Impact of cap-assisted colonoscopy on detection of proximal colon adenomas: systematic review and meta-analysis

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Background and Aims: Proximal colon adenomas can be missed during routine colonoscopy. Use of a cap or hood on the tip of the colonoscope has been shown to improve overall adenoma detection with variable rates. However, it has not been systematically evaluated for detection of proximal colon or right-sided adenomas where the cap may have maximum impact on adenoma detection rate (ADR). Our aim was to perform a systematic review and meta-analysis to evaluate the impact of cap-assisted colonoscopy (CC) on right-sided ADRs (r-ADRs) compared with standard colonoscopy (SC).

Methods: PubMed, EMBASE, SCOPUS, and Cochrane databases as well as secondary sources (bibliographic review of selected articles and major GI proceedings) were searched through October 1, 2016. Primary outcome was the pooled rate of r-ADR. Detection of flat adenoma, sessile serrated adenoma/polyp (SSA/P), and number of right-sided adenomas per patient were also assessed. Pooled odds ratio (OR) and 95% confidence intervals (CIs) were calculated using random-effect models.

Results: We screened 686 records and analyzed data from 4 studies (CC group, 2546 patients; SC group, 2547 patients) that met criteria for determination of r-ADRs, whereas 6 studies (CC group, 3159 patients; SC group, 3137 patients) were analyzed to estimate right-sided adenomas per patient. r-ADR was significantly higher with CC compared with SC (23% vs 17%; OR, 1.49; 95% CI, 1.08-2.05; $I^2 = 79\%$; $P = .01$). CC also improved detection rates of flat adenoma (OR, 2.08; 95% CI, 1.35-3.20; $P < .01$) and SSA/P (OR, 1.33; 95% CI, 1.01-1.74; $P = .04$). The total number of right-sided adenomas (CC: 1428 [60%] vs SC: 1127 [58%]) and number of right-sided adenomas per patient (CC, .71 ± .5, vs SC, .65 ± .62 [mean ± standard deviation]) were numerically higher for CC but were not statistically significant ($P = .43$). Approximately 17 CCs would be required to detect an additional patient with right-sided adenoma.

Conclusions: Use of CC significantly improves the proximal colon ADR. In addition, flat adenoma and serrated colonic lesion detection rates are also significantly higher as compared with SC. (Gastrointest Endosc 2017;86:274-81.)

(footnotes appear on last page of article)

Colorectal cancer (CRC) is a leading cause of death in the United States. Colonoscopy continues to be the criterion standard for CRC screening, either as primary test or as a workup of a positive fecal occult blood test. Current evidence demonstrates a large difference in CRC occurrence and detection on the right side compared with the left side of the colon.[1-3] In addition, location of the primary neoplasm could influence the treatment choice. Importantly, overall survival was substantially longer for patients with the tumor originating from the left side or distal colon (descending colon, sigmoid colon, and rectum) compared with the right side of the colon or the proximal colon (cecum and ascending colon mainly) (33.3 vs 19.4 months).[2] There are higher odds of missing right-sided or proximal adenomas, and patients with proximal adenomas have a higher risk for adenoma recurrence overall.[4] A Canadian study also found that interval colon cancer incidence of the right side of the colon was higher than that of the left side over a period of 10 years after a normal colonoscopy.[5] This indicates that polyps/adenomas are more commonly missed in the proximal or right-sided

