP exceeds physiological thresholds, individual organ systems become compromised, potentially increasing patient morbidity and mortality, particularly in Patients with relevant co-morbidities.

Cardiovascular effects:

As IAP increases, systemic vascular resistance (SVR) is increased due to both mechanical compression of the abdominal aorta and production of neurohumoral factors such as vasopressin and activation of the renin–angiotensin–aldosterone axis. Compression of the inferior vena cava reduces preload and may lead to a decrease in cardiac output and subsequent decrease in arterial pressure, particularly if the patient is hypovolaemic. This may be exacerbated by the cephalad displacement of the diaphragm which raises intra-thoracic pressure with further reduction in blood flow through the inferior vena cava, and compression of pulmonary parenchyma which increases pulmonary vascular resistance, further reducing cardiac output.

Reverse Trendelenburg positioning may also result in hypotension due to the reduction in preload by venous pooling in the lower limbs and pelvis which in turn is exacerbated by reduced femoral venous flow secondary to raised IAP.

Respiratory effects

Respiratory changes occur due to raised IAP and Trendelenburg positioning. As the abdomen is distended by CO₂, diaphragmatic excursion is limited resulting in raised intra-thoracic pressure, reduced pulmonary compliance, and reduced functional residual capacity which in turn leads to pulmonary atelectasis, altered V/Q relationships, and hypoxaemia. During surgery, insufflated CO₂ is absorbed, causing an increase in PCO₂ which is further exacerbated by V/Q mismatch.

Splanchnic effects

Blood flow to the kidney and liver is significantly compromised with increasing IAP and this should be an important consideration in patients with existing disease when determining suitability for laparoscopic surgery.

Persistent IAPs over 20 mm Hg will cause a reduction in mesenteric and gastrointestinal mucosal blood flow by up to 40% with progressive tissue acidosis developing as pressure increases. The renal effects of pneumoperitoneum are significant and raised IAP is recognized as an independent cause of acute kidney injury. An IAP of 20 mm Hg will reduce GFR by 25%. The mechanism for this is postulated to be an impaired renal perfusion gradient secondary to the combined effect of reduced renal afferent flow due to impaired cardiac output and reduced efferent flow due to raised renal venous pressure.

Neurological effects

An elevated IAP causes an increase in intra-cerebral pressure (ICP) by limiting cerebral venous drainage as a consequence of raised intra-thoracic pressure. While clinical studies have suggested that cerebral perfusion pressure is maintained by the increase in mean arterial pressure that occurs with elevated IAP, the increase in ICP may lead to cerebral oedema. This contributes to the temporary neurological dysfunction that patients often experience on emergence from prolonged laparoscopic procedures, particularly those requiring extended periods of steep Trendelenburg positioning.

Table 3: Physiological changes associated with pneumoperitoneum.

Cardiovascular:

- IAP < 10 mm Hg \uparrow VR \rightarrow \uparrow CO
- IAP 10–20 mm Hg \uparrow IAP \rightarrow \downarrow VR \rightarrow \downarrow CO
 \uparrow IAP \rightarrow \uparrow SVR
 $BP = \downarrow CO \times \uparrow\uparrow SVR \leftrightarrow \uparrow BP$
- IAP > 20 mm Hg

Respiratory:

- Lung volumes esp FRC \downarrow
- Airway resistance \uparrow
- Pulmonary compliance \downarrow
- Airway pressure \uparrow
- Risk of barotrauma \uparrow
- V/Q mismatch \uparrow

Renal:

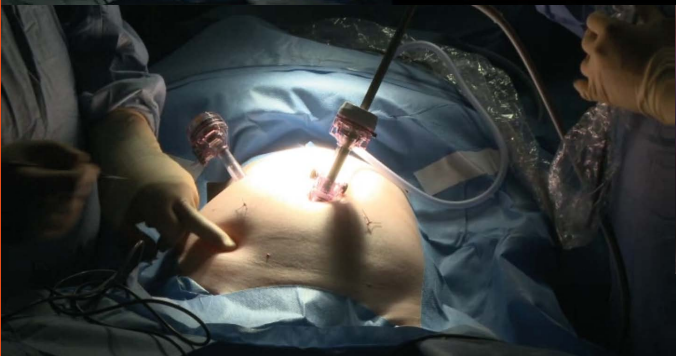
- Renal function \downarrow

Gastrointestinal:

- Risk of regurgitation \uparrow

Neurological:

- ICP $\leftrightarrow \uparrow$
- CPP $\leftrightarrow \downarrow$



Enhanced Recovery After Colon, Rectal And Pelvic Surgery

Mr CR Selvasekar MD, FRCS
Consultant Colorectal & Laparoscopic
Surgeon, The Christie NHS Foundation
Trust, Manchester

ERP?

- What exactly is ERP?
- Key components
- ERP in pelvic surgery
- Implementing ERP

What is ERP?

- Reduction of surgical stress
- Promotion of recovery of normal functions

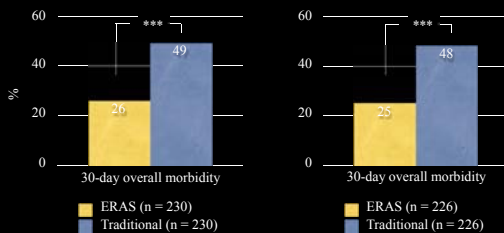
How?

- Significant evidence on the optimisation of perioperative care
- Synthesized, integrated and applied in a comprehensive programme

Reasons to invest in ERP protocol

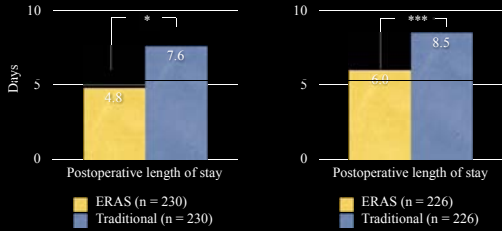
- ↓ postoperative morbidity
- ↓ time to recovery
- ↓ health provider costs

ERP significantly reduces postoperative morbidity



Wind *et al.*, Br J Surg 2006;93:800.
Varadhan *et al* KK.Clin Nutr.2010;29:434.

ERAS significantly reduces postoperative hospital stay

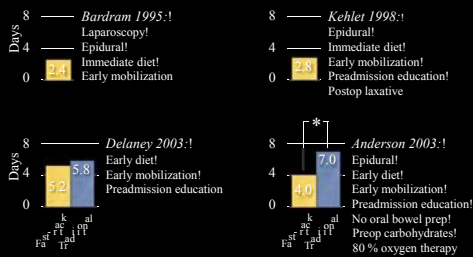


Wind *et al*, Br J Surg 2006;93:800.
Varadhan *et al* KK, Clin Nutr. 2010;29:434.


ERAS significantly reduces health provider costs

	ERAS (n=50) (NZD)	Trad (n=50) (NZD)	Difference (NZD)
ERAS course Denmark	10,561	0	10,561
Research Fellow/ERAS nurse	84,144	0	84,144
ERAS patient booklet	210	0	210
Nutritional supplements	1,476	0	1,476
Tenoxicam	71	0	71
Outpatient clinic slots	5,788	0	5,788
Fluids	8,738	16,758	-8,020
Epidurals	6,921	7,831	-910
Complication costs	470,357	746,326	-275,969
Ward stay	214,351	375,571	-161,220
TOTAL	802,618	1,146,487	-343,869
PER PATIENT			-6,878


A brief history of ERAS



Bardram *et al*, Lancet 1995;345:763. Kehlet *et al*, Br J Surg 1999;86:226.
Delaney *et al*, Dis Colon Rectum 2003;46:851. Anderson *et al*, Br J Surg 2003;90:1497.

ERAS 

ERAS Study Group



Hvidovre, Denmark	Tromsø University Hospital
Edinburgh Royal Infirmary	Ersta Hospital, Karolinska Institute, Stockholm
St Mark's Hospital, London	Charité Hospital, Berlin
University Hospital, Maastricht	North Shore Hospital, Auckland
	Middlemore Hospital, Auckland

ERAS Study Group protocol for elective *colonic* surgery

<i>Preoperative elements!</i>	<i>Intraoperative elements!</i>	<i>Postoperative elements!</i>
Preadmission patient education with discharge planning!	Short incisions or laparoscopy!	Mid-thoracic epidural 48 h!
No oral bowel prep!	No fluid overloading!	Oral diet 4 h postop!
Preop carbohydrates!	Active warming!	Mobilisation 4-6 h postop!
No sedating premedication	No wound drainage!	Removal of urinary drainage at 24 h
	No nasogastric drainage	

Lassen et al, Arch Surg 2009;144:961.

ERAS Study Group protocol for elective *rectal* surgery

<i>Preoperative elements!</i>	<i>Intraoperative elements!</i>	<i>Postoperative elements!</i>
Preadmission patient education with discharge planning!	Short incisions or laparoscopy!	Mid-thoracic epidural 96 h!
Oral bowel prep given!	No fluid overloading!	Oral diet 4 h postop!
Preop carbohydrates!	Active warming!	Mobilisation 4-6 h postop!
No sedating premedication	No wound drainage!	Removal of urinary drainage at 96 h
	No nasogastric drainage!	
	Suprapubic catheter	

Soop et al, Curr Opin Crit Care 2006;12:166.
Lassen et al, Arch Surg 2009;144:961.

Preoperative patient education with discharge planning

Several RCTs of *standard reassurance vs education and instruction*!:

- 50% reduction in analgesics requirements!
- 38% reduction in time to *restatus*!
- 20% reduction in length of hospital stay

Egbert et al, N Engl J Med 1964;270:825. Disbrow et al, West J Med 1993;158:488.

Preoperative patient education with discharge planning

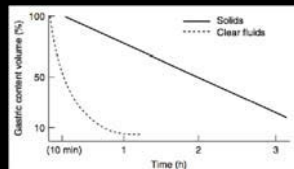
ERAS nurse meets patient and one relative in clinic!

Structured education about their operation and perioperative care!



Preoperative overnight fasting:! A history lesson

- Originated in 1848 after aspiration during ether anaesthesia!
- ≥ 200 mls needed for passive regurgitation!
- Is overnight fasting needed?



Anon, Edinburgh Med Surg J 1848:69:498!
Ljungqvist et al, Br J Surg 2003;90:400.

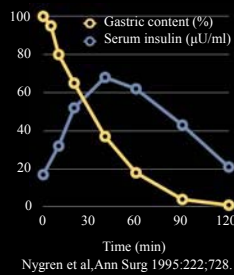
Preoperative fasting! Current guidelines

	Clear uids	Solids	Exceptions
NZ	2h	6h	Emergencies# Slow gastric emptying#
UK	3h	6h	
US	2h	6h	

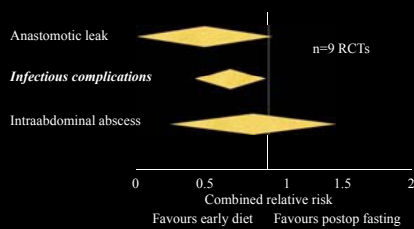
www.anzcs.edu.au www.rcoa.ac.uk www.asahq.org

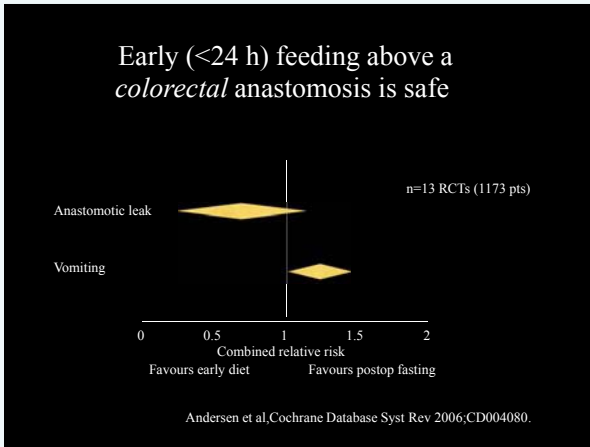
Preoperative oral carbohydrate treatment: Concept

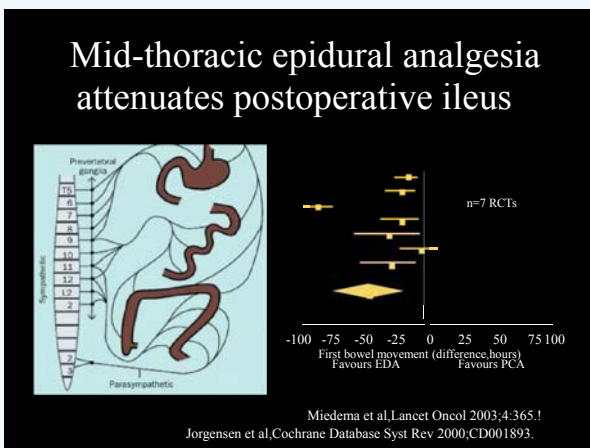
- 12.5% complex carbohydrate solution!
- 285 mosmol/kg!
- 400 ml (50 g) a metabolic breakfast

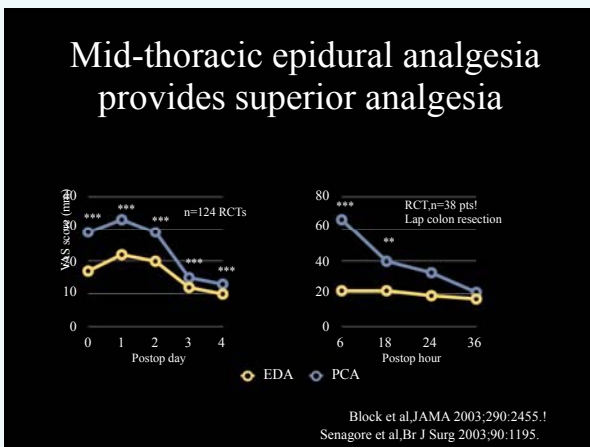


Early (<24 h) feeding after! gastrointestinal surgery prevents infections









Low-thoracic epidural analgesia does not attenuate ileus

- RCT in lap colon resection!
- EDA vs spinal vs PCA!
- T9-T12 insertion

Group	LOS (Days)	BM
EDA (n=30)	3.7	3.1
Spinal (n=31)	2.7	2.7
PCA (n=30)	2.8	4

Levy BF, et al, Br J Surg 2011;98:1068

NSAIDs and anastomotic dehiscence - observational data

Comparison	Control (N)	NSAID (N)
Celecoxib	373	119
Diclofenac	42	33

Holle et al, Br J Surg 2009;96:650. Klein et al, Dig Surg 2009;26:27

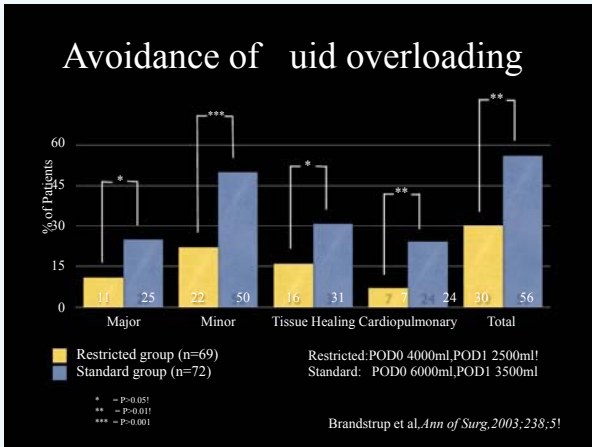
NSAIDs and anastomotic dehiscence - meta-analysis

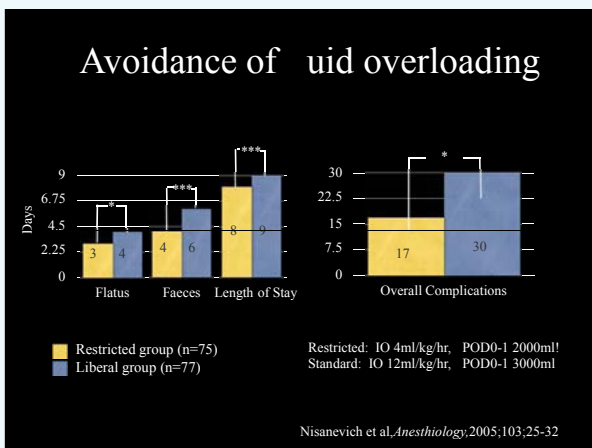
Study or Subgroup	NSAID		Control		Weight	Peto Odds Ratio	
	Events	Total	Events	Total		Peto, Fixed, 95% CI	Peto, Fixed, 95% CI
Chen 2005	2	34	1	30	16.6%	1.75 [0.18, 17.57]	
Chen 2009	3	45	1	44	22.2%	2.75 [0.37, 20.22]	
Schlachta 2007	4	22	1	22	26.0%	3.75 [0.60, 23.66]	
Sim 2007	1	35	0	35	5.7%	7.39 [0.15, 372.38]	
Wattchow 2009	4	116	2	57	29.5%	0.98 [0.17, 5.53]	
Yu 2008	0	20	0	20		Not estimable	
Total (95% CI)		272		208	100.0%	2.16 [0.85, 5.53]	
Total events	14		5				

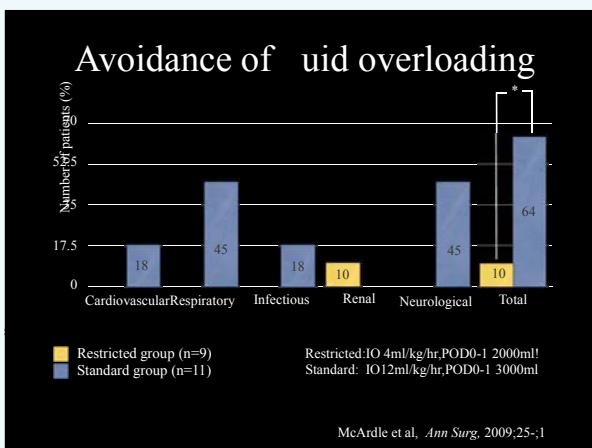
Heterogeneity: Chi² = 1.61, df = 4 (P = 0.81); I² = 0%
Test for overall effect: Z = 1.61 (P = 0.11)

5 vs 2% (P=0.11)
2x747 pts needed in a RCT

Burton et al, Dis Colon Rectum 2012; in print





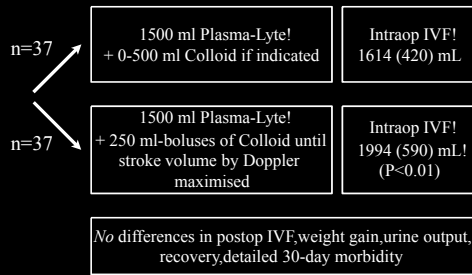


Doppler within ERAS?

- Control group in all previous RCTs: *traditional fluid therapy (fluid overloading)!*
- Recently completed Auckland RCT: Doppler-directed fluid therapy vs balanced fluid therapy

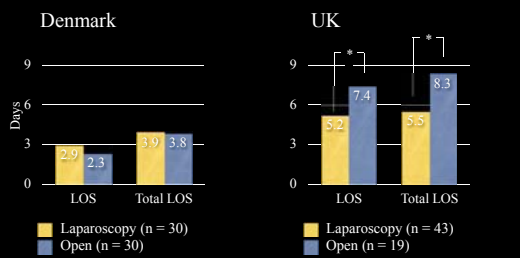
Srinivasa et al, Br J Surg 2012, accepted for publication

Doppler within ERAS?

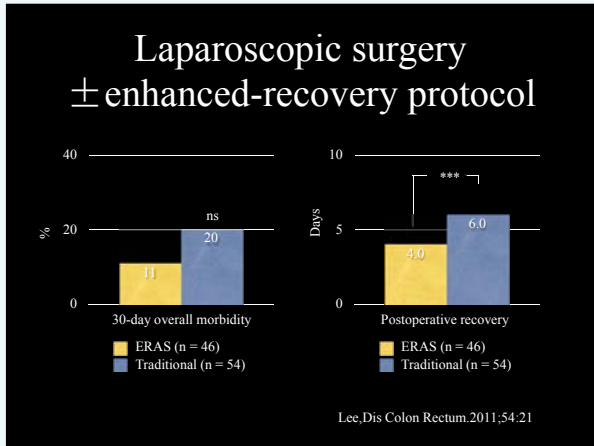


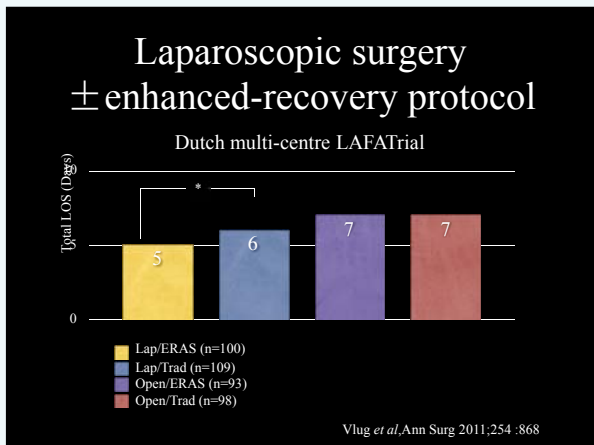
Srinivasa et al, Br J Surg 2012, accepted for publication

Enhanced-recovery protocol ± laparoscopic surgery



Basse et al, Ann Surg 2005;241:416-1
King et al, Br J Surg 2006;93:300.





Discharge

Discharge criteria	
Able to eat and drink (>800 mls/d)	Day 1
Good pain relief on oral analgesia (VAS ≤4)	Day 2
Bowel function (repeated atus OR stools)	Day 2
Normal obs	

Followup

Colorectal specialist nurse calls at 48 hours after discharge!

Patient calls ward directly with issues the first week!

Surgical followup at 4 weeks

23-hour stay colorectal resection: Guilford pilot study

Selection to 23-h protocol:!
ERAS modifications:!

- | | |
|------------------------------|------------------------|
| ASA 1-2! | Spinal anaesthesia! |
| Age <75! | Paracetamol+NSAID! |
| BMI <28! | Foley out at midnight! |
| Incision <7 cm! | Discharge at 23 hours! |
| Uncomplicated operation! | Phone call PM POD 1 |
| Care giver at home for 24 h! | |
| Living <10 miles away | |

Levy BF *et al.* Dis Colon Rectum.2009;52:1239

23-hour stay colorectal resection: Guilford pilot study

Demographics:!

- Males:females 4:6!
- Age 60 (43-72)!
- ASA 1:ASA 2 1:9

Operations:!

- 3 right hemicolectomy!
- 1 left hemicolectomy!
- 2 sigmoid colectomy!
- 2 high anterior resection!
- 2 low anterior resection

Levy BF *et al.* Dis Colon Rectum.2009;52:1239

23-hour stay colorectal resection: Guilford pilot study

Discharged at 23 h: 10/10

Readmission: 0/10

Breakthrough morphine: 1/10

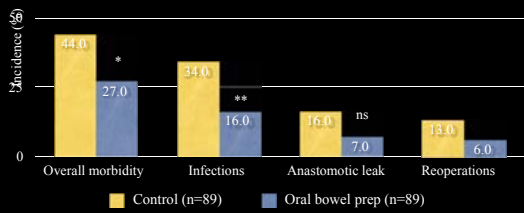
Would recommend pathway: 10/10



2001: A SPACE ODYSSEY

Levy BF *et al.* Dis Colon Rectum. 2009;52:1239

Oral bowel preparation in low anterior resection



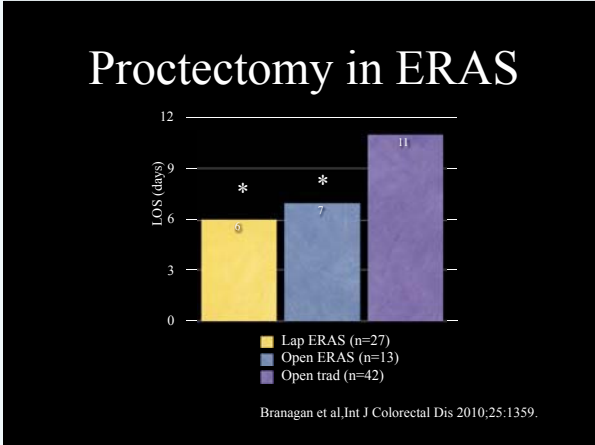
Bretagnol *et al.* Ann Surg 2010.


Pelvic drainage

- Supported by data from the DutchTME trial!
- Meta analysis in rectal surgery (French, 3 RCTs)!
- Drains do not improve leak rate or overall outcome



Bretagnol *et al.* Ann de Chir 2005.



- 
- ERAS is here!
 - In colon surgery, ERAS halves overall complication rates !
 - Reduces LOS by 2-3 days!
 - Is cost effective!
 - Adaptable to pelvic surgery and other subspecialties

Robotic Colorectal Surgery

Selvasekar MD, FRCS
Consultant Colorectal and Laparoscopic Surgeon
The Christie NHS Foundation Trust, Manchester

We Care, We Discover, We Teach The Christie **NHS** Foundation Trust

Advances in Surgery Can Be Measured By the Size of the Scars



Minimally Invasive Surgery

Open Surgery

Basic Laparoscopic Surgery

Robotics / NOTES / SILS

Advantages of MIS Colectomy
Systematic review - Lap vs. Open Colon Trials*

- Smaller incisions
- Less blood loss
- Faster GI recovery
- Shorter length of stay
- Less postop narcotics
- Less pulmonary infections
- Less wound infections

*11,910 pts - 22 RCT, 66 cohort series
Noel, Cima, Dozois, Senegore et al. JACS 2007

Limitations of Laparoscopy
Current Perspective (*20 years later..)

- Fixed instrument tips with limited dexterity
- Exposure, retraction difficult
- Two-dimensional views
- Operator fatigue, long cases
- Steep learning curve, pelvis

Robotic Surgery

- Cadiere, 1991 Cholecystectomy
- Marescaux, 2001 Transatlantic robotic-assisted telesurgery

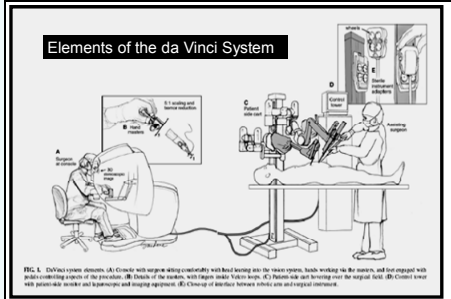



FIG. 4. da Vinci system elements. (A) Console with surgeon sitting comfortably with head leaning into the vision system, hands working via the masters, and feet engaged with pedals controlling aspects of the procedure. (B) Heads of the master, with right master, master arm, and right wrist. (C) Heads of the slave working over the surgical field. (D) Console view with patient side monitor and laparoscopic and imaging equipment. (E) Cloning of anatomy between robotic arm and surgical instrument.

Robotic Platform

- Restores "feel" of open surgery in MIS setting
- Improved ergonomics
- Motion scaling
- 3D vision & magnification
- Filters tremor
- Increases range of motion



Robotic Surgery Theoretical Advantages

- Shorter learning curve than lap?
- Larger number of surgeons will be able to make safe transition to MIS?
- More precise dissection will lead to better cancer outcomes and fewer complications (bleeding, nerves)?

Robotic Surgery
Theoretical Advantages

*Surgeon fatigue, spine/hand injury?

Education - telementoring?

Integration of technology – staplers, ligasure, harmonic, SILS device?

*Berguer et al J Surg Res 2006;134:87
*Park et al. JACS 2010;210:306-313

Drawbacks of Robotic System

Lack of tactile & tensile feedback
Prompt open conversion impossible?
Time – setup, docking, takedown
Cost:

- Initial (\$1.8 million per da Vinci-S)
- Maintenance (\$100,000/year)
- Disposables (\$ 1500/case)

Robotic Technique
Evolution – Rectal Dissection

<u>Hybrid Robotic</u>	Laparoscopy flexure Robotic TME
<u>Totally Robotic*</u>	Flexure, vessels TME

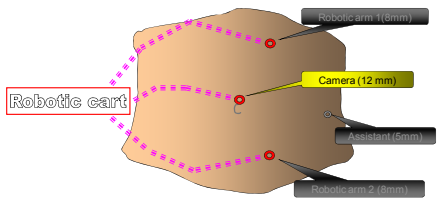
*Luca et al. Ann Surg Onc 2009;16:1274
*Helman, Pigazzi et al. Surg Endosc 2009;23:447

Christie Experience

Total procedures: 8
Male: 4
Age: 71.5 (44-79)
Operation Types:
- Anterior Resection: 3
 Abdominoperineal Resection: 3
 Rectopexy: 1
 Posterior Clearance: 1
LOS: 9 (7-12)
Post operative complications: Nil

Robotic Right Hemicolectomy

Surgical Technique – Robotic port placement



Robotic Right Hemicolectomy

No difference in lymph node harvest, EBL, conversion, LOS, complication, wound infection.

- Robotic procedure
- Longer operating time
 - Higher cost
 - No technical advantage

Robotic Right Hemicolectomy

Conclusion

No Role

Robotic Left Colon & Rectal Cancer
Feasibility, Safety Outcomes

No. Pts	LC (27), R (28)
OR time (min)	290
EBL (ml)	68
Conversion	0
Leaks	7 (2C, 5R)
Reinterventions	0

*Luca et al. Ann Surg Oncol 2009;16:1274

Robotic Left Colon & Rectal Cancer
Oncologic Outcomes

Nodes	18.5
Distal margin (cm)	2.5
Quality of TME	
Complete	22
Nearly complete	6
Incomplete	0

*Luca et al. Ann Surg Oncol 2009;16:1274

Robotic Proctectomy - Rectal Cancer
Feasibility, Safety Outcomes

No. pts	50
BMI	23
OR time (min)	304
Conversion	0
Leaks	4
Complications	18%

*Choi, Kim et al. DCR 2009;52:1824-1830

Robotic Proctectomy - Rectal Cancer
Oncologic Outcomes

Nodes	20.6
Distal margin (cm)	1.9
Circumferential Margin	
Complete	49
Positive	1

*Choi, Kim et al. DCR 2009;52:1824-1830

Drawbacks of Robotic System

Lack of tactile & tensile feedback

Prompt open conversion impossible?

Cost:

- Initial (\$1.5 per da Vinci-S)
- Maintenance (\$100,000/year)
- Equipment (\$ <2000/case) – drapes, endo wrist instruments, other disposables

Current Questions
Robotic Pelvic Surgery

Will robotic surgery lead to more accurate, and more precise anatomic resections?

Will this lead to better cancer outcomes?

Will this lead to safer (less bleeding) and less collateral damage (ureter, nerves) and better QOL postoperative outcomes?

ROLARR Trial

International RCT
Primary end point: rate of conversion to open surgery
Secondary end point:

- pathological CRM
- 3 yr LR
- Postoperative complications
- Sexual and bladder function
- Patient self reported QoL
- DFS and OS
- Health economics
- QALY
- Direct resource utilization
- Cost effectiveness

Thank You

Laparoscopic Colorectal Surgery in Swansea
Experience of a UK National Fellowship
Training Centre



Umesh Khot
Consultant Surgeon




History of Lap Colorectal Surgery

- First laparoscopic colonic resection- Jacobs 1991. *
- Technique development slow- technically demanding, multi-quadrant, anatomical challenge and need for special instruments.
- Experience and technological advances – disadvantages overcome.

*Surgical laparoscopy and Endoscopy 1991;1:144-50.

Evidence

- Conventional Vs. Laparoscopic-Assisted Surgery in patients with colorectal cancer **CLASICC 2005**
- Colon Cancer Laparoscopic or Open resection **COLOR 2005**
- Clinical Outcomes of Surgical Therapy **COST 2004**
- Cochrane review (25 RCTs)

Short term benefits LS vs. OS

- Reduced intra-operative blood loss (LS)
- Reduced postoperative pain (LS)
- Shorter duration of postoperative ileus (LS)
- Improved postoperative pulmonary function (LS)
- Shorter length of hospital stay (LS)

Evidence

Laparoscopic Surgery for colorectal cancer is safe and effective.

T. Lourenco et al. Surgical Endoscopy (2008) 22:1146-60
Meta-analysis & Systematic review of 19 RCT's.

NICE guidance TA105, August 2006

DOH

Advantages

Improved short-term outcomes

- Less pain (small incisions)
- Early mobility and gut function
- Reduced LOS
- Cosmesis
- Early return to daily activity/work-benefit to society

Oncological and long-term outcome similar to open surgery

Disadvantages

Not many!

Cost (offset by advantages)

- £1500 saving per patient –bed cost
- Less use of intensive care/blood products

Long learning curve!

- Well trained surgeon-Open before Laparoscopy!!!!

Focus Today

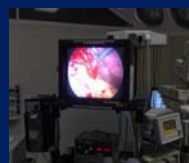
- High Quality Surgery-DOH
- ERP-National Programmes
- Anaesthetic modifications
- Team work

This operation is too difficult "open".....
let's convert to laparoscopic!!!



When we started-2007

- No modern equipment for 9 months
- General instruments




Now

- SHD Stacks-4
- LCS trays
- Harmonic scalpel & Oesophageal Doppler
- Special Table



What is Ideal

- OR1



The Team

- Surgeon
- Anaesthetist
- Nurses
- Pain team
- Physiotherapy / Occupational therapy
- Dietician
- Specialist Nurses
- And the PATIENT!

The Package

- Enhanced Recovery Programme
- Pre-operative optimisation
- Replenished Bowel Preparation
- Laparoscopic Surgery
- Epidural vs.. Intrathecal
- Minimised use of OPIATES!
- Early mobilisation
- Fluids Day 1 / Solids Day 2

Anaesthetic Consortium-Pivotal!



Implementation

- Laparoscopic Surgery-Consultant Training
- National Programme- LAPCO
 - Preceptorship
 - Fellowships
- ERP-National Programme

Preop Surgeon

- Preassessment and ERAS pathway
- Consent-pro vs. cons, (previous open op)
- Counselling (opiates)/ Information booklet
- EDD-suitability to go home early
- Stoma training
- Meeting CNS
- MDT

Preop Anaesthetist

- Managing patients' expectations
- Informed choice of anaesthetic technique
- DOSA
- Fluid optimisation*
- Pre-medication
- Bowel preparation

Intraoperative Methods

- Dexa/ondansetron
- Antibiotics
- Intrathecal Analgesia-DOSE
- Gel pad-protector
- Maquet Alpha Max operating table
- Doppler guided fluid management

2007 Swansea- a new start

- Gold standard- Epidural!
- Problems!!
- Hampered Enhanced Recovery!!!
- Alternative????

Swansea Lead

Intrathecal Analgesia
in
Colorectal Surgery

Intrathecal Analgesia at Singleton

Short-term outcomes with intrathecal versus epidural analgesia in laparoscopic colorectal surgery.

Virlos I, Clements D, Beynon J, Ratnalikar V, Khot U.

British Journal of Surgery 2010;97:1401-1406

Oesophageal Doppler



Postoperative Surgical Care

- Carbohydrate/Protein drinks @2hrs
- Min IV-usually no more than1 litre
- Mobilisation-next day (pedometer)
- 2 doses antibiotics
- Free fluids/Breakfast next day/Full diet
- Catheter,PCA removed next day
- PCA/data collected by patient

Post Discharge

- Aim – Safe early discharge
- Intensive stoma care training
- Community support
 - Information leaflets provided
 - Telephone contact
 - Home visit
- Consultant/Nurse clinic led follow up

CNS Role

- Key worker role
 - Team approach
- Provide patient support and counselling
- Patient education – Specialised leaflets
- Relatives/carers involved

National Outcomes-NBOCAP 2007 (Benchmark when I started)

- LOS 11 days in the UK
- LCS offered in <5% cases
- Conversion 7-21%(5.5% in 2007)

Our Results

617 cases

Right Hemicolectomy	295 (47%)
Sigmoid Colectomy	75 (12%)
Anterior Resection	78 (13%)
Low Anterior Resection	62 (10%)
APER	33 (5%)
Panproctocolectomy / Subtotal colectomy	25 (4%)
Ileo-anal pouch procedure	10 (1%)
Rectopexy	12 (2%)
Hartmann's reversal	24 (4%)

Our Results



- Conversion 10.2%(63/617)
Bleeding, unclear anatomy, T4, equipment failure
- Major complication 9.3%(57/617)
Leak (n=28; 4.5%), wound, chest, cardiac, ileus
- Mortality 1(0.2%), day 28 cardiac
- Readmission 37 (6%)
- LOS 2-4 days (Open surgery 10 days)
- Operating time Similar (45min-3.5 hrs)

Cost Audit

Operation	Open	Laparoscopic
Sigmoid Colectomy	£4025	£3081
Right Hemicolectomy	£3166	£2242

Cost saving of around £ 900 with laparoscopic approach!



Recovery times cut by three weeks

Darent Valley Hospital, Dartford and Gravesham NHS Trust, has been working to improve outcomes for patients undergoing major bowel surgery, through laparoscopic surgery and the Enhanced Recovery Programme (ERP), and has reduced recovery times by three weeks.

Factors used to speed up recovery included: carbohydrate loading prior to surgery, use of laparoscopic surgical techniques, better cardiac and fluid monitoring (including oesophageal doppler monitoring), and early return to food following surgery.

Speaking about ERP, Dr Michael Parker, consultant general and colorectal surgeon at Darent Valley Hospital, commented:

"By enabling patients to leave hospital sooner and recover more quickly we are saving the Trust a significant amount of money. For the third of patients we treated who were returning to work, we also saved the economy substantial sums by enabling them to return to work a full three weeks earlier than before."

The team at Darent Valley combined laparoscopic surgery with ERP for a series of 200 patients undergoing colorectal surgery between January 2003 and June 2009. These patients were compared against a group of patients undergoing open colorectal surgery, also at Darent Valley.

The median length of stay in hospital was reduced to just five days. In comparison, the UK National Bowel Cancer Audit for 2004-5 reports the national average for open colorectal surgery to be almost double, at 11 days. The median length of time for patients at Darent Valley to return to "normal" after being discharged, was slashed from 29 days for patients undergoing open surgery) to just seven.

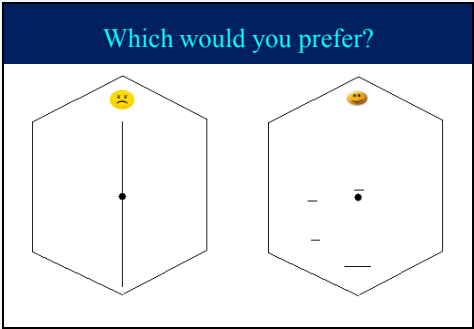
Dr Parker and his team are looking at the possibility of reducing length of stay by one more day which may be the optimum without increasing the risk of readmission. They hope to extend the combination of laparoscopic surgery and the enhanced recovery programme to other surgical specialities.

Hospital stay and return to full activity following laparoscopic colorectal surgery.
Raymond T, Dastur, Khot UB, Parker MC.
Colorectal Dis. 2010;12: 1001-1006.

Following laparoscopic colorectal surgery, patients can be expected to return to their usual activities within a week after discharge from the hospital and less than 2 weeks from surgery.

Oncological outcome after Laparoscopic Abdominoperineal Excision of Rectum (APER)

Colorectal Disease 2012 Aug;14(8):967-71



Elderly and ERAS



- Mean age 67 years
- Colorectal Population
 - 70% patients > 65 yrs
 - 2.5x Cancer risk (Age > 80yrs)
- More to Gain ?

Laparoscopic Right Hemicolectomy



Ethicon-Fellowship

- 7 Fellows so far
- All practising Consultants
- 40 cases over six months
- Complete Consultant level training
- Highly recommended near CCT...but
Swansea has withdrawn from 2013!!

Accommodation

Ty Newydd Country offers tranquillity, comfort and excellent food - and some of the most beautiful scenery in Wales! It provides every modern convenience, while retaining the character and style of a fine Georgian country house. With 28 beautifully appointed bedrooms to unwind in, hot bath, free broadband connection in every room, a fantastic restaurant, log fires, a nice ambience, a welcoming bar and lovely gardens with magnificent views of the Beacons and Neath Valley, the hotel is an excellent place for a nice and relaxing stay.



Details
Ty Newydd Country Hotel
Penderyn Road
Hirwaun
Aberdare
Mid Glamorgan
CF44 9SX

W: <http://www.tynewyddcountryhotel.co.uk/>
T: 01685 813 433
Contact: Ms Melanie Hillier -
melanie@tynewyddcountryhotel.co.uk



Notes

Notes

DIRECTIONS TO PRINCE CHARLES HOSPITAL

Travelling to Prince Charles Hospital

By Rail: The nearest main line station is Merthyr Tydfil, which is only a 5 minute walk to the bus station or a 10 minute taxi journey to the Hospital, and has regular service connections to Cardiff. For details of local and national rail enquiries please call the Traveline on: 0870 608 2 608.

By Bus: From outlying areas you are advised to travel to the Merthyr Tydfil bus station and then take the number 27 bus which travels to the Hospital. The service runs on the hour and then every 15 minutes with a journey time of 10 minutes.

By Road: Merthyr Tydfil is situated north of Cardiff on the A470 and A465 making it easily accessible via the UK road network.

From Cardiff: Take the A470 heading north for Pontypridd and Merthyr Tydfil. Go straight ahead at the Abercynon roundabout. Go straight ahead at the next two roundabouts and at the third roundabout you will leave the A470 by taking the third exit from the left, (effectively turning right) which is also signposted to Cyfarthfa Castle. Go straight ahead until you reach a set of traffic lights. Turn left at the traffic lights and travel up a twisty road until you reach a T-junction. You will see Cyfarthfa Castle immediately ahead of you. Turn left at the T-junction, also signposted to Cefn Coed y Cymmer. Take the next right turn which is signposted to Prince Charles Hospital. Follow the signs for the hospital.

From Brecon: Travel south along the A470. Approaching Merthyr Tydfil you come to a roundabout which is the junction of the A470 and A465. Take the first left for Abergavenny and then proceed as if coming from Neath above.

From Abergavenny: Take the A465 for Merthyr Tydfil. Approaching Merthyr Tydfil you come to a roundabout which exits to Cardiff, Merthyr Tydfil, Neath and Asda/ MFI/Allied Carpets. Take the Neath turnoff and continue along the A465 for about 1 kilometre where there is a slip road to the left marked H(A&E) in red and Merthyr Industrial Estate. Follow the slip road to a T-junction and turn right up a hill to a roundabout. Take the third exit off the roundabout. Follow this road past a School and housing estate. The road dips down a small gradient and at the bottom turn left for Prince Charles hospital. This is the fourth left turn after coming off the roundabout (approximately 1 kilometre). The entrance to the hospital is up a small hill and on the left.

From Neath: Take the A465 for Merthyr Tydfil. Approaching Merthyr Tydfil you pass the Baverstock Hotel on your left and, proceeding down a hill you come to a roundabout. Take the second left (effectively straight ahead for Abergavenny). Almost immediately (about 150 yards) turn left, signposted to Prince Charles Hospital, onto a steep and twisty road. You will come to a T-junction at which you will turn right into Cefn Coed y Cymmer. On leaving the village you will drive straight on at the mini roundabout. Take care here as the junction is slightly off-set and the road narrows into a left hand bend. As the bend straightens out, take the next turning left which is signposted to Prince Charles Hospital. The road almost doubles back on itself up a steep hill. As you turn into this road you will see a lake on your right which is set in the grounds of Cyfarthfa Castle. Continue up the hill, and follow signs for the hospital.

On Arrival: Car parking is readily available around the hospital site. Visitors are then requested to report to the reception of the ward or department they are attending.

ABOUT THE HOSPITAL

Cwm Taf Health Board

Cwm Taf Health Board was established on 1 October 2009 and consists of two District General Hospitals; Prince Charles Hospital and the Royal Glamorgan Hospital. They are responsible for the provision of health care services to over 325,000 people principally covering the Merthyr Tydfil and Rhondda Cynon Taff Local Authority areas.

Prince Charles Hospital is based in the Gurnos Estate, Merthyr Tydfil CF47 9DT. To the north of the hospital lies the beautiful Brecon Beacons National Park whilst to the south-west is the Gower Peninsula with its outstanding coastline. The capital city of Wales, Cardiff, is only 25 miles away along the dual carriageway (A470) South to North Wales trunk road.

The Royal Glamorgan Hospital is based in Llantrisant, Rhondda Cynon Taff CF72 8XR. It is located in a semi-rural area, just 3 miles from the M4 and only 13 miles from the city of Cardiff. The hospital is within easy access to Bristol, Bridgend, Swansea and the whole of South Wales. The hospital is cushioned by areas of outstanding beauty: the Glamorgan Heritage Coast, the Gower, Rhondda Heritage Park and the Brecon Beacons National Park are all within short driving distance.

Cwm Taf Health Board is committed to the development of Medical Education programmes that are dynamic, interactive and adequately prepare our undergraduates, junior medical staff for their present/ future roles and personal career development. We not only ensure we offer the complete curriculum for undergraduate students, foundation, core and specialty trainees; we also ensure we offer a wide range of clinical skills and related topics combined with support and funding for other relevant courses for appropriate staff.

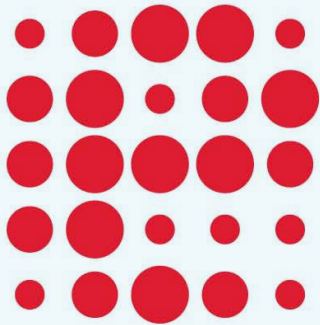
The recently refurbished Medical Education and Training Centres consist of classrooms and lecture theatres all fully equipped with a wide range of state of the art audio-visual facilities. A new Theatre-Video link has also been installed allowing for interesting operations to be shown 'live' to an audience in the Lecture Theatre which has greatly enhanced teaching sessions.

The Resuscitation & Clinical Skills department have developed a full range of clinical skills training programmes which have local, national, European and International accreditation. There are dedicated fully equipped high fidelity simulation suites at both sites, enabling the delivery of an extremely wide range of skills for the majority of undergraduate and postgraduate training requirements.



ACKNOWLEDGEMENTS

We are pleased to acknowledge the generous support of Ethicon Endo-Surgery, the co-organiser and principal sponsor of the event, who provided 10 scholarship places.



Ethicon Endo-Surgery

PART OF THE *Johnson & Johnson* FAMILY OF COMPANIES

We gratefully acknowledge the help and support of Dukes' Club and its members.



The Royal College of Surgeons of Edinburgh provides 12 CPD points for attendance at this event.





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Bwrdd Iechyd
Cwm Taf
Health Board

Laparoscopic Colorectal Surgery Course & Master Class

Dates: 26th and 27th September 2012

Venue: Prince Charles Hospital, Merthyr Tydfil, Wales



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