



**MAYO CLINIC
INSTITUTE OF ONCOLOGY
VILNIUS UNIVERSITY
THE LITHUANIAN SOCIETY OF COLOPROCTOLOGISTS**



**World Colorectal Cancer Conference
Mayo Clinic Days in Vilnius 2012**

**May 18-19, 2012
Vilnius, Lithuania**

Friday, May 18	15.45-16.00 Michael Davies (Cardiff, UK) Colorectal imaging	10.45-11.00 Parvez Sheikh (Mumbai, India) Iatrogenic sphincter injuries
10.30-10.35 Official opening by Prof. Konstantinas Povilas Valuckas (Director, Institute of Oncology, Vilnius University)	16.00-16.30 Coffee break	11.00-11.30 Coffee break
Rectal cancer Moderator N. E. Samalavičius (Vilnius, Lithuania)	Rare tumors, anesthesia and recovery Moderator T. Po kus (Vilnius, Lithuania)	Benign colonic diseases Moderator P. niuolis (Klaipėda, Lithuania)
10.35-10.50 David Beddy (Dublin, Ireland) Downstaging effects of chemoradiotherapy in rectal cancer	16.30-16.45 Bruce Wolff (Rochester, USA) Unusual anorectal tumors (GIST, Melanoma, Carcinoid)	11.30-11.45 Stefan D. Holubar (Dartmouth, New Hampshire, USA) Minimally invasive surgery for chronic ulcerative colitis
10.50-11.05 Claudio Fucini (Florence, Italy) Biological prognostic markers and indicators of radiochemosensitivity in stage II/III rectal cancer: is it time to consider them?	16.45-17.00 Richard Devine (Rochester, USA) Tailgut cysts and other uncommon pelvic tumors	11.45-12.00 Sudeep Khaniya (Dharan, Nepal) Surgical management of rectal prolapse through abdominal approach: single institution experience
11.05-11.20 Ho Kyung Chun (Seoul, Korea) Local treatment of rectal cancer	17.00-17.15 Bruce Wolff (Rochester, USA) Appendiceal tumours	12.00-12.15 Richard Devine (Rochester, USA) Diverticulitis: current practice update
11.20-11.35 Dolores Herrerros (Madrid, Spain) Endoanal treatment of rectal cancer (TEM): indications and results	17.15-17.30 Renatas Tikui is (Vilnius, Lithuania) Which anesthesia is the best for colorectal surgery	12.15-12.30 Dieter Hahnloser (Lausanne, Switzerland) Washout for acute perforated diverticulitis: is it worthwhile?
11.35-11.50 Daniel Leonard (Bruxelles, Belgium) Total mesorectal excision for rectal cancer: 12 years experience and quality assessment	17.30-17.45 Alan Horgan (Newcastle, UK) Enhanced recovery after colorectal surgery, the UK experience	12.30-12.45 Seung-Kook Sohn (Seoul, Korea) Subtotal colectomy for slow transit constipation
11.50-12.05 Ronan O'Connell (Dublin, Ireland) Anastomotic techniques for low anterior resection	17.45-18.00 Bruce Wolff (Rochester, USA) Postoperative ileus	12.45-13.00 Sudeep Khaniya (Dharan, Nepal) Complicated sigmoid volvulus: management and outcomes
12.05-12.20 Dieter Hahnloser (Lausanne, Switzerland) Robotic surgery for rectal cancer: what is the evidence?	18.00-18.15 Cary B. Aarons (Philadelphia, USA) Postoperative adhesions	Surgery for colorectal cancer Moderator K. Petrulevičius (Vilnius, Lithuania)
12.20-12.35 Andreja Arsovski (Skopje, Macedonia) Laser treatment of lung metastasis from colorectal cancer	18.15-18.30 Ricardo Escalante (Caracas, Venezuela) Major complications after radical surgery of rectum	13.00-13.15 David Beddy (Dublin, Ireland) Malignant colonic obstruction: surgery or stenting?
12.35-14.00 Lunch	18.30-18.45 Stefan D. Holubar (Dartmouth, New Hampshire, USA) High resolution anoscopy for high grade intraepithelial lesions	13.15-13.30 Seung-Kook Sohn (Seoul, Korea) Palliative surgery for malignant bowel obstruction in patients with peritoneal metastases
Colorectal cancer prevention, screening and diagnosis Moderator D. Venskutonis (Kaunas, Lithuania)	18.45-22.00 Conference dinner (Panorama hotel conference center)	13.30-14.30 Lunch break
14.00-14.15 Francis Seow-Choen (Singapore) The right age to start screening for colorectal cancer	Saturday, May 19	14.30-14.45 Michael Davies (Cardiff, UK) Laparoscopic colorectal surgery
14.15-14.20 Ronan O'Connell (Dublin, Ireland) Introduction of population screening for colorectal cancer in Ireland	Benign anorectal diseases Moderator R. iug da (Kaunas, Lithuania)	14.45-15.00 Alan Horgan (Newcastle, UK) Laparoscopic splenic flexure mobilisation
14.20-14.25 Varut Lohsiriwat (Bangkok, Thailand) Colorectal cancer screening: Thailand's perspective	9.00-9.15 Ricardo Escalante (Caracas, Venezuela) The first hospital of the World	15.00-15.15 Francis Seow-Choen (Singapore) Performing laparoscopic surgery with minimal number of ports
14.25-14.30 Gintautas Rad iūnas (Vilnius, Lithuania) Colorectal cancer screening in Lithuania	9.15-9.30 Sarkis Yeretsian (Montreal, Canada) Open Cohort Study on 50 Patients with grade III/IV and IV/IV using Closed Bloodless Hemorrhoidectomy Technique (CBH)	15.15-15.30 Daniel Leonard (Bruxelles, Belgium) Single incision laparoscopic colorectal surgery: feasibility and short-term outcomes study
14.30-14.45 Cherd Sak Iramaneerat (Bangkok, Thailand) Colonoscopy training	9.30-9.45 Tomas Po kus (Vilnius, Lithuania) Hemorrhoids in pregnancy	15.30-16.00 Ho Kyung Chun (Seoul, Korea) Operating through a natural orifice
14.45-15.00 Narimantas Evaldas Samalavičius (Vilnius, Lithuania) Colonoscopic perforations	9.45-10.00 Parvez Sheikh (Mumbai, India) Post haemorrhoidectomy /Post PPH - complications & management	16.00-16.15 Yoonah Park (Seoul, Korea) What do I need to begin robotic surgery?
15.00-15.15 Varut Lohsiriwat (Bangkok, Thailand) Management of precancerous lesions of the colon	10.00-10.15 Sunil Kumar Gupta (Ranipur, India) Primary closure of wound after fistulectomy	16.15-16.30 Garbiela Moslein (Dusseldorf, Germany) Extended surgery in Lynch syndrome patients at the time of colon cancer is recommended: a quality of life study indicating that more is better
15.15-15.30 Cary B. Aarons (Philadelphia, USA) The surgical management of malignant polyps	10.15-10.30 Richard Devine (Rochester, USA) Management of rectourethral fistulas	16.30-16.45 Peter Sagar (Leeds, UK) Higher and wider? More radical resection for recurrent rectal cancer
15.30-15.45 Mohsen Towliat (Tehran, Iran) Differential diagnosis of solitary rectal ulcer and rectal carcinoma: is it a challenge?	10.30-10.45 Peter Sagar (Leeds, UK) Management of pouch- and recto-vaginal fistulas	



Dear international guests,
society members,
colleagues and friends,

It is my great privilege and pleasure to welcome you at the first World Colorectal Cancer Conference in Lithuania, which is held on May 18-19, 2012. It is as well a very nice continuation of Mayo Clinic Days in Vilnius project, happening already for the third time in our capital since the first meeting of such a kind in 2007.

A lot has been achieved in the treatment of colorectal cancer in Lithuania over the past several decades. Firstly, for the third year we have a colorectal cancer screening program for average risk individuals, which is now available for approximately 80 percent of Lithuanian citizens, from the age of 50 to 75. The Lithuanian polyposis registry will soon be celebrating its 20th anniversary. Diagnostic facilities had dramatically been improved. Rectal cancer is treated mostly in specialized centers who are capable of offering a multidisciplinary approach. Colorectal cancer patients can access up-to-date treatment, including modern surgical options, frontline radiotherapy and chemotherapy. Biological therapy for colorectal cancer also became available when indicated. Despite all that, our statistics are pretty alarming: in 2009, we diagnosed 1608 new colorectal cancer cases, and registered 1004 deaths from this disease. Nearly half of our newly diagnosed patients had an advanced disease (stage III and IV). That is the reason why the only specialized tertiary referral center in Lithuania - Oncology Institute of Vilnius University - tries to mobilize all efforts to optimize colorectal cancer treatment on a national level, encouraging the most up-to-date treatment for every individual patient, and increase overall survival for those affected with this disease.

We truly believe that this meeting will give us new impulses in the progress of managing colorectal cancer. We do hope that all the participants and invited speakers will benefit from fruitful discussions, relaxing social activities, beneficial personal communications, as well as from facing this amazing spring 2012, which smiles with all its blossoms into our crowded conference room from the other side of the window.

Sincerely yours -

Prof. Narimantas Evaldas Samalavičius
President of the Lithuanian Society of Coloproctologists
Chief of Center of Oncosurgery
Oncology Institute of Vilnius University

Invited speakers:

Prof. Bruce G. Wolff
College of Medicine, Mayo Clinic
Chairman in Colon & Rectal Surgery
Division of Colon & Rectal Surgery
Mayo Clinic
Rochester, Minnesota, USA

Prof. Richard M. Devine
College of Medicine, Mayo Clinic
Division of Colon & Rectal Surgery
Rochester, Minnesota, USA

Prof. Patrick Ronan O'Connell, M.D.
University College Dublin
Elm Park, Dublin, 4, Ireland
Mayo Clinic international clinical fellow 1985-1986

Prof. Peter M. Sagar, M.D.
Leeds General Infirmary
Division of Colon and Rectal Surgery
Great George St.
Leeds, LS1 3 EX
United Kingdom
Mayo Clinic international clinical fellow 1995-1996

Dr. Alan F Horgan
Director, Newcastle Surgical Training Centre
National Clinical Lead, Enhanced Recovery Partnership
Programme
Newcastle
United Kingdom
Mayo Clinic international clinical fellow 1998

Prof. Dieter Hahnloser
CHUV
Service de chirurgie viscérale
BH10/983
Rue du Bugnon 46, 1011 Lausanne, Switzerland
Mayo Clinic international clinical fellow 2002-2003

Dr. Michael Davies.
Spire Cardiff Hospital
United Kingdom
Mayo Clinic international clinical fellow 2004-2005

Dr. Maria Herreros Marcos
Autonoma de Madrid University
University Hospital La Paz
Paseo de la Castellana
261 28046 Madrid, Spain
Mayo Clinic international clinical fellow 2009-2010

Dr. David Beddy
University College Dublin
Elm Park, Dublin, 4, Ireland
Mayo Clinic international clinical fellow 2009-2010

Dr. Tomas Poškus
IIIrd department of abdominal surgery
Vilnius University Hospital Santariskiu Klinikos Center
branch
ygimantų 3, L T-01128 Vilnius, Lithuania
Mayo Clinic international clinical fellow 2009-2010

Dr. Daniel Leonard
Unité de Chirurgie Colorectale
Service de Chirurgie et Transplantation Abdominale
Cliniques universitaires Saint-Luc
10, avenue Hippocrate
B-1200 Bruxelles, Belgium
Mayo Clinic international clinical fellow, January 2010 -
June 2010

Prof. Gabriela Moslein
HELIOS St. Josefs-Hospital
Abteilung für Allgemeine und Viszeralchirurgie
Koloproktologie,
Axstraße 35 - 44879 Bochum, Germany
Mayo Clinic international research fellow, 1995

Assist. Prof. Stefan D. Holubar
Colon & Rectal Surgery
Dartmouth-Hitchcock Medical Center
Dartmouth Medical School
Hanover, New Hampshire, USA
Mayo Clinic research fellow 2007-2009, clinical fellow 2009-
2010

Assist. Prof. Cary B. Aarons
Division of Colon & Rectal Surgery
Perelman School of Medicine
University of Pennsylvania
3400 Spruce Street, 4 Silverstein
Philadelphia, PA 19104, USA
Mayo Clinic clinical fellow 2009-2010

Assoc. prof. Claudio Fucini
University of Florence
Director of the 3rd Emergency and General Surgery Unit
AOUCareggi -Florence -Italy
Director of the School of Specialization in Surgery of the
Alimentary
Tract-University of Florence, Italy
Visiting physician at Mayo Clinic, multiple visits since 1984

Prof. Narimantas Evaldas Samalavius
Chief of Clinic of Oncosurgery
Institute of Oncology, Vilnius University
Santari kių 1, LT-08406 Vilnius, Lithuania
Visiting physician at Mayo Clinic, June 2006

Dr. Renatas Tikuiis
Chief of Anesthesia and Intensive care department
Institute of Oncology, Vilnius University
Santari kių 1, LT-08406 Vilnius, Lithuania
Visiting physician at Mayo Clinic, November-December 2007

Dr. Gintautas Radziūnas
IIIrd department of abdominal surgery
Vilnius University Hospital Santariskiu Klinikos Center
branch
ygimantų 3, LT-01128 Vilnius, Lithuania
Visiting physician at Mayo Clinic, January 2010

Assist. prof. Varut Lohsiriwat
Division of Colorectal Surgery, Department of Surgery,
Faculty of Medicine, Siriraj Hospital
Mahidol University, Bangkok 10700, Thailand
Visiting physician at Mayo Clinic, October-December 2010

Prof. Ho-Kyung Chun
Chairman, Department of Surgery
President, Center for Health Promotion
Samsung Medical Center
Sungkyunkwan University School of Medicine
Seoul, Korea

Dr. Yoona Park
Clinical Assistant Professor
Department of Surgery, Samsung Medical Center
Sungkyunkwan University School of Medicine
Seoul, Korea

Prof. Seung-Kook Sohn
Department of Surgery
Kangnam Severance Hospital
Yonsei University College of Medicine
PO Box 1217, Seoul 135-720, Korea

Assoc.prof. Cherdas Iramaneerat
Division of Colorectal Surgery, Department of Surgery,
Faculty of Medicine, Siriraj Hospital
Mahidol University, Bangkok 10700, Thailand

Dr Francis Seow-Choen
Colorectal Surgeon & Director
Seow-Choen Colorectal Surgery PLC
Singapore, Singapore

Dr. Parvez Sheikh
Charak Clinic Nursing Home
Laud Mansion, 21 M. Karve Road
Mumbai 400004, India

Dr. Sunil Kumar Gupta
Main Hospital,
Bharat Heavy Electricals Limited,
Ranipur, Hardwar-249403, Uttarakhand, India

Assoc. prof. Sudeep Khaniya
Department of Surgery
B.P. Koirala Institute of Health Sciences, Dharan, Nepal

Assoc. prof. Mohsen Towliat
Erfan Hospital
West 17th Alley
Shahid Bakhshayesh st. After Sarv Square
Saadatabad, Tehran, Iran

Dr. Sarkis Yeretsian
Clinique Medic-aile Montreal
Appletree Medical Center, Ottawa, Ontario, Canada

Prof. Ricardo Escalante
Loira Medical Center
Caracas, Venezuela

Prof. Andreja Arsovski
Private General Hospital Remedika
16 Makedonska Brigada 18
1000 Skopje, Macedonia, FYR
16 Makedonska Brigada 18, 1000 Skopje, Macedonia, FYR

David Beddy (Dublin, Ireland)

DOWN STAGING EFFECTS OF CHEMORADIOTHERAPY IN RECTAL CANCER

Much of the evidence for down staging following chemoradiotherapy (CRT) in rectal cancer has come from randomised controlled trials over the past decade. The German CAA trial compared neoadjuvant CRT to post-op CRT and demonstrated significant down staging with preoperative treatment; 8% of patients having a complete response. Comparison of long-course RT to CRT in the EORTC and FFCD trials confirmed that chemotherapy with radiotherapy increases the down staging effect compared to radiotherapy alone. The Polish trial compared short-course RT to neoadjuvant CRT showing the superiority of CRT in producing complete response and sterilising lymph nodes. These trials showed that down staging with CRT reduces the risk of local recurrence in the pelvis. There is no convincing evidence that CRT increases the rate of sphincter preservation with low tumours. CRT significantly reduces the lymph node yield and number of positive nodes.

Approximately 10 -20% of patients with locally advanced rectal cancers receiving CRT will undergo pathological complete response (PCR) leading to an excellent oncological outcome. This has led to non-operative treatment of complete responders with selected series suggesting that a strategy of observation in patients with a PCR produces results similar to patients having radical surgery. The identification of patients with a PCR is currently problematic and up to 50% of those initially thought to have a complete response may regress on observation. Furthermore up to 15% of patients with a complete luminal response harbour residual tumour in adjacent lymph nodes. New imaging modalities including diffusion weighted MRI show promise in the ability to predict patients with a PCR. Strategies to improve the down staging response include increasing the interval to surgery post CRT, using newer chemotherapeutic regimes and increasing the radiation dose.

In summary down staging after CRT is significant and improves oncological outcome with complete responders having outcomes similar to stage 1 rectal cancer. Difficulties exist in identifying complete responders and therefore the current gold standard must remain total mesorectal excision following neoadjuvant CRT.

Claudio Fucini, Niccolò Bartolini (Florence, Italy)

BIOLOGICAL PROGNOSTIC MARKERS AND INDICATORS OF RADIOCHEMOSENSITIVITY IN STAGE II/III RECTAL CANCER

Is it time to consider them?

Background. Preoperative chemoradiation in advanced rectal cancer appears to reduce local recurrence, improve survival and allow a larger number of sphincter saving procedures. In a consistent number of patients, however, there is a limited or no response to chemoradiation. These patients do not take advantage from the treatment and have 25% of chances to experience toxicity.

Many biomolecular prognostic markers and markers of sensitivity to neoadjuvant radiochemotherapy have been investigated to avoid unnecessary and potentially harmful complications. Of particular interest are the markers of apoptosis, the regulatory mechanism controlling the disruption of cell cycle and programmed cell death; it has been reported that the damage of this mechanism has a major impact on the resistance of malignant tumours to radiotherapy and chemotherapy.

Methods. The expression of pro-apoptotic (Bax) and anti-apoptotic (mutated p53, Bcl-2, Bclxl) proteins was determined retrospectively (8-10 years after surgery) using immunohistochemistry in pre-treatment biopsy samples from 67 patients operated for stage II/III rectal cancer (< than 12 cm from the anal verge) and enrolled in an active follow-up programme. Thirty-three had been treated with immediate surgery followed, in selected cases, by adjuvant postoperative chemoradiation. Thirty-four had preoperative chemoradiation. The percentage of immunostained cells was recorded as negative (none or < 10%) medium positive (10-50%) or high positive (> 50%). Survival analyses and statistical tests were performed using SAS software.

Results. Independent prognostic factors for rectal cancer death were pN status (hazard ratio 3.82; 95% CI 1.67-8.73) and a high level of Bclxl positivity (hazard ratio 4.75; 95% CI 2.10-10.72) according to multivariate regression analysis by stepwise selection. Bax expression was associated with downstaging and higher survival in irradiated patients ($P = 0.0004$).

Conclusions. Pretreatment evaluation of apoptotic Bax and anti-apoptotic Bclxl factors in biopsy samples of stage II/III rectal cancers seems to be helpful in selecting tumours that will respond to chemoradiation or in identifying patients who will have a poor prognosis and/or limited benefit from chemoradiation. It is time to evaluate these data in prospective studies with large cohorts of patients.

Ho-Kyung Chun (Seoul, Korea)

LOCAL TREATMENT OF RECTAL CANCER

Local excision is a well described procedure with several advantages comparing to radical resection. First, it avoids a permanent stoma in patients requiring abdomino-perineal resection. Second, the duration of the procedure is shorter and the risk of postoperative complications is lower. The third reason is the expectation of better postoperative function regarding defecation, urination, and sexual activity.

With emerging data showing comparable long-term outcome, local excision has gained popularity as a valid alternative to radical surgery in selected patients. However, recently published large series of patients with a long-term follow-up have shown that the recurrence rate is higher than that previously reported. In addition, in patients with local recurrence after local excision, only 50% or less will ultimately be salvaged by radical surgery. The previous enthusiasm for local excision has diminished and selecting patients for local excision must be cautious. The prevailing current opinion is that local excision should be limited to the T1N0 category without unfavorable prognostic factors. Those unfavorable prognostic factors include: positive or very narrow margins, tumor fragmentation, involvement of venous or lymphatic vessels, perineural infiltration, deep infiltration of the submucosa, and a flat or ulcerative tumor on macroscopic assessment. In addition, the tumor should not be larger than 3-4 cm nor should it involve more than 30-40% of the entire bowel circumference.

Albeit local excision of advanced rectal cancer showed high recurrence rate, extension of the indication for local excision is controversially discussed because of the favorable results after neoadjuvant chemoradiation and radical surgery of radio-sensitive rectal cancer. In pooled analysis of neoadjuvant chemoradiation with local excision, local recurrence rate of 1% in patients with complete remission, and about 10% in yT1-2 patients was reported. The oncologic outcomes of preoperative chemoradiation and local excision in selected patients will be coming and this modality for rectal cancer may be encouraging.

Conclusively, local excision such as transanal endoscopic microsurgery (TEM), transanal excision, and posterior approach is a good alternative surgical option with comparable oncologic outcome, low morbidity/mortality, and better functional results in selected patients of T1 rectal cancer. Moreover, it is anticipated that multimodality approach including local excision will widen the role in management of advanced rectal cancer.

Maria Dolores Herreros Marcos (Madrid, Spain)

ENDOANAL TREATMENT OF RECTAL CANCER (TEM): INDICATIONS AND RESULTS

Background: Transanal Endoscopy Microsurgery (TEM) allows local excision of rectal tumors located 4 to 18 cm above the anal verge. The aim of this procedure is to perform a R0 resection decreasing morbidity and improving postoperative functional results.

Only long-term low local recurrence rate should be accepted after this procedure.

Indications: Current general indication of TEM is

1. -benign tumor
2. -adenoma recurrence
3. -low risk rectal cancer
4. -stenosis
5. -retrorectal tumor

T1 rectal tumors can be treated through TEM if they fulfill the following requirements:

- Well differentiated (G1, G2)
- Absence of lymphangiosis (L0)
- Absence of endovascular microfoci (V0)
- Size up to 3 cm
- Height up to
 - o 20 cm posterior
 - o 15 cm anterior and lateral

Results: After TEM or local excision, local recurrence of T1 low risk tumor is 0-8,3% but when it became high risk tumor risk is 3-31%. If T2 tumors are resected by local excision, recurrence rate is 7-75%.

Conclusion: Nowadays only T1 low risk tumor resection by TEM is oncologically acceptable. Recent preliminary results regarding the management of T2 lesions after neoadjuvant treatment and TEM have been published. Long-term data are needed to accept this new indication.

Daniel Leonard (Bruxelles, Belgium)

TOTAL MESORECTAL EXCISION FOR RECTAL CANCER: A 12 YEAR EXPERIENCE AND QUALITY ASSESSMENT

Ronan O'Connell (Dublin Ireland)

ANASTOMOTIC TECHNIQUES FOR LOW ANTERIOR RESECTION

The technique of anterior resection and colorectal anastomosis was developed by Dr Claude Dixon at the Mayo Clinic. In a seminal publication in the *Annals of Surgery* (1948) he presented a series of 272 patients with tumours 6-20 cm from the dentate line with an overall 5 year survival of 68%. This set the benchmark for nearly 40 years until a combination of technical advances with the introduction of stapling devices and the realization that distal intramural spread of rectal cancer was rare. These allowed low anastomoses with distal margins as close as 1cm above the dentate line which were oncologically safe in the majority of patients. Rectal mobilization became standardized with the popularization of Total Mesorectal Excision by Heald and others. Coupled with these developments came advances in the treatment of congenital disorders in children and ulcerative colitis which provided much insight into the mechanisms of continence and how it might be preserved with colo-anal or ileo-anal anastomosis. The physiological importance of a 'neorectal' reservoir was realized and it is now standard to construct a stool reservoir as part of low anterior resection with coloanal anastomosis.

The double staple technique remains the most commonly performed, however for suitable tumours, inter-sphincteric dissection and pull-through ultra-low coloanal anastomosis can provide acceptable function outcomes, albeit often at the price of some incontinence or stool fragmentation. New techniques include the APPEAR operation in which an approach through the perineum can facilitate anastomosis while techniques employing devices such as ColonRing™, Seamguard® and C-Seal® remain to be proven.

Laparoscopic and robot assisted techniques have led to less invasive rectal mobilization, however the double staple anastomotic techniques have remained similar. Totally laparoscopic anterior resection has become possible with transanal specimen retrieval using a modified NOTES technique and intra-abdominal rendezvous for anastomosis. Cost benefit analyses will undoubtedly be needed to determine widespread feasibility and applicability of these developments.

Dieter Hahnloser (Lausanne, Switzerland)

Robotic surgery for rectal cancer: what is the evidence?

The primary goal of rectal cancer surgery is long-term disease-free survival. Laparoscopic rectal cancer surgery has many short-term patient benefits compared to open surgery and an oncological adequate TME can be performed.[] Robotic TME is a technical innovation with the potential benefits of a 3-dimensional view, improved dexterity with an increased range of movements at the tips of the instrument, physiological tremor elimination, enhanced ergonomics and a stable camera view. However, the robot is also expensive and can be dangerous, because patients (and doctors) seek new modes before evidence-based clinical utility is proven.

Several case-controlled studies on robotic TME have been published so far. Most cases were selected due to the availability of the robot and compared to laparoscopic cases. Most studies used a hybrid technique with conventional laparoscopic vessel dissection and mobilization of the left colon, whereas the robot was used for the pelvic part of the operation. Robotic operations were 40-60 minutes longer in three studies[] and conversions ranged from 0-7.3%.[, ,] Morbidity ranged from 10.7-30.6% and were not significant to laparoscopic TME. Distal resection margins and +CRM were also comparable between the two techniques. However, completeness of TME was only mentioned in one study and was significantly better in robotic cases (93% vs. 75%, $p=0.02$).[] The first plateau of the learning curve has been described to be at 30 cases.[]

Robotic rectal cancer surgery can be safely performed by experienced laparoscopic surgeons, with acceptable short-term outcomes comparable to those for laparoscopic resections. There is a need for more studies on quality control, patient gains and of cost analysis, as robotic surgery was 22'000\$ more expensive in one study.[] However, in the narrow fat pelvis the robot seem to be of great help.

1. Ohtani, H., et al., A meta-analysis of the short- and long-term results of randomized controlled trials that compared laparoscopy-assisted and conventional open surgery for rectal cancer. *J Gastrointest Surg*, 2011. 15(8): p. 1375-85.

2. deSouza, A.L., et al., A comparison of open and robotic total mesorectal excision for rectal adenocarcinoma. *Dis Colon Rectum*, 2011. 54(3): p. 275-82.

3. Kwak, J.M., et al., Robotic vs laparoscopic resection of rectal cancer: short-term outcomes of a case-control study. *Dis Colon Rectum*, 2011. 54(2): p. 151-6.

4. Park, J.S., et al., S052: a comparison of robot-assisted, laparoscopic, and open surgery in the treatment of rectal cancer. *Surg Endosc*, 2011. 25(1): p. 240-8.

5. Baik, J.H., C. Pastor, and A. Pigazzi, Robotic and laparoscopic total mesorectal excision for rectal cancer: a case-matched study. *Surg Endosc*, 2011. 25(2): p. 521-5. Baik, S.H., et al., Robotic versus laparoscopic low anterior resection of rectal cancer: short-term outcome of a prospective comparative study. *Ann Surg Oncol*, 2009. 16(6): p. 1480-7.

5. Baik, J.H., C. Pastor, and A. Pigazzi, Robotic and laparoscopic total mesorectal excision for rectal cancer: a case-matched study. *Surg Endosc*, 2011. 25(2): p. 521-5.

6. Baik, S.H., et al., Robotic versus laparoscopic low anterior resection of rectal cancer: short-term outcome of a prospective comparative study. *Ann Surg Oncol*, 2009. 16(6): p. 1480-7.

Arsovski A., Stojanovska Lj., Hadzi-Mancev M. (Skopje, Macedonia)

LASER TREATMENT OF LUNG METASTASIS OF COLORECTAL CARCINOMA

One of the most frequent metastases from colorectal carcinoma are located in lung. Contemporary surgical and oncological treatment of lung metastasis gives good results from the aspect of quality of life and duration of disease free period. The best surgical approach is laser resection, especially in multiple metastasis. Laser technology allows very precise resection of the metastasis lung tissue sparing and minimal deformation of bronchial and vascular structure of the lung. We use Dornie laser Medilas D multi Beam. Since November 2009 we have performed 27 laser metastasectomies of the lung, 16 of them were from primary colorectal cancers. All of them were previously operated, with different colorectal resections. The time between abdominal and lung operations was from 5 months and 4,5 years. 6 metastasis were single (4 right and 2 left lung); 4 cases have ipsilateral 2 metastasis; 1 case with bilateral (1+1) metastasis; 2 cases with multiple unilateral metastasis (3 and 5) and 4 cases with multiple (3-7) bilateral metastasis.

There were no major postoperative complications. Postoperative hospital stay was between 4-7 days (mean 5,2). In two cases there were recidives after 4 and after 6 months. There is short time for postoperative follow up and for significant statistical evaluation, but from this group three patients have died (after 3,6 and 6 months), the others are still disease free.

We can conclude that laser resections of lung metastasis is safe method which gives good postoperative results.

Francis Seow-Choen (Singapore, Singapore)

THE RIGHT AGE TO START SCREENING FOR COLORECTAL CANCER

Colorectal cancer is one of the commonest cancers in the developed world. In Singapore it is the leading cause of cancer when males and females are combined. The incidence of colorectal cancer rises dramatically at about the age of 45 to 50 years of age. As a result most cancer agencies and colorectal and gastroenterological societies recommend colorectal screening from the age of 50 in order to effectively detect the most cases of colorectal cancer.

However, the detection of colorectal cancer should not be the motive of colorectal cancer screening as it not a positive result for the patient. Colorectal surgeons and others who are interested in decreasing the huge mortality and morbidity associated with colorectal cancer should perform colonoscopy to detect and remove polyps and not diagnose cancer. It may be less dramatic but the detection and removal of precancerous colorectal polyps is a positive result for the patient as it then allows very effective cancer prevention. Colorectal polyps are usually present at least 10 to 15 years before they undergo malignant change. There is therefore a wide window of opportunity to screen and remove these polyps and therefore prevent cancer and decrease deaths and lower healthcare costs! I recommend that routine screening should begin at the age of 35 in high risk populations in the developed world.

Ronan O'Connell (Dublin, Ireland)

COLORECTAL SCREENING - THE IRISH PERSPECTIVE

In Ireland, as in most of Europe, colorectal cancer is the second most commonly diagnosed cancer. The burthen of the disease is growing due to an increasing and aging population. In December 2003, the Council of the European Union made a recommendation (2003/878/EC) that member states introduce evidence-based cancer screening through a systematic population-based approach with quality assurance at all appropriate levels. As part of this policy it was recommended that faecal occult blood based screening be introduced for both men and women in the age group 50-74.

The Irish Department of Health and Children established an expert working group that recommended:

- Target population 55-74

- Biennial Screening

- Participation target 60%+

- An immunochemical faecal occult blood test on an automated platform

- Colonoscopy offered to those with a single positive iFOBT

- CT colonoscopy as a supplementary screening test

The report was subject external international review and a Health Technology Assessment exercise. Both endorsed the recommendations and concluded that biennial iFOBT would be highly cost effective compared to a policy of no screening (estimated €1696/QALY) with an estimated lifetime reduction in the incidence (14.7%) and mortality (36.0%) from colorectal cancer.

The programme is due to commence in 2012. Regional screening centres are being identified to provide screening colonoscopy. These centres must meet JAG (Joint Advisory Group) in GI endoscopy criteria and a comprehensive QA programme is being put in place. In addition, surgical cancer services, including those for colorectal cancer, are being restricted to 8 regional cancer centres.

Varut Lohsiriwat M.D (Bangkok, Thailand)

Colorectal cancer screening: Thailand's perspective

The incidence of colorectal cancer (CRC) has been increasing in many Asian countries including Thailand. The National Cancer Institute of Thailand has reported that CRC is the third leading cause of cancer-related death. The crude rate of CRC in Thai people is about 8.9 per 100,000 in male and 7.4 per 100,000 in female. Although no national health policy of CRC screening exists in Thailand at this moment, a large number of physician have offered patients CRC screening. A recent survey among Thai general surgeons showed that most surgeons recommended CRC screening for average-risk individuals start at the age of 50 years and finish at the age of 75 years. Colonoscopy was the most popular investigation tool used in CRC screening, followed by faecal occult blood testing and double contrast barium enema (DCBE).¹ A review of screening colonoscopy in nearly 1600 asymptomatic Thai adults at our hospital showed the advanced adenoma detection rate of 2.7% and CRC detection rate of 0.6%. Meanwhile, the screening DCBE of about 800 Thai adults performed at our faculty during the last few years had a diagnostic yield of 0.7% for advanced adenoma and 0.4% for CRC.

Reference

1. Lohsiriwat V, Lohsiriwat D, Thavichaigarn P, on behalf of the Society of Colon and Rectal Surgeons Thailand. Colorectal cancer screening and surveillance: a survey among Thai general surgeons. *Asia Pacific J Cancer Prev* 2009; 10: 467-70.

Gintautas Rad iūnas, Narimantas Evaldas Samalavičius (Vilnius, Lithuania)

SCREENING FOR COLORECTAL CANCER IN LITHUANIA

Screening, in medicine, is a strategy used in a population to detect a disease in individuals without signs or symptoms of that disease. Screening tests are performed on persons without any clinical sign of disease. Lately, more than 1 million people worldwide are diagnosed with colorectal cancer (CRC) each year. Screening can prevent many of these deaths by helping to detect colorectal cancer in an early, more treatable stage or by detecting and removing its nonmalignant precursor lesion, the adenoma, thereby preventing colorectal cancer incidence. Fecal occult blood test is the cheapest and easiest for the patient test in the screening for CRC. The immunochemical test (iFOBT) is highly accurate for human hemoglobin (hHb) compared to the Guaiac and Hemoporphyrin methods. The results of immunochemical tests are not affected by dietary peroxidases, animal blood and ascorbic acid.

1538 new cases of colorectal cancer were diagnosed in Lithuania in 2008. The National Health Insurance Fund under the Ministry of Health has funded the Program for the Early Detection of CRC since 01. 07. 2009. iFOBT test was applied for the population between 50 to 74 years old. If the test was negative, a repeated test should be performed in 2 years. If the test was positive, a colonoscopy and, if necessary, a biopsy was carried out. If no pathology was found during the colonoscopy, repeated iFOBT should be performed in 10 years. In 2009-2011 this Program was organised as a pilot study in Vilnius and Kaunas regions, from 2013, the Program should include the population of the entire country.

Results. In the period 01. 07. 2009 - 30.06. 2011, 160 008 asymptomatic patients underwent iFOBT testing, this comprises 43% of the target group; in 7,5% iFOBT test was positive and 6883 colonoscopies were performed. Adenoma was found in 1445 patients (21%), adenoma with high grade dysplasia in 336 patients (4.9%), cancer in 286 patients (4.2%), intraepithelial neoplasia associated with IBD in 59 patients (0.9%), malignant neuroendocrine tumor in 1 patient (0.01%), and polyp in 408 patients (6%).

Conclusions. 1. Malignant and pre-malignant lesions were found in 31% of colonoscopies, performed after the positive iFOBT. 2. Results of the Program should be evaluated in several years, determining changes in mortality from CRC.

Cherdsak Iramaneerat (Bangkok, Thailand)

COLONOSCOPY TRAINING

Colonoscopy is a complicated set of skills. Becoming a competent colonoscopist requires learning both in cognitive and technical skills. In order to set up an effective colonoscopic training program, a trainer should (1) set up specific, measurable, relevant, and timely learning objectives; (2) orientate the learning process according to a clinical learning cycle; (3) concern about dual-task interference during the colonoscopic practice; (4) arrange the clinical experience in a way that learners could have a distributed practice; and (5) allow trainees to start their procedures in a part-task practice.

In general, colonoscopic training could be divided into basic and advanced procedures. The advanced colonoscopic procedures should be reserved only for those who have mastered the basic colonoscopic techniques.

There are many educational resources available for colonoscopic training, including atlas, videotape, CD-ROM, and internet. These educational resources have different advantages and limitations that colonoscopic trainers and learners should consider and try to maximize the advantages and minimize the limitations of these resources. The colonoscopic training program can provide many forms of training courses, including video-based course, live course, small group sessions, and telemedicine. All of these training methods have patient involvement. Thus, the issue of patient safety is also being concerned. The introduction of educational intervention during the procedure should not compromise the safety of the patients who undergo the demonstrated procedure. The American Society for Gastrointestinal Endoscopy (ASGE) has provided some basic guidelines for setting up these training courses in order to achieve educational goals, while guaranteeing the safety of patients.

Besides from these learning methods, there are also many types of training models available for colonoscopic practice including mechanical models, animal models, and computerized models. These training models are useful in building up basic colonoscopic skills among beginners. Nevertheless, practicing in simulators or training models still could not substitute for the practice in real patients.

Another important component of colonoscopic training is the assessment of competency of colonoscopists. There are some guidelines on the minimum number of endoscopic procedures performed prior to becoming competent. However, because different trainees acquire colonoscopic skills in varying rates, indicators of competence should also include the quality of the procedures as well, such as the success rate, and cecal intubation time.

Narimantas Evaldas Samalavičius (Vilnius, Lithuania)

COLONOSCOPIC PERFORATIONS

Aim: to determine the national incidence of perforation after colonoscopy (CP), and to evaluate the patients' characteristics, endoscopic information, clinical presentation, diagnostic workup, intra-operative findings, management and outcomes of patients with CP in fourteen main hospitals in Lithuania.

Methods: The medical records of patients who developed iatrogenic colonic perforations after colonoscopy between a period of 5 years, January 1, 2007 to December 31, 2011 in fourteen major Lithuanian hospitals were retrospectively reviewed. Incidence of CP, patients' characteristics, endoscopic information, intra-operative findings, management, factors influencing outcome and prognosis were analyzed.

Results: A total of 56514 colonoscopies (49530 diagnostic and 6984 therapeutic) were performed over a 5-year period. 40 patients (0,07%) had CP: 28 from diagnostic colonoscopy (incidence 0,056%) and 12 from therapeutic (0,17%). In 22 cases, perforation was noticed by the endoscopist through visualization of extra-intestinal tissue during the procedure. Other perforations (n = 18, 45%) were diagnosed after the procedure. The most consistent symptom was abdominal pain, followed by tenderness, abdominal distension and tachycardia. The most common site of perforation was in the sigmoid colon (n = 23, 57,5%). All patients with CP underwent surgical management: primary repair (70%) and bowel resection (30%). Prompt diagnosis and treatment resulted in fewer intestinal resections (p = 0,005), terminal ostomies (p = 0,002), shorter hospital stay (p = 0,045). The mortality rate was 15% and postoperative complication rate was 37,5%. Cigarette smoking, co-morbidities, and a large perforation site were significant risk factors for developing a postoperative complication.

Conclusion: CP is a serious but rare complication of colonoscopy. National incidence of CP is 0,07%. Therapeutic procedures have a higher perforation risk than diagnostic procedures. The sigmoid colon is the area at greatest risk of perforation. Surgery is still the mainstay of CP management. Delayed diagnosis and treatment, cigarette smoking, co-morbidities, a large perforation site, result in worse postoperative outcome and prognosis.

Varut Lohsiriwat Bangkok, Thailand)

MANAGEMENT OF PRECANCEROUS LESIONS OF THE COLON

Colorectal carcinogenesis includes chromosomal instability, DNA repair defect (microsatellite instability), and aberrant DNA methylation. Phenotypic phenomena of such abnormalities could be grouped into two major precancerous lesions: conventional adenoma and serrated adenoma. Good bowel preparation and careful inspection are crucial in detecting precancerous colorectal lesions during endoscopic examination. In general, endoscopic removal of such lesions is advised if applicable. Several endoscopic procedures have been advocated such as snare polypectomy, piecemeal polypectomy, and endoscopic mucosal or submucosal resection. Surgery is indicated when the lesions are not suitable for endoscopic removal, or the pathological reports reveals malignant lesions with unfavourable histology. If surgery is required, standard oncological resection is recommended either via an open approach or a laparoscopic approach. Time and interval of follow-up endoscopy depend on number, size and histology of the lesion. For colitis-associated colon cancer, dysplasia represents the majority of precancerous lesions especially in individuals with active and long-standing disease. Generally, the presence of adenocarcinoma, high-grade dysplasia, or multiple low-grade dysplasia are indications for proctocolectomy.

Cary B. Aarons (Philadelphia, USA)

THE MANAGEMENT OF MALIGNANT COLORECTAL POLYPS

Colorectal cancer screening programs, which incorporate endoscopy, have resulted in the increased detection of a variety of neoplastic and non-neoplastic colorectal polyps. The ultimate goal of these programs is to decrease the incidence of colorectal cancer by identifying and removing precancerous lesions with polypectomy or surgical resection for those polyps that cannot be removed endoscopically. Not surprisingly, the widespread use of polypectomy and more advanced techniques, like endoscopic mucosal resection, have also resulted in a relative increase in the number of malignant polyps, in which cancerous cells have penetrated the muscularis mucosa but are limited to the submucosa. Malignant polyps (T1 lesions) account for 2% to 12% of those in colonoscopic polypectomy series.

The definitive management of these early cancers still offers some controversy. Although endoscopy is highly effective in removing polyps down to the submucosal layer, especially in the era of more advanced endoscopic techniques, it cannot assess if there is residual disease within the bowel wall or if there are involved surrounding lymph nodes. Conversely, standard surgical resection allows for more accurate staging but it does carry recognized risks. Ultimately, the clinical decision depends primarily on the patient's overall medical condition, the risk of lymph node metastasis, and the presence of any adverse risk factors in the polyp. This presentation will review the classification of malignant polyps as well as their definitive management.

Mohsen Towliat Kashani (Tehran,Iran)

DIFFERENTIAL DIAGNOSIS OF SOLITARY RECTAL ULCER AND RECTAL CARCINOMA - IS IT A CHALLENGE?

Background:Solitary rectal ulcer is a chronic fibrosing rectal disease with or without ulceration which might show such degrees of atypical regenerative changes that raising the suspicion of adenomatous dysplasia or even adenocarcinoma as well.

Objectives:This pitfall could be worst if SRU presented as mass like ulcerative lesion in rectoscopy (I had 2 such cases that mistaken by adenocarcinoma, Scheduled for surgery). In addition to regenerative atypia that is common in SRU the next pitfall in pathology is colitis cystic profunda common in SRU which means misplacement of glands in submucosa that might be mistaken by invasive adenocarcinoma!

Results:To be aware about these two mimickers in SRU histopathology by Pathologists and correlation with clinical and imaging studies (for example young age , location in anterior rectal wall and history of constipation, straining, and ODS symptoms) would prevent misdiagnosis.

Conclusions: We should be aware of history of chronic difficult defecation, mucosal thickness of rectal mass which the lesion dose not pass through the muscularis mucosa in endosonography. In such cases surgeons should send slides for second look to other pathologist, if anytime “ something is wrong” about diagnosis.

Michael Davies (Cardiff, UK)

INVESTIGATION OF COLORECTAL SYMPTOMS IN ELDERLY PATIENTS: USE OF MINIMAL PREPARATION CT COLONOGRAPHY

Introduction: Investigation of elderly and frail patients with symptoms suggestive of colonic cancer can be difficult due to concerns regarding the safety of bowel preparation and intolerance of invasive investigations. These patients can be investigated with Minimal Preparation Computed Tomography of the colon. Unlike other colonic investigations MPCT does not require use of bowel preparation. The aim of this study was to review our experience of this technique involving consecutive patients with long term follow-up to assess the reliability of this test for detection of colon cancer.

Methods: The first 200 consecutive MPCT reports from December 2002 to February 2007 were reviewed retrospectively. They were cross referenced with both the hospital's clinical information system and pathology databases and the U.K. National Cancer Registry up to February 2012 for a follow-up period of at least 5 years. MPCT reports were classified as positive for colonic cancer, negative or inconclusive.

Results: Median age of the patients was 83 (range 49-99) years. 14/200 (7%) of scans were reported as positive for colonic cancer. 8 patients underwent surgery and in 6 patients adenocarcinoma was confirmed histologically, 2 patients had large adenomas. 24/200 (12%) patients had indeterminate MPCT scans for CRC. These patients had further investigation and 3 patients had a colonic cancer diagnosed. 162 (81%) MPCT reports were negative for colonic cancer. Three patients in this group were identified during the follow up period with colon cancer. 23 patients had extracolonic pathology detected. Our experience with MPCT shows a sensitivity of 86% and specificity of 99% for colonic cancer. All patients were able to complete the test.

Conclusions: MPCT has a sensitivity and specificity which compares favourably with other imaging modalities. With an increasingly aged and comorbid population attending with bowel symptoms we have found MPCT a reliable and well tolerated test to exclude colonic carcinoma in elderly patients.

Bruce Wolff (Rochester, USA)

RECTAL CARCINOID

Rectal carcinoid is a rare neuroendocrine tumor, which has its origin in the enterochromaffin cells in the crypts of Lieberkuhn. The most common site in the GI tract is the appendix, followed by the ileum second, and the rectum as third. These tumors may produce some metastatins, peptide YY, 5-HTP, and serotonin, although serotonin production in a typical carcinoid syndrome is very rare. The most common symptoms are bleeding, pain, occasionally constipation, although at least half are asymptomatic, and are discovered incidentally on endoscopy. These are characterized upon visualization as a firm, yellowish, smooth submucosal nodule. Ultrasound is a valuable asset in determining the size and extent of these tumors, and local excision is appropriate for tumors equal to or less than a centimeter, and if there is not invasion of the muscularis propria, and no ulceration. If the tumors are larger than this, there is an increased rate of metastasis. If the tumors are greater than 2 centimeters, a low anterior resection or abdominal perineal resection in some cases maybe indicated, and there are some long-term survivals with this radical surgery.

In a study from the University of Pennsylvania, by Chinkinsley, et al (DC&R 2002), the NCI's Database was used, and there were 11,427 cases of rectal carcinoid. This study showed that there has been an increased incidence over the past 25 years, and in this study, the small bowel was the most prevalent site with 44.7%, which was greater than rectal at 19.6%, which was also greater than the appendix at 16.7%. There was an 87% five year survival with rectal carcinoid. Carcinoids occurring in the colon carry a less than 50% five year survival rate, and metastasis is frequent. The carcinoid syndrome is rare.

The carcinoid syndrome is also rare in rectal carcinoids, and if there is no metastasis, there is a 92% five year survival rate. If the carcinoids are less than 1 centimeter, mets are very infrequent, with only a 3% metastasis rate, 1-2 centimeters carcinoids carry an 11% metastasis rate, and 2 centimeters or larger carcinoids have a 74% risk of metastasis. A risk stratification has been done by Fahy and colleagues (Annals of Surgery Oncology, 2006), and in 70 patients, a tumor size of 1.3 centimeters or larger was found to be the break point for prognosis. Poor outcome was predicted by large size, deep invasion, lymphovascular invasion, and increased mitotic rate.

Anorectal Melanoma. Anorectal melanoma makes up less than 1% of all colorectal cancers, and only 2% of all melanomas. However, it's the third most common site of melanoma after cutaneous and ocular presentations. There is an increased incidence overall in young males, and HIV maybe a risk factor. Symptoms include pain, bleeding, or presentation of a mass. Up to 70% of anorectal melanomas are amelanotic.

The five year survival rate of anorectal melanoma is from 17%-22%, distant metastasis are frequently present with diagnosis ranging from 16%-57%. These usually occur in regional lymph nodes, the liver, lung or bone. The tumor is not responsive to chemoradiation therapy, and surgery is the procedure of choice.

There has been great controversy in whether to perform wide local excision for small (1-2 centimeter melanomas) or to perform abdominal perineal resection. There have been many retrospective studies on this controversy, one of which by Podnos, published in American Surgery, 2006, consisted of data on 126 patients. The extent of correlated disease collated with five year survival, and it was found that survival is improving recently, although there was no difference in type of operation (WLE vs. APR). Five year survival was also determined by local only disease (32%), vs. regional disease (17%), vs. distant disease (0%). There are at least 20 other studies which address this same problem, unfortunately, all with fairly small numbers, including our own study of 50 cases in 1997 (Thibault et al). In examining collectively these studies, there is no clear advantage of APR over WLE in appropriate cases. An analysis of 420 patients, shows APR survival is 13% vs. WLE of 8%, with a P value of 0.30. In a Memorial Sloan-Kettering study, disease free survival in APR was 27% vs. WLE at 13% with a P value of 0.34. This difference was probably based on stage, rather than surgical approach. Other collected series of 398 and 483 patients show no survival advantage of APR, these studies were published in 2004. Therefore, we recommend local excision if the disease can be locally controlled, continence is maintained, or if there is distant disease with a small primary. AP Resection may be preferable if local control is not possible, or if there is an isolated local recurrence.

Recently, newer systemic with monoclonal antibodies have produced some dramatic results. Ipilimumab, in combination with dacarbazine, has shown significant survival benefit over dacarbazine alone. Vemurafenib has also shown considerable promise.

Richard Devine (Rochester, USA)

TAILGUT CYSTS AND OTHER UNCOMMON PELVIC TUMORS

Tailgut cysts, congenital duplications of the rectum, and rectal gastrointestinal stromal tumors are all rare conditions.

31 patients with tailgut cysts were operated on at the Mayo Clinic between 1985 and 2008. The majority (28) were women and the median age was 52. Complete cyst excision (via a posterior approach in 20 patients) was achieved in all patients. 4 patients had a malignant transformation in the cyst. The cyst occurred in one patient.

A rare case of a rectal duplication presenting in an adult woman is presented and the literature reviewed.

About 5% of gastrointestinal stromal cell tumors will occur in the colon and rectum. A case of a rectal GIST is presented and the current management reviewed.

Bruce Wolff (Rochester, USA)

APPENDICEAL TUMORS

Malignant appendiceal tumors are rare and often are found incidentally. Between 1973 and 1978, from one population-based study, 2117 appendiceal malignancies were reported in this analysis. Age-adjusted incidence of cancer of the appendix was 0.12 per 1,000,000 people per year. In the more that 500,000 appendectomies that are performed each year in the United States, primary appendiceal carcinoma is diagnosed in 0.9% to 1.4% of the removed specimens.

Carcinoids. There are three basic types of appendiceal masses, and these are mucocele, carcinoid, and adenocarcinoma. Carcinoids are by far the most common appendiceal tumors and account for 85% of appendiceal masses discovered. Carcinoids are usually found at the appendiceal tip, and 70% to 90% are less than 1 cm. in diameter. Simple appendectomy is sufficient treatment if the carcinoid is less than 2 cm. in diameter and there is no obvious mesenteric or intra-abdominal metastasis. If the carcinoid measures more than 2 cm, is located at the base of the appendix, or there are large nodes in the mesentery, a right hemicolectomy recommended.

Mucocele. Mucoceles are divided into three types: simple mucocele, cystadenoma, and cystadenocarcinoma. Simple mucoceles are appendiceal dilatations with accumulation of mucus due to obstruction of the lumen. A cystadenoma is a dilated mucus-filled appendix containing adenomatous mucosa, and it is generally felt to be the precursor of cystadenocarcinoma. Cystadenocarcinoma is an adenocarcinoma associated with a dilated, mucus-filled appendix. If there is mucous or a gelatinous material associated with a cystadenocarcinoma, this is termed pseudomyxoma peritonei. There can be extravasation of mucous material from a benign mucocele as well.

In a study of primary appendiceal mucoceles from 1976 to 2000 at Mayo Clinic -Rochester, it was found that 62 patients had simple mucoceles. 20 patients had cystadenoma, and 47 patients had cystadenocarcinoma. Of these 135 patients, 129 underwent surgery and 22 had appendectomy only, 25 patients underwent right hemicolectomy, 82 patients had other procedures in addition to the appendectomy, such as total abdominal hysterectomy with bilateral salpingo oophorectomy, debulking, or right hemicolectomy. The mean follow-up on these series of patients was greater than six years.

Careful evaluation of the data showed that there was a close correlation of certain symptoms and findings with malignancy. The presence of symptoms was significantly associated with malignancy in 58% of patients: abdominal pain vs. no abdominal pain; abdominal mass vs. no abdominal mass; and weight loss were significantly associated with malignancy. If the diagnosis of mucocele was made preoperatively, 58% of these patients had a malignant process, as opposed to 31% if no preoperative diagnosis was made. If pseudomyxoma peritonei was present, 95% of these patients had a malignant condition. If there was extravasation from the mucocele, again, this was associated with malignancy.

Cystadenomas were associated with a larger size than simple mucoceles, with the mean size of cystadenomas measuring 8.1 cm. in diameter vs. simple mucoceles, which were 4.1 cm., and this as a significant difference. Interestingly, no cystadenoma in this series was found to be less than 2 cm. in diameter. In summary, abdominal pain, abdominal mass, weight loss, pseudomyxoma peritonei, and mucocele extravasation are indicative of the presence of a malignant mucocele. We concluded that all mucoceles 2 cm. or larger should be removed, even if discovered incidentally on preoperative CT scans or other studies.

Adenocarcinomas of the appendix. The third type of appendiceal neoplasm is adenocarcinoma of the appendix. If carcinoid constitutes 85%, mucinous-type adenocarcinoma, or the malignant mucocele, constitutes 8%, colonic-type adenocarcinoma is 4%, and adenocarcinoid, or goblet-cell tumors, 2%. In another study of adenocarcinoma of the appendix from Mayo Clinic Rochester from 1976 to 1992, 94 patients (52 men and 42 women) were found to have carried this diagnosis. The mean age was 56.5 years. As with appendiceal masses, many of these were initially felt to represent clinically acute appendicitis. Right lower quadrant pain was found in 50% of these patients, abdominal mass in 14%, ascites in 11%, and 5% had nonspecific GU or GI symptoms. 20% had the adenocarcinoma of the appendix found as an incidental finding. In this series, those patients who underwent right hemicolectomy for adenocarcinoma of the appendix (there were 62 of these patients) had a significantly improved survival over those who had appendectomy alone (27 patients). The survival of the right hemicolectomy group at seven years was 45% vs. 20% for those with appendectomy alone. With those patients with mucinous adenocarcinoma, colectomy again has a better survival with 29 patients undergoing hemicolectomy with a five-year survival of nearly 80% vs. 45% (18 patients) who underwent appendectomy alone.

Two additional factors should be pointed out from this study. The first is the high incidence of second primary malignancies, either synchronous or metachronous. Seventeen patients had a synchronous or metachronous gastrointestinal tract lesion, six had a genital urinary tract lesion, and 10 had other malignancies such as breast, lung, lymphoma, melanoma, thyroid, and chondrosarcoma, for a total of 33 synchronous and metachronous second primary malignancies in these 94 patients.

The second notable effect was the number of metastases found in the ovaries. Oophorectomy was carried out in 23 patients, metastases were found in 14 patients (57%). Nine of these 14 patients had obvious clinical involvement, but four had occult only metastasis. Therefore, we feel right hemicolectomy is the treatment of choice for appendiceal adenocarcinoma even if it involves a reoperation. Oophorectomy is recommended in women with this condition, especially in post-menopausal patients. A diligent search for synchronous primary tumors and metachronous tumors is warranted.

Not everyone agrees with the philosophy of right hemicolectomy for adenocarcinoma of the appendix. Dr. Paul Sugarbaker, who has for many years had an interest in patients with peritoneal dissemination of appendiceal malignancy, feels that right hemicolectomy may open planes that are not generally available to the superficial infiltration of malignant cells. He advocates appendectomy only in most cases. Dr. Sugarbaker advises a cytoreductive procedure with debulking, including peritonectomy initially, and advises a second look procedure in selected patients. With this approach, and intraperitoneal chemotherapy with mitomycin-C and 5-FU, he has reported the five-year survival rate in 98 patients of 73.6%. This compared favorably with a 68% survival rate in 223 patients who did not undergo the second look procedure. The final reductive procedure itself can be quite extensive and time-consuming, and carries a fairly high complication rate in those patients requiring extensive surgery.

Adenocarcinoid or Goblet-Cell Carcinoma. Adenocarcinoid is a rare tumor which is again most often found as an incidental discovery. In a series of 57 patients from the Mayo Clinic, excellent survival was found. Overall five-year, disease-specific survival was 100% in Stage I adenocarcinoid tumors; however, this was only eight patients. Disease-specific five-year survival in Stage II disease (20 patients) was 76%; however, survival in Stage III and Stage IV was poor (22% and 14% respectively). Overall survival for this group was for a disease-specific five-year survival probability was 47%. Again, ovarian metastasis was a prominent feature of this tumor, with half of the women (18 patients) having ovarian metastasis present.

Unlike adenocarcinoma, adenocarcinoid survival was not affected by the type of procedure (right hemicolectomy vs. appendectomy alone) performed. The extent of disease (localized vs. nonlocalized) did correlate with survival, nor did chemotherapy affect survival.

In summary, carcinoids, if less than 2 cm. without obvious local or regional metastasis, are suitable for simple appendectomy. For carcinoids greater than 2 cm., those located at the base of the appendix, or with obvious nodal metastasis, a right hemicolectomy is recommended.

All mucoceles equal or greater than 2 cm. should be removed as the possibility of cystadenoma or cystadenocarcinoma is present. Adenocarcinomas of the appendix, in general, should undergo right hemicolectomy, in our opinion, with oophorectomy in female patients. A careful examination for synchronous and metachronous tumors should be made.

References:

- Nitecki SS, Wolff BG, Schlinkert R, Sarr MG: The natural history of surgically treated primary adenocarcinoma of the appendix. *Ann Surg* 219(1):51-57, 1994.
- Sugarbaker PH: Peritonectomy Procedures. *Ann Surg* 221(1):29-43, 1995.
- Carr NJ, Path MRC, McCarthy WF, Sorbin LH: Epithelial Noncarcinoid Tumors and Tumor-Like Lesions of the Appendix. *Cancer* 75(3):757-768, February 1, 1995.
- Deans, GT, Spence RAJ: Neoplastic lesions of the appendix. *British Journal of Surg*(82) 299-306, 1995.
- Sugarbaker PH, Chang D: Results of Treatment of 385 Patients with Peritoneal Surface Spread of Appendiceal Malignancy. *Ann Surg Oncol*.6(8):727-731, 1999.
- Pestieau SR, Sugarbaker PH: Treatment of Primary Colon Cancer with Peritoneal Carcinomatosis. *DCR* 43(10):1341-1348, October 2000.
- McCusker ME, Cote TR, Clegg LX, Sobin LH: Primary Malignant Neoplasms of the Appendix. *Cancer* 94(12):3307-3312, June 15, 2002.
- Stocchi L, Wolff BG, Larson DR, Harrington JR: Surgical treatment of appendiceal mucocele. *Arch Surg* 138(6):585-90 June 2003.
- Pham TH, Wolff B, Abraham SC, Drelichman E: Surgical and chemotherapy treatment outcomes of goblet cell carcinoid: A tertiary cancer center experienced. *Ann Surg Oncol*. 2006 13(3):1-7.
- Lopez JP, Kandil E, Schwartzman A, Zenilman ME: Appendiceal mucocele: Benign or malignant? *Surg Rounds* 538-544, November 2006.

Renatas Tikui is, Povilas Miliuskas, Narimantas Evaldas Samalavičius (Vilnius, Lithuania)

WHICH ANESTHESIA IS BEST FOR COLORECTAL SURGERY?

Introduction: Anesthesiologists are faced with the task of choosing the “best” anesthesia for patient having a surgical procedure. The factors influencing this decision are different for every patient, surgeon, type of operation and anesthesiologist.

Objective: Good and appropriate anesthesia should achieve some objectives:

1. Minimize patient morbidity and mortality
2. Provide superior pain management intraoperatively and postoperatively.
3. Provide optimal operating conditions for the surgeon
4. Minimize patient side effects

Four types of anesthesia can be performed for surgery: local anesthesia, sedation, regional anesthesia and general anesthesia. These four types of anesthesia have different risk, complications, side effects, and degree of success in pain management.

Local anesthesia and sedation does not provide any muscle relaxation, and is most often used for peripheral operations.

Regional anesthesia anesthetize region of the body providing complete sensory loss and muscle relaxation. The most common regional anesthesia in colorectal surgery is spinal and epidural. But both of them need preparation time for operation, therefore preoperative time can be greatly prolonged.

General anesthesia provides the best operating conditions for the surgeon. Patient is completely unconscious and profound muscle relaxation is achieved.

We tried to compare different types of anesthesia for colorectal surgery.

Conclusion: The anesthesiologist has several objectives, but the most important are to limit patient risk and make sure patient get through the operation safely. We have concluded that a combination of general anesthesia with regional anesthesia is the most appropriate anesthesia method for colorectal surgery.

Alan Horgan (Newcastle, UK)

ENHANCED RECOVERY AFTER SURGERY - THE UK EXPERIENCE

Change is hard. However, the Enhanced Recovery Partnership Programme demonstrated our capacity in the NHS to change. In just two years, from May 2009, enhanced recovery pathways have been established in the vast majority of NHS hospitals in England. Now, in 2012, enhanced recovery for surgery is becoming standard practice. Length of hospital stay has reduced without increase in readmissions and with high levels of patient satisfaction.

We have seen the spread of enhanced recovery pathways to many surgical specialties beyond the original four main areas of colorectal, gynaecology, orthopaedics and urology. Successful adoption and application of enhanced recovery pathways will result in more empowered patients and a better functioning team, with increased bed capacity, fewer postoperative complications and an overall reduction in hospital costs.

The future delivery of medical care will need to focus, not only on the development of innovative treatments, but on reducing the levels of stress associated with the delivery of in-patient care. The enhanced recovery pathway provides an evidence-based means of achieving this within an increasing number of surgical and medical subspecialties.

The UK Enhanced Recovery Pathway will be described, together with the evidence supporting the pathway and an update on the UK National Programme.

Bruce G. Wolff (Rochester, Minnesota)

POSTOPERATIVE ILEUS

Ileus is defined as the functional inhibition of propulsive bowel activity, and can be caused by a number of mechanisms. Postoperative ileus is uncomplicated ileus following surgery, which usually resolves spontaneously within 2-3 days. It was felt in the past that primary ileus was a response to surgical trauma, and has often been considered to be inevitable. Paralytic postoperative ileus is a form of postoperative ileus lasting more than three days after surgery. The possible mechanisms of postoperative ileus are interruptions of normal functioning in the autonomic nervous system, the enteric nervous system, the stimulation of inflammatory mediators, anesthesia, and certainly use of narcotics.

The economic impact of postoperative ileus in the United States is it the most common reason for delayed hospital discharge following abdominal surgery, and the healthcare costs are estimated at between \$750 million per year to one billion dollars per year; as a result of increased hospital days, increased nasogastric intubation, IV hydration, extra nursing care, and additional laboratory testing. It is important to distinguish postoperative ileus from postoperative bowel obstruction, and in general, postoperative ileus on upright abdominal film will show a distended abdomen in a non specific diffuse gas distribution, including the colon. Bowel obstruction will produce distention as well, but there is usually a thickening of the bowel wall, and possible air fluid levels, or a sharp transition point from bowel filled with air to bowel which contains no air.

There have been many treatment maneuvers which have been used to lessen the effect of postoperative ileus, and these include use of physical agents such as nasogastric tube and gum chewing, and early ambulation. Surgical technique such as laparoscopy is of known benefit, and under the heading of anesthesia and analgesia, epidural analgesia has been effective, as has the use of NSAIDs. Pharmacologic agents such as opioid antagonists have also been recently used, and perioperative care plans with fluid and sodium restrictions have recently come into vogue.

In terms of what has become effective and what has not been effective, the use of NG tubes have shown no influence on POI, and routine placement has become anachronistic; early feeding has shown some promise as has sham feeding. Early mobilization has not shown any clear effect on POI, but certainly may decrease other postoperative complications such as thrombophlebitis. Laparoscopic studies have generally shown a benefit with decreased duration of POI. Psychological preoperative preparation, through suggestion, has proven effective in at least one study. Pharmacologic agents such as metoclopramide and erythromycin have not suggested benefit. Epidural anesthesia has suggested improvement, however this is most effective when this is given at the thoracic level, and requires a dedicated anesthesia staff for maintenance. A newer and perhaps more effective option is intrathecal injection of opioids, as a one time maneuver preoperatively. NSAIDs have also shown probably benefit but antiadrenergic agents have not. Cholinergic agents, such as neostigmine, have possible benefit, but also has significant side effects.

There are several studies which show gum chewing to be of a small but significant benefit, but most of these have not been large randomized controlled trials. Then there are less conventional treatments such as mechanical massage of the abdominal wall, which at least in one study has shown improved pain scores, and shorter routine to bowel function.

More recently, over the last decade, there has been considerable interest in opioid antagonist such as alvimopan or methylnaltrexone, which occupy the MU receptors in the intestine in a competitive inhibition of opioids in the GI tract, but these agents do not cross the blood brain barrier, so analgesia is preserved. There have been several randomized controlled trials in phase III studies which have shown effectiveness in large and small bowel resection and radical abdominal hysterectomy cases. The return of GI function is generally one day earlier in the treatment group, and there is a reduced incidence of NG tube reinsertion, nausea and vomiting, and readmission. The incidence of adverse events in the alvimopan group was comparable to the placebo groups. Since FDA approval of alvimopan, (Entereg™), there have been several community hospital retrospective studies, which have shown similar effectiveness, but in many of these studies, patient data was not matched, and there was no comprehensive collection of adverse events.

Recently we have compared several clinical pathways in order to determine effectiveness, and to attempt to determine which components of pathways make the most difference. While in the past, most studies have looked at one treatment, such as nasogastric decompression, or gum chewing, or early mobilization, these pathways combine several components in order to

achieve more dramatic results in terms of return of bowel function and discharge after abdominal surgery in both laparoscopic and open surgical patients. These enhanced recovery programs were first initiated about 15 years ago by Dr. Henrik Kehlet, and since his initial work there have been six randomized controlled trials on 452 patients, which have shown decreased morbidity, shortened length of hospital stay, and improved resource utilization.

We have recently been encouraged to adopt several of these pathways starting with a fast track study in laparoscopic right colon cancer cases consisting of 197 patients from 2005 to 2007. There were 150 patients who underwent “traditional” postoperative management at the discretion of the surgeon, versus 82 fast track patients with early removal of NG tubes, early feeding on postoperative day one, early ambulation, and so forth. Outcomes were improved in the fast track group with length of stay (three days vs four days), with a P value of less than 0.05. Complications improved in the fast track group 29% vs 56%, also significant. There were equal readmissions. This study was published in *Surgical Endoscopy* in 2010. A second study published in *JACS* in 2010, was fast track in laparoscopic colectomy patients for diverticulitis. There were 334 patients, 235 of whom had traditional postoperative management vs 99 fast track patients from 1998 to 2008. Again, the groups were well matched and there was again a length of stay decreased from five days in the traditional to three days in the fast track group. Complications were also improved and there were equal readmission rates.

More recently, enhanced protocol was compared to the fast track pathway with enhanced recovery having definite components such as preoperative analgesia with celecoxib and gabapentin. There was also dexamethasone injection, plus 5 HT-3 antagonists given for nausea prophylaxis. Fluid administration was strictly controlled and intrathecal opioid injection was administered preoperatively, and IV ketorolac was given at the end of the case. Oral oxycodone as needed as pain scores of more than four was prescribed with scheduled acetaminophen and NSAIDs, both IV and orally administered. Regular diet was begun four hours after the procedure on the day of surgery. Ambulation was encouraged immediately as it was in the fast track patients. A pilot study was conducted from November 2009 to February 2010, and all minimally invasive patients on two surgical services were enrolled. Sixty six enhanced pathway patients were matched with 66 fast track pathway patients. This study showed a shortened time to return a bowel function of one vs. two days. Length of stay was also reduced (3.1 vs 4.4). Patients discharged on day two were 44% of enhanced recovery patients vs. 8% of fast track patients. These findings were highly significant. Complications were also reduced in the enhanced recovery group, although not significantly, and readmission rates were the same.

From January to July 2011, all minimal invasive surgery patients at Mayo were reviewed in a prospective database, and there were 396 enhanced recovery pathway patients compared to 177 fast track pathway patients. Return of bowel function was again shortened in the enhanced recovery group, and the number of those patients discharged on day two was also significantly increased (38% vs 5%). Complications were also significantly reduced in enhanced recovery pathway group (30% vs 40%). Readmission rates again were the same (10.8% vs. 12.3%). This has led to a significant improvement in our NSQIP data in colorectal surgery concerning length of stay with a reduction from the middle of the group to an exemplary classification in a year's time. There was also a cost improvement benefit of about \$1300 per patient or a 15% decrease cost of enhanced recovery pathway group.

More recently we have looked at a combination of alvimopan (Entereg™) in enhanced recovery patients, and have found a further benefit, and cost benefit ratio in a case matched patient study.

Therefore, these are exciting times in postoperative management of patients with many effective and worthy elements combining to reduce what use to be the foregone conclusion of postoperative ileus.

Cary B. Aarons (Philadelphia, USA)

POSTOPERATIVE ADHESIONS: A REVIEW OF THE PATHOGENESIS AND STRATEGIES FOR PREVENTION

Postoperative adhesions, formed after abdominal surgery, pose a significant clinical and financial problem. Up to 95% of patients develop adhesions after surgery, the majority of which have increased risk of long-term sequelae, including small bowel obstruction (SBO), chronic pelvic pain, infertility, and difficult reoperative surgery. Adhesion formation begins with trauma to the peritoneal surfaces. This local injury results in the production of an inflammatory exudate, sometimes connecting two adjacent visceral structures creating fibrin bands. Under normal conditions, these bands are resolved by fibrinolysis. However, under ischemic or inflammatory conditions, the peritoneal fibrinolytic system is suppressed and these bands are infiltrated with inflammatory cells and fibroblasts to organize into dense adhesions. Fibrin is principally degraded by plasmin, a protease converted from plasminogen by two plasminogen activators, tissue (tPA), and urokinase (uPA). tPA is the primary plasminogen activator in the peritoneum and is produced primarily by mesothelial cells. It is inactivated by forming a 1:1 complex with plasminogen activator inhibitor-1 (PAI-1).

In addition to meticulous surgical technique, several approaches have been used in the prevention of adhesions including: anti-inflammatory agents, fibrinolytic agents, antibiotics, and synthetic solid barriers. However, none of these methods has proven to be uniformly efficacious under all surgical conditions. Ultimately, a more profound understanding of the mechanisms of normal peritoneal healing and the molecular and cellular components involved in the formation of adhesions will expedite a safe and efficient strategy of adhesion prevention. This presentation will review the pathogenesis of adhesion formation as well as the experimental and clinical strategies for its prevention.

Ricardo Escalante (Caracas, Venezuela)

MAJOR COMPLICATIONS IN RECTAL SURGERY

Complications are best avoided through careful planning and safe surgical techniques. Despite this, they still occur, even in the most skilled and experienced hands. The exact frequency and severity of complications is difficult to determine due to heterogeneous definitions: patient population, procedures, comorbidities, and intensity of follow up.

In this presentation we are going to evaluate the risk factors in rectal surgery and the most common complications in this kind of intervention, both benign and malignant diagnosis.

The possible complications in rectal surgery include the following:

- Infections
- Injury to nearby organs
- Leakage of anastomosis

A wound infections that develops following a rectal resection may vary from a rather superficial suppurative process, which may merely prolong the patient's duration of hospital stay, to an irreversible process eventually causing the death's patient.

Anastomotic complications are not uncommon. The evidence of this complication ranges between 3 an 11 per cent in larger series.

New technologies, laparoscopic and robotic surgery, don't avoid the risk of injury to other organs.

Recent papers have demonstrated that robotic surgery minimize the risk of neurological lesions in radical surgery of the Rectum.

The right knowledge or anatomy and the practice of safe surgical techniques avoid the risk of complications in Rectal Surgery.

Stefna D. Holubar (Dartmouth, USA)

HIGH-RESOLUTION ANOSCOPY (HRA) FOR HIGH-GRADE SQUAMOUS INTRAEPITHELIAL LESIONS (HGIL)

Bowen's disease is a chronic pre-malignant condition that if un-treated can lead to squamous cell cancer of the anus, while standard wide-local excision is morbid and confounds future diagnosis and treatment due to scarring. We will briefly review Bowen's disease and its medical and surgical treatments for HGIL including HRA and its reported benefits.

Ricardo Escalante (Caracas, Venezuela)

ANCIENT HOSPITALS OF THE WORLD

At national and international Congresses we gather information about modern technologies developed in modern hospitals, but we usually forget their origins.

A hospital is a health care institution which provides treatments by specialized staff and equipments, but at the beginning their aim was completely different.

In ancient cultures, such as Greece, Egypt and Rome; religion and medicine were linked. Priests were dedicated to attend and cure pilgrims and poor people in religious places.

In the medieval period the term hospital encompassed hostel for travelers, dispensary for poor, relief and surgeries for injuries, home for blinds and mentally ill; some of them had special areas for lepers.

This short journey will allow us to have an idea about ancient hospitals in India, Europe, America and other destinations. This is very important to understand the development of modern hospitals.

Sarkis Yeretsian (Montreal, Canada)

OPEN COHORT STUDY ON 50 PATIENTS WITH HEMORRHOIDS GRADE III/IV AND IV/IV USING CLOSED BLOODLESS HEMORRHOIDECTOMY (CBH) TECHNIQUE

Background: It is commonly taught that Emergency Hemorrhoidectomy is best handled with conservative therapy. The purpose of this study was to perform Acute Hemorrhoidectomy by using this novel technique.

Under local anesthesia (xylocaine 2%), a crile is placed at the perianal skin outside the mucocutaneous junction opposite each primary cushion. A gentle traction is exercised on the forceps and eversion of the hemorrhoidal complex is obtained. A crile is applied at the base of the internal hemorrhoid and with a catgut chromic N0. 2-0 a running suture is passed under the crile to secure the vessels and excision of the internal hemorrhoids over the concave aspect of the crile. Reapplication of the curb forceps on the external hemorrhoid by enclaving on the first row of suture and excision of the external hemorrhoid is performed. An open cohort study was performed on 50 patients with hemorrhoids grade III/IV and IV/IV from August 2006 using Closed Bloodless Hemorrhoidectomy technique. The mean age of these patients was 54.5 years (range 20-89).

Results: Few minor complications were observed, which were dealt with conservative therapy: one delayed hemorrhage due to 13 liquid stools (diverticular disease) local infection 6%, skin tags in 8%, persistent wound discharge 4%, constipation due to narcotics 28%. No life threatening complications were encountered and very gratifying results were obtained for the patients and for the surgeon.

Emergency Hemorrhoidectomy could be executed by applying this novel technique.

(US Patent #6,688,312)

Tomas Poškus, Diana Bu inskienė, Gra ina Drąsutienė, Aistė Akelyte, Narimantas Evaldas Samalavičius (Vilnius, Lithuania)

POSITIVE FAMILY HISTORY AND ASSOCIATED VARICOSE VEINS ARE SIGNIFICANT PREDICTORS OF PERIANAL DISEASE OF PREGNANCY: PROSPECTIVE COHORT STUDY

The aim of the study was to identify the incidence of perianal disease of pregnancy and to identify the risk factors of perianal diseases.

Patients and methods: This is a prospective observational cohort study. Pregnant patients, who consented to participate, were included. Detailed questionnaire, including demographic, social, dietary, obstetric, perianal symptoms, quality of life related questions was filled out by the patient at the time of first visit to the gynecologist. The patients were followed up until the end of pregnancy and any perianal symptoms were investigated by colorectal surgeon and diagnosis was made. Data on delivery method, post-partum course up until 1 month after delivery was collected. The risk factors were identified with chi square test, and p values of less than 0.05 were considered significant. Logistic regression analysis was used to identify independent factors, associated with the perianal disease of pregnancy and puerperium.

Results: 440 patients were included in the study from January 2010 to January 2011. 176 patients (39.5%) were diagnosed with perianal diseases during the study time. 163 of them were diagnosed with hemorrhoids; 2 with anal fissure; 9 - with hemorrhoids and anal fissure.

Patients with perianal diseases were older (30.3 ± 5.5 vs. 27.6 ± 5.3 years), their BMI was slightly higher (24.3 ± 5.0 vs. 22.0 ± 2.3) as well as weight gained with pregnancy (13.7 ± 6.0 vs. 10.7 ± 3.7 kg) and the weight of the newborn (3834.4 ± 478.5 vs. 3543.1 ± 2225.5 g). Incidence of cesarean section in the groups was not different.

26 of 176 patients with perianal diseases had associated varicose veins in contrast to 12 of 266 without perianal disease, $p < 0.01$; OR 3.7 (1.7-8.1). 132 patients of 176 with perianal diseases reported family history of perianal diseases; and only 120 of 266 patients without perianal diseases reported positive family history, $p < 0.01$; OR 3.87 (2.45-6.97).

Conclusions: Incidence of perianal diseases of pregnancy and puerperium is 39.5%. Associated varicose veins and positive family history of perianal diseases are significant predictors.

Parvez Sheikh (Mumbai, India)

POST HAEMORRHOIDECTOMY/POST PPH COMPLICATIONS AND MANAGEMENT

Dr. SUNIL KUMAR GUPTA
MS, FAIS, FICS, FACRSI, FACS
HEAD SURGERY, MAIN HOSPITAL,
BHEL, RANIPUR, HARDWAR
UTTARAKHAND, INDIA

PRIMARY CLOSURE OF WOUND AFTER FISTULECTOMY

Key Words: Fistula-in ano, infected anal gland, Fistulectomy, Primary closure.

Fistula-in-ano is thought to occur as a result of crypt glandular infection. The fundamental principle of fistula surgery is to excise infected anal gland responsible for recurrent infection and to deal with fistulous tract with different surgical techniques viz. fistulectomy, fistulotomy, coring out and seton placement (cutting/draining). Fistulectomy involves excision of infected anal gland and the entire fistulous tract which results in a wound which takes a long time to heal if left open to heal by secondary intention having significant morbidity.

Purpose: The aim of present series was to minimize post-operative morbidity and to hasten the process of healing by primary closure of the resultant fistulectomy wound after accomplishing excision of anal gland and entire fistulous tract.

Methods: 16 patients with inter-sphincteric or trans-sphincteric low anal fistula-in-ano who presented to department of surgery at Main Hospital BHEL Hardwar between November 2009 to December 2011 were subjected to fistulectomy and primary closure of resultant wound in layers. Male to female ratio was 5:3 and the age ranged from 22 years to 61 years. Patients with supra-sphincteric or supra levator fistula-in-ano were excluded from the study group. Closure of fistulectomy wound was accomplished in layers using Polyglactin 2-0 suture. Skin closure was done using Vicryl Rapide 2-0 suture.

Results: 2 patients (12.5%) had superficial wound infection requiring extended antibiotic therapy and dressings. None of them had faecal incontinence or wound dehiscence. Total average healing time was 11.2 days. No recurrence was seen in follow-up period which ranged from 3 months to 2 years.

Conclusions: Primary closure of fistulectomy wound is a good comparable alternative to other treatment modalities for fistula-in-ano.

Richard Devine (Rochester, USA)

MANAGEMENT OF RECTOURETHRAL FISTULAS

Rectourethral fistulas are a rare complication of prostatectomy or radiation treatment of prostate cancer (less than 1%). Iatrogenic injuries from surgical prostatectomy will sometimes heal with fecal diversion and prolonged urinary catheterization alone. Several different surgical approaches have been described for persistent fistulas, including transanal, posterior (York-Mason), transperineal, and anterior trans abdominal. The type of repair should be tailored to the cause and size of the fistula and the patient's overall medical condition. The various surgical approaches and their results are discussed.

Peter M. Sagar (Leeds, UK)

THE MANAGEMENT OF POUCH VAGINAL FISTULAS

Introduction: A fistula that develops between the ileal pouch anal anastomosis (or the ileal pouch) and the vagina is a source of considerable morbidity and impacts on the quality of life of the patient. The incidence increases with time after the ileal pouch has been constructed - the reported incidence is between 3 and 17% with an amalgamated figure of 6%. For the purposes of comparison, rectovaginal fistulae develop in 10% of women with Crohn's disease. Whilst the majority present in the first year after surgery and a quarter before closure of ileostomy (2) an increasing number are presenting more than ten years after construction of the ileal pouch. The incidence of pouch vaginal fistulae (PVF) relates to a number of factors including a late diagnosis of Crohn's disease, peripouch sepsis and technical factors. The relative paucity of published data means that the optimal management has not been determined but most authors would likely agree that management depends on the position of the fistula from the ileal pouch-anal anastomosis, the extent of surrounding scar tissue and previous attempts at repair.

Causes of PVF: Several predisposing factors are known to be associated with the development of a pouch vaginal fistula and these include:

1. Technical factors like injury to the vagina or rectovaginal septum at the time of operation. The use of the double-stapled technique to construct the ileal pouch anal anastomosis (IPAA) carries with it a risk of direct injury to the vagina at the time of operation. This most likely results from partial incorporation of the posterior vaginal wall within the circular staple line (3). Recognised at the time of surgery, manoeuvres can be employed to disconnect the anastomosis, repair the injury to the vagina and then reconstruct the anastomosis; usually a hand-sewn procedure given the initial failure of the stapled technique.
2. Septic factors such as anastomotic leak leading to pelvic sepsis. Sepsis remains a major determinant of both long-term success of the ileal pouch anal anastomosis and the development of pouch vaginal fistulae. There is the potential for routine cryptoglandular sepsis, more common in colitis than in the general population, to develop and can lead to an anovaginal fistula. Typically, cryptoglandular sepsis is associated with an internal opening of the PVF that lies below the IPAA.
3. Disease-related factors like late diagnosis of Crohn's disease. Recognised late, this will cause much distress to both patient and surgeon and would require prompt diversion to allow consideration for the best method of repair after a suitable time interval.

Symptoms: Some patients have little or no symptoms. Such PVF are almost hairline and may simply produce occasional small amount of intestinal gas or minor discharge on the perineum. Unfortunately, the majority of patients present with more troublesome symptoms such as vaginal discharge, variable amounts of faecal matter, gaseous discharge, or episodes of recurrent vaginitis. Patients are often treated for candidiasis or vulvar irritation and gynaecologists sometimes make the diagnosis.

Investigations: Clinical examination in the office will often confirm the diagnosis, being successful in 90% of cases. However, careful examination under anaesthetic (EUA) is usually preferable, due to patient discomfort and the desire to a) assess the fistula; and b) exclude associated sepsis. EUA allows identification of the level of the internal opening, its relation to the anastomosis (usually the staple line), the direction of travel of the track and the location of the external orifice in relation to the vaginal wall, the vaginal fourchette, labia or perineum. Whilst most tracks are short and straight, they can be complex and branched and the surgeon may be misled by identifying one external orifice at, say, the centre of the lower portion of the vaginal wall whilst missing a secondary branch track extending out towards the labia. A low PVF can also mask the presence of a higher fistula from the pouch body to the mid-body of the vagina. At EUA, introduction of dye, such as methylene blue, into the pouch with three white swabs in the vagina which are then removed sequentially to identify staining is useful. Too rapid infusion of any dye into the pouch can lead to the fluid running straight into the pre-pouch ileum without any spillage into the fistula track. Moreover, a very low fistula track may be bypassed by the nozzle and fail to be recognised. Alternatively, hydrogen peroxide gently instilled into the anus may demonstrate bubbles as they emerge from the vaginal opening.

Vaginography is performed by the instillation of contrast via a Foley catheter with the balloon inflated to occlude the vaginal opening. It is more helpful with high rather than low fistulas.

Imaging with CT scanning, ideally with contrast enema, may also help to identify fistulous tracks although MR examination (T1 weighted with fat suppression and IV gadolinium) is preferable. In expert hands, endoanal ultrasound is also helpful.

Classification: Classification systems for PVF depend on site and disease. For simplicity and applicability, PVF are best considered simply as “high” or “low” according to the relationship to the IPAA and cervical os.

Surgical procedures. Most of the procedures have been adapted from techniques used to repair rectovaginal fistulas albeit with less success.

The following is a review of available surgical options in the management of PVF in the order of increasing complexity:

1. Seton drain: a draining Seton such as a rubber sloop or a silk suture (No 1) helps drain any associated sepsis and helps define the fistula. One report of the use of Setons in this situation reported a success rate of 4 out of 4 patients (3) but, unfortunately, this has not been matched by others (4). Arguments against its use are i) the Seton may damage any residual anal sphincter and ii) it simply encourages further leakage and discharge. There is no evidence to support its use except for the initial control of sepsis before definitive repair. However, there are no studies to show whether use of a seton before definitive repair of PVF improves outcomes.

2. Fistulectomy: the results of fistulectomy, coring out of the fistula track with repair of the internal opening at pouch level, are disappointing. There is no evidence currently to support its use in the management of PVF.

3. Biological tissue plugs: the recent advent of collagen plugs for anal fistulas has led to the development of button plugs to treat PVF. There are very few reports of success of treatment of PVF with a conventional collagen plug but there have been reports of success with the button plug (5). The technique involves securing the button portion of the collagen plug on the pouch side of the fistula with four dissolvable sutures. The button of the plug detaches within four weeks with the collagen matrix left in situ. The early promise of the button plug suggested success rates of about 55% at 16 weeks (5) but, disappointingly, such results were not maintained long-term with 0 of 11 PVF successfully healed at two years (6). Early success probably related to the persistence of the collagen plug within the track but failure of local tissue in-growth coupled with the relatively short length of PVF and the presence of a staple line, led to long term failure (6). Given a total lack of long term response, the use of biological tissue plugs cannot be recommended for the management of PVF.

4. Transanal pouch advancement flap: this is essentially a variation on the mucosal advancement flap used for high fistulas-in-ano. A cephalad-based flap of mucosa and submucosa, (base:height ratio 2-3x), is mobilised from the ileal pouch, the internal opening is excised and the flap is advanced and sutured beyond the internal fistula opening.

Shah et al (4) reported a success rate of 44% with an advancement flap done perianally. 22 patients had a recurrence out of 44 patients who underwent this procedure. Lee et al (7) showed a slightly higher success rate of 50% (10/20 patients). Further analysis shows a marginal difference in the healing rate between patients undergoing ileostomy and those proceeding directly to repair (3/5 versus 7/15). Ozuner (8) showed a success rate of 45% (15/24 patients). Of 24 patients who underwent ileal pouch advancement flaps, 10 had a successful outcome. Fourteen patients failed the initial ileal advancement flap. However, five patients had successful reoperations. In general, the success is in the order of 40-50% (2,4,8). There is no evidence to suggest that the success rates are better with a covering ileostomy (2).

The advantage of the anal advancement flaps is that it is a fairly straightforward procedure, and the flap has more distal mobility. However, the disadvantage of this approach is the likelihood of damage to sphincters, and that the flap lies on the high pressure side of the PVF. Also, transanal exposure can be suboptimal and the most proponents would avoid its use in smokers (9).

5. Trans-vaginal approach: the trans-vaginal approach involves an inverted T-shaped incision in the lower vagina that incorporates the vaginal orifice of the PVF. Flaps are raised and the internal orifice of the fistula is identified and repaired with interrupted absorbable sutures. The levator muscles can then be brought across to cover the internal orifice repair and the flaps of the vagina are then sutured back into position.

The repair can also be augmented by placement of a collagen patch between pouch and vagina. The advantage of the vaginal flap includes good access, decreased damage to anal sphincters and less tension (10). The vascularity of the vaginal wall means haematoma is a significant postoperative risk. Good haemostasis during the procedure and postoperative use of a vaginal pack reduces this risk.

6. Tissue interposition: The fundamental aim of tissue flaps is to place healthy tissue between the two fistulous openings. A variety of techniques to transpose healthy muscle between the rectum and vagina for repair of rectovaginal fistulas have been described. These include using gracilis muscle and the labial fat pad (Martius Procedure). However, only the

gracilis muscle flap has been used for the repair of PVF. The gracilis can be detached from its insertion, mobilised and tunnelled subcutaneously and secured between pouch and vagina. It provides a well-nourished, vascularised piece of tissue albeit with the disadvantage of extra incisions required to mobilise the gracilis muscle (11).

In general, interposition flaps are particularly useful after previous failed repairs as well as when abdominal procedures are contraindicated. Most series show a high morbidity of around 33-50% and these include perineal wound infection, urethral stricture, fever, urinary retention and perineal bleeding (11,12).

7. Trans-anal pouch advancement/revision: A technique of transanal disconnection of ileal pouch from the IPAA, transanal advancement of the pouch and re-suture at the dentate line has been described for patients with significant stricturing at the IPAA. The technique can be employed in patients with PVF especially in slimmer patients with demonstrable mobility of the pouch above the level of the anastomosis. The attraction of this procedure is that it brings down healthy, full thickness tissue to the region of the fistula in a full thickness manner (13).
8. Trans-abdominal approach: PVF that arise from the mid-body of the ileal pouch require a trans-abdominal approach. This carries a significant risk of loss of the pouch. The patient needs to be fully counselled about this eventuality. At laparotomy, the pouch is mobilised down to the pelvic floor with careful dissection between vagina and the anterior wall of the pouch to prevent inadvertent damage to the anterior wall of the ileal pouch. Whilst it is may be possible to identify, disconnect and repair the fistula and carry out an omentoplasty, more commonly it is necessary to transect at the anal outlet, to excise the pouch outlet, curette and close the track and then carry out a hand-sewn pouch anal anastomosis. It is prudent then to cover the new anastomosis with an ileostomy. Such procedures are technically demanding and probably best left in the hands in surgeons and institutions with a high volume pouch practice.

References.

1. Lolohea S, Lynch AC, Robertson GB, Frizelle FA. Ileal pouch-anal anastomosis-vaginal fistula: a review. *Diseases of the colon and rectum*. 2005; 48(9): 1802-10.
2. Paye F, Penna C, Chiche L, Turet E, Frileux P, Parc R. Pouch-related fistula following restorative proctocolectomy. *The British journal of surgery*. 1996; 83(11): 1574-7.
3. Keighley MR, Grobler S, Bain I. An audit of restorative proctocolectomy. *Gut*. 1993; 34(5): 680-4.
4. Shah NS, Remzi F, Massmann A, Baixauli J, Fazio VW. Management and treatment outcome of pouch-vaginal fistulas following restorative proctocolectomy. *Diseases of the colon and rectum*. 2003; 46(7): 911-7.
5. Gonsalves S, Sagar P, Lengyel J, Morrison C, Dunham R. Assessment of the efficacy of the rectovaginal button fistula plug for the treatment of ileal pouch-vaginal and rectovaginal fistulas. *Diseases of the colon and rectum*. 2009; 52(11): 1877-81.
6. Gajsek U, McArthur DR, Sagar PM. Long-term Efficacy of the Button Fistula Plug in the Treatment of Ileal Pouch-vaginal and Crohn's-related Rectovaginal Fistulas. *Diseases of the colon and rectum*. 2011; 54(8): 999-1002.
7. Lee PY, Fazio VW, Church JM, Hull TL, Eu KW, Lavery IC. Vaginal fistula following restorative proctocolectomy. *Diseases of the colon and rectum*. 1997; 40(7): 752-9.
8. Ozuner G, Hull T, Lee P, Fazio VW. What happens to a pelvic pouch when a fistula develops? *Diseases of the colon and rectum*. 1997; 40(5): 543-7.
9. Zimmerman DD, Delemarre JB, Gosselink MP, Hop WC, Briel JW, Schouten WR. Smoking affects the outcome of transanal mucosal advancement flap repair of trans-sphincteric fistulas. *The British journal of surgery*. 2003; 90(3): 351-4.
10. Burke D, van Laarhoven CJ, Herbst F, Nicholls RJ. Transvaginal repair of pouch-vaginal fistula. *The British journal of surgery*. 2001; 88(2): 241-5.
11. Zmora O, Potenti FM, Wexner SD, Pikarsky AJ, Efron JE, Nogueras JJ, et al. Gracilis muscle transposition for iatrogenic rectourethral fistula. *Annals of surgery*. 2003; 237(4): 483-7.
12. Wexner SD, Ruiz DE, Genua J, Nogueras JJ, Weiss EG, Zmora O. Gracilis muscle interposition for the treatment of rectourethral, rectovaginal, and pouch-vaginal fistulas: results in 53 patients. *Annals of surgery*. 2008; 248(1): 39-43.
13. Fazio VW, Tjandra JJ. Pouch advancement and neileoanal anastomosis for anastomotic stricture and anovaginal fistula complicating restorative proctocolectomy. *The British journal of surgery*. 1992; 79(7): 694-6.

Parvez Sheikh (Mumbai, India)

IATROGENIC INJURIES OF THE ANAL SPHINCTER

Iatrogenic injuries of the anal sphincter can be a nightmare both for the patient & the causative surgeon. It can occur following surgery for anorectal problems or following an obstetric injury. The most common surgical causes are following surgeries for high fistula, anal dilatation & sphincterotomy, while the common obstetric causes are median episiotomy & instrument delivery. Less common causes include following haemorrhoidectomy, low anterior resection, vaginal hysterectomy & rarely nerve injury following spinal surgery.

One can experience varying degrees of incontinence ranging from flatus incontinence & urgency to frank incontinence for solid stools. Major incontinence, besides causing maceration of the perianal skin & mucosal prolapse & bleeding, can pose a major threat to the patient's social life & they may become socially withdrawn.

One can easily prevent sphincter injury from occurring in most cases. A pre-op assessment of the sphincter before venturing on an anal surgery can detect latent sphincter injury & prevent further sphincter damage. Using non-muscle cutting procedures in case of high fistula, abandoning anal stretching or selectively dividing the lowermost fibers of internal sphincter during sphincterotomy, can prevent a significant sphincter injury from taking place. If significant amount of sphincter has been divided during surgery, it can be sutured primarily with preferably PDS to prevent major incontinence. Similarly, sphincter injury discovered after a vaginal delivery can be primarily repaired with fairly good results.

Various methods are available to detect the extent & degree of sphincter damage. Clinical history (incontinence scores) & examination can give a fairly good idea about the sphincter injury. These can be supplemented with anal manometry, endo anal USG / MRI & pudendal nerve study, if needed. Treatment for anal sphincter injury will largely depend on the patient's symptoms & life style. Minor symptoms can be controlled by dietary modification, anti-diarrheal, fiber supplement, sphincter exercises & even biofeedback. Major sphincter disruptions need a surgical repair. Local sphincteroplasty is best suited for sphincter injury at a single site & where the divided ends of the sphincter are not too far apart, like in obstetric anal sphincter injury. Long term results of simple approximation of the divided ends of the sphincter & overlapping sphincteroplasty are comparable. Other forms of repair include gracilis or gluteus muscle transposition. Sacral nerve stimulation can be effective at times. Occasionally permanent fecal diversion maybe the only option left for the patient.

Iatrogenic anal sphincter injuries maybe preventable, in most cases. Once the sphincter is damaged, it can almost never function as a normal sphincter, even after a repair. It is better for a specialist to handle complex situations to avoid the medio-legal litigation which often follows this calamity.

Stefan D. Holubar (Dartmouth, USA)

MINIMALLY INVASIVE SURGERY (MIS) FOR CHRONIC ULCERATIVE COLITIS (CUC)

Laparoscopy has been widely applied for colorectal resection for CUC. This session will review the characteristics and outcomes at Mayo Clinic for three laparoscopic operations for CUC: 1) MIS subtotal colectomy for severe-to-fulminant disease 2) laparoscopic ileal-pouch anal anastomosis (IPAA), and 3) MIS total proctocolectomy with Brooke ileostomy. We will conclude by discussing the rate of major complications associated with ileostomy reversal.

Sudeep Khaniya (Dharan, Nepal)

SURGICAL MANAGEMENT OF RECTAL PROLAPSE THROUGH ABDOMINAL APPROACH: A SINGLE INSTITUTION EXPERIENCE

Introduction: Rectal prolapse is a full thickness, circumferential intussusception of the entire rectal wall through the anal canal. Management in adult is surgical and over 100 different procedures have been described in the literature. In this study we want to highlight the clinical presentations, techniques employed and immediate postoperative outcome of rectal prolapse in the tertiary care referral centre in Nepal.

Methods: Data of 16 adult patients admitted in the surgical unit with a diagnosis of rectal prolapse were retrieved from the hospital records and analyzed retrospectively.

Results: Median age of the patients was 52 (35-65) years. Male to female ratio was 2:3. 12 Patients underwent abdominal mesh rectopexy, 2 patients had resection rectopexy and 2 patients had Theirsch's repair. Mean hospital stay was 7 days.

Conclusions: Surgical approaches in rectal prolapse remains debatable. While deciding the approach, the surgeon must match the operation to the patient, balancing morbidity, function and recurrence.

Richard Devine (Rochester, USA)

DIVERTICULITIS: CURRENT PRACTICE UPDATE

In western countries the incidence of diverticulosis rose dramatically in the 20th century. In the United States almost 50% of people age 50 or older will have colonic diverticula. Many patients believe avoiding eating seeds and nuts will prevent attacks of diverticulitis. This has been shown to be a myth. Current trends in the management of diverticulitis include a more conservative approach to recommending prophylactic surgery and an increased use of primary anastomosis or peritoneal lavage in patients needing urgent surgery. Unanswered questions include the role of surgery in patients who present with an abscess that is successfully treated without surgery and the indications for surgery in immunosuppressed patients.

Dieter Hahnloser (Lausanne, Switzerland).

WASHOUT FOR ACUTE PERFORATED DIVERTICULITIS. IS IT WORTHWHILE?

60% of patients older 60 years have diverticulosis, 20% will develop acute diverticulitis and approximately 25% out of them will need emergency surgery. Hartmann procedure has a high mortality of up to 15% and stomas are not reversed in nearly 50% of patients. Primary anastomosis with protective loop ileostomy is feasible in most cases, however needs two operations and still 12% of stomas are not reversed.

Emergency laparoscopic lavage and drainage is a relatively new strategy in the management of perforated diverticular disease. Laparoscopic lavage can help avoid emergency laparotomy, resection, stoma formation and the associated morbidity, mortality and cost. In a recent review of case series, conversion rates of 4.9% were reported with mean hospitalization of 9.3 days, complications in 18.9% of patients and a mortality of 0.25%. [] ICU stay (48% lavage patients vs. 80% resection patients, $p=0.02$) [] and total length of hospitalization (14 days vs. 23.5 days, $p<0.0001$) [] were also reduced in 2 comparative series. Of note, patients in the lavage groups were highly selected (100/ 1'257 admitted patients) [] and this approach was successful in the case of fecal peritonitis in only 7-5-8% of patients. [,]

However, 49% of patients did not undergo elective resection after successful laparoscopic lavage, [] and recurred only between 2.3-25%. [] All recurrences could be managed conservatively. The ongoing prospective randomized "ladies trial" comparing laparoscopic peritoneal lavage or resection for purulent peritonitis and Hartmann's procedure or resection with primary anastomosis for purulent or faecal peritonitis in perforated diverticulitis (NTR2037) will provide stronger data.

In summary, laparoscopic lavage for acute diverticulitis has a low morbidity (<20%), a low risk of stoma formation (2%), a low failure rate (4%) in Hinchey III patients and is a valuable option in selected patients.

1. Afshar, S. and M.A. Kurer, Laparoscopic peritoneal lavage for perforated sigmoid diverticulitis. *Colorectal Dis*, 2012. 14(2): p. 135-42.
2. Franklin, M.E., Jr., et al., Long-term experience with the laparoscopic approach to perforated diverticulitis plus generalized peritonitis. *World J Surg*, 2008. 32(7): p. 1507-11.
3. Karoui, M., et al., Laparoscopic peritoneal lavage or primary anastomosis with defunctioning stoma for Hinchey 3 complicated diverticulitis: results of a comparative study. *Dis Colon Rectum*, 2009. 52(4): p. 609-15.
4. Myers, E., et al., Laparoscopic peritoneal lavage for generalized peritonitis due to perforated diverticulitis. *Br J Surg*, 2008. 95(1): p. 97-101.

Seung-Kook Sohn (Seoul, Korea)

TOTAL ABDOMINAL COLECTOMY IN SLOW TRANSIT CONSTIPATION

Constipation is a common gastrointestinal symptom and an ever-growing problem, affecting 1.9%-27.2% of the general population in Western countries. In general, constipation is medically defined as a bowel frequency of less than once per 3-4 days. However, patients sometimes define constipation as straining, a feeling of incomplete emptying after bowel movement, passage of hard stools, and a need for manual help to facilitate defecation, beside just bowel frequency. In 2006, ROME III criteria have further created more formal criteria to be used in defining both functional constipation and further defecatory disorders. Also in Korea, the prevalence of self-reported constipation was 16.5%, while using well-defined the ROME II criteria; the prevalence of functional constipation was estimated at about 9.2%. Such being various definitions of constipation and subjective judgment brings inappropriate treatment and stool softener or laxative abuse. Constipation causes the deterioration not only of the patients' quality of life but also of socio-economic losses. Also prolonged administration of laxative causes side effects and mental anguish. Chronic constipation seriously affects patients' health and is often associated with an extensive psychological strain. Therefore, accurate diagnosis of constipation based on fundamental causes will prevent the patients from unnecessary loss of socio-economic and spiritual comfort.

Before any invasive treatment, it is necessary to determine the cause of constipation. It is important to address the anatomical abnormality. To rule out organic causes and make accurate diagnosis, several physiologic and functional evaluations including colonoscopy, colonic transit time, manometry and defecography are performed. Anorectal physiology assessment of patients with constipation is usually of little value, unlike the role in patients with fecal incontinence. In contrast physiological tests, radiological investigation such as defecography and colonic transit time have a distinct role in patients with constipation. After completing the evaluation, the patients can be classified into 4 diagnostic categories depending upon the presence or absence of various underlying physiologic abnormalities: (1) normal transit constipation, (2) pelvic floor dysfunction (PFD), (3) slow transit constipation (STC), (4) combined STC and PFD. Pelvic floor dysfunction must be diagnosed and treated before any surgery for colonic transit alterations, or a surgical correction of pelvic floor dysfunction can be added to surgery for STC.

Conservative treatment is generally recommended as a first-line therapy. Although medical treatment has made incredible progress, a large number of patients diagnosed as constipation didn't get enough relief of symptom. Some pharmacologic agents have been effective, but the side effects make them difficult to use in practice. The cost should be considered as well. Many of the new drugs are expensive and the treatments are often needed for longer time; sometimes even indefinitely. Usually in these patients, they already have exhausted all of the medical options, and their quality of life has been severely affected. For this group, surgery is the last resort which can be finally attempted.

Surgical treatments for STC include an antegrade enemas (the Malone procedure), total abdominal colectomy with ileorectal anastomosis (TAC & IRA) or ileo-sigmoid colon anastomosis, TAC with cecorectal anastomosis, a partial colectomy, and permanent ileostomy. More recently, neuromodulation using sacral nerve stimulation is showing promising results. The British surgeon Sir William Arbuthnot-Lane first popularized TAC for 39 patients with constipation in 1908, but they were not widely performed due to high morbidity and mortality rate. In the last couple of decades, TAC has become popular once again, since physiologic studies have allowed more accurate patient selection. Nonetheless, some clinicians are still reluctant to perform this procedure due to postoperative complications. Small bowel obstruction was the most common long-term problem. TAC with cecorectal anastomosis, while preserving the ileocecal valve with the theoretical advantages of water preservation, was often complicated by cecal distention. A partial colectomy was also founded to produce a low success rate. Currently, TAC & IRA is known to be more successful than TAC with ileosigmoidostomy. Some remaining sigmoid colon also can cause a recurrence of constipation. TAC for constipation generally improves the stool frequency and eliminates the need for stool softeners and enemas. In 32 published studies reviewed, a median success rate after TAC of was 86% with a range of 39-100%. This variability may be from the lack of standardized preoperative physiologic testing in some of these reports. In this respect, patient selection may be most important factor for determining outcome of TAC in constipation.

In Korea, several studies evaluated the outcome of TAC in chronic constipation. Lim et al reported 11 cases with TAC for patients with chronic constipation and satisfaction level was up to 78%. Another study reported by Sohn et al in 2011 showed 82% satisfaction level in 37 patients and in average, 3.6 times of bowel movement a day. In our institute, we also reported 11 patients

Sudeep Khaniya (Dharan, Nepal)

COMPLICATED SIGMOID VOLVULUS: MANAGEMENT AND OUTCOMES

Sigmoid colon volvulus, a frequent cause of acute large bowel obstruction has the potential for high morbidity and mortality, especially in elderly.

The hospital records of all volvulus patients admitted in our general surgical unit were reviewed for the period of the two years (from 2009 to 2011). Complete data of 11 patients were available for this retrospective analysis.

Median age of the patients was 58 (42-60)years. Male to female ration was 4:1. Duration of hospital stay was 9 (7-19) days. All the patients underwent exploratory laparotomy and resection of sigmoid colon. Three patients had gangrenous sigmoid colon. One patient died in the post operative period due to pneumonia with septic shock.

David Beddy (Dublin, Ireland)

MALIGNANT COLONIC OBSTRUCTION-SURGERY OR STENTING?

Colorectal cancer presents with bowel obstruction in 7-29% of patients. More than half of these patients are greater than 70 years of age and usually obstructed cancers signify advanced disease with over 25% having liver metastasis. In the mid-20th-century treatment was with the three stage procedure consisting of an initial proximal stoma to defunction, followed by resection and later stoma closure. In the 1970s Hartmann's procedure was introduced however only 60% of these patients ever underwent stoma closure. In the 1980s single stage procedures including subtotal colectomy and segmental colectomy with intraoperative lavage and primary anastomosis were introduced. All of these surgical procedures carry mortality in excess of 10% with a large difference in patient outcome related to age, ASA status and tumour stage. Therefore surgery for malignant colonic obstruction has a high risk of patient morbidity and mortality.

With this background self expanding colonic stents were introduced over the last decade for use in malignant large bowel obstruction to palliate advanced disease and as an initial measure to decompress resectable disease and act as a bridge to surgery. Many single series observational studies have been published demonstrating technical success in excess of 90% with low perforation rates, low mortality and good durability particularly in palliative patients. In patients where stents are used as a bridge to surgery there is evidence that they increase the number of patients undergoing single stage surgery with primary anastomosis. More recently randomised trials have cast doubt on the safety of stenting particularly in patients with resectable disease where stenting may cause an unacceptably high rate of bowel perforation with possible seeding of tumour resulting in a worse oncological outcome. The status of stenting for malignant large bowel obstruction is now being re-evaluated in light of new evidence and may not be as applicable in patients who can tolerate surgical resection with acceptable morbidity.

Seung-Kook Sohn (Seoul, Korea)

PALLIATIVE SURGERY FOR MALIGNANT BOWEL OBSTRUCTION IN PATIENTS WITH METASTATIC ADVANCED CARCINOMA

Approximately 40-50% of patients with gastrointestinal tumors are not candidates for curative surgery because of locally advanced tumors or metastatic disease. In the course of the disease most of these patients will require palliative surgery because of obstruction, fistula, pain or hemorrhage. In clinical practice, surgeons face malignant bowel obstruction (MBO) frequently, however, it was not easy to treat successfully.

Bowel obstruction occurs in 5-43% of patients diagnosed with advanced primary or metastatic intra-abdominal malignancy. MBO has been noted to occur in 15% of terminally ill patients in palliative care units. The most frequent causes of MBO are ovarian cancer (5.5-51%) and colorectal cancer (10-28%). Clearly, the cause of the obstruction can play a role in the treatment decision-making process. For patients with metastatic disease, benign intestinal obstructions must be considered. The rate of benign intestinal obstruction found in patients with previously diagnosed malignancy varies, but is significant (3-48%). Nowadays, abdominal pelvic computed tomography (CT) has become useful tool for diagnosing MBO. The sensitivity, specificity, and accuracy were previously reported as 93%, 100% and 94% respectively.

A major goal of palliative surgery is to provide adequate palliation of symptoms of bowel obstruction, to allow for an oral diet, and improvement in quality of life with the least degree of morbidity possible. Prolongation of survival may be a secondary benefit. However, the currently available data has focused on mortality, morbidity, and survival time after surgery, rather than postoperative improvement of quality of life.

Non-operative management must be considered initially. Because MBO is rarely an emergency, time must be taken to inform the patient and family about the situation, treatment approach, determine their wishes. The most dismal problem for palliative treatment of MBO is the low possibility of a cure. The median expectations for these patients are known as 4 - 9 months.

Unfortunately, complete MBOs do not resolve after exclusively non-operative treatment, and if the ability to take solid food is considered desirable, an operation remains the only possible therapeutic option. However, when considering surgical treatment, surgeons should take into account the merits and demerits of the procedure, such as the relief of symptoms, morbidity and mortality rate as well as recurrence of obstruction after the operation. Based on statistics, 6- 50% of malignant bowel obstructions are inoperable for various reasons. Accordingly, appropriate patient selection is crucial. And the patient's status is very important to the decision-making.

When an exploratory laparotomy is undertaken, surgeons should be prepared for multiple causes of MBO. Resection of the obstructed segment may afford the best outcome. If resection cannot be done safely, a bypass procedure such as enteroenterostomy, an intestinal stoma, or a large gastrostomy tube are alternative approaches. Cytoreductive surgery entails maximal debulking and possible intraperitoneal chemotherapy for patients with symptomatic recurrent intra-abdominal cancer.

Currently, as MBO is managed empirically, the decision to operate or not is still left to individual preference and experience. The outcomes thereof are variable and inconsistent. Control of symptoms varies from 42% to over 80%, and is the reason why the definition of success after surgery is inhomogeneous and different for each study. Many reports have stated that surgical benefits are defined as the ability to tolerate solid food, the ability to tolerate oral feeding at discharge, the ability to resume a normal diet, ability to live without a recurrent obstruction, and survival of more than 60 days, and alleviate pain.

Although palliative surgery could be helpful to increasing survival time, the decision for surgery should be made cautiously because the morbidity rate (42%), mortality rate (5-32%), and re-obstruction rate (10-50%) are relatively high.

In our experience, we reported the surgical outcomes of MBO for patients with carcinomatosis with recurrent colorectal cancer in 1997. Ten patients (6 male, 34-60 years old) underwent surgeries including 3 cases of resection and anastomosis, 6 cases of bypass surgeries, and 1 case of exploration only. There was one mortality. Complications entailed 3 enterocutaneous fistulas, 2 wound infections, and 1 abdominal abscess. Only 4 patients were discharged to their home on average at 16 days after surgery (range 7-32 days). The mean survival after surgery was 64 days (range 12-94 days).

In the following series, twenty-eight patients were included. Patients underwent surgeries including 10 cases of metastectomy and anastomosis, 16 cases of bypass or colostomy surgeries, 1 case of metastectomy and band lysis, and 1 case of exploratory laparotomy and adhesiolysis. The mean operation time was 292 (range 140-659) min. Complications occurred in 10 patients (5 sepsis, 2

Michael Davies (Cardiff, UK)

WHAT PROPORTION OF ELECTIVE COLORECTAL CASES CAN BE PERFORMED LAPAROSCOPICALLY?

Introduction: The proportion of elective colorectal resections which can be performed with laparoscopic surgery in published series varies widely with figures >90% in some selected case series. In the United Kingdom (U.K.) there is an initiative (NICE) to ensure that all "suitable" patients are offered laparoscopic surgery with a national training programme for consultant surgeons. In our Unit 4 of 5 surgeons have experience in laparoscopic colorectal surgery. Tertiary referral services include Anal Carcinoma, Transanal Endoscopic Micosurgery, Intestinal Failure and Pelvic Floor Surgery. We assessed the proportion of laparoscopic resections which were undertaken on an unselected patient series attending our unit over a one year period.

Methods: A 12 month period (January 2011- January 2012) was assessed. Data from a prospectively collected colorectal department data base was analysed. Indications for laparoscopic or open surgery were assessed.

Results: 232 patients underwent elective colorectal resection. 60% of resections for colorectal cancer were performed laparoscopically. Indications for open surgery included locally advanced disease, multiorgan evisceration and previous surgery. This data compares favourably with the UK National Bowel Cancer Audit which demonstrates that despite increasing use of the laparoscopic approach, 65% of patients in the U.K. are still having open surgery for colorectal cancer. The overall proportion of patients in our unselected series having laparoscopic surgery fell to 54% when all patients were included in the analysis.

Conclusions: Despite a comparatively high ratio of trained laparoscopic surgeons, our data suggests that a significant percentage patients with colorectal disease are not "suitable" for laparoscopic surgery. This data may be helpful to define national targets for training surgeons and in comparison of activity between units with a similar tertiary practice.

Alan Horgan (Newcastle, UK)

LAPAROSCOPIC SPLENIC FLEXURE MOBILISATION - THE RIGHT LATERAL APPROACH

Surgical resection for left colonic or rectal pathology, benign or malignant, is a common operation in colorectal surgical practice. This operation usually involves mobilisation of the splenic flexure either to excise the pathological segment of colon in question or indeed to enable a tension-free colonic reconstruction after adequate resection. The splenic flexure is often sited high under the left dome of the diaphragm held by supporting ligaments attached to the lower pole of the spleen and the adjacent diaphragm. Several techniques for mobilisation of the splenic flexure have been described. The standard laparoscopic technique involves approaching the splenic flexure via a medial to lateral dissection along Toldt's fascia combined with, when necessary, dividing the colonic attachments along the lateral peritoneal reflection and detaching the omentum from the left half of the transverse colon via the lesser sac. This is usually performed with the patient in the supine position with varying degrees of reverse Trendelenburg tilt. We describe a novel approach to splenic flexure mobilisation with the patient in the right lateral position which converts what was commonly regarded as difficult and potentially hazardous, to a simple, safe and effective technique.

Francis Seow-Choen (Singapore)

PERFORMING LAPAROSCOPIC SURGERY WITH MINIMAL NUMBER OF PORTS

Laparoscopic surgery for colorectal resection is now common place and may be regarded as a routine procedure in many centres around the world. The procedure had been evolving rapidly and interest in the procedure had been driven both by the patient as well as by the fact that the benefits it brings are plainly marvellous.

My own experience with colorectal surgery started in 1987 with the formation of the department of colorectal surgery at Singapore General Hospital. At that time all colorectal resection were attempted via a long mid line. However I had observed some surgeons in the USA and in the UK doing operations like ileal-anal pouches through low supra pubic incisions. This started to interest me greatly and I started to do these sorts of incisions. I found that a long suprapubic incision made for a better recovery and less pain than the classical midline incision. However with time and experience, I found that a short skin crease incision made better sense as the recovery was even faster and the operation was in no way hindered.

When laparoscopic surgery came into the colorectal rectal world we also jumped in and investing the technique thoroughly. Most cases were performed with at least four to five ports and included an extraction site separate from these port incisions.

However with the experience of practice and by observation I noted that most cases of laparoscopic surgery may be easily done with three ports only and we have for many years now performed laparoscopic surgery with one camera and two working ports. This technique is applicable to all types of colorectal resection including ultra low anterior resection, total colectomy, ileal anal pouches and right hemicolectomy. The extraction site is performed by extending the umbilical incision.

Recently, with the advent of single incision laparoscopic surgery(SILS), we have also embarked on investing the use and place of this technique in clinical practice. At the present moment, SILS has a limited place in our practice as the instrumentation is still far from ideal although it is possible especially for right sided colectomies. At the present time in order to facilitate SILS, we have used a separate 5 mm trocar for the manipulation of the energy device, a technique that helps SILS greatly without increasing substantially the post-operative pain or morbidity.

Minimally invasive surgeries are best done with as little ports as possible and this is entirely possible at this present time. The author will present his experience and show how this can be done as a routine.

Daniel Leonard (Bruxelles, Belgium)

SINGLE ACCESS LAPAROSCOPIC COLORECTAL SURGERY: INITIAL EXPERIENCE AND FEASIBILITY STUDY

Aim: With the progress of minimal-invasive surgery, colorectal surgery is increasingly being performed laparoscopically. Through this approach, surgeons were able to improve post-operative comfort of patients by reducing the surgical trauma and thus reduce post-operative hospital stay. Many studies report laparoscopic colorectal surgery as safe and oncologically valid. Recently, single access laparoscopic surgery (SALS) has emerged offering a “single scar laparoscopic” alternative. This study aims to assess the feasibility of SALS approach in routine colorectal surgical practice without compromising the safety of the procedure.

Methods: Clinical data was prospectively collected during our initial experience of SALS routine colorectal surgical procedures.

Results: Since its introduction, in our Colorectal Surgery Unit, in August 2011, 52 SALS colorectal procedures have been performed. Over the same period, 58 classic laparoscopic and 31 open colorectal procedures were performed. Patients suitable for laparoscopic colorectal surgery have been systematically enrolled for the single access approach. Exclusion criteria were high BMI, rectal surgery, T4 tumors and previous laparotomy. There were 30 men and 22 women. Mean age was 51 years and median BMI was 23 (17-31). Procedures performed were: 16 right hemi-colectomies or ileo-caecal resections, 18 left hemi-colectomies or sigmoidectomies, 2 transverse colectomies, 2 anterior resections, 3 sub-total colectomies, 1 secondary proctectomy and ileal-pouch anal anastomosis (IPAA), 6 restorative proctocolectomies with IPAA, 2 total mesorectal excisions (TME), 1 small bowel resection and 1 adhesiolysis. Indications were IBD, diverticulitis or malignancy. There were no intra-operative complications. Conversion to laparotomy was necessary for 3 patients (5.7%): two because of obesity and one patient with perforated T4 sigmoid adenocarcinoma. During both anterior resections, two trocars were added thus converting to classic laparoscopy (3.8%). Median length of the skin incision was 4 cm (3-6). Mortality was nil. Three IBD patients (5.7%) presented post-operative complication consisting in ileo-cecal and ileo-rectal anastomotic dehiscence and ileal-pouch leakage. For the latter patient, redo SALS allowed elective suture of the pouch and ileostomy with no further complication. Median hospital stay was 6 days (3-18) and median follow-up of 4.7 months (1-12).

Conclusion: No technical modifications were necessary to perform colorectal surgery through SALS approach on a daily basis. For experienced laparoscopic colorectal surgeons, SALS colorectal surgery is feasible. At this time, SALS may present cosmetic advantages and less trauma to the abdominal wall compared to the multiport laparoscopy. However, a randomized controlled trial is required to point out short and long-term advantages.

Ho-Kyung Chun (Seoul, Korea)

OPERATING THROUGH A NATURAL ORIFICE

Introduction. If laparoscopic surgery has earned the description of “minimally invasive surgery” (MIS), Natural Orifice Transluminal Endoscopic Surgery (NOTES) has taken this to the next level by declaring itself to be “minimum-invasive surgery”. This may seem like an oxymoron as surgery has always been associated with scars and pain. However, laparoscopic surgery has succeeded in diminishing the scars and the pain; NOTES, literally by its' definition, seeks to eliminate them altogether.

NOTES is therefore, the latest and arguably the most significant innovation in surgery since Professor Kurt Semm, a gynecologist, performed the world's first laparoscopic appendectomy at the University of Kiel in Germany on 13 September 1980. Then, Phillippe Mouret of France performed the first laparoscopic cholecystectomy using video techniques in 1987. These were the index procedures that revolutionized minimally invasive surgical techniques in general surgery. And as the twenty first century begins, the cycle of innovative development seems to be beginning again.

In 2004, Dr. Anthony Kalloo, a gastroenterologist from USA, first introduced us to NOTES. And in 2007, he brought out the first publication regarding cholecystectomy via solely NOTES technique on a human patient. Since then many further series of pure and hybrid NOTES procedures have begun.

How did it all start? Over the last 20 years there have been major advances in endoscopy, both in techniques and in instruments. No longer just a diagnostic tool, it has rather quickly and efficiently become one of the best and safest minimally invasive therapeutic tools for the addressing of a wide range of gastrointestinal pathology. It obviates the need to operate on many patients with a variety of neoplastic lesions such as large polyps, submucosal benign lesions, dysplastic lesions, and very early malignant lesions. Endoscopic mucosal resection was the evolutionary step before somebody had the courage to breach the muscular layer of the gastrointestinal tract and venture into the peritoneal cavity intentionally and not accidentally. From that point on, progress has accelerated. The possibilities now seem limitless. The massive expansion in technology brought about by the advances in laparoscopic surgery, and endoscopic procedures has given us a huge range of selection in instruments and devices. As much as having helped to progress the NOTES idea into reality in such a short time, these instruments are likely to further enable intraluminal endoscopy to continue its advance. But is it really a revolution or just an interesting experiment? If one tracks back to how laparoscopic surgery started the skepticism surrounding NOTES is understandable. Both surgical and medical communities are slow to welcome NOTES in exactly the same way they were slow to accept laparoscopic cholecystectomy. However, in less than 20 years, laparoscopic cholecystectomy has become the gold standard surgical approach, and it now seems likely that in shorter time NOTES will prove itself as a worthy alternative to a variety of open and laparoscopic procedures.

Where do we stand with NOTES at this point in time? Gettman et al. reported in 2002 the first ever transvaginal nephrectomy in a porcine model well before NOTES, as an entity, was defined. However, it was Kalloo et al. in 2004 that brought NOTES into a spotlight when he performed a transgastric peritoneoscopy in a porcine model, opening the door to major developments in the field of NOTES. From that date on, NOTES has been steadily gathering momentum while growing interest has ensured a notable progress to its evolution.

The surgical and medical communities have joined forces to oversee the progress of NOTES taking it safely from the drawing board to the research laboratory and finally to the operating room. Of course, the lessons learned from the hasty introduction of laparoscopic cholecystectomy and the pitfalls that hindered the progress of MIS were kept in sight during this progress. Since Kalloo performed his groundbreaking NOTES procedure, many experimental porcine procedures have been described and more recently, some very encouraging, highly selective human procedures have been successfully completed with no reported morbidity. Such early human reports are rather promising. However, it may still be too early to generalize the feasibility of this concept.

Noscar. The skills needed for the safe practice of NOTES cross two specialties: surgery and gastroenterology. For the successful development of this new technique, close collaboration between the two specialties is mandatory. On 22 July 2005, 14 leaders from the American Society of Gastrointestinal Endoscopy (ASGE) and the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) met in New York City to discuss how to develop NOTES from theory into practice safely and efficiently, and addressed the associated challenges, limitations, and requirements in a white paper published in Surgical Endoscopy. The main goals were to synchronize research and clinical progress in this field and to avoid pitfalls associated with the

overly hasty introduction of laparoscopic procedures for certain indications.

Recommendations by the working group, Natural Orifice Surgery Consortium for Assessment and Research (NOSCAR), highlighted the challenges and limitations in implementing NOTES and set guidelines for future development and progress. These guidelines ushered the beginning of large-scale research projects all over the world with the use of animal laboratories and human subjects, where appropriate, to try to address and overcome the limitations imposed by instruments, techniques and human factors. Potential barriers to the advances of NOTES were highlighted. These guidelines were drafted to help researchers and industry pioneers harmonize their efforts to bring major advancements to NOTES. Now that the barriers have been identified, one can utilize the available resources to research and test instruments and techniques while investigating the best access points (enterotomy sites), enterotomy closure methods, instruments, insufflation, orientation, stable platforms, reaching and handling techniques. Also one can explore what applications would best suit NOTES. In this review, we will concentrate on optimizing training NOTES providers and avoiding the mistakes of the past.

Limitations of NOTES. Despite many potential advantages, there are also many obstacles to overcome with practicing NOTES. Many of these drawbacks come from the limitations of the technical support; difficult learning curves as well as the intentional incision to the lumen of the natural orifice. NOSCAR White Paper pointed out potential barriers of NOTES practice as follows.

- 1 Access to the peritoneal cavity.
- 1 Enterotomy closure.
- 1 Prevention of infection (transluminal contamination).
- 1 Development of endosuturing devices.
- 1 Development of anastomotic (non-suturing) devices.
- 1 Spatial orientation.
- 1 Development of a multitasking platform to accomplish procedures.
- 1 Control of intra-peritoneal haemorrhage.
- 1 Management of iatrogenic intra-peritoneal complications.
- 1 Physiologic untoward events.
- 1 Compression syndromes.
- 1 Training providers.

Potential benefits of NOTES. There are potential benefits of NOTES superior to the conventional laparoscopic surgeries which are attributed to the avoidance of incision from outside of the body. Potential benefits of NOTES can be listed as follows.

- 1 No scars, less pain, fewer wound complications, earlier mobility and recovery.
- 1 Less physiological and psychological trauma to the patients and family.
- 1 Feasible alternative to laparoscopic surgery in morbidly obese patients.
- 1 Possibility of performing certain surgical procedures using conscious sedation rather than full anesthesia.
- 1 More ambulatory surgery.
- 1 Less overall cost associated with operative care.
- 1 Potential to offer therapy outside the operating room environment.
- 1 May allow care providers other than surgeons to explore the abdominal cavity for diagnostic or staging purposes.

Prospective of NOTES. NOTES can be used as a stand-alone procedure or as a bridge procedure to improve the accessibility in laparoscopic surgery. An example of how NOTES can complement laparoscopic surgery was recently presented at the ASCRS meeting in Boston when Li and Milsom presented a successful application of combined NOTES with a laparoscopic approach to resect a large, benign cecal polyp sitting behind a mucosal fold, which would have been inaccessible with endoscopy alone.

During the procedure, a laparoscopic technique was used to push the polyp into the cecal lumen rendering it accessible to the endoscopist's instruments. Using this innovative combined approach saved the patient from undergoing laparoscopic bowel resection. Such an example illustrates the importance of developing NOTES alongside with laparoscopic surgery. It shows that one can utilize the expertise of surgeons and gastroenterologists to develop new, inventive patient management solutions to a wider range of surgical and medical problems. The operating room for the future should see NOTES technology and instruments built inside along with the laparoscopic equipments to permit both surgeons and gastroenterologists to work individually or together to treat a wide variety of medical and surgical pathologies. NOTES should therefore offer comparable outcome results to minimally invasive surgery with some superior advantages.

In reality, however, what one is left with NOTES is an endless quest for perfection and improvement. But such challenges are well worthy to be overcome. If making scars smaller resulted in so many benefits to the patient's recovery and psychology, imagine the potential gains to patients and the health services from a no scar surgery. If no scar surgery is what the patients prefer, then this is what they shall get. Hence, the importance of proving the safety and efficacy of NOTES cannot be more emphasized.

Modifications of NOTES: NOSE, E-NOTES, TEM/TEO. With current endoscopic systems and suturing devices, it is difficult to extend NOTES procedure to more advanced surgery. As with initial series of conventional laparoscopic surgery, human NOTES procedure is largely limited to appendectomy, cholecystectomy and other minor procedures. There have been many efforts to extend or modify the pure NOTES (P-NOTES) to let the more complex surgery be possible.

Some surgeons prefer to extract the specimen through the natural orifice; mainly, via vagina or anus, therefore it is called as NOSE (Natural Orifice Specimen Extraction).

From the beginning of the NOTES, some surgeons started to modify the conventional multiport laparoscopic surgery without side trocars using single access port, mainly through or just beside of the umbilicus, which was natural orifice during embryonic periods; so single access port laparoscopic surgery using the umbilicus is named as E-NOTES (embryonic NOTES). And this kind of surgical procedures seems to be the most popular modifications of the NOTES.

Morino and Arezzo from Italy actively introduced the TEM (Transanal Endoscopic Microsurgery) into the colorectal surgery. They use the TEM, not only for transanal excision but also for more extensive surgical procedure such as colorectal resection and anastomosis. This kind of surgical procedure is named as transanal endoscopic operation (TEO).

References

1. Alverdy JC. NOTES: a surgeon's perspective. *Gastrointest Endosc Clin N Am* 2007; 17(3): 605-10, viii.
2. Buyske J. Natural orifice transluminal endoscopic surgery. *JAMA* 2007; 298(13): 1560-1.
3. Kalloo AN. Natural Orifice Transluminal Endoscopic Surgery (NOTES). *Gastroenterol Hepatol* 2007; 3(3): 183-4.
4. Arezzo A, Repici A, Kirschniak A, Schurr MO, Ho CN, Morino M. New developments for endoscopic hollow organ closure in prospective of NOTES. *Minim Invasive Ther Allied Technol* 2008; 17(6): 355-60.
5. Buess GF. Natural orifice transluminal endoscopic surgery (NOTES). *Minim Invasive Ther Allied Technol* 2008; 17(6): 329-30.
6. Leroy J, Cahill RA, Peretta S, Marescaux J. Single port sigmoidectomy in an experimental model with survival. *Surg Innov* 2008; 15(4): 260-5.
7. Raman JD, Cadeddu JA, Rao P, Rane A. Single-incision laparoscopic surgery: initial urological experience and comparison with natural-orifice transluminal endoscopic surgery. *BJU International* 2008; 101(12): 1493-6.
8. Remzi FH, Kirat HT, Kaouk JH, Geisler DP. Single-port laparoscopy in colorectal surgery. *Colorectal Dis* 2008; 10(8): 823-6.
9. Bardakcioglu O, Ahmed S. Single incision laparoscopic total abdominal colectomy with ileorectal anastomosis for synchronous colon cancer. *Tech Coloproctol* 2010; 14(3): 257-61.
10. Brunner W, Schirnhofner J, Waldstein-Wartenberg N, Frass R, Weiss H. Single incision laparoscopic sigmoid colon resections without visible scar: a novel technique. *Colorectal Dis* 2010; 12(1): 66-70.
11. Keshava A, Mackenzie S, Al-Kubati W. Single-port laparoscopic right colonic resection. *ANZ J Surg* 2010; 80(1-2): 30-2.
12. Allaix ME, Arezzo A, Caldart M, Festa F, Morino M. Transanal endoscopic microsurgery for rectal neoplasms: Experience of 300 consecutive cases. *Dis Colon Rectum* 2009; 52(11): 1831-6.

Yoonah Park, (Seoul, Korea)

WHAT DO I NEED TO BEGIN ROBOTIC SURGERY

Building a Robotic Surgery Program

To establish a successful robotic surgical program in an institute, the following key elements are considered.

1) Purchase Of Robotic System

The cost of da Vinci system is approximately 1.5-1.75 million USD depending upon the type of system purchased. In addition, there is per case disposable fee for the robotic instruments of approximately 200 USD per instrument used. In order to make a cost analysis and therefore to check the economic feasibility of the purchase of a da Vinci system, we need to evaluate the cost of surgery and the reimbursement according to the different health system

2) The Operating Room (OR)

The dedicated OR for robotic surgery is advisable. Compared to a traditional OR, a robotic OR requires a larger OR (about 60m²) with LCD screen because of the space limitations caused by the presence of a surgical console and surgical cart. There is the need of keeping a specific stock required by the short life of many disposable instruments and the need of extra instruments in case of possible malfunctioning

3) The Robotic Team

!The leading surgeon

A leading surgeon is essential to the start up. This individual should oversee the clinical aspect of the robotic surgery program and plan the strategy for scaling the learning curve and growing the program. The role of the leading surgeon is not only performing the robotic surgical procedure but also to take care of and train the team members.

Training of the leading surgeon is based on the improving their knowledge of the da Vinci system with lab exercises on training kit, porcine model or cadavers. In addition, Intuitive surgical provides an on-line education program on their website. At the end of the on-line education program, a trainee may take an examination to test their basic knowledge acquired. The next steps are case observations and video-based learning. There are 22 global training centers for da Vinci robotic surgery. Because all the people involved in the robotic surgery are not familiar with the new technology and every single member has their own learning curve, the patient selection is important for the beginning step. It is advisable to perform the first procedures with a supervisor.

!The operating room nursing staff

During the robotic surgery, the operator is not in the direct contact with a patient while a scrub nurse and usually one bedside assistant are sit by the patient. Therefore, through understanding of the basic mechanism of the da Vinci system as well as the surgical procedure is required for the nursing staffs.

!Surgical fellows and residents

Training programs with hands-on experience for fellows and residents have been recently developed. Surgical simulator is available to make the trainee perform various kind of surgical procedures requiring different levels of surgical skill. When starting the robotic program, fixed team members are advisable until the learning curve might be overcome.

4) Data Collection

It is recommended to present and share a new experience with colleagues in meetings and scientific events. An appropriate and prospective data collection is crucial to audit regarding efficiency, outcomes and patient satisfaction related to new procedures. Outcome monitoring in comparison with the previous adopted technique is mandatory. A complete collection of video recorded surgical procedure is helpful for surgical audits and for training.

5) Training and Education

Once the program is set up, one of the most important issues to maintain the program is training of surgical fellows and residents. It is because this new surgical technique is unfamiliar with them, they should play a role of bedside assistant with the operator being apart from the patient and they are the leading surgeons in the future.

On-line education to acquire the basic knowledge for the system, hands-on training with dry lab and animal lab, and performance of segmented surgical procedure under supervision are the steps of training.

Gabriela Möslein (Dusseldorf, Germany)

EXTENDED SURGERY IN LYNCH SYNDROME PATIENTS AT THE TIME OF COLON CANCER IS RECOMMENDED - A QUALITY OF LIFE STUDY INDICATING THAT MORE IS BETTER

Objectives: Lynch Syndrome (LS) is associated with a substantial risk for metachronous cancers following segmental oncologic resection of the initial cancer. The aim of this study was to compare the quality of life (QoL) after segmental or extended colonic resection in patients with a hereditary predisposition to colorectal cancer.

Design: QoL was assessed with the disease specific EORTC QLQ-C30 and CR38 questionnaires. Patients were recruited from the German HNPCC Consortium, the New Zealand Familial Gastrointestinal Cancer Registry and the database of the Hôpital Saint Antoine in Paris with the following inclusion criteria: Colonic resection for colon cancer; hereditary cancer according to Amsterdam II Criteria and/or mismatch repair deficient tumour; age at operation < 60y; surgery >6 months before study; no ostomy.

Results: 51% of questionnaires were returned, 587 eligible (503 segmental, 84 extended). Patients with limited resections were significantly younger at the time of surgery, whereas age at the time of survey was comparable. Patients with subtotal colectomy, reporting more frequent nocturnal bowel movements, demonstrated an improved outcome regarding fatigue/weakness, role functioning and constipation, but after adjustment for multiple testing, there was no significant difference.

Conclusion: This large, international study has demonstrated that when compared with segmental resections, extended colonic resection for hereditary colon cancer syndromes is associated with an equivalent QoL. In view of the substantial risk reduction for metachronous cancers, patients with LS should undergo more extensive surgery at the time of their primary colon cancer diagnosis. This finding highlights the importance of preoperative diagnosis in patients with hereditary predisposition to cancer.

Peter M. Sagar (Leeds, UK)

LOCALLY RECURRENT RECTAL CANCER – HIGHER AND WIDER

Local recurrence of rectal cancer occurs in between 2.6 – 32% of patients. Without treatment, survival is poor, with a median survival of 6-7 months, which is complicated by symptoms of chronic pain, pelvic sepsis, fistulas, obstruction and bleeding². Radiotherapy alone, or in combination with chemotherapy, can palliate symptoms and extend survival to 12-14 months. Radical surgery is the only curative option in this cohort of patients.

Radical surgery for locally recurrent rectal cancer (LRRC) was first conceptualised in the 1940s. Since then, there have been a number of series documenting the oncological and survival benefit of surgery for LRRC, with 5 year survival rates of 38-62%. Despite, such promising outcomes, only a small proportion of patients are referred for consideration of curative surgery. Unlike, the mainstream acceptance of surgery for hepatic and pulmonary metastases, the general recognition that surgery for local recurrence can offer benefits has been slow. 5-year survival rates following hepatic and pulmonary metastectomy are 8-44% and 39-48% respectively. Survival benefit gained from surgery for local recurrence is comparable, if not superior, to that of metastectomy, and therefore such intervention should be seriously considered for patients with local recurrence.

Reservation regarding surgery for LRRC may be due to the historic perception of the associated high morbidity and mortality, with reported rates of up to 59% and 3% respectively. This, however, is comparable to the high rates of morbidity observed with abdominoperineal resection for primary lower rectal cancer. Furthermore, surgical resection of hepatic or pulmonary metastatic disease carries mortality rates of 5% and 1% respectively, with morbidity rates of up to 50% and 12%. The marginal differences observed in morbidity and mortality rates between already accepted surgical practices and surgery for local recurrence, combined with similar survival outcomes, leads to the question, why are we neglecting some patients with local recurrence and failing them by not appropriately referring them for consideration of potentially curative surgery?

Advances in surgical practice have expanded the range of options available to patients with LRRC, with the exact surgical procedure being performed dictated by the anatomical location of the tumour. There are a number of contraindications to curative surgery; these include high involvement of the sacrum above the level of S3, extensive involvement of the lateral pelvic sidewall, extension through the greater sciatic notch, encasement of the iliac vessels, irresectable distant metastatic disease and poor performance status. The continual development within this field has led to high sacrectomies, internal hemipelvectomies and en-bloc resection of the iliac vessels being performed with curative intent in patients with LRRC to try and close the window of contraindications. These surgical advances have been supplemented with advances in multi-modal therapies, including the use of intra-operative radiotherapy and selected re-irradiation to optimise oncological outcomes.

Surgery for LRRC is technically demanding due to the loss of normal anatomical planes, post-radiotherapy fibrosis and invasion into multiple surrounding structures. This, combined with long operative times, significant blood loss, the involvement of a number of allied disciplines and relatively high post-operative morbidity, calls for the development of specialist, centralised services to appropriately assess and manage this cohort of patients. The development of such services would allow for appropriate patient selection, accurate pre-operative staging of disease, optimisation and standardisation of multimodal therapies including chemotherapy, pre-operative and intra-operative radiotherapy and allow for the development of current surgical techniques. Furthermore, it is well documented that surgical outcomes are improved in high volume centres with high volume surgeons. The technical nature of surgery for local recurrence requires a surgeon who is experienced operating in unfamiliar territory, comfortable dealing with potentially significant blood loss, and able to make an appropriate judgement call with regards to radicality of resection to achieve the optimal outcome for the patient. Therefore, there is a strong case that undertaking such resectional surgery on an occasional basis in a local centre is inappropriate.

The mindset towards the management of LRRC needs to change, with a shift towards the consideration of surgical resection. LRRC is a curable disease process, with surgery offering optimal survival and oncological benefit, with acceptable rates of morbidity and mortality. Continuing advances in multimodal therapies and surgical practice means options available to this cohort of patients will expand further. To offer patients the best possible outcome, the development of central services with appropriate referral pathways is essential. As a fraternity we should acknowledge all the options available to patients with local recurrence and adopt the attitude that just like metastatic disease, a pelvic recurrence is not the end of the road.

1. Abulafi AM, Williams NS. Local recurrence of colorectal cancer: the problem, mechanisms, management and adjuvant therapy. *Br J Surg.* 1994; 81:7-19.
2. McCall JL, Cox MR, Wattchow DA. Analysis of local recurrence rates after surgery alone for rectal cancer. *Int J Colorectal Dis.* 1995; 10: 126-132.
3. Ito Y, Ohtsu A, Ishikura S, Boku N, Nihei K, Ogino T, Ikeda H. Efficacy of chemoradiotherapy on pain relief in patients with intrapelvic recurrence of rectal cancer. *Jpn J Clin Oncol.* 2003; 33:180-185.
4. Dunphy J. Recurrent cancer of the colon and rectum: report of cases with favourable results following radical surgery. *N Engl J Med* 1947; 237: 111-3.
5. Yamada K, Ishizawa T, Niwa K, Cguman Y, Akiba S, Aikou T. Patterns of pelvic invasion are prognostic in the treatment of locally recurrent rectal cancer. *BJS* 2001; 88: 988-993.
6. Kusters M, Dresen RC, Martijn H, Nieuwenhuijzen GA, van de Velde CJ, van den Berg HA, Beets-Tan RG, Rutten HJ. Radicality of resection and survival after multimodality treatment is influenced by subsite of locally recurrent rectal cancer. *Int J Radiat Oncol Biol Phys.* 2009 Dec 1;75(5):1444-9.
7. Hansen MH, Balteskard L, Dorum LM, Eriksen MT, Vonnen B, Norwegian Colorectal Cancer Group. Locally recurrent rectal cancer in Norway. *Br J Surg.* 2009 Oct; 96(10): 1176-82.
8. S. Zhang, F. Gao, J. Luo and J. Yang. Prognostic factors in survival of colorectal cancer patients with synchronous liver metastasis.
9. Morris EJ, Forman D, Thomas JD, Quirke P, Taylor EF, Fairley L, Cottier B, Poston G. Surgical management and outcomes of colorectal cancer liver metastases. *Br J Surg.* 2010 Jul;97(7):1110-8.
10. Saito Y, Omiya H, Kohno K, Kobayashi T, Itoi K, Teramachi M, Sasaki M, Suzuki H, Takao H, Nakade M. Pulmonary metastasectomy for 165 patients with colorectal carcinoma: A prognostic assessment. *J Thorac Cardiovasc Surg.* 2002 Nov;124(5):1007-13.
11. Inoue M, Ohta M, Iuchi K, Matsumura A, Ideguchi K, Yasumitsu T, Nakagawa K, Fukuhara K, Maeda H, Takeda S, Minami M, Ohno Y, Matsuda H; Thoracic Surgery Study Group of Osaka University. Benefits of surgery for patients with pulmonary metastases from colorectal carcinoma. *Ann Thorac Surg.* 2004 Jul;78(1):238-44.
12. Sakamoto T, Tsubota N, Iwanaga K, Yuki T, Matsuoka H, Yoshimura M. Pulmonary resection for metastases from colorectal cancer. *Chest.* 2001 Apr;119(4):1069-72.
13. Melton GB, Paty PB, Boland PJ, Healey JH, Savatta SG, Casas-Ganem JE, Guillem JG, Weiser MR, Cohen AM, Minsky BD, Wong WD, Temple LK. Sacral resection for recurrent rectal cancer: analysis of morbidity and treatment results. *Dis Colon Rectum.* 2006 Aug;49(8):1099-107.
14. Luna-Pérez P, Rodríguez-Ramírez S, Vega J, Sandoval E, Labastida S. Morbidity and mortality following abdominoperineal resection for low rectal adenocarcinoma. *Rev Invest Clin.* 2001 Sep-Oct;53(5):388-95.
15. Fusai G, Davidson BR. Management of colorectal liver metastases. *Colorectal Dis.* 2003 Jan;5(1):2-23
16. Yedibela S, Klein P, Feuchter K, Hoffmann M, Meyer T, Papadopoulos T, Göhl J, Hohenberger W. Surgical management of pulmonary metastases from colorectal cancer in 153 patients. *Annals of Surgical Oncology,* 13(11):1538-1544.
17. Mirnezami A, Sagar PM, Kavanagh D, Witherspoon P, Lee P, Winter D. Clinical Algorithms for the Surgical Management of Locally Recurrent Rectal Cancer. *Dis Colon Rectum* 2010; 53: 1248-1257.
18. Archampong D, Borowski DW, Dickinson HO. Impact of surgeon volume on outcomes of rectal cancer surgery: a systematic review and meta-analysis. *Surgeon.* 2010 Dec;8(6):341-52.

ISBN 978-609-435-002-3



9 786094 350023