

# AK behandling

## Endoskopi

Overlæge Bo Søndergaard

Endoskopi sektionen

Gastroenheden

Hvidovre Hospital



# Endoscopy in patients on antiplatelet or anticoagulant therapy, including direct oral anticoagulants: British Society of Gastroenterology (BSG) and European Society of Gastrointestinal Endoscopy (ESGE) guidelines



## Authors

Andrew M. Veitch<sup>1</sup>, Geoffroy Vanbiervliet<sup>2</sup>, Anthony H. Gershlick<sup>3</sup>, Christian Boustiere<sup>4</sup>, Trevor P. Baglin<sup>5</sup>, Lesley-Ann Smith<sup>6</sup>, Franco Radaelli<sup>7</sup>, Evelyn Knight<sup>8</sup>, Ian M. Gralnek<sup>9</sup>, Cesare Hassan<sup>10</sup>, Jean-Marc Dumonceau<sup>11</sup>

## Institutions

Institutions listed at end of article.



## GUIDELINE



# The management of antithrombotic agents for patients undergoing GI endoscopy

**Prepared by: ASGE STANDARDS OF PRACTICE COMMITTEE**

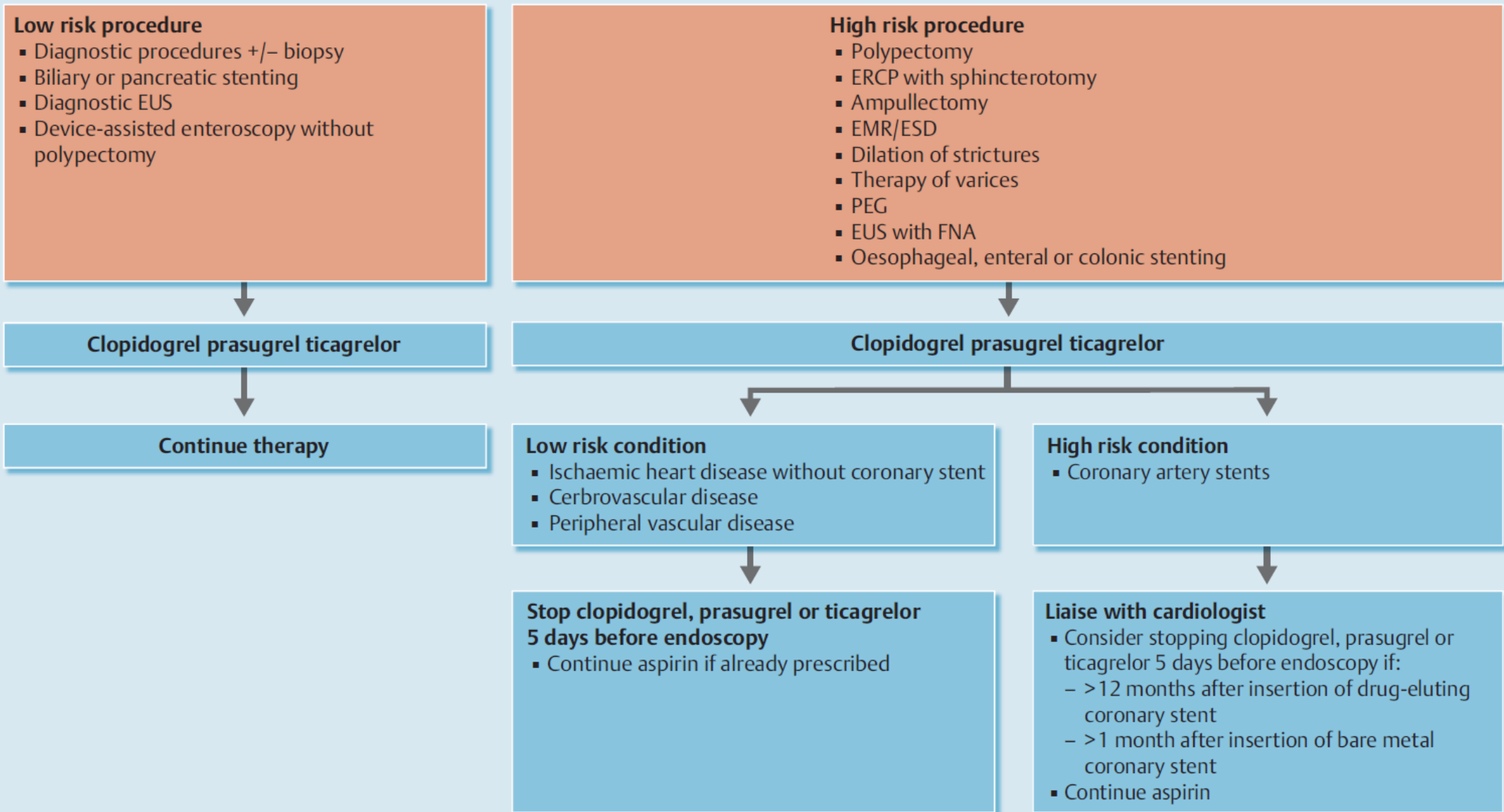
**Ruben D. Acosta, MD, Neena S. Abraham, MD, MSCE, FASGE (invited content expert, ad-hoc member), Vinay Chandrasekhara, MD, Krishnavel V. Chathadi, MD, Dayna S. Early, MD, FASGE, Mohamad A. Eloubeidi, MD, MHS, FASGE, John A. Evans, MD, Ashley L. Faulx, MD, FASGE, Deborah A. Fisher, MD, MHS, FASGE, Lisa Fonkalsrud, BSN, RN, CGRN, Joo Ha Hwang, MD, PhD, FASGE, Mouen A. Khashab, MD, Jenifer R. Lightdale, MD, MPH, FASGE, V. Raman Muthusamy, MD, FASGE, Shabana F. Pasha, MD, John R. Saltzman, MD, FASGE, Aasma Shaukat, MD, MPH, FASGE, Amandeep K. Shergill, MD, Amy Wang, MD, Brooks D. Cash, MD, FASGE, previous Committee Chair, John M. DeWitt, MD, FASGE, Chair**

This document was reviewed and approved by the Governing Board of the American Society for Gastrointestinal Endoscopy.

# Take home message #1

*For all endoscopic procedures we recommend continuing aspirin (moderate evidence, strong recommendation), with the exception of ESD, large colonic EMR (>2 cm), upper gastrointestinal EMR and ampullectomy. In the latter cases, aspirin discontinuation should be considered on an individual patient basis depending on the risks of thrombosis vs haemorrhage (low quality evidence, weak recommendation).*





**Fig. 1** Guidelines for the management of patients on P2Y12 receptor antagonist antiplatelet agents undergoing endoscopic procedures.

### Low risk procedure

- Diagnostic procedures +/- biopsy
- Biliary or pancreatic stenting
- Device-assisted enteroscopy without polypectomy

### Warfarin

### Continue warfarin

- Check INR during the week before endoscopy:
  - If INR within therapeutic range continue usual daily dose
  - If INR above therapeutic range but <5 reduce daily dose until INR returns to therapeutic range

### DOAC

- Dabigatran
- Rivaroxaban
- Apixaban
- Edoxaban

**Omit DOAC on morning of procedure**



### High risk procedure

- Polypectomy
- ERCP with sphincterotomy
- Ampullectomy
- EMR/ESD
- Dilation of strictures
- Therapy of varices
- PEG
- EUS with FNA
- Oesophageal, enteral or colonic stenting

### Warfarin

#### Low risk condition

- Prosthetic metal heart valve in aortic position
- Xenograft heart valve
- AF without valvular disease >3 months after VTE
- Thrombophilia syndromes (liaise with haematologist)

#### Stop warfarin 5 days before endoscopy

- Check INR prior to procedure to ensure INR < 1.5
- Restart warfarin evening of procedure with usual daily dose
- Check INR 1 week later to ensure adequate anticoagulation

#### High risk condition

- Prosthetic metal heart valve in mitral position
- Prosthetic heart valve and AF
- AF and mitral stenosis
- < 3 months after VTE

#### Stop warfarin 5 days before endoscopy

- Start LMWH 2 days after stopping warfarin
- Give last dose of LMWH ≥24 hours before procedure
- Restart warfarin evening of procedure with usual daily dose
- Continue LMWH until INR adequate

### DOAC

- Dabigatran
- Rivaroxaban
- Apixaban
- Edoxaban

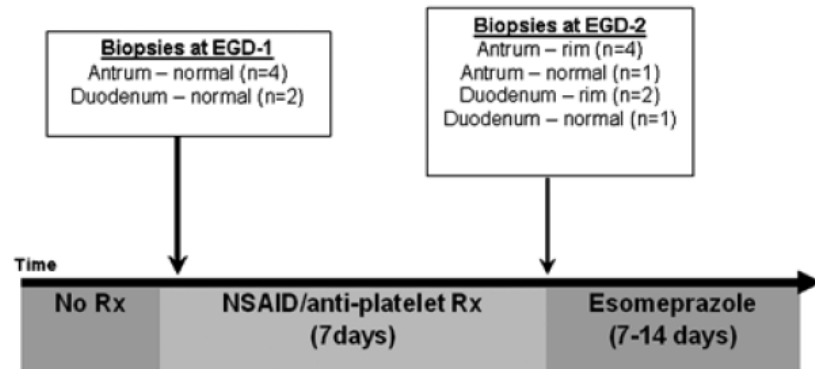
#### Take last dose of drug ≥ 48 hours before procedure

- For dabigatran with CrCl (eGFR) 30–50 ml/min take last dose of drug 72 hours before procedure
- In any patient with rapidly deteriorating renal function a haematologist should be consulted

# Is Gastroduodenal Biopsy Safe in Patients Receiving Aspirin and Clopidogrel?

## *A Prospective, Randomized Study Involving 630 Biopsies*

Matthew J. Whitson, MD,\* Andrew E. Dikman, MD,\* Caroline von Althann, BA,\*  
 Shefali Sanyal, BA,\* Jay C. Desai, MD,\* Neville D. Bamji, MD,\* Susan Kornacki, MD,†  
 Noam Harpaz, MD, PhD,‡ Carol A. Bodian, Dr PH,§ Lawrence B. Cohen, MD,\*  
 Kenneth M. Miller, MD,\* and James Aisenberg, MD\*



**FIGURE 1.** Study time line. EGD-1 indicates first esophagogastroduodenoscopy; EGD-2, second esophagogastroduodenoscopy; NSAID, nonsteroidal anti-inflammatory drug; Rx, dosing.

**TABLE 2.** Probability of Endoscopic and Clinical Bleeding Events (First and Second Endoscopies are Combined)

Drug	Biopsies	Endoscopic Bleeding Events	Upper Confidence Limit (Endoscopic Bleeding)	Clinical Bleeding Events	Upper Confidence Limit (Clinical Bleeding)
CPG	350	0	0.0085	0	0.0085
ASA	280	1	0.0169	0	0.0106

The upper confidence limit reflects the highest probability consistent with the data of bleeding at a single gastroduodenal biopsy site.

ASA indicates aspirin; CPG, clopidogrel.



# Evaluation of safety of endoscopic biopsy without cessation of antithrombotic agents in Japan

Satoshi Ono · Mitsuhiro Fujishiro · Shinya Kodashima · Yu Takahashi ·  
Chihiro Minatsuki · Rie Mikami-Matsuda · Itsuko Asada-Hirayama ·  
Maki Konno-Shimizu · Yosuke Tsuji · Satoshi Mochizuki · Keiko Niimi ·  
Nobutake Yamamichi · Makoto Kaneko · Yutaka Yatomi · Kazuhiko Koike

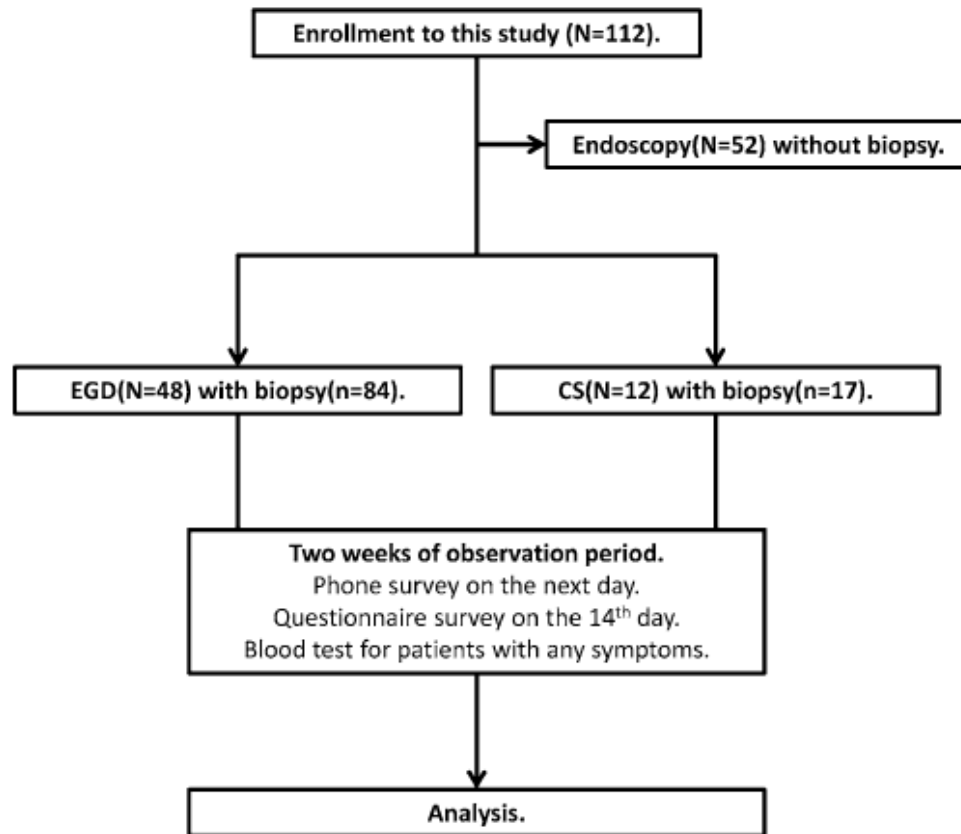
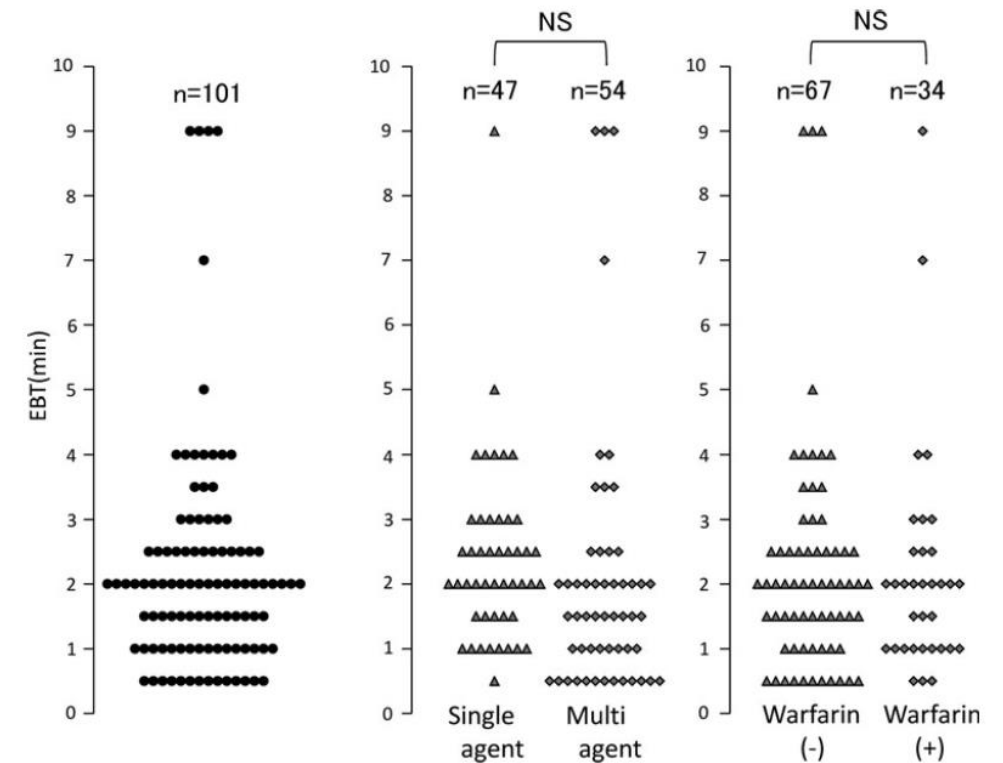


Fig. 2 Dot chart of endoscopic bleeding time (EBT). a EBT of all 101 biopsies. b EBT of biopsies in patients receiving a single antithrombotic agent and those receiving multiple agents. c EBT of biopsies in patients not receiving warfarin and those receiving warfarin





## 7.1 Diagnostic endoscopy and mucosal biopsy

Diagnostic endoscopies, including mucosal biopsy sampling, harbor a minimal risk of haemorrhage, and no severe haemorrhage has been reported in studies involving thousands of patients in total [9, 80–83]. Furthermore no increased risk of haemorrhage from biopsy has been found in studies of patients on aspirin, clopidogrel or warfarin [84, 85]. In these studies only small numbers of biopsies were taken, and the safety of taking large numbers of biopsies in patients on warfarin, such as in Barrett's oesophagus surveillance, has not been studied. There have been no published reports of excess bleeding in this context, however. There are no data about biopsies in patients taking the newer antiplatelet agents or DOACs. Due to uncertainty regarding the level of anticoagulation on DOACs at the time of endoscopy and the absence of reliable test of anticoagulation on these drugs, we suggest omitting the dose of DOAC on the morning of the procedure to allow an adequate safety margin. This applies to both once daily and twice daily regimens.

# Risk factors for adverse events related to polypectomy in the English Bowel Cancer Screening Programme\*

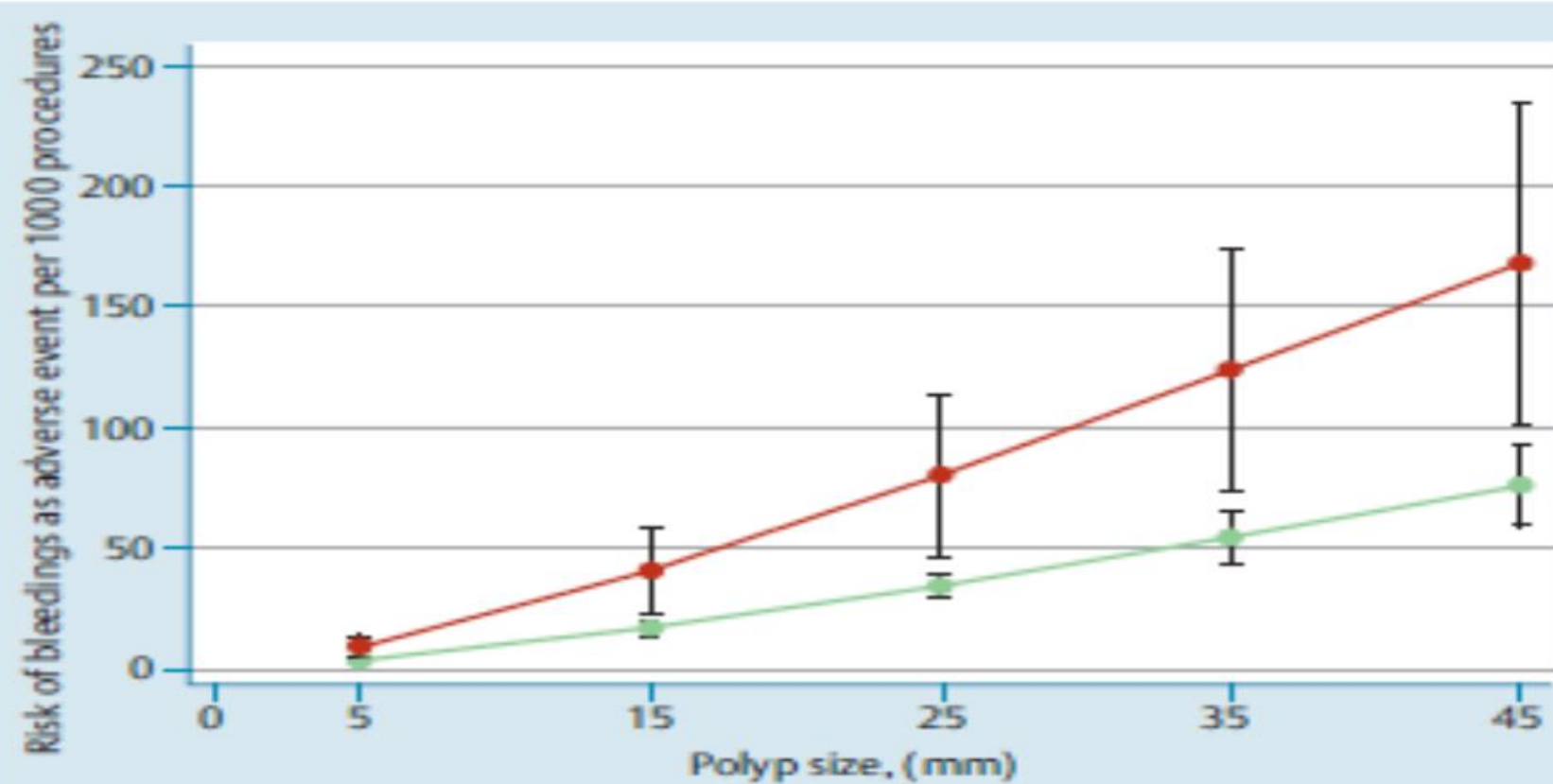
## Authors

Matthew D. Rutter<sup>1,5,6</sup>, Claire Nickerson<sup>2</sup>, Colin J. Rees<sup>3,5,6</sup>, Julietta Patnick<sup>2</sup>, Roger G. Blanks<sup>4</sup>

**Table 1** Polypectomy adverse event rate: for procedures with single-polyp resection, by polyp location for full colonoscopies.

Location	Procedures, n	Adverse events			
		Bleeding		Perforation	
		n	% (95%CI)	n	% (95%CI)
Rectum	5508	50	0.91 (0.67 – 1.24)	2	0.04 (0.004 – 0.13)
Sigmoid colon	14211	164	1.15 (0.98 – 1.34)	10	0.07 (0.034 – 0.13)
Descending colon	1909	17	0.89 (0.52 – 1.42)	1	0.05 (0.001 – 0.29)
Splenic flexure	687	3	0.44 (0.09 – 1.27)	2	0.29 (0.035 – 1.05)
Transverse colon	2666	11	0.41 (0.21 – 0.74)	0	0.00
Hepatic flexure	803	2	0.25 (0.03 – 0.90)	0	0.00
Ascending colon	2710	17	0.63 (0.37 – 1.00)	2	0.07 (0.009 – 0.27)
Cecum	2387	27	1.13 (0.75 – 1.64)	3	0.13 (0.026 – 0.37)
Total	30881	291	0.94 (0.84 – 1.06)	20	0.06 (0.040 – 0.10)

CI, confidence interval.



**Fig. 1** Bleeding as an adverse event of polypectomy: modelled risk per 1000 procedures by polyp size for cecal (upper line) and noncecal (lower line) locations. This analysis used data from only "hot snare" procedures where only a single polyp was resected.

## Meta-analysis: colonoscopic post-polypectomy bleeding in patients on continued clopidogrel therapy

S. Gandhi<sup>\*</sup>, N. Narula<sup>†</sup>, W. Mosleh<sup>‡</sup>, J. K. Marshall<sup>§</sup> & M. Farkouh<sup>¶</sup>

**Table 1** | Summary of pooled analysis

	Clopidogrel group	Control group	Relative risk ratio	Lower 95% CI	Upper 95% CI	P value	I <sup>2</sup> %
Immediate PPB (%)	22/431 (5.10)	66/3920 (1.68)	1.76	0.90	3.46	0.10	30
Delayed PPB (%)	15/565 (2.65)	37/6158 (0.60)	4.66	2.37	9.17	<0.00001	0
Total PPB (%)	37/574 (6.45)	103/6169 (1.67)	2.54	1.68	3.84	<0.00001	2

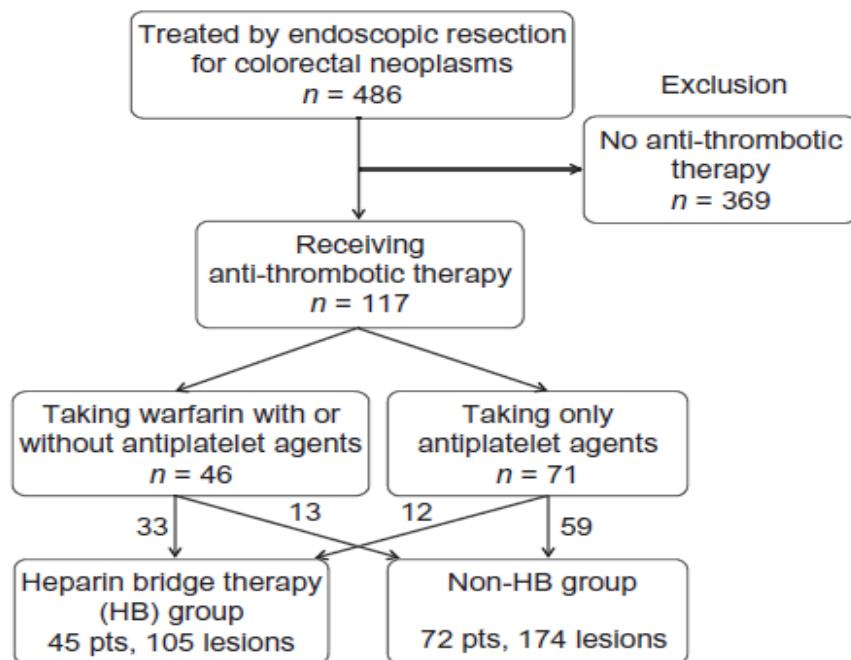


## Original Article

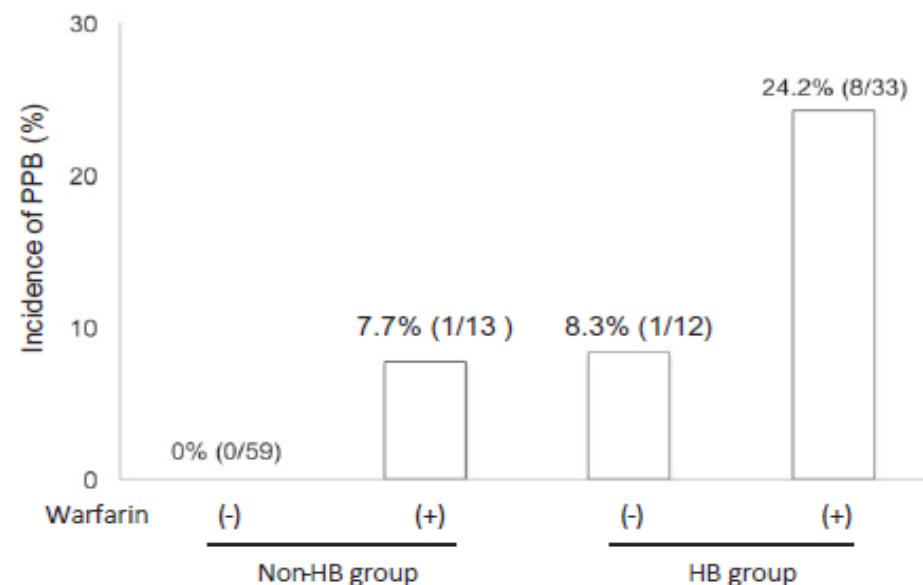
# Clinical features of post-polypectomy bleeding associated with heparin bridge therapy

Takuya Inoue, Tsutomu Nishida, Akira Maekawa, Yoshiki Tsujii, Tomofumi Akasaka, Motohiko Kato, Yoshito Hayashi, Shunsuke Yamamoto, Jumpei Kondo, Takuya Yamada, Shinichiro Shinzaki, Hideki Iijima, Masahiko Tsujii and Tetsuo Takehara

Department of Gastroenterology and Hepatology, Osaka University Graduate School of Medicine, Osaka, Japan



**Figure 1** Flow diagram of the patients analyzed in the present study. Pts, patients.



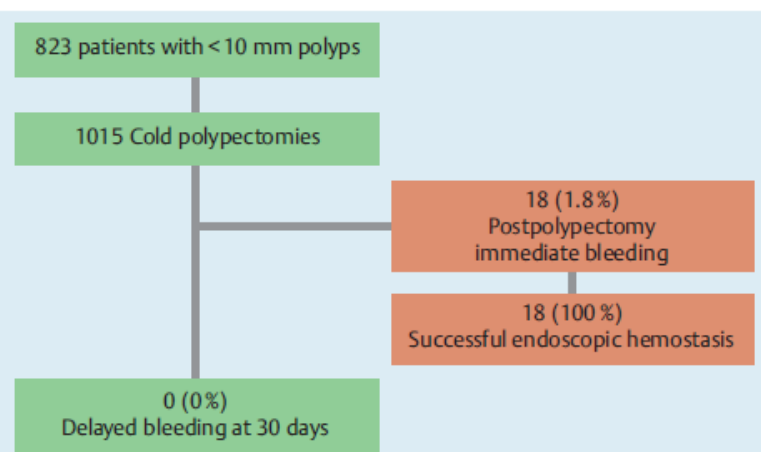
**Figure 2** Incidence of post-polypectomy bleeding (PPB) analyzed by warfarin use in each group. HB, heparin bridge therapy.



# Safety of cold polypectomy for < 10 mm polyps at colonoscopy: a prospective multicenter study

## Authors

A. Repici<sup>1</sup>, C. Hassan<sup>1</sup>, E. Vitetta<sup>1</sup>, E. Ferrara<sup>1</sup>, G. Manes<sup>2</sup>, G. Gullotti<sup>3</sup>, A. Princiotta<sup>3</sup>, P. Dulbecco<sup>4</sup>, N. Gaffuri<sup>5</sup>, E. Bettoni<sup>5</sup>, N. Pagano<sup>1</sup>, G. Rando<sup>1</sup>, G. Strangio<sup>1</sup>, A. Carlino<sup>1</sup>, F. Romeo<sup>1</sup>, D. de Paula Pessoa Ferreira<sup>1</sup>, A. Zullo<sup>1</sup>, L. Ridola<sup>6</sup>, A. Malesci<sup>1</sup>



**Fig. 1** Study flow chart. The primary aim of the study was to evaluate the immediate and delayed bleeding rate following cold polypectomy for subcentimetric polyps.

1. At univariate analysis, bleeding risk was significantly more frequent in patients on antiplatelet therapy compared with those not on therapy (6.2% vs. 1.4%;  $P < 0.001$ ), respectively. Bleeding also appeared to be more frequent after removal of a 6–9-mm lesion than following polypectomy of a diminutive polyp (4.1% vs. 1.2%;  $P = 0.01$ ). Bleeding patients were significantly older compared with those with no bleeding (69 years vs. 63 years;  $P = 0.02$ ). At multivariate analysis, antiplatelet therapy (OR 4; 95%CI 1.5–10.6) and 6–9 mm size (OR 2; 95%CI 1.1–6.9) appeared to be independent predictors for postpolypectomy bleeding, whereas age was not.

# Removal of small colorectal polyps in anticoagulated patients: a prospective randomized comparison of cold snare and conventional polypectomy <sup>(CME)</sup>

Akira Horiuchi, MD,<sup>1</sup> Yoshiko Nakayama, MD,<sup>1,2</sup> Masashi Kajiyama, MD,<sup>1</sup> Naoki Tanaka, MD,<sup>1</sup> Kenji Sano, MD,<sup>3</sup> David Y. Graham, MD<sup>4</sup>

Komagane; Matsumoto, Japan; Houston, Texas, USA

**TABLE 1. Baseline characteristics, indications, and outcomes in patients with cold snare polypectomy and conventional polypectomy**

	Cold group	Conventional group	P
Number of patients	35	35	
Mean age,* y (SD)	67.0 (13)	67.3 (12)	.54
Gender (female)†	10	11	.79
Indications‡			
Hemo-positive stool	25	20	.51
Screening	8	12	
Other	2	3	
Indications for warfarin‡			
Atrial fibrillation	26	25	.96
Thromboembolism	7	8	
Other	2	2	
Mean INR* (SD)	2.4 (.4)	2.3 (.4)	.13
Aspirin use	2	2	
Cecum intubation rate,† %	100	100	
Mean cecal intubation time,* min (SD)	5.5 (5)	5.4 (7)	.57
Intubation rate of terminal ileum,† %	89	86	.72
Mean procedure time,* min (SD)	16 (7)	26 (9)	<.001

SD, Standard deviation; INR, international normalized ratio.

\*Differences between cold snare polypectomy (Cold) and conventional polypectomy (Conventional) compared using the Student t test for continuous variables.

†Differences between the Cold group and the Conventional group compared using the  $\chi^2$  test for categorical data.

**TABLE 2. Comparison of polyps in patients undergoing cold snare polypectomy (Cold group) and conventional polypectomy (Conventional group)**

	Cold group	Conventional group	P
Total number of polyps removed	78	81	
Mean number of polyps per patient* (SD)	2.2 (1.2)	2.3 (1.2)	.61
Mean polyp size,* mm (SD)	6.5 (1.2)	6.8 (1.3)	.86
Median polyp size, mm	6.5	6	.81
Complete retrieval rate,† %	94	93	.80

Characteristics of polyps removed‡

## Pathology

High-grade adenoma	2	2	.99
Adenoma	70	72	
Hyperplastic polyp	6	7	

## Size

≤ 5 mm	44	45	.91
6 mm ≤ size ≤ 10 mm	34	36	

## Shape

Flat	23	19	.71
Sessile	50	56	
Pedunculated	5	6	

SD, Standard deviation.

\*Differences between cold snare polypectomy (Cold group) and conventional polypectomy (Conventional group) compared using the Student t test for continuous variables.

†Differences between the Cold group and the Conventional group compared using the  $\chi^2$  test for categorical data.

**TABLE 3. Comparison of bleeding in patients with cold snare polypectomy (Cold group) and conventional polypectomy (Conventional group)**

	Cold group	Conventional group	<i>P</i>	OR (95% CI)
Immediate bleeding	5.7% (2/35)	23% (8/35)	.042	4.9 (.96-25.0)
Hematochezia*	5.7% (2/35)	8.6% (3/35)	.500	1.5 (.24-9.9)
Delayed bleeding*	0% (0/35)	14% (5/35)	.027	
Total	11% (4/35)	46% (16/35)	.0015	6.5 (1.9-22.5)

OR, Odds ratio; CI, confidence interval.

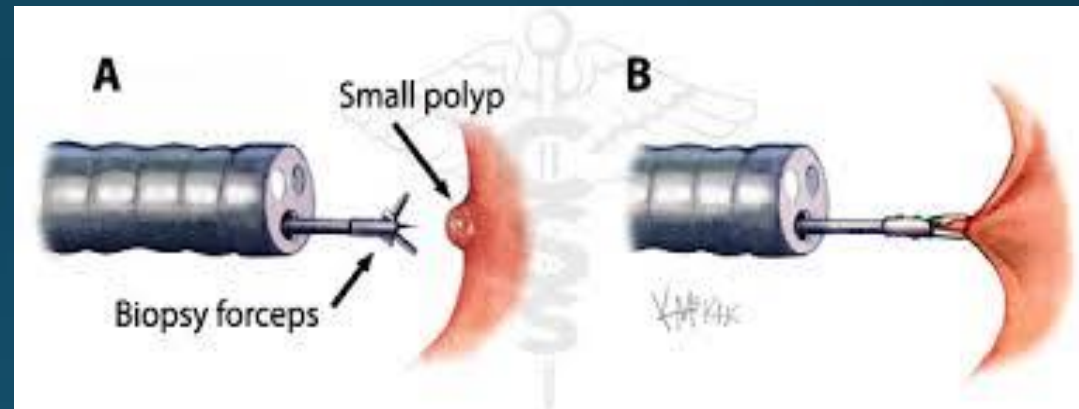
\*Hematochezia (mild uninvestigated bleeding) and delayed bleeding within 2 weeks after each polypectomy were recorded. Difference between Cold group and Conventional group was compared using the Fisher exact test.

# Perfekte polypektomi metode ?

- Sikker
- Effektiv
- Let at foretage
- Væv tilgængeligt til histologisk undersøgelse
- Ingen vævsskade
- Billig

# Standard polypektomi

- Metoder:
  - Kold tang
  - “Hot biopsy”
  - Varm slynge
  - Kold slynge

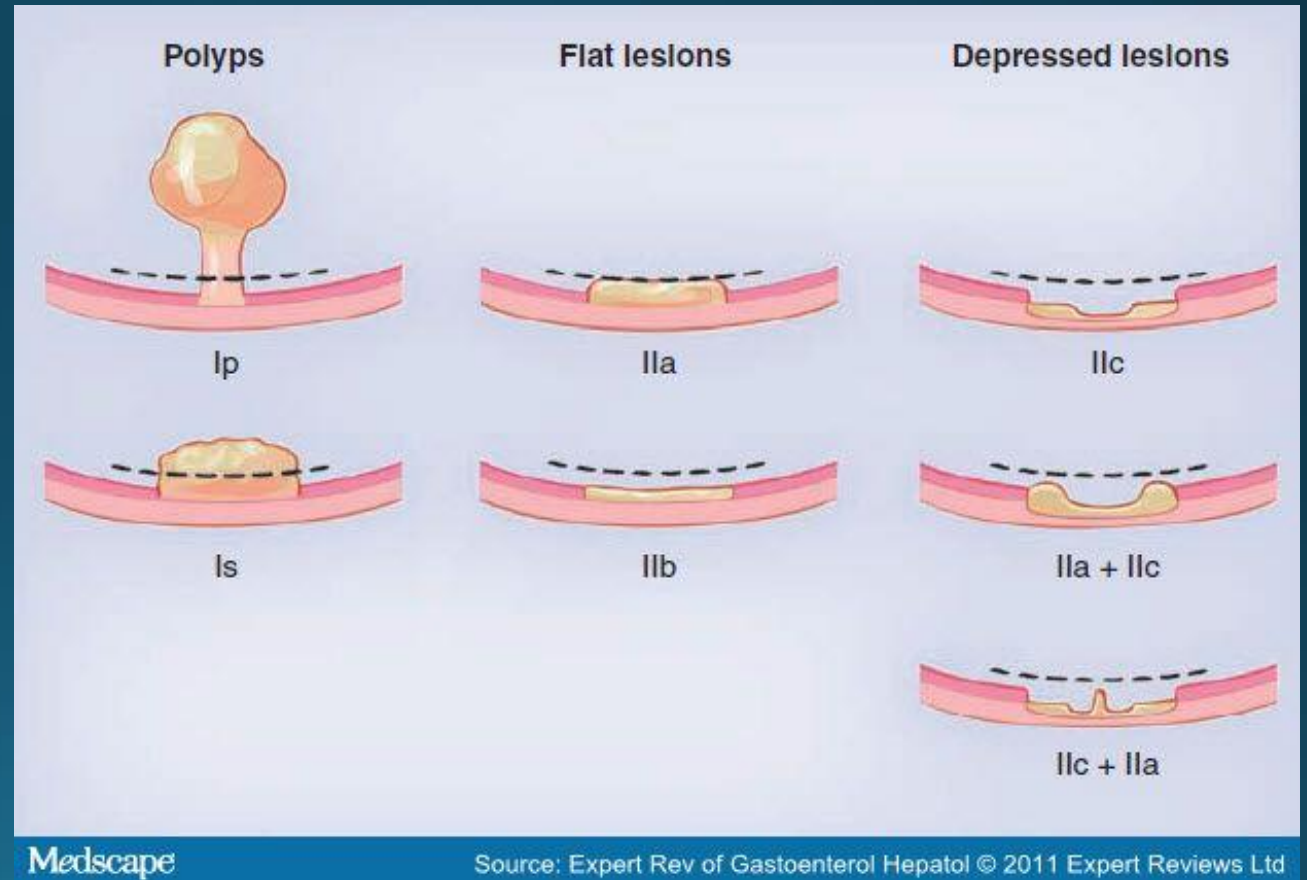


# Terminologi & definitioner

Lille polyp : Max 10 mm

Diminutiv polyp: Max 5 mm

Morfologisk klassifikation –  
Paris klassifikation





# Polypektomi teknikker

## Små polypper colon/rectum

	Let at udføre ?	Sikker ?	Komplet resektion ?	Histologisk "kvalitet"
Kold biopsi	+++	+++	++ +	++
Hot biopsi	+++	+	++	+
Kold slynge	++	+++	+++ ++	+++
Varm slynge	++	++	+++ ++	++

# Guidelines ?



European Society of  
Gastrointestinal Endoscopy

33 guidelines online



> 50 guidelines online

**But – no guidelines describes how to perform polypectomy in the colorectum !**

# Prevalence of advanced histological features in diminutive and small colon polyps (CME)

Neil Gupta, MD, MPH,<sup>1,2</sup> Ajay Bansal, MD,<sup>1,2</sup> Deepthi Rao, MD,<sup>1</sup> Dayna S. Early, MD,<sup>3</sup>  
Sreenivasa Jonnalagadda, MD,<sup>3</sup> Sachin B. Wani, MD,<sup>3</sup> Steven A. Edmundowicz, MD,<sup>3</sup> Prateek Sharma, MD,<sup>1,2</sup>  
Amit Rastogi, MD<sup>1,2</sup>

Kansas City, Missouri, USA

**TABLE 1. Histopathology of colon polyps by lesion size**

	≤5 mm (n = 1620)	6-9 mm (n = 455)	<10 mm (n = 2075)	≥10 mm (n = 286)
Neoplastic	977 (60.3%)* [57.9%-62.7%]†	321 (70.5%) [66.1%-74.7%]	1298 (62.5%) [60.4%-64.6%]	234 (81.8%) [76.8%-86.1%]
Tubular adenoma	964 (59.5%) [57.1%-61.9%]	310 (68.1%) [63.6%-72.4%]	1274 (61.4%) [59.3%-63.5%]	181 (63.3%) [57.4%-68.9%]
Sessile serrated adenoma	3 (0.2%) [0%-0.5%]	3 (0.6%) [0.1%-1.9%]	6 (0.3%) [0.1%-0.6%]	7 (2.4%) [1.0%-5.0%]
Traditional serrated adenoma	1 (0.1%) [0%-0.3%]	1 (0.2%) [0%-1.2%]	2 (0.1%) [0%-0.3%]	3 (1.0%) [0.2%-3.0%]
Villous component	8 (0.5%) [0.2%-1.0%]	7 (1.5%) [0.6%-3.1%]	15 (0.7%) [0.4%-1.2%]	37 (12.9%) [9.3%-17.4%]
High-grade dysplasia	1 (0.1%) [0%-0.3%]	0	1 (0.05%) [0%-0.3%]	8 (2.8%) [1.2%-5.4%]
Cancer	0	0	0	1 (0.3%) [0%-1.9%]
Any advanced histology‡	9 (0.5%) [0.2%-1.0%]	7 (1.5%) [0.6%-3.1%]	16 (0.8%) [0.4%-1.2%]	43 (15.0%) [11.1%-19.7%]
Nonneoplastic	643 (39.7%) [37.3%-42.1%]	134 (29.4%) [25.3%-33.9%]	777 (37.4%) [35.3%-39.6%]	52 (18.2%) [13.9%-23.1%]

\*Percentages in parentheses are relative to the total number in each size category.

†Percentages in brackets are the 95% confidence interval.

‡Any advanced histology includes a villous component, high-grade dysplasia, or cancer.

## Incomplete Polyp Resection During Colonoscopy—Results of the Complete Adenoma Resection (CARE) Study

HEIKO POHL,<sup>1,2</sup> AMITABH SRIVASTAVA,<sup>3</sup> STEVE P. BENSEN,<sup>2</sup> PETER ANDERSON,<sup>2</sup> RICHARD I. ROTHSTEIN,<sup>2</sup> STUART R. GORDON,<sup>2</sup> L. CAMPBELL LEVY,<sup>2</sup> ARIFA TOOR,<sup>2</sup> TODD A. MACKENZIE,<sup>4</sup> THOMAS ROSCH,<sup>5</sup> and DOUGLAS J. ROBERTSON<sup>1,2</sup>

**Table 3.** Polyp Characteristics Associated With Incomplete Resection of Neoplastic Polyps

Polyp characteristics	Neoplastic polyps		Relative risk (95% CI)	
	All (N = 346), n	Incompletely resected (n = 35) (10.1%), n (%)	Univariate	Multivariate <sup>a</sup>
Size, mm				
5–7	172	10 (5.8)	1.00 (reference)	1.00 (reference)
8–9	64	6 (9.4)	1.61 (0.61–4.26)	1.66 (0.62–4.46)
10–14	67	9 (13.4)	2.34 (0.98–5.43)	1.95 (0.87–4.37)
15–20	43	10 (23.3)	4.00 (1.78–9.00)	3.21 (1.41–7.31)
Location in the colon				
Left colon	135	11 (8.1)	1.00 (reference)	
Right colon	211	24 (11.4)	1.40 (0.71–2.76)	Not applicable <sup>b</sup>
Location at fold				
Between/on a fold	271	25 (9.2)	1.00 (reference)	
Behind a fold	67	6 (9.0)	0.97 (0.41–2.27)	Not applicable <sup>b</sup>
Morphology				
Nonflat	158	11 (7.0)	1.00 (reference)	1.00 (reference)
Flat	153	19 (12.4)	1.78 (0.88–3.62)	1.45 (0.73–2.91)
Histology				
Adenoma <sup>c</sup>	304	22 (7.2)	1.00 (reference)	1.00 (reference)
SSA/P	42	13 (31.0)	4.28 (2.34–7.83)	3.74 (2.04–6.84)
Resection				
En bloc	286	24 (8.4)	1.00 (reference)	1.00 (reference)
Piecemeal	54	11 (20.4)	2.43 (1.27–4.66)	1.41 (0.66–2.98)
Ease of resection				
Easy	222	17 (7.7)	1.00 (reference)	1.00 (reference)
Moderately difficult	75	10 (13.3)	1.74 (0.83–3.63)	1.56 (0.75–3.24)
Difficult	45	8 (17.8)	2.32 (1.07–5.05)	1.71 (0.67–4.44)

# Complete biopsy resection of diminutive polyps

Authors

Yoon Suk Jung<sup>1</sup>, Jung Ho Park<sup>1</sup>, Hong Joo Kim<sup>1</sup>, Yong Kyun Cho<sup>1</sup>, Chong Il Sohn<sup>1</sup>, Woo Kyu Jeon<sup>1</sup>, Byung Ik Kim<sup>1</sup>, Jin Hee Sohn<sup>2</sup>, Dong Il Park<sup>1</sup>

Institutions

<sup>1</sup> Department of Internal Medicine, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea  
<sup>2</sup> Department of Pathology, Kangbuk Samsung Hospital, Sungkyunkwan University School of Medicine, Seoul, Korea

**Table 3** Diminutive polyp complete resection rate using cold biopsy forceps polypectomy according to size, histology, number of bites, and location.

	Complete resec- tion rate, n/N (%)	95%CI	P value
Overall complete resection	78/86 (90.7)	84.6 – 96.8	
Size			
≤3 mm	21/22 (95.5)	86.8 – 104.6	0.674
>3 mm	57/64 (89.1)	81.5 – 96.7	
Histology			
Adenoma	60/65 (92.3)	85.8 – 98.8	0.398
Hyperplastic polyp	18/21 (85.7)	70.7 – 100.7	
Number of forceps bites			
≤2 bites	61/66 (92.4)	86.0 – 98.8	0.381
>2 bites	17/20 (85.0)	69.4 – 100.6	
Location			
Right colon	17/21 (81.0)	64.8 – 97.8	0.095
Left colon and rectum	61/65 (93.8)	87.9 – 99.7	



# Biopsy forceps is inadequate for the resection of diminutive polyps

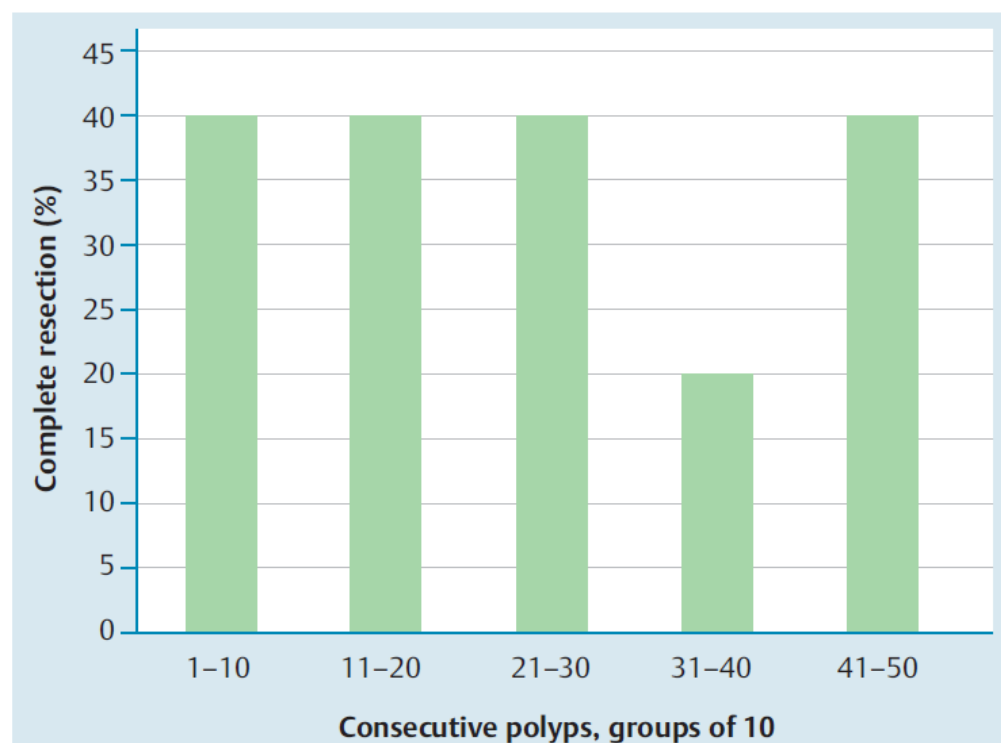
## Authors

M. Efthymiou<sup>1,2</sup>, A. C. F. Taylor<sup>1</sup>, P. V. Desmond<sup>1</sup>, P. B. Allen<sup>1</sup>, R. Y. Chen<sup>1</sup>

## Institutions

<sup>1</sup> Department of Gastroenterology, St Vincent's Hospital, Melbourne, Australia

<sup>2</sup> University of Melbourne, Melbourne, Australia



**Fig. 4** Polyp resection rate assessed per consecutive group of 10 polyps.

**Table 2** Diminutive polyp resection rates using cold biopsy forceps polypectomy – univariate analysis.

	Resection rates, n/N (%)	P value
Overall resection 95 %CI	21 / 54 (39) 0.26 – 0.53	
Resection according to size < 3 mm ≥ 3 mm	5 / 10 (50) 16 / 44 (36)	0.43*
Resection according to location Right colon Left colon or rectum	5 / 6 (83) 16 / 48 (33)	0.03†
Resection according to histology Adenoma Hyperplastic	13 / 21 (62) 8 / 33 (24)	0.006*
Resection according to number of forceps bites ≤ 2 bites > 2 bites	17 / 40 (43) 4 / 14 (29)	0.53†

CI, confidence interval.

\* Pearson's chi-squared.

† Fisher's exact test.



# Cold Snare Polypectomy Vs. Cold Forceps Polypectomy Using Double-Biopsy Technique for Removal of Diminutive Colorectal Polyps: A Prospective Randomized Study

Chang Kyun Lee, MD, PhD<sup>1</sup>, Jae-Jun Shim, MD, PhD<sup>1</sup> and Jae Young Jang, MD, PhD<sup>1</sup>

**Table 3.** Efficacy and safety of the cold polypectomy techniques

	Overall	CSP ( <i>n</i> = 59)	CFP ( <i>n</i> = 58)	<i>P</i> value
Histological polyp eradication, <i>n</i> (%)	99 (84.6)	55 (93.2)	44 (75.9)	0.009
Visual polyp eradication, <i>n</i> (%)	94 (80.3)	54 (91.5)	40 (69.0)	0.002
Time taken for polypectomy, s	18.13 (10.55) (4.0–50.0)	14.29 (8.74) (4.0–45.0)	22.03 (10.87) (6.0–50.0)	<0.001
Failure of tissue retrieval, <i>n</i> (%)	4 (3.4)	4 (6.8)	0 (0)	0.119
Postpolypectomy bleeding <sup>a</sup> , <i>n</i> (%)	0 (0)	0 (0)	0 (0)	
Perforation, <i>n</i> (%)	0 (0)	0 (0)	0 (0)	

CFP, cold forceps polypectomy; CSP, cold snare polypectomy.

Data are expressed as means (s.d.) (range) or numbers (%).

<sup>a</sup>Indicates any significant bleeding requiring endoscopic hemostasis or therapeutic intervention.

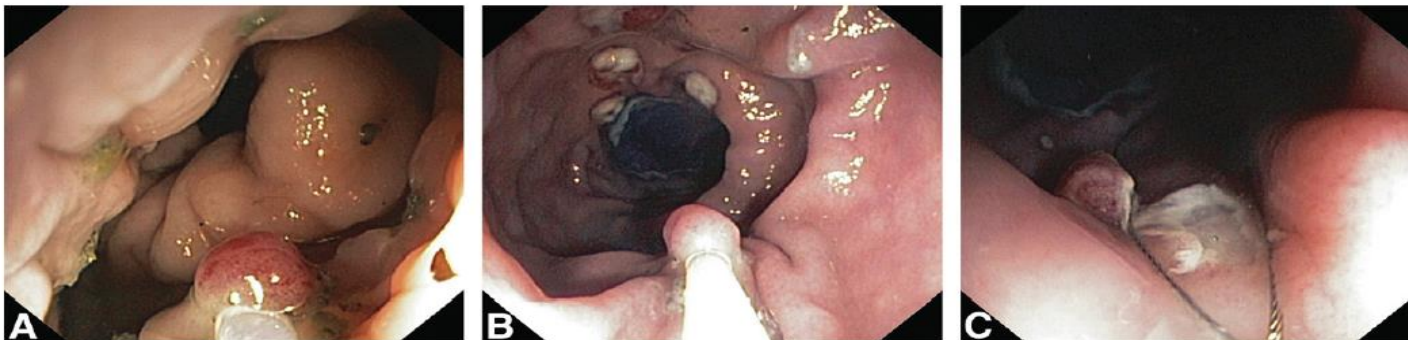
## A blinded comparison of the safety and efficacy of hot biopsy forceps electrocauterization and conventional snare polypectomy for diminutive colonic polypectomy in a porcine model

Andrew J. Metz, MBBS (Hons), FRACP,<sup>1</sup> Alan Moss, MBBS (Hons), FRACP,<sup>1</sup> Duncan Mcleod, MBBS, FRCPA,<sup>2</sup> Kayla Tran, MBBS, FRCPA,<sup>2</sup> Craig Godfrey, BVSc,<sup>2</sup> Abe Chandra, MBBS, FRACS,<sup>4</sup> Michael J. Bourke, MBBS, FRACP<sup>1</sup>

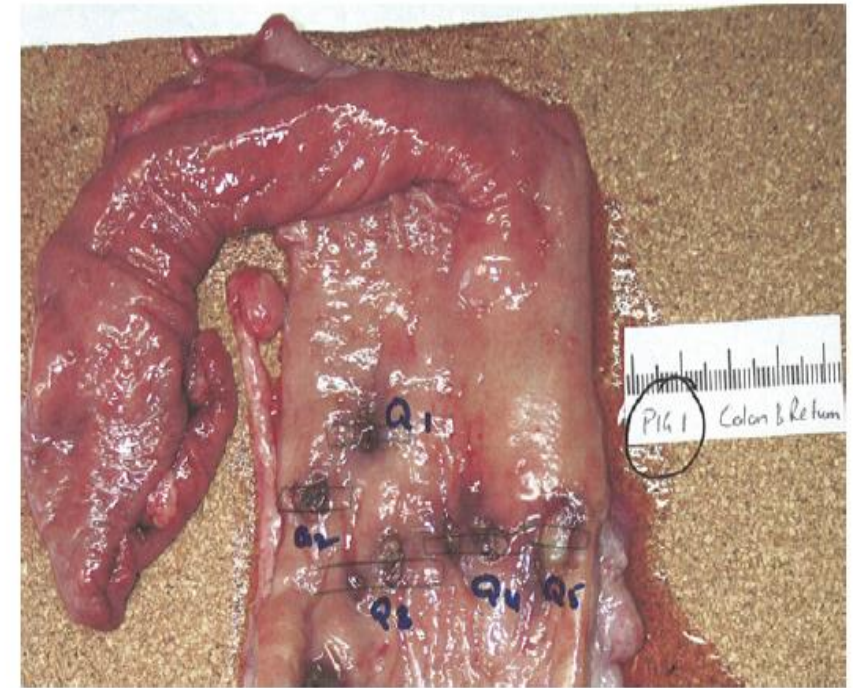
Sydney, Australia



**Figure 2.** Technique of hot biopsy forceps electrocauterization. **A**, Tenting of the artificial polyp. **B**, Blanching of pedicle after 1 to 2 seconds of current. **C**, The tissue is avulsed, leaving ablated mucosa.



**Figure 3.** Technique of conventional snare polypectomy. **A**, Artificial polyp ensnared. **B**, Snare closed and raised. **C**, Mucosal defect after hot forceps polypectomy.



**Figure 4.** Macroscopic colectomy specimen with polypectomy sites at necroscopy.

**TABLE 1. Depth of thermal injury at polypectomy sites in colectomy specimens**

Injury, no. (%)	CSP N = 41	HBF N = 41	P value
Partial MP necrosis	1 (2)	14 (34)	< .001
Full-thickness MP necrosis	1 (2)	9 (22)	.014
Full-thickness MP inflammation	5 (12)	13 (32)	.06
Histologic serositis	4 (10)	13 (32)	.027

CSP, Conventional snare polypectomy; HBF, hot biopsy forceps electrocauterization; MP, muscularis propria.

**TABLE 2. Quantified mean depth of thermal injury at polypectomy sites\***

Mean depth of thermal damage	CSP	HBF	P value
Ulcer	0.95	0.85	.45
Necrosis	1.02	1.56	.01
Inflammation	1.95	2.49	.045

CSP, Conventional snare polypectomy; HBF, hot biopsy forceps electrocauterization.

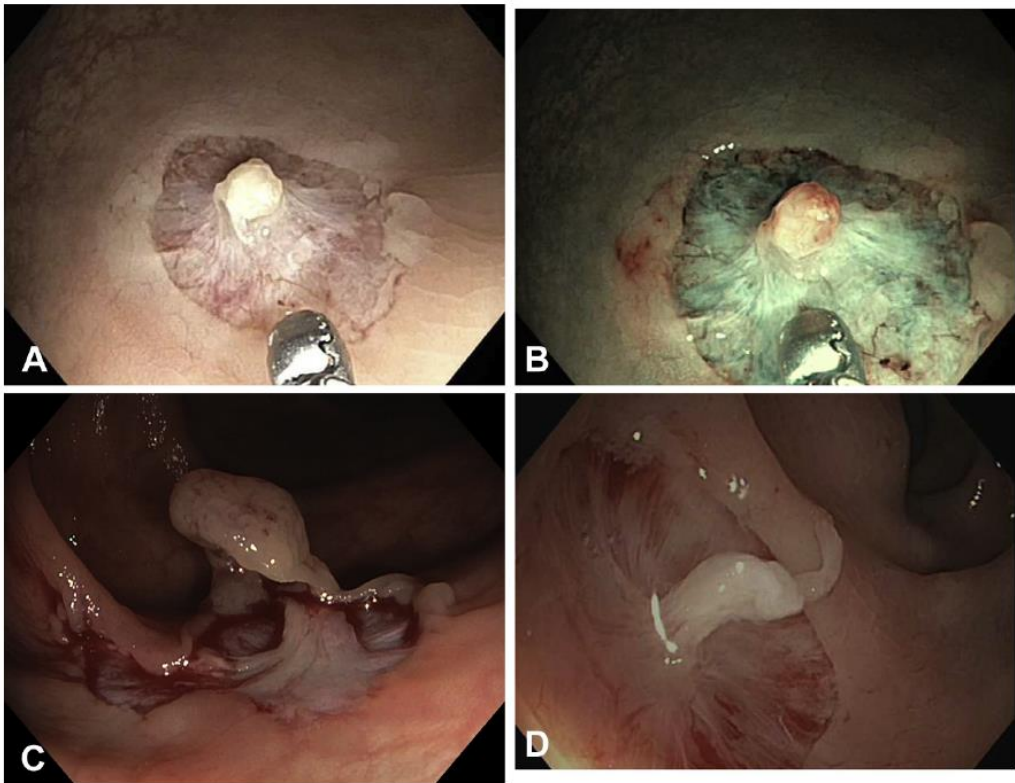
\*Colon wall layers were numerically assigned: mucosa = 0, submucosa = 1, partial muscularis propria = 2, full-thickness muscularis propria = 3, serosa = 4.



# Characterization and significance of protrusions in the mucosal defect after cold snare polypectomy

Nicholas Tutticci, MBBS, FRACP,<sup>1</sup> Nicholas G. Burgess, MBChB, BSc, FRACP,<sup>1,2</sup> Maria Pellise, MD, PhD,<sup>1</sup> Duncan Mcleod, MBBS, FRCPA,<sup>3</sup> Michael J. Bourke, MBBS, FRACP<sup>1,2</sup>

Sydney, NSW, Australia



**Figure 2.** Cold snare defect protrusion (CSDP) after cold snare polypectomy (CSP) of 6-mm flat adenoma under white light (A) and narrow band imaging (NBI) (B). CSDP with obvious continuity of white strands to the remainder of the cold snare polypectomy mucosal defect (CSPMD) (C) after CSP of 7 mm flat sessile serrated adenoma, which is adjacent before suctioning, and (D) after CSP of sessile 7 mm adenoma.

TABLE 2. Characteristics of CSDPs

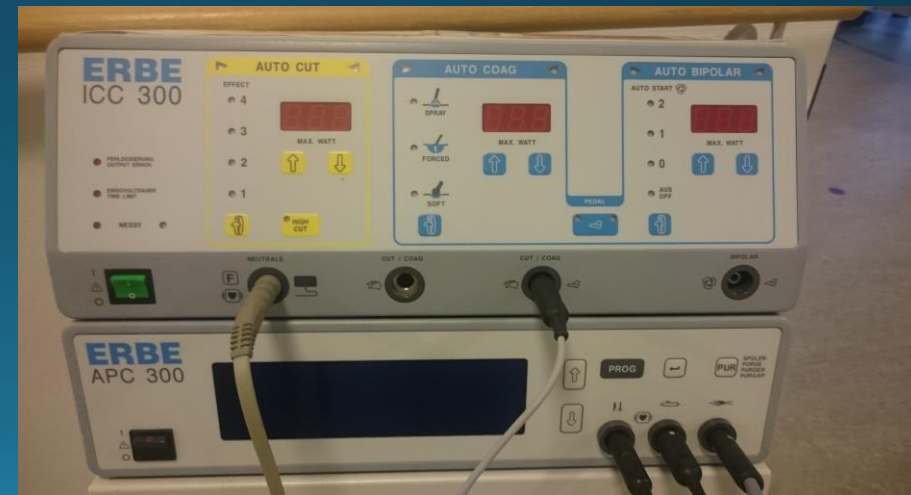
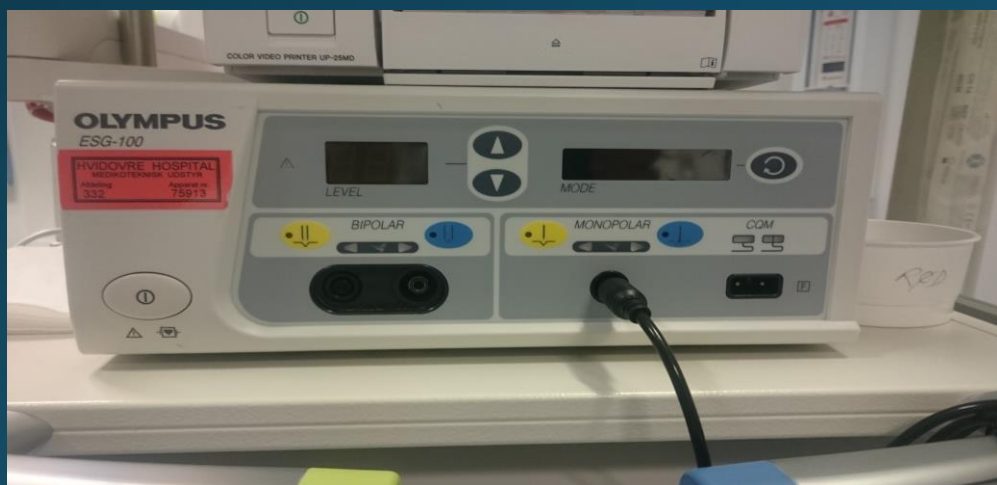
Characteristic	Value
No. of CSDPs	36
Mean polyp size, mm (SD)	6.3 (1.6)
Polyp location	
Proximal colon	22 (61%)
Distal colon	14 (39%)
Polyp histopathology	
Adenomatous	21 (58%)
Serrated	15 (42%)
Nonpolyp	0
Stalk histopathology	
Submucosa	34 (94%)
Muscularis mucosa	29 (81%)
Both submucosa and muscularis mucosa	29 (81%)
Normal mucosa only	1 (3%)

CSDP, Cold snare defect protrusion; SD, standard deviation.

# What snare to use ?







# Diathermy ?





# Polypektomi metode

## Små polypper colon/rectum

	Let at udføre ?	Sikker ?	Komplet resektion ?	Histologisk "kvalitet" ?
 Kold tang	+++	+++	++ +	++
 "Hot biopsy"	+++	+	++	+
 Kold slynge	++	+++	+++ ++	+++
 Varm slynge	++	++	+++ ++	++

