

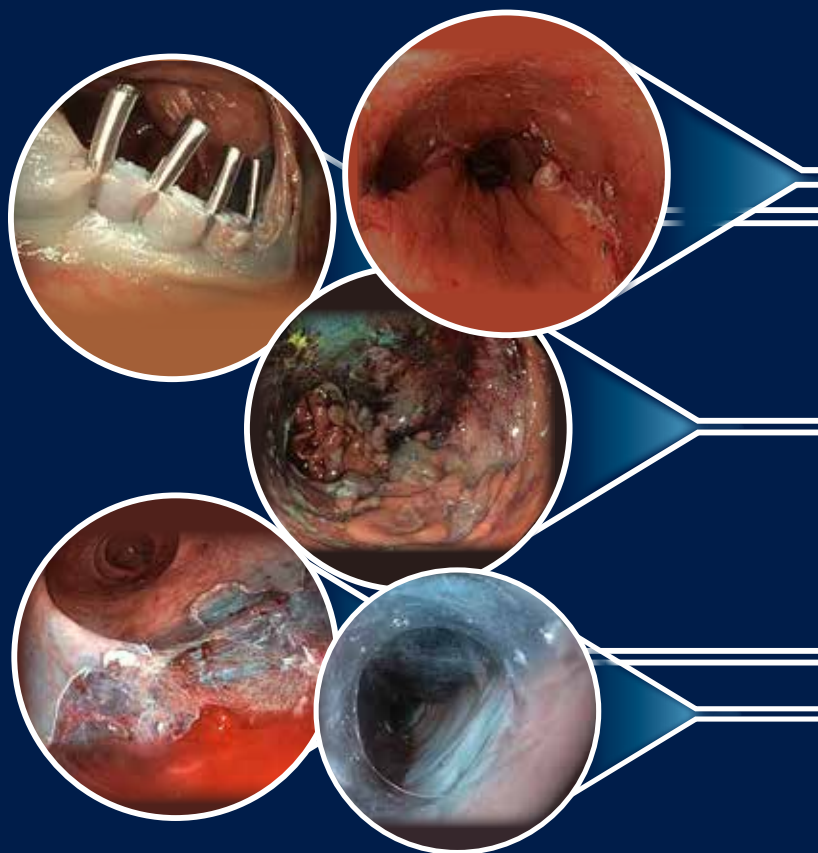
8TH ANNUAL

SIES 2015

SYDNEY INTERNATIONAL ENDOSCOPY SYMPOSIUM

Thursday 5th & Friday 6th March
Hilton Sydney, Australia

CONFERENCE PROGRAM & SYLLABUS



INTERNATIONAL FACULTY

-  Evelien Dekker - The Netherlands
-  Robert Hawes - USA
-  Alessandro Repici - Italy
-  Hironori Yamamoto - Japan

Topics Include

- Colonoscopy
 - Approach to serrated polyps, serrated dysplasia and neoplasia in 2015
 - Best practice polypectomy
 - New methods in advanced tissue resection: EMR and ESD
 - Enhanced imaging and optical diagnosis
- GI stricture management
- Palliation of malignant luminal obstruction
- ERCP: complex and basic therapeutics
- Direct cholangioscopy
- Balloon enteroscopy
- Treatment of achalasia including POEM
- Endoscopic treatment of perforations and fistulas
- Endoscopic ultrasound
- Barrett's Oesophagus
 - Detection of inconspicuous neoplasia and dysplasia
 - Endoscopic treatment for dysplasia and early cancer in 2015

WESTMEAD ENDOSCOPY
SYMPOSIUM NURSES' WORKSHOP

Wednesday 4th March 2015

Demonstrations and updates on
Endoscopic techniques and equipment

Venue: Hilton Sydney

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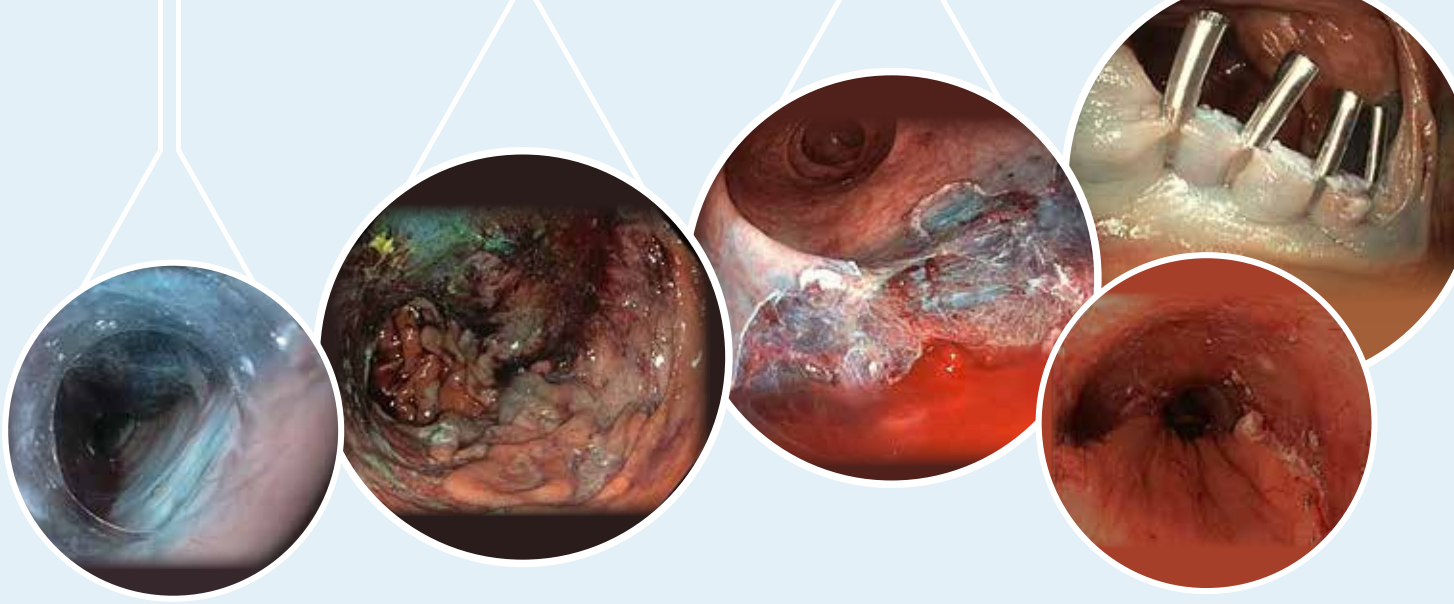
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27	28	29	30	31		



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WELCOME!

Dear Colleagues and friends

It is my great pleasure to welcome you to the Sydney International Endoscopy Symposium, our 8th Annual Westmead Endoscopy meeting. Once again we have set ourselves the goal of a comprehensive demonstration of diagnostic and therapeutic endoscopy. I believe that this year will be our most successful event yet.

We are delighted to welcome four truly outstanding clinicians from abroad; Evelien Dekker, Alessandro Repici, Robert Hawes, and Hironori Yamamoto as our expert faculty. All of them are leaders on the international stage having made numerous outstanding contributions to the practice of Endoscopy over the last ten to twenty years.

Their insights are eagerly awaited.

The Symposium's content has been carefully designed to facilitate discussion. Please utilise the ShowGizmo App or Twitter via your mobile phone to relay your questions through the chairs to our proceduralists. This is a unique feature that will enhance the interaction between the expert faculty and the audience. A strong emphasis on the cognitive processes behind the delivery of high quality endoscopy will feature. Several novel technologies will also be demonstrated.

On behalf of our Department, Nurses and Doctors alike, I thank you for your support and for interrupting your busy schedules to join us here for these two special days. I believe the international guests, in combination with our Australian faculty and the team from Westmead, will provide an enlightening and informative educational experience for you, and hopefully a very enjoyable one.

Yours sincerely

Michael Bourke

Chairman Sydney International Endoscopy Symposium 2015
Director of Gastrointestinal Endoscopy,
Westmead Hospital, Sydney



WELCOME TO NURSES

It is a great pleasure to welcome you to the 8th Annual Sydney International Endoscopy Symposium Nurses' Workshop. The Westmead Endoscopy team has prepared another fabulous and stimulating array of talks and demonstrations which will enhance your understanding of Gastrointestinal Endoscopy. An interesting topic on the agenda is the open forum dealing with challenges in reprocessing with Robyn Brown, Di Jones and Beth Wardle on the panel!

We are delighted to have a large and diverse group of fantastic speakers on our programme including Nick Burgess, Prakash Sundaralingam, Vu Kwan, Susan Lane, Eric Lee, Michael Bourke and our 2015 international speaker Jacqueline Neilson from the UK.

We have kept the very popular demonstration stations again this year and you will have hands-on opportunities with the latest devices in therapeutic endoscopy.

The Symposium is also an avenue for networking and interaction amongst the great nursing minds in gastroenterology and endoscopy, offering updates and sharing and learning fresh tips and tricks to promote the specialisation in this specialty.

All nurses are encouraged to attend the following two full days live high quality transmission from the Westmead Endoscopy Suite to the Hilton Sydney Hotel, which will showcase the latest development with interesting and challenging cases, that demonstrate the skills and wisdom of the internationally renowned guest faculty.

RCNA points will be available for nurses attending the Symposium.

Yours sincerely

Mary Bong

Nurse Unit Manager Endoscopy Unit,
Westmead Hospital Organising Committee
Sydney International Endoscopy Symposium,
Nurses' Workshop 2015

INTERNATIONAL FACULTY



DR ALESSANDRO REPICI

Professor of Gastroenterology at Humanitas Medical School Humanitas Research Hospital Milano, Italy

Alessandro Repici was born in Messina, Sicily where he grew up and attended Medical School and graduated in 1990. He continued his training at University of Torino, Molinette Hospital where he spent two-year fellowship in Internal Medicine and three year in gastroenterology, six months in Paris doing a fellowship on advanced biliary endoscopy, three months at Altona Hospital in Hamburg and three months as visitor at Eppendorf University Hospital, Hamburg.