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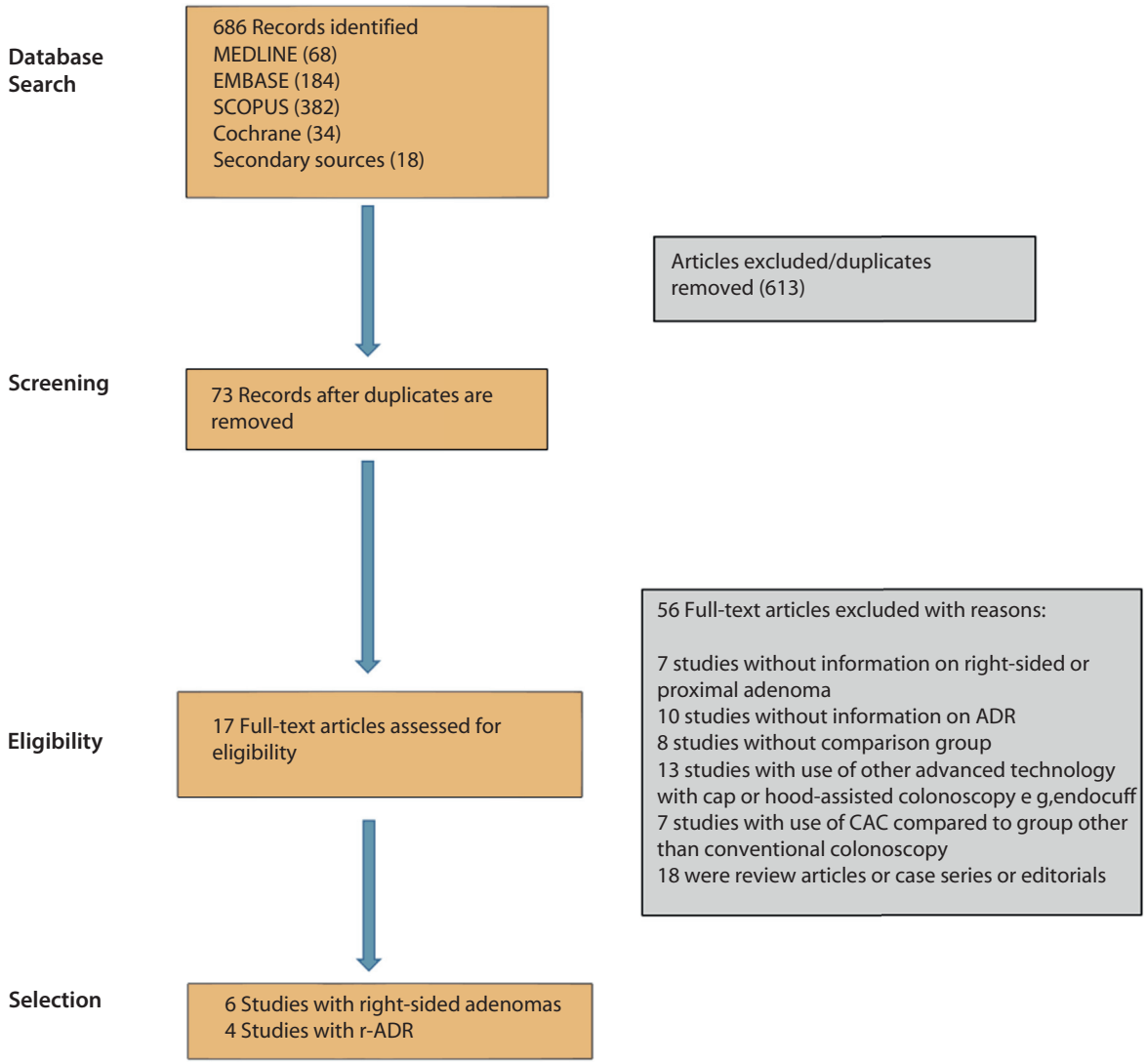

Figure 1. Electronic search, screening of articles, and selection process. *ADR*, adenoma detection rate; *CAC*, cap-assisted colonoscopy; *r-ADR*, right-sided ADR.

colon during colonoscopy, which progress to CRC over time. This study highlighted the need for better adenoma detection rate (ADR) in the right side of the colon.