In 1998 he spent time as research fellow at Wellesley Hospital in Toronto working under the tutorial of Norman Marcon on new technologies for endoscopic delivery of nano-particles for palliation of oesophageal tumours. In 2005 moved to Milano where he took the position of Director of digestive endoscopy unit at Humanitas Research Hospital one of the largest private facilities of the country. Since 2007 he became Director of endoscopy program for all the hospitals belonging to the Humanitas Group in Italy.

Since 2010 he is the organizer of one the most attended live endoscopy course in Europe. Since 2011 Dr Repici is founder and editor in chief altogether with his good friend Todd Baron of www.webendoscopy.com a website devoted to advanced endoscopic procedures educational and training. The main field of clinical activity for Dr Repici is advanced endoscopy with special interest in procedures like ESD, stenting, POEM, Zenker treatment and ERCP. He has been recently appointed as one of the Associate Editors of Gastrointestinal Endoscopy and already serves in the Editorial Board of Digestive and Liver Disease. He is married with Marilena and has 4 children Alberto, Matteo, Benedetta and Ludovica.



DR EVELIEN DEKKER

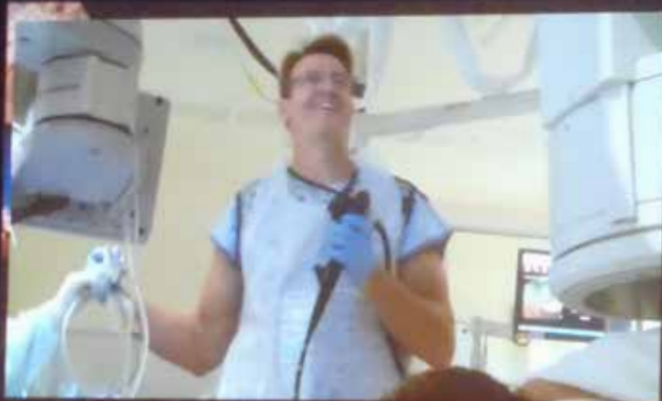
Professor of Gastrointestinal Oncology, Department of Gastroenterology and Hepatology, Faculty of Medicine, University of Amsterdam, The Netherlands

Dr Evelien Dekker is professor of Gastrointestinal Oncology, specialising in screening and diagnosing colorectal carcinoma, at the University of Amsterdam's Faculty of Medicine (AMC-UvA). Evelien Dekker obtained her PhD at the UvA and did her medical training to qualify as a junior doctor, internist and subsequently a gastroenterologist at the Amsterdam Medical Centre (AMC) and OLVG hospital.

Dekker has worked as a gastroenterologist since 2005, and primary investigator in the Gastroenterology department of the AMC since 2009. Her clinical duties primarily engage her in the field of gastroenterology-oncology and hereditary intestinal tumours. Furthermore, she is a member of the board of Procolo, an innovative centre of expertise for colonoscopy.

Colon cancer is a key focus of Dekker's research, including screening methods for intestinal cancer, the quality and advanced technical developments within colonoscopy, the treatment of intestinal polyps and the early stages of intestinal cancer, and hereditary intestinal cancer and polyposis syndromes.

Dekker is also the chair of the Dutch Colonoscopy Surveillance Guideline Committee, a member of the same guideline committee at the European level and a member of the Dutch Hereditary Intestinal Cancer Guideline Committee. Dekker is a member of the advisory council of the scientific journal Nature Reviews in Gastroenterology & Hepatology. Dekker has written numerous articles in prominent scientific journals such as Lancet Oncology, Gastroenterology, Endoscopy, Gastrointestinal Endoscopy, American Journal of Gastroenterology and Gut.





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INTERNATIONAL FACULTY continued



DR ROBERT HAWES

Medical Director of the Florida Hospital Institute for Minimally Invasive Therapy Center for Interventional Endoscopy (CIE) at Florida Hospital Florida, USA

Rob Hawes grew up in Bloomington, Indiana. He attended Indiana University (IU) School of Medicine, graduating in 1980. He continued his training at Indiana University completing a three-year residency in Internal Medicine and a two-year fellowship in Gastroenterology. Dr Hawes spent a year in London, England (1985-1986) doing an Advanced Endoscopy Fellowship concentrating on ERCP and endoscopic laser therapy.

Dr Hawes returned to Indiana University in the fall of 1986 and served on the faculty in the Division of Gastroenterology from 1986-1994. He established the EUS program at IU in 1987; one of the first 5 training centres in the US. He continued his work in pancreatobiliary endoscopy and established a multi-modality treatment centre for the non-operative management of gallstones.

Dr Hawes served on several committees and the governing board of the American Society for Gastrointestinal Endoscopy (ASGE) as president in 2005-2006. Dr Hawes feels strongly that advances in therapeutic endoscopy will be dependent on close collaboration between therapeutic endoscopists and minimally invasive surgeons.

Dr Hawes has published over 300 peer reviewed articles and written numerous book chapters. He has lectured and performed live demonstration in over 30 countries throughout Europe, Asia and the Americas. In 2006, MUSC awarded Dr Hawes the Peter B. Cotton Endowed Chair for Endoscopic Innovation. He is currently Professor of Medicine at the University of Central Florida College of Medicine. In January 2012, Dr Hawes moved to Florida Hospital Orlando where he is now the Medical Director of the Florida Hospital Institute for Minimally Invasive Therapy. Dr Hawes has been married to his wife Chris for 35 years and they have 23 year old twins; daughter Taylor and son Grant.



PROF HIRONORI YAMAMOTO

Chairman and Professor of the Department of Medicine, Division of Gastroenterology Jichi Medical University Tochigi, Japan

Hironori Yamamoto, MD, PhD, serves as the Chairman and Professor of the Department of Medicine, Division of Gastroenterology at Jichi Medical University, Tochigi, Japan. He also serves as the Director of the Gastroenterology Center and the Endoscopy Center of Jichi Medical University Hospital.

He was born and raised in Kochi, Japan. He graduated from Jichi Medical University in 1984. He then gained post-graduate clinical training in the Kochi Central Hospital from 1984 – 1986 followed by overseas training at Surgical Endoscopy Unit in Beth Israel Medical Centre, New York, Department of Gastroenterology, Mayo Clinic, Rochester, Minnesota and Department of Medicine, University of Texas Southwestern Medical Centre, Dallas, Texas. He returned to Japan to join the Department of Gastroenterology, Jichi Medical University in 1995.

He has served on the Boards of the Japan Gastroenterological Endoscopy Society and the Japanese Society of Gastroenterology. He had been an associate editor of Gastrointestinal Endoscopy, the official Journal of the American Society for Gastrointestinal Endoscopy from 2004 to 2009. He is currently a deputy editor in chief of Digestive Endoscopy, the official Journal of the Japan Gastroenterological Endoscopy Society.

He is a member of the American Gastroenterological Association (fellowship member), American Society for Gastrointestinal Endoscopy (fellowship member), Japanese Society of Internal Medicine, Japanese Society of Gastroenterology and Japan Gastroenterological Endoscopy Society.

He is the inventor of double-balloon endoscopy and also one of the pioneers of endoscopic submucosal dissection (ESD). He has published widely on gastrointestinal endoscopy.

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NURSES' WORKSHOP PROGRAM

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SYDNEY INTERNATIONAL ENDOSCOPY SYMPOSIUM 2015 NURSES' WORKSHOP

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The attendance of Jacqueline Neilson has been graciously supported by



NURSES' WORKSHOP - WEDNESDAY 4TH MARCH 2015

0730	REGISTRATION OPENS		
0830 - 0845	Welcome note – Mary Bong RN & Scott Daczko Nurse Manager Operations Westmead Hospital		
SECTION 1 – New Developments in Endoscopy - Facilitator: Robyn Brown			
0845 - 0915	<i>New therapeutics innovations in endoscopy: ESD, submucosal tunneling and POEM</i> – Prof Michael Bourke		
0915 - 0945	<i>Clostridium difficile: difficult by name, difficult by nature</i> – Dr Vu Kwan		
0945 - 1015	<i>Real-time optical diagnosis of colonic lesions</i> – Dr Nick Burgess		
1015 - 1045	<i>Access to endoscopy services: The UK experience</i> – Jacqueline Neilson, International Speaker (UK) <i>The Australian experience</i> – Di Jones RN		
1045 - 1105	Morning Tea and Trade Displays		
SECTION 2 – Workshop Demonstrations & Talk - Facilitator: May Bong			
1115 - 1330	Demonstration 1 – Tools for therapeutic interventions – Octavio Ferrer	Demonstration 2 – Potpourri demonstrations – Jeneviah Junio	Talks – Didactic Lectures – Vu Kwan
	Booth 1. <i>Banders & APC</i> – Pauline Luxford & Helena Tsang	Booth 1. <i>Biliary & Pancreatic stenting & crushers</i> – Judy Tighe-Foster & Betty Lo	Talk 1. <i>What's new in GI bleeding in 2015</i> – Pralathan Sundaralingam
	Booth 2. <i>ESD / EMR Set-up & Assist</i> – Nicky Stojanovic & Alison Bannister	Booth 2. <i>Microtesting</i> – Ewa Kasprzak, Lilawati Singh, Di Jones & Beth Wardle	Talk 2. <i>The role of Endoscopy in IBD</i> – Eric Lee
	Booth 3. <i>Strictures</i> – Adeyemi Adenike & Polly Leong	Booth 3. <i>Endoscopic Assessment of Lesions</i> – Rebecca Sonson & Laura Bokody	Talk 3. <i>The Assisting Nurse Role in Endoscopy</i> – Jacqueline Neilson
	Booth 4. <i>Patient care & safety</i> – Susan Lane & <i>Infection control for Clostridium Difficile</i> – Jo Tallon & Kathy Dempsey	Booth 4. <i>Solutions & Recipes</i> – Amelia Tam & Marriam Khilwati	
1330 - 1430	Lunch and Trade Displays		
SECTION 3 – Endoscopy Update 2015 - Facilitator: Judy Tighe-Foster			
1430 - 1445	Quiz – Marriam Khilwati RN		
1445 - 1515	<i>Nursing care of the patient during long and complex procedures</i> – Susan Lane RN		
1515 - 1545	<i>Open forum: Challenges in reprocessing in 2015</i> – Robyn Brown RN, Di Jones RN and Beth Wardle RN		
1545 - 1615	Quiz prizes, presentations and surprises		
1615	Closing remarks and thank you		
1620	Afternoon Tea and Trade Displays		

SYMPOSIUM PROGRAM

DAY ONE — THURSDAY 5TH MARCH 2015

0800	REGISTRATION OPENS
0830 - 0835	Official conference open and welcome – Prof Michael Bourke
0835 - 0855	<i>Serrated lesions 2015: Detection, characterisation and resection</i> – Prof Evelien Dekker
0855 - 0915	<i>Best practice imaging in 2015: The things every colonoscopist should do</i> – A/Prof Raj Singh
0915 - 1030	LIVE ENDOSCOPY 1: CHAIRS – David van der Poorten, David Abi-Hanna, Gregor Brown
1030 - 1100	Morning Tea
1100 - 1300	LIVE ENDOSCOPY 2: CHAIRS – Dev Samarasinghe, Nghi Phung, Mark Appleyard
1300 - 1400	LUNCH
1400 - 1530	LIVE ENDOSCOPY 3: CHAIRS – Vu Kwan, Simon Edmonds, Cameron Bell
1530 - 1600	Afternoon Tea
1600 - 1635	<i>Oesophageal strictures; conventional and refractory: Best practice management</i> – Prof Alessandro Repici
1635 - 1700	General endoscopy quiz – Dr Nick Burgess
1700	CLOSE
1700 - 1800	EXPERTS ON THE SPOT: MINI-SYMPOSIUM <i>Endoscopic emergency potpourri: Major bleeding, suspected perforation, and oops!</i>
1830 - 1845	Coaches depart promptly for Symposium Reception
1845 - 2045	OFFICIAL SYMPOSIUM RECEPTION – Sydney Opera House 'Opera Point Marquee'

*Coaches will depart the Hilton Sydney from 6.30pm sharp (one-way transfer), alternatively, you can make your own way to the venue, allow approximately 20 minutes from the Hilton Sydney.



SYMPOSIUM PROGRAM

DAY TWO — FRIDAY 6TH MARCH 2015

0800	REGISTRATION OPENS
0830 - 0845	<i>Multiple colonic lesions: What now?</i> – Prof Evelien Dekker
0845 - 0915	<i>ESD in the West for whom by whom</i> – Prof Hiro Yamamoto
0915 - 1030	LIVE ENDOSCOPY 4: CHAIRS – Stephen Williams, Milan Bassan, Phil Craig
1030 - 1100	Morning Tea
1100 - 1300	LIVE ENDOSCOPY 5: CHAIRS – Golo Ahlenstiel, David Ruppin, Gregor Brown
1300 - 1400	Lunch
1400 - 1530	LIVE ENDOSCOPY 6: CHAIRS – Eric Lee, Thao Lam, Nick Tuttici
1530 - 1600	Afternoon Tea
1600 - 1630	<i>The Peter Gillespie Lecture – The future of endoscopy: Looking back to move forward</i> – Prof Rob Hawes
1630 - 1645	Quiz answers and awards for the winners – Dr Nick Burgess
1645 - 1700	CLOSING REMARKS



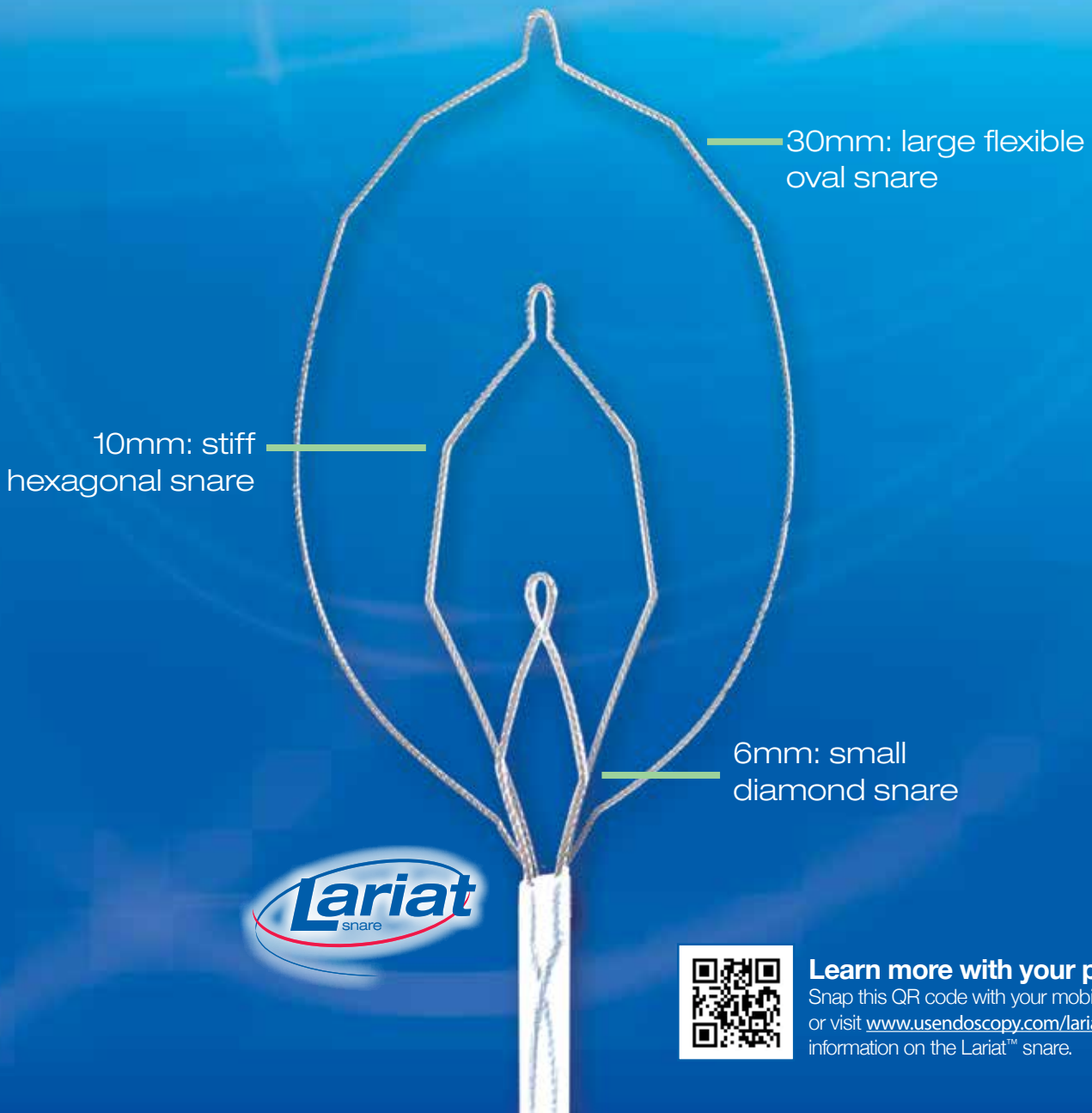
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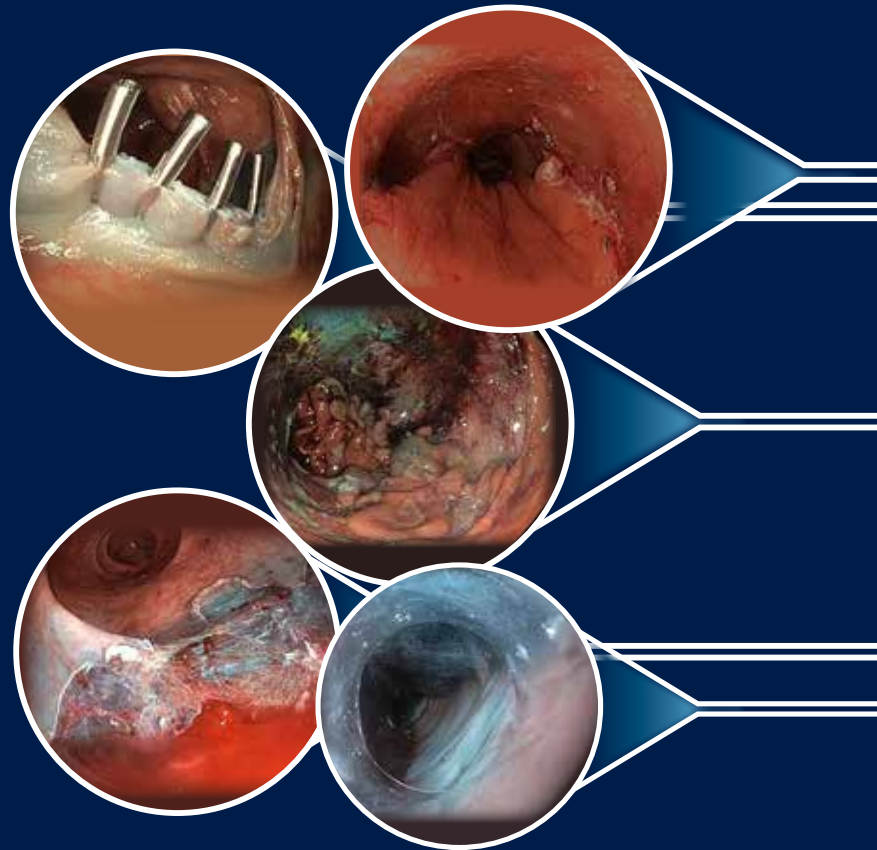
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ABSTRACTS AND CONFERENCE NOTES



ABSTRACTS AND CONFERENCE NOTES

Best practice in imaging in 2015: The things every colonoscopist should do

Rajvinder Singh

INTRODUCTION

It is well known that gastrointestinal tract cancers are often preceded by a curable, non-invasive, pre-malignant stage that may progress asymptotically. The transformation process begins with the formation of atypical cells in the epithelium, directly above the basal membrane. Detection of anomalies at a very early stage before neoplasia permeates into the deeper submucosal layer and beyond is crucial. Mucosal morphology can then be further interrogated. Carefully studying the vascular and structural characteristics may aid the endoscopist in making a decision in real time as to whether 'lesions' should be left alone, biopsied or resected.

DETECTION

Most of the novel electronic image enhancing modalities performs no better than white light endoscopy in the detection of colorectal neoplasia (table 1). There is simply no substitute for good bowel preparation and meticulous withdrawal technique ensuring good views are maintained to enable careful interrogation of the mucosa.

CHARACTERISATION

Lesions which are detected should be studied further to gain valuable information. This is ideally performed in a methodical manner, initially with a 'wide field' overview of the lesion where the Paris classification and granularity are assessed followed by a closer or 'micro or magnified' view where the vascular patterns, with some of the electronic chromoendoscopy techniques and if further information is needed and where possible the Kudo's pit pattern is assessed. In vivo classification of polyps using advanced imaging techniques is important for two reasons: i) the cost of histological examination of all polyps, particularly small low-risk lesions, has prompted consideration of a "diagnose, resect, and discard" strategy which could be cost effective and (ii) accurately differentiating invasive from non invasive cancers may enable clinical decisions to be made in real time thereby guiding further therapy.

1. Lesion assessment (wide field view)

A. Paris- Japanese Classification

The Paris Japanese classification is especially important not only for standardisation but also permits prediction of the risk of submucosal invasion (9).

Polyps can be divided into:

1. Protruding lesions

- a) Ip (pedunculated)
- b) Is (sessile): lesion elevated more than 2.5mm from the base of the polyp

2. Flat lesions

- a) 0-IIa: Slightly elevated (<2.5mm)
- b) 0-IIb: True flat lesion
- c) 0-IIc: Mildly depressed lesion

The 2.5mm limit is used to differentiate sessile (Is) from flat (0-IIa) lesions and approximates the diameter of a closed biopsy forceps when placed on the adjacent mucosa next to the polyp (although impractical and rarely performed).

Flat colorectal lesions account for up to half of all colorectal polyps while depressed lesions are less frequent occurring in about 1-3% of all polyps (table 2). The prevalence of high-grade dysplasia (HGD) or invasive cancer however increases as the lesion becomes depressed (Paris 0-IIc). Up to 59% of all Paris type 0-IIc lesions harbour HGD or submucosal invasion (SMI)(table 3).

Large colorectal lesions (measuring >20mm in size) are relatively infrequent and may occur in up to 4% of all polyps (table 4). The size of the lesion though does not appear to matter when lesions are assessed for SMI. In the ongoing Australian Colonoscopic Endoscopic (ACE) resection study looking at large sessile lesions measuring more than 20 mm, SMI was detected in 33 of 680 polyps. The mean size of these polyps was 37 mm in comparison to 35 mm when no SMI was detected (p = 0.53) [12].

B. Granularity

Flat lesions >20mm should be further evaluated based on the granularity of the surface. They can be divided into granular (G), non granular (NG) or a mixed pattern which contains both morphologies. The surface of G lesions appears ragged and almost polypoid ('lumpy bumpy') whereas NG lesions have a smooth, elevated and an almost seamless surface. An NG morphology in combination with a depression (Paris type 0-IIc) though appear to be the nastiest of all lesions having a higher relative risk of SMI (54X) compared to granular, flat non depressed, Paris type 0-IIa lesion (18).

2. Lesions assessment on closer 'micro' view

A. Kudo's pit pattern

The introduction of the Kudo's pit pattern (KPP) has led to a paradigm shift of how colorectal polyps are assessed (19). Pit pattern visualisation has enabled polyp histology to be predicted in real time. Some of the commonly used dyes include:

- i) Indigo carmine (0.2%) which is a surface contrast agent
- ii) Methylene blue (2mls in 40-50mls of water), a dye which is absorbed actively into the mucosa or
- iii) Crystal violet (0.2%: 10mls in 40 mls of water) which is generally used in cases where KPP type V (or Sano's type III/ NICE type III - described below) needs to be defined further. Crystal violet is an absorptive dye.

The KPP is best visualised using high definition scopes with optical magnification (60-115X) (20). It can be divided into:

1. *Type I*: Pits appears round- normal colonic mucosa
2. *Type II*: Pits appears star like or onion skin like - hyperplastic polyps
3. *Type III L* or *III S*: Elongated or small round pits respectively tubular adenomas
4. *Type IV*: Cerebiform pits- tubular villous or villous adenomas
5. a) *Type VI*: Irregular (I) asymmetrical pits indicating malignancy confined to the mucosa (suitable for endoscopic resection)
b) *Type VII*: Pit patterns disappears, non-structured (N) or 'structure-less'- advanced or signifying invasive cancer (avoid endoscopic resection, surgery recommended)

A recent systematic review looked at more than 50 studies comparing the accuracy of standard white light endoscopy, chromoendoscopy, white light endoscopy with magnification, chromoendoscopy with magnification and Narrow Band Imaging (NBI) with magnification in the prediction of colorectal polyp histology (table 5). The authors found that chromoendoscopy and NBI, both with optical magnification were the most effective method in predicting polyp histology resulting in an area under the ROC of more than 0.90.

B. Electronic chromoendoscopy

Some of the electronic chromoendoscopy technologies which are widely available now include NBI (Olympus), I scan (Pentax) or the Flexible spectral Imaging Color enhancement (FICE, Fujinon). All these imaging modalities assist in defining the micro vascular architecture in colorectal polyps but should be used with some form of optical magnification. There have been numerous classifications utilised which at times can be confusing. These are based on the presence or absence of superficial meshed capillary vessels, which will be explained in more detail here.

1. The Sano Classification

The Sano classification is based on the inspection of the microvascular architecture on the surface of polyps (24). The microvascular architecture (capillary pattern) was classified into I, II, IIIA, or IIIB. *Type I pattern* is characterized by meshed capillary vessels being visually unidentifiable and is mostly observed in hyperplastic polyps. *Type II* that is mostly observed in adenomas and is characterized by meshed capillary vessels, which are clearly visualized and surround the mucosal glands. The *Type III pattern* is mostly observed in carcinomas and is characterized by meshed capillary vessels, which shows features of branching, irregularity and avascularity. This is further divided into two subtypes: *Type IIIA* characterized by high microvessel density with lack of uniformity (high grade dysplasia, intramucosal cancer or superficial cancer invading into the superficial submucosal), and *Type IIIB* which is characterized by the presence of avascular areas. The *Type IIIB pattern* is observed in deep submucosally invasive carcinomas. In a preliminary feasibility study using the above classification, the sensitivity (Sn),

specificity (Sp), positive (PPV) and negative predictive values (NPV) in differentiating neoplastic from non-neoplastic lesions with high confidence was 98%, 89%, 93% and 97%, respectively, whilst the Sn, Sp, PPV and NPV in predicting endoscopic resectability (*Type II, IIIa* vs. *Type I, IIIb*) was 100%, 90%, 93% and 100%, respectively (25). The interobserver agreement between assessors (k value) was substantial at 0.89. Recently the modified Sano's classification has been proposed where Sessile Serrated Adenomas/Polyps are classified as *Type IIo*: Pink mucous cap, Cloud like appearance, wavy pits, central brown oval/round dots, capillaries which may meander across the polyp (26)

2. The Hiroshima Classification

The Hiroshima classification is based on both the surface pattern and microvessel features of colorectal lesions (27). These features are classified as *Types A, B and C*, on the basis of both their surface pattern and microvascular architecture.

Lesions are classified as *Type A* when microvessels are not visible or are extremely opaque; *Type B* when a regular surface pattern or a regular meshed capillary network is observed, or as *Type C* when an irregular surface pattern with no particular structure is observed. The *Type C pattern* comprises of three subtypes (*C1, C2* and *C3*) according to the surface pattern and detailed magnifying NBI depiction of microvessel diameter, degree of irregularity and microvessel distribution. Lesions are classified as *Type C1* when the microvessel network is irregular, when the surface pattern is somewhat non-distinct, and when microvessel diameter or distribution is uniform (mostly in intramucosal or superficial submucosally invasive cancers); *Type C2* when the microvessel network is irregular and the surface pattern is irregular because of increased microvessel intensity around the pits, and vessel diameter or distribution is not uniform and *Type C3*, when the surface pattern is not clear, microvessels are thick or vessel distribution is not uniform with avascular areas being visualized. *Type C2* and *C3 pattern* signifies invasive cancers.

3. NICE classification

The NICE classification was established by an international cooperative group (Colon Tumor NBI Interest Group – CTNIG) including Japanese, USA, French and UK endoscopists in an effort to unify the above classifications (28, 29). It is based on the evaluation of the following 3 characteristics: colour, vessel and surface pattern. The NICE classification has been advocated to be user friendly with both conventional or magnified views. It consists of 3 patterns.

Type 1 is characterized by the colour being the same or lighter than the background, no or isolated lacy vessels and a surface pattern which is dark or has white spots of uniform size, or even a homogeneous absence of pattern. This pattern is typically seen in hyperplastic lesions. *Type 2* is characterized by the colour being browner relative to the background, a lesion demonstrating thick brown vessels surrounding white structures with a surface pattern being oval, tubular or branched white structures surrounded by the vessels described

ABSTRACTS AND CONFERENCE NOTES

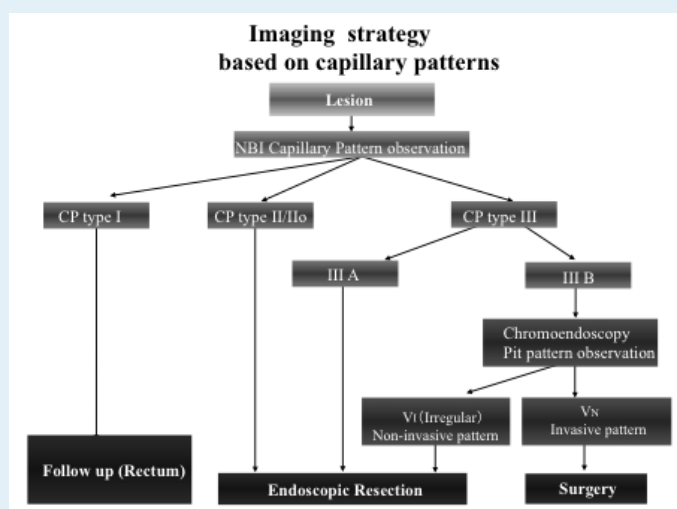
above (adenomas). *Type 3* is characterized by the colour being brown to dark brown relative to the background; markedly distorted or missing vessels, and areas showing distortion or absence of surface pattern. *Type 3* is considered an index for deep SMI cancers. Although more simplistic, this classification unfortunately does not address sessile serrated adenomas/polyps.

Currently, there are no comparative data looking at the diagnostic accuracy amongst all of these classifications. It is therefore difficult to objectively comment on the advantage of each of these classifications although it may be prudent to adopt any one of them while assessing colonic neoplasia.

CONCLUSION

Advanced endoscopic imaging and a step-by-step methodological approach as described above can often aid in the characterisation of colorectal polyps before a decision is made to proceed onto endoscopic resection. This includes looking at the lesion from afar where the gross morphology and granularity is determined followed by assessing the vasculature and when in doubt, the pit pattern. This sequential method of assessment will enable a calculated and precise decision to be made in real time as to whether endoscopic resection can be performed safely and adequately.

PROPOSED ALGORHYTM (Based on the Modified Sano's classification)



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Table 1: Image enhanced endoscopy in detecting colorectal polyps

Author	Year	Technology	# of pts	Design	Result
Rex ¹	2007	NBI	434	RCT	-
Inoue ²	2008	NBI	243	RCT	-
Adler ³	2008	NBI	401	RCT	-
Matsuda ⁴	2008	AFI	167	Random, Tandem	+
Pohl ⁵	2008	FICE	764	RCT	-
Kaltenbach ⁶	2008	NBI	276	Random, Tandem	-
Van Den Broek ⁷	2009	AFI	100	Random, Tandem	-
Adler ⁸	2009	NBI	1256	RCT	-

Table 2: Percentage of flat-depressed colorectal lesions.

Author	No of adenomas	% of flat lesions
Jaramillo ¹⁰	261	42%
Rembacken ¹¹	321	36%
Saitoh ¹²	136	40%
Rex ¹	785	56%
Okuno ¹³	66,670	1.9%
Togashi ¹⁴	5408	2.8%
Soetikno ¹⁵	1535	1.2%
Tsuda ¹⁵	973	1.4%

Table 3: Prevalence of High Grade Dysplasia (HGD) and Submucosal Invasion (SMI) in colorectal polyps according to the Paris Japanese classification.

Author	HGD			SMI		
	Ip	0-IIa/b	0-IIc	Ip	0-IIa	0-IIc
Rembacken ¹¹	7.4%	12.8%	25%	0.9%	1.7%	50%
Soetikno ¹⁵	0.5%	3.5%	225	0.5%	1.0%	11%
Tsuda ¹⁶	7.3%	12.8%	35.7%	-	-	-
Hurlstone ¹⁷	12%	15.4%	59%	-	-	-

Table 4: Comparison of the Paris Japanese classification and size

	Total	≤5mm	6-10mm	11-19mm	≥20mm
Polypoid (Is, Ip)	14,814	47.6%	37.7%	12.6%	2.1%
Flat (0-IIa, 0-IIb)	10,363	73.1%	13.9%	9.0%	4.0%
Flat-depressed (0-IIc)	585	45.0%	29.4%	21.7%	3.9%
Total	24862	14,892	7190	2919	761

(Adapted from Kudo SE, Lambert R, Allen J et al. Nonpolypoid neoplastic lesions of the colorectal mucosa. Gastrointest Endosc 2008; 4: Suppl 3)

Table 5: Comparison of various endoscopic techniques in predicting colorectal neoplasia.

Technique	#Studies	#Polyps	Sensitivity	Specificity	Area under ROC
Standard	8	1493	71.3	81.4	0.80
Chromo-endoscopy	11	3097	88.6	85.0	0.87
Magnification	4	1108	81.5	79.7	0.87
Magnification +Chromo	21	21446	97.1	74.3	0.95
Magnification +NBI	10	1016	88.5	80.0	0.91

(Adapted from Subramaniam V, Mannath J, Ragunath K et al. Gastrointest Endosc Vol. 69, Issue 5)

ABSTRACTS AND CONFERENCE NOTES

ESD in the West for whom by whom

Hironori Yamamoto

Endoscopic submucosal dissection (ESD) is an ideal endoscopic resection technique for superficial neoplastic lesions in the GI tract in terms of confirmation of curative resection and very low local recurrence rate. However, it can be technically difficult and risky.

ESD has become a standard endoscopic treatment for early cancers in the stomach, esophagus and colon & rectum in Japan. ESD was first established as a standard treatment in the stomach in 2007. However, colorectal ESD was considered more risky and less beneficial even in Japan. Colorectal ESD was approved as a standard treatment in 2012 which was 5 years after the approval of gastric ESD.

I believe colorectal ESD is more important than gastric ESD in Western countries because the incidence of gastric cancer is low. There could be many colorectal cases, which could be cured by ESD, requiring surgical resection.

Colorectal ESD could be more difficult and risky than gastric ESD for several reasons. Endoscopic control is often difficult in the colon. Prominent folds and the location of lesions can make colorectal ESD very difficult. The colonic wall is much thinner and softer than in the stomach. These factors make the risk of perforation higher in the colon than in the stomach. For these reasons, some ESD techniques applicable to gastric ESD are not suitable for colorectal ESD.

However, some aspects of colorectal ESD could make it easier than gastric ESD. Creation of good mucosal elevation is usually simple in the colon. The submucosal tissue is fine and is easily distinguished from the muscle layer after submucosal injection. Control of bleeding is usually easy in the colon as well. These factors make colorectal ESD rather easy.

“Pocket-creation method” is a unique ESD technique that makes colorectal ESD safe and reliable. The key feature of the PCM is the creation of a large submucosal pocket using a small-caliber-tip transparent hood (ST hood: DH-15GR, Fujifilm, Tokyo, Japan). The PCM maintains a thick submucosal layer with a minimal mucosal incision preventing the leakage of injection solution. PCM provides good traction with the tip of the hood stretching the submucosal tissue, which facilitates submucosal dissection. The endoscopic view during PCM facilitates recognition of the muscularis, indicating a safe and appropriate dissection line just above the muscularis. This results in a high-quality pathological specimen with a thick submucosal layer under the tumor. If the lesion located on a vertical wall or over a fold, the vertical approach of the knife changes to the ideal horizontal orientation by insertion into the pocket. The tip of the endoscope in the submucosal pocket synchronizes with the fluctuating position due to breathing or heartbeat, maintaining the tip at a stable distance between the tip of the knife and submucosal tissue.

Using the pocket creation method of ESD, colorectal ESD could become a standard treatment for large laterally spreading tumors by specialized endoscopists in Western countries as well.

The future of endoscopy: looking back to move forward

Robert H Hawes

The premise of this talk is to look at the current evolution of EUS and view it as a surrogate marker for the future of endoscopy. To understand the current evolution of EUS, you must look back at the history of endoscopic procedures. First look at colonoscopy. Introduced initially as a diagnostic test, it quickly evolved into a therapeutic procedure with the introduction of polypectomy. Many of us have long predicted the demise of screening colonoscopy and for many parts of the world, standard colonoscopy for screening purposes this will never become a reality due to cost. Despite current practice in the United States, where screening colonoscopy is still the standard of care, we are seeing a consistent improvement in fecal and blood testing and these tests will inevitably disrupt colonoscopy for colorectal cancer (and eventually polyp) screening. Thus, we can be assured of the inevitable demise of colonoscopy as a diagnostic tool but its role as a therapeutic tool with polypectomy will endure.

ERCP is perhaps the “poster child” for this evolution of diagnostic to therapeutics. The first ERCP was performed in 1968 in the United States. However, it was only five years later that the first sphincterotomy was performed “simultaneously” by Classen and Kawai. This was followed by the introduction of biliary stenting and therapeutic ERCP was off and running. The elimination of ERCP as a diagnostic tool was sealed with the introduction of MRI and MRCP and this was confirmed at the NIH consensus conference on ERCP in 2002 when it was stated that there is no longer an indication for diagnostic ERCP.

EGD is still widely applied as a diagnostic tool. Most of us predicted that diagnostic EGD would be disrupted with the introduction of the capsule. Recent studies and meta-analyses suggest that headway is being made in the area of screening for Barrett’s using capsule endoscopy but the inability to develop a reliable mechanism to externally move the capsule within the stomach and then advance it into the duodenum has enabled the continuing use of EGD for diagnostics. However, capsule endoscopy is steadily becoming more sophisticated and will no doubt replace diagnostic EGD in the future. Therapeutic EGD however continues to make remarkable progress. Endoscopy is the standard first-line approach in the management of acute gastrointestinal bleeding. The development of EMR and ESD in the treatment of early esophageal and gastric cancer has been remarkable. We are now entering the era of submucosal dissection surgery with the introduction of POEM. As these techniques are refined, it will inevitably lead to endoscopic full thickness resection and ultimately to the resurrection of NOTES.

We now come back to EUS. Introduced in late 1980s, it was used exclusively to stage gastrointestinal cancers and to evaluate submucosal masses. In the early 1990s we saw the introduction of EUS guided FNA. In the early and mid-1990s, we saw the very earliest signs of investigators exploring interventional EUS. This discipline is now progressed to the point that EUS guided drainage of pancreatic fluid

collections is the standard of care. Randomized comparative trials of EUS guided biliary drainage versus PTC are underway. Early exploration of EUS guided cyst ablation for pancreatic cystic neoplasms is gaining momentum. This is all happening as we see a gradual decline in EUS for diagnostic and staging purposes. EUS has been relegated to a secondary procedure in the staging of esophageal, gastric, pancreatic and rectal cancer having given way to multi-detector CT scans and state-of-the-art MRI scanners. The last bastion of diagnostic EUS is submucosal masses but now we are seeing protocols where a needle knife is used to incise the mucosa overlying an intramural mass and then direct biopsies of the lesion which provides sufficient tissue to analyze for molecular markers.

This pattern of evolution from diagnostic to therapeutics has been consistently seen since the introduction of flexible endoscopy. I believe that this paradigm shift can be used to predict the future of endoscopy. The primary implication of this evolutionary study is in training. To date, training programs in flexible endoscopy concentrate too much on diagnostic endoscopy. The learning curve is relatively short and diagnostic endoscopy can be easily integrated into training programs which must include general gastroenterology, hepatology, inflammatory bowel disease and gastrointestinal motility disorders. It is time to restructure our training programs and carve out specific training tracks for those individuals who wish to concentrate on endoscopy and this training should concentrate on therapeutics.

Colonic Polypectomy

Nicholas G Burgess, Farzan F Bahin, Michael J Bourke

BACKGROUND

The optimum resection technique for any given polyp is quick, ensures complete adenoma removal, and minimizes complications. Variations in polyp size, morphology, histology and location mean that there cannot be a "one-size-fits-all" approach to resection technique, and that polypectomy must be tailored to the characteristics of the lesion, based on the best available evidence. Here we present an evidence based appraisal of polypectomy techniques, including expert opinion 'technical tips' to guide endoscopists on achieving efficient and safe excision of lesions adapted from: Burgess NG, Bahin FF, Bourke MJ. Colonic Polypectomy (with videos). *Gastrointestinal Endosc.* March 2015 (in press).

Recommendations are evidence based and presented according to the GRADE guidelines. These guidelines present an indication of the strength of the evidence supporting that finding and an indication of whether the statement is strong or weak based on the available evidence.

Table 1.

Quality of evidence	Definition	Symbol
High quality	Further research is very unlikely to change our confidence in the estimate of effect	***
Moderate quality	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate	**
Low quality	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate	*
Very low quality	Any estimate of effect is very uncertain	

Diminutive and Small Polypectomy:

Diminutive polyps (DP) are defined as polyps ≤ 5 mm in size and are extremely common. Current evidence suggests cold snare polypectomy (CSP) is the safest and most efficient way to remove diminutive and small (≤ 9 mm) polyps, with lower rates of incomplete resection than biopsy techniques and few complications.

Box 1: Evidence Based Practice Points:

Recommendation	Strength of Recommendation	Quality of Evidence
CSP should be the primary modality employed for resection of diminutive polyps.	Strong	***
CBF resection should be reserved for polyps ≤ 3 mm, large capacity or jumbo forceps should be used, and careful visual inspection should be employed post resection to ensure complete removal.	Strong	***
Hot Biopsy Forceps should be avoided.	Strong	***
Small 6-9mm polyps can be resected by CSP or HSP as the optimum technique is not defined.	Weak	*

Box 2: Technical Tips to achieve complete excision in Diminutive Polypectomy

- Stiff thin wire snares (≤ 0.3 mm diameter) are probably more effective at CSP
- Position the polyp at 6 o'clock in the endoscopic field and stabilize the scope position
- If the polyp is flat consider directly suctioning the polyp to elevate it from the surrounding mucosa¹³⁹
- Deploy the snare over the polyp ensuring a 1-2mm margin of normal tissue around the polyp
- Ensure the snare is parallel to the mucosal surface, a tangential excision risks leaving residual polyp
- Apply firm downward pressure using the Up/Down wheel to anchor the snare on normal mucosa
- Suction gas to decrease colonic wall tension and facilitate polyp capture
- Close the snare fully in one slow continuous movement, observing the polyp to ensure appropriate tissue capture and completely resect the polyp
- If the snare stalls, maintain continued full closure
- In cases of sustained stalling, loosen and close again. It may also be possible to amputate the polyp against the end of the colonoscope
- Avoid the use of electrocautery as sustained stalling may indicate muscularis propria capture
- Carefully inspect the post resection defect to ensure complete resection, liberal water pump irrigation into the defect expands the submucosa everting the edges of the excision facilitating inspection and may contribute to tamponade of small vessels in the event of bleeding to improve visualization.

ABSTRACTS AND CONFERENCE NOTES

Pedunculated Polyps

Pedunculated polyps comprise approximately one third of all polyps in the colon, are predominantly located distal to the transverse colon and are typically adenomatous³⁴. 75% are over 10mm³⁴, and they may grow to substantial size developing large feeding blood vessels in the stalk³⁵.

Complications are rarely encountered with polypectomy of pedunculated polyps up to 20mm in the distal colon³⁴ and these can be safely resected observing a few basic principles.

Box 3: Evidence Based Practice Points:

Recommendation	Strength of Recommendation	Quality of Evidence
Prophylactic measures to prevent post polypectomy bleeding should be used in pedunculated polyps when stalks exceed 5mm in diameter or head size is greater than 20mm.	Weak	**
Epinephrine volume reduction may be used as a method of reducing pedunculated polyp size prior to resection.	Weak	*
Resection of lipomas using detachable nylon loop assisted techniques is recommended to avoid perforation.	Weak	**
Resection of lipomas should only be performed if the lesion is or is likely to cause symptoms (bleeding, intussusception, obstruction) as the risk of perforation is high whereas the risk of malignant transformation is very low.	Strong	***

Box 4: Technical Tips for Pedunculated Polypectomy

- Position the patient so that the polyp hangs in a dependent manner. This may require the patient to be rolled into a supine or right lateral position. Dependency elongates the stalk and facilitates snare placement. In the event of immediate post-polypectomy bleeding (PPB), blood streams away from the non-dependent bleeding point and endoscopic access for haemostasis is optimized. Similarly in the unlikely event of a perforation the risk of leakage of bowel content is minimized
- Align the polyp mucosal attachment point at 6 o'clock in the endoscopic view
- For polyps with a pedicle diameter greater than 5mm or a head size greater than 20mm, consider prophylactic detachable loop placement or endoscopic clips
- Deploy the snare midway between the mucosal attachment point and the head. In cases where malignant head infiltration is suspected, consider application closer to the mucosal wall
- Apply the snare to resistance
- Use conventional low power coagulation current to maximize coagulation whilst closing the snare in a controlled manner to transect the stalk
- If the snare stalls, consider options which include removing the snare by fully opening it and gently passing the colonoscope 5-10 cms proximal to the polyp
- In cases of sustained stalling without evidence for MP entrapment, consider the use of pure cut or blended electrocautery to complete the resection.

Endoscopic Mucosal Resection (EMR) and Advanced Polypectomy

EMR of flat or sessile lesions up to 25mm in size has become routine for appropriately trained and experienced endoscopists. There is now a growing evidence base for EMR improving safety, efficacy and applicability. Key areas of improvement in recent years have included refinement of the submucosal injectate, chromoendoscopy, dynamic injection, retroflexion, cap assisted and underwater EMR.

Recurrent or residual adenoma at the first surveillance colonoscopy (SC1) (typically 3-6 months) is reported in 10-30% of large prospective series of EMR outcomes and is a limitation of the technique^{72,73}. It is associated with larger lesions and the use of thermal ablative therapies where snare resection has been incomplete⁴⁹. Research into techniques and modalities to reduce recurrence is imperative to improve the technique.

Box 5: Evidence Based Practice Points:

Recommendation	Strength of Recommendation	Quality of Evidence
Patients undergoing EMR of lesions 20mm in size or greater should have scheduled follow up within 6 months to assess for residual or recurrent disease which occurs in 15-30%.	Strong	**
A chromic dye should be incorporated into the submucosal injection solution to facilitate identification of fluid cushion extent, lesion margins and identify deep mural injury.	Strong	**
Solutions other than saline may be considered for submucosal injection as they may provide a more sustained mucosal lift and reduce the number of snare resection pieces.	Weak	**
Thermal ablative treatment should only be applied after all efforts have been made to completely excise or remove visible residual adenoma. Thermal ablation of significant residual adenoma is an ineffective single session treatment committing the patient to more intensive follow up.	Strong	**
Adjuvant thermal ablative treatment may be applied to the margins of the endoscopic mucosal defect following complete snare resection to prevent recurrence.	Weak	**

Figure 1. An extensive resection of a Paris 0-IIa+Is mixed tubulovillous/traditional serrated adenoma. The lesion was nearly circumferential and extended for 100mm from the dentate line. Significant intraprocedural bleeding was controlled with snare tip soft coagulation and coagulation forceps. Ropivacaine was included in the submucosal injectate for resection around the dentate line, and the patient received intraprocedural antibiotics due to the risk of bacteraemia.



Box 6: Technical Tips for Endoscopic Mucosal Resection

- Ensure the endoscope is straight without a loop in the insertion tube
- Position the patient so that the endoscopic view is optimized, preferably with any fluid pool opposite the lesion. This may require right lateral or supine positioning.
- Carefully examine the lesion for evidence of submucosal invasion and consider aspects that may increase difficulty: submucosal fibrosis, ileocecal valve or appendiceal involvement, difficult positioning. If the lesion is complex consider referral to a tertiary endoscopic resection service
- Align the area for resection at 6 o'clock in the endoscopic view
- Begin submucosal injection:
 - Deploy the needle tip and prime the injector needle.
 - Gently touch the lesions surface with the needle tip. Commence injection just prior to needle puncture of the mucosa
 - When submucosal lifting is confirmed, lift and manipulate the needle and colonoscope (using the Up/Down wheel whilst gently pulling back on the needle) whilst continuing infiltration to control the direction and form of the submucosal cushion to optimize elevation and access.
- Apply the snare to ensure a rim of normal tissue is captured in addition to the polyp
- Apply firm downward pressure using the Up/Down wheel to anchor the snare
- Suction gas to decrease colonic wall tension and facilitate tissue capture
- Use a 3 stage snare closure technique:
 - Initially, close until the target tissue is seated within the snare and the loop of the snare has just started to enter the snare sheath. (there may be the sensation of a small "jolt" experienced by the endoscopist within the snare catheter at that point).
 - Aspirate gas again (sometimes even to the point of complete lumen collapse for lesions resistant to snare capture), whilst pushing down firmly and closing the snare to resistance.
 - Re-insufflate, confirm that the target tissue and margins are ensnared. Excessive puckering may indicate muscularis propria (MP) capture.
 - Move the snare sheath back and forth to assess mobility. The ensnared tissue should move independently of the colon wall. Fixation may indicate MP capture
 - If there is concern at this point for MP capture or inaccurate snare placement, the snare may be released and reapplied. Alternatively, gentle release of resistance whilst elevating the tissue with the Up wheel may allow excess tissue or entrapped MP to be excluded.
 - Should be closed fully and tightly. (video 1)
 - With full snare closure, using fractionated current minimal electrocautery should be required to completely resect the tissue. Resection should be complete in 1-3 pulses, 1-2 seconds
- Following resection, irrigate the defect and then carefully inspect for evidence of deep mural injury
- For piecemeal resection, continue the resection in a sequential manner, aligning the snare with the edge of the advancing mucosal defect. Snare capture should incorporate the resected mucosal edge and submucosa to avoid leaving tissue islands.

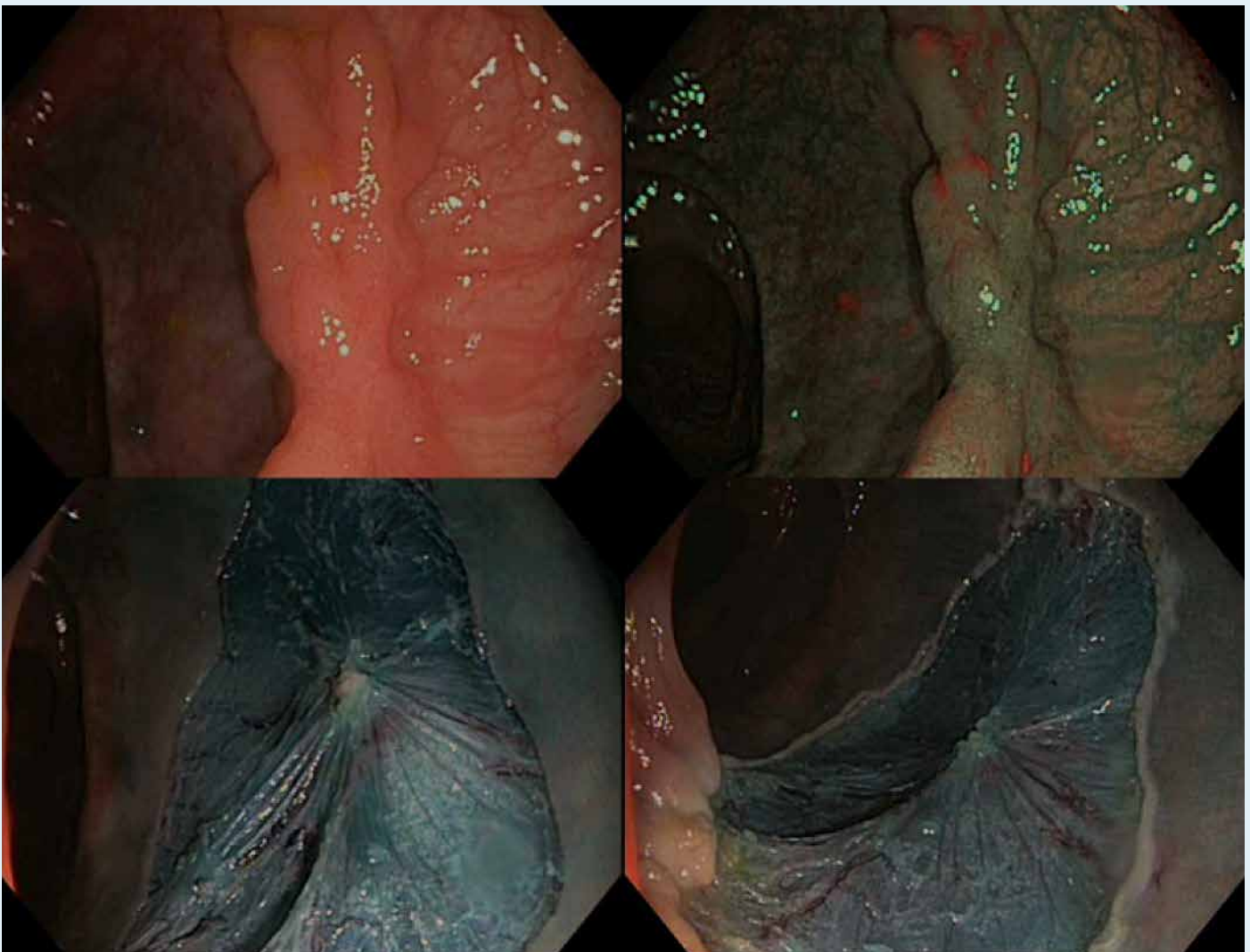
ABSTRACTS AND CONFERENCE NOTES

Involvement of the dentate line, submucosal fibrosis, previous biopsy or attempts at resection and tattoo marking too close to the lesion can all markedly increase the difficulty of resection. Lesions involving the appendiceal orifice or ileocecal valve are difficult to resect and have historically been seen as a contraindication to resection, however high rates of success have been reported in tertiary level advanced endoscopy units and referral to an expert centre should be considered before surgery⁹³.

Box 7: Evidence Based Practice Points:

Recommendation	Strength of Recommendation	Quality of Evidence
Submucosal tattoo should be used to mark difficult or high-risk lesions for subsequent surgical or endoscopic treatment.	Strong	***
Submucosal tattoo marking should be 2-3cm from lesions where subsequent endoscopic treatment is planned due to the risk of submucosal fibrosis.	Strong	**
Resection of difficult lesions should be performed at a tertiary centre with experience in endoscopic resection.	Strong	**

Figure 2. A 35mm Paris 0-IIa Non granular lesion in the mid transverse colon. This was resected by piecemeal chromogelofusine EMR. The central portion of the lesion lifted poorly and this tissue was biopsied separately revealing fibrosis only. The margins of the defect were ablated with snare tip soft coagulation (STSC) as this may prevent marginal recurrence. The lesion histology was tubular adenoma with widespread high grade dysplasia.



Polypectomy and EMR Adverse Events

Adverse events are uncommon with diminutive polypectomy, but they increase as the size and complexity of endoscopic resection escalates. Delayed bleeding, deep mural injury, perforation and post procedural pain are all complications which can cause considerable morbidity. Research to improve EMR by predicting and preventing these complications is ongoing.

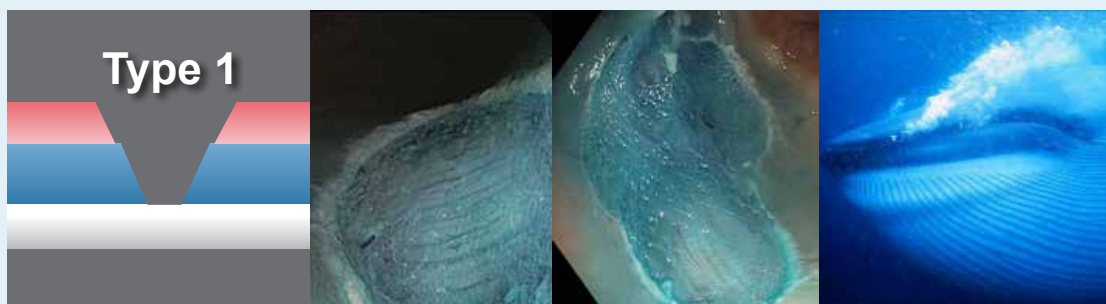
Box 8: Evidence Based Practice Points:

Recommendation	Strength of Recommendation	Quality of Evidence
Carbon dioxide insufflation should be used in preference to air for advanced resection procedures in the colon.	Strong	***
Deep mural injury identified by the "target" sign should be closed with clips	Strong	**
A microprocessor controlled or blended current could be considered for endoscopic mucosal resection as it may reduce delayed bleeding in comparison to a pure coagulation current	Weak	**
Prophylactic endoscopic clip placement may be considered for preventing delayed bleeding in patients on antiplatelet or anticoagulant medications with polyps over 10mm in size.	Weak	**

Figure 3. A Classification score for Deep Mural Injury (DMI) in the colon.



A "Type 0" defect is a normal post resection finding. The mucosa has been completely resected revealing the underlying partially resected submucosa. The submucosa is homogeneously stained by the chromogelofusine dye. Submucosal vessels may be exposed but are uninjured.

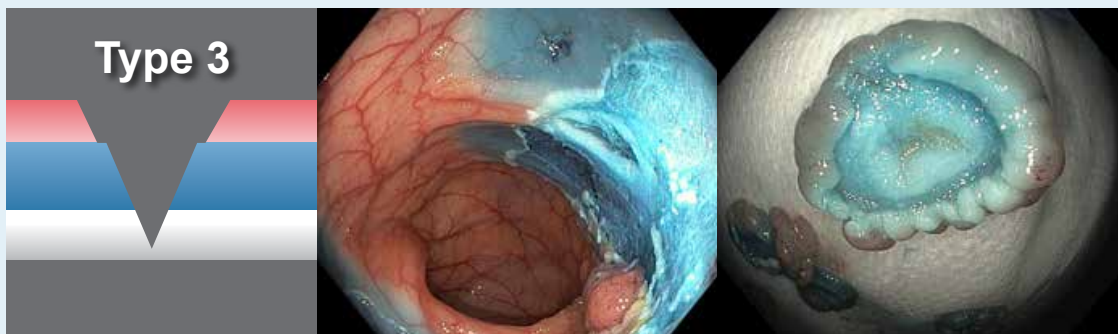


A "Type 1" defect occurs when the submucosa has been completely resected and the underlying muscularis propria (MP) is revealed. The MP does not avidly stain with the chromic dye so has a white appearance, and the circumferential striations of the muscle layer are seen. This appearance resembles the ventral pleats of a blue whale seen from underwater so is referred to as the "whale" sign.

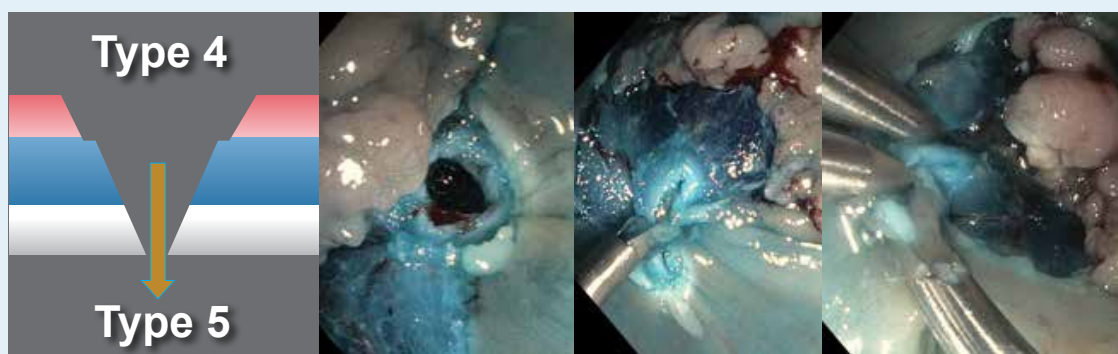


In a "Type 2" defect, the distinction between submucosa and MP is unclear often due to poorly staining submucosal fibrosis. In the first image, an area of poorly staining defect is noted following snare resection. Clips are placed even though a clear defect target sign is not visible.

ABSTRACTS AND CONFERENCE NOTES



A "Type 3" defect refers to partial resection of the muscularis propria resulting in a defect target sign (DTS) (left image) or a specimen target sign (STS) (right image). These defects require clip closure of the DTS to prevent delayed perforation.



A Type 4 defect is a complete hole, or full-thickness resection of the muscularis propria which is clean and not contaminated by faecal effluent. A concentric ring of cautery artifact to the muscularis is observed. These defects should be closed immediately, although resection of the surrounding adenoma prior to clip placement should be performed where possible. If the closure site is not clear of adenoma, follow up attempts at resection may be hampered by sub-mucosal fibrosis, clip artefact and buried adenoma. A Type 5 defect occurs where the full thickness perforation is contaminated by fecal effluent. These defects should also be closed and a surgical consultation obtained. Acute surgical intervention is required if there is clinical deterioration, features of peritonitis, evidence of significant free intra-peritoneal fluid or failed endoscopic resection.

Serrated Polyps and Polypectomy

In addition to being difficult to detect, sessile serrated polyps (SSPs) are more likely to be incompletely resected than conventional adenomas. The CARE study demonstrated that 31% of SSPs had remnant tissue in the resection defect compared to 7.2% of conventional adenomas and in lesions above 10mm in size residual tissue remained in 47.5%.

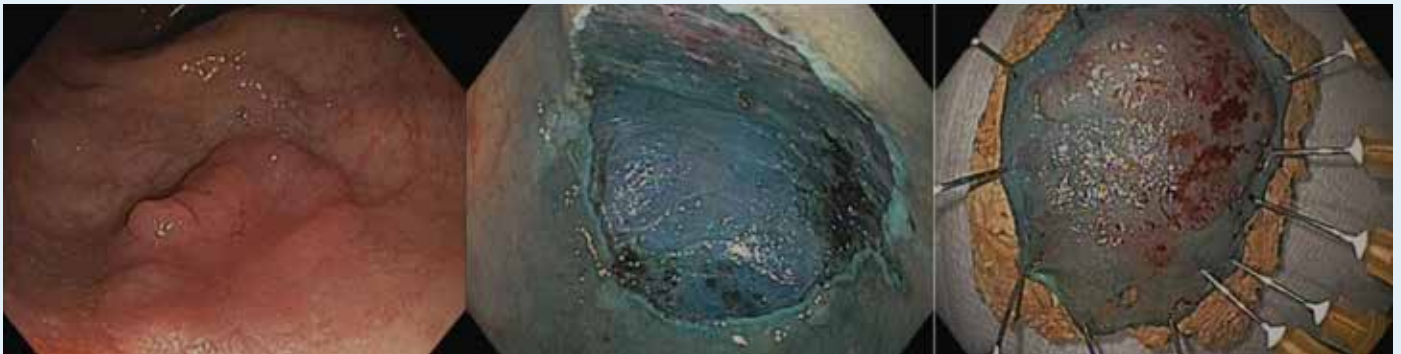
Endoscopic Submucosal Dissection and Hybrid Procedures

ESD of early invasive lesions in the proximal colon is associated with greater technical difficulty, longer procedure time and higher risks of perforation¹²⁸ whereas a right hemicolectomy can often be easily and safely performed laparoscopically and has the considerable advantage of lymph node staging. Careful discussion with the patient is necessary and must take into account local experience and alternative treatment options.

Box 9: Evidence Based Practice Points:

Recommendation	Strength of Recommendation	Quality of Evidence
Endoscopic Submucosal Dissection can be considered for the resection of colonic lesions however local experience and availability and procedural risks compared to surgery must be carefully weighed	Weak	**

Figure 4. Endoscopic submucosal dissection of a 25mm 0-IIa non granular laterally spreading tumour (LST) with pseudodepression and a disrupted pit pattern suggestive of high grade dysplasia. The lesion was resected en-bloc. Histology revealed tubular adenoma with high grade dysplasia. Deep and lateral margins were clear.



SUMMARY

Colonoscopic polypectomy necessitates an adaptable approach to differing lesion morphologies, pathobiology, locations and risks. Colonoscopists need to be able to select the most appropriate technique, electrosurgical settings and ancillary equipment for the lesion they are faced with and should have an array of techniques available to control

adverse events when they occur. Implementation of wide-scale screening programs in many countries on the basis of the now well established efficacy of screening and polypectomy in the reduction of CRC incidence and mortality means that more patients than ever before will be exposed to the benefits and the risks of this procedure.

Suggested Approach to Endoscopic Treatment of Colorectal Polyps:

Diminutive Polyps 1-5mm

- Cold Snare Polypectomy
- Cold Biopsy forceps ONLY for polyps <3mm in difficult position for CSP

Small Polyps 6-9mm

- Cold Snare Polypectomy or Hot Snare Polypectomy

Flat and Sessile Polyps 10-25mm

- EMR with blended or microprocessor controlled current

Sessile Polyps >15mm NG or >25mm G

- Referral to tertiary polypectomy service
- EMR with microprocessor controlled current
- ESD for lesions with a moderate risk of submucosal invasion in the rectum or low sigmoid colon*

Pedunculated Polyps 10+mm

- Snare Resection with blended current
- Prophylactic mechanical pretreatment (Polyp head >20mm or stalk >5mm) (endoscopic clip or detachable nylon loop)
- (For giant pedunculated polyps where detachable nylon loop placement is not possible consider epinephrine volume reduction, consider referral to tertiary polypectomy service)

Lipoma

- Resection not required unless symptomatic (bleeding/pain/obstruction)
- Consider referral to tertiary polypectomy service
- EUS Assessment
- Endoloop +/- Snare resection

NB: Treatment options should be carefully considered in any polyp with features suggestive of submucosal invasive cancer (Paris 0-IIc component, Kudo Pit Pattern V, Non lifting, Sano III), this may include surgical evaluation. Lesions with features of deep submucosal invasion (combinations of the above, Sano IIIb.), or obvious cancers should not be considered for endoscopic treatment

*ESD is highly dependent on local availability and expertise – high volume centers with low adverse event rates may consider resection of lesions outside these parameters.



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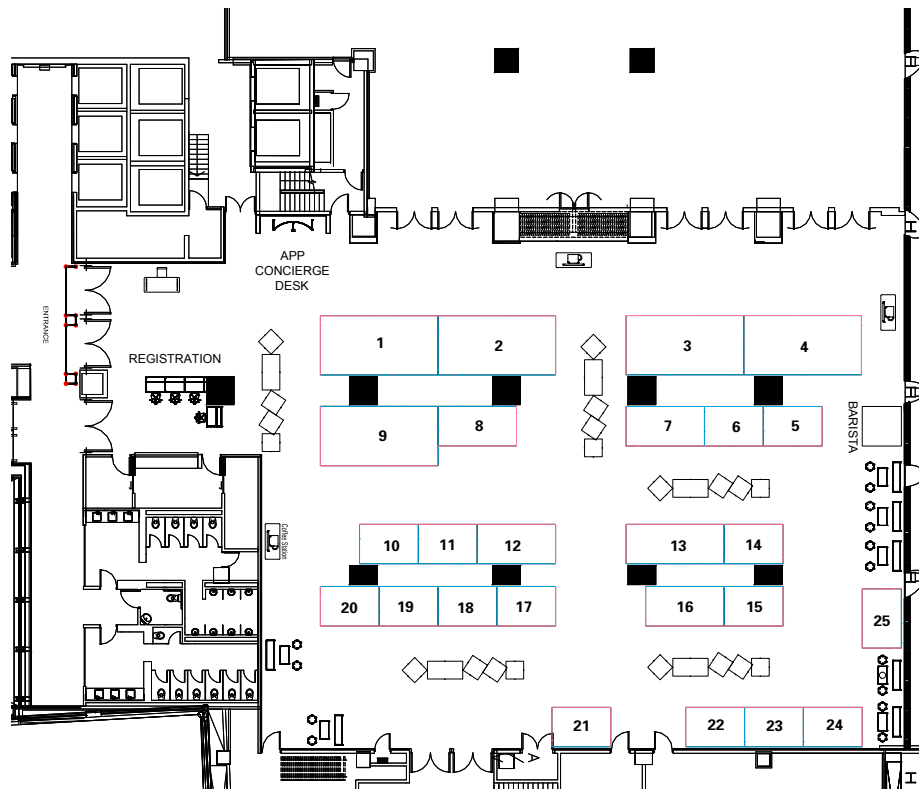
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