Several developments have occurred in the mechanical aspects of colonoscopy with the invention of cap, cuff, and ring to enhance quality and efficiency of the standard colonoscope.[6] Cap-assisted colonoscopy (CC) is a technique that uses a transparent cap or hood attached to the tip of the colonoscope that flattens the mucosal folds and improves visibility of polyps situated proximal to them. These are the so-called blind spots where polyps can be commonly missed as determined by a study that compared colonoscopy results with CT colonography images.[7] Meta-analysis of studies comparing CC with standard colonoscopy (SC) has shown that CC is associated with improved detection of colorectal neoplasia and higher cecal intubation rates than SC.[8,9]

However, techniques to enhance the efficacy and quality of SC has not been formally assessed earlier to evaluate detection rates of right-sided or proximal lesions. CC provides better visualization, but we do not know the efficacy of CC for detecting proximal colonic lesions. Because CC has higher rates of reaching the cecum and improving visualization in the right side of the colon, it is likely that detection rates of right-sided adenomas would be improved with CC compared with SC. Multiple randomized control trials have determined variable ADRs of CC versus SC. However, only a few of these trials reported and compared ADRs specifically for the proximal colon.[10-13] Therefore, we performed a systematic review of the present literature and conducted a meta-analysis of eligible studies to compare pooled rates of ADRs for right-sided or proximal colon adenomas for patients undergoing CC versus SC.

TABLE 1. Number of right-sided adenomas reported among CC and SC groups among inclusion studies

Study	Design	Country	Population	Total no. of patients (CC:SC)
Rastogi et al 2012[11]	RCT	USA	Screening or surveillance	420 (210:210)
Kim et al 2015[13]	Retrospective	South Korea	Screening	1023 (515:508)
Horiuchi et al 2013[12]	Retrospective	Japan	Screening, hematochezia, heme-positive stools, other	2301 (1165:1136)
de Wijkerslooth et al 2012[10]	RCT	Netherlands	Screening	1339 (656:683)
Hewett et al 2010[28]	Tandem study, intervention trial	USA	Screening, surveillance, other	100 (52:48)
Pohl et al 2015[29]	RCT	USA	Screening, surveillance, heme-positive stools, other	1143 (561:552)

CC, Cap-assisted colonoscopy; *SC*, standard colonoscopy; *RCT*, randomized controlled trial; *ADR*, adenoma detection rate; *NA*, not available.

METHODS

Search strategy

The meta-analysis was performed according to the PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analysis).[14] A comprehensive electronic literature search was conducted in PubMed/MEDLINE, EMBASE, SCOPUS, and Cochrane databases to identify studies that assessed CC for adenoma detection compared with SC from the beginning of indexing for each database to October 1, 2016. Bibliographic review of selected articles and major GI proceedings were examined as secondary sources for full-length articles of studies of CC or hood-assisted colonoscopy compared with standard white-light endoscopy/colonoscopy. A literature search was performed and verified by 2 independent authors (M.D. and C.H.) with no restriction in language. The search for studies of relevance was performed using the following text words and corresponding Medical Subject Heading/Emtree terms: "colonoscopy or endoscopy" AND "colorectal, colon, rectum, or large colon or large bowel" AND "adenoma, ADR, adenoma detection" AND "cap or hood or cap assisted" (Supplementary Table 1, available online at www.giejournal.org).

Eligibility criteria

Two reviewers (M.D. and C.H.) independently evaluated all studies retrieved according to the eligibility criteria, and any disagreement was resolved by consensus. Studies were included if they met all the following criteria: (1) randomized controlled trials or retrospective studies with control group comparing CC versus SC, (2) primary outcome and report of overall ADR, (3) information on either proximal adenomas (or right-sided lesions) or adenoma characterization by their location (cecum, ascending colon, hepatic flexure, and transverse colon excluding beyond the part of splenic flexure), and (4) information on the number of individuals with proximal adenomas in the CC and SC groups. We excluded articles if there was no documentation on location of adenomas/polyps with quantity or no mention of number of patients with right-sided or proximal adenomas. If data on proximal adenomas were not available, data on the ascending colon and cecum were still considered suitable.

Data extraction and quality assessment

Data were extracted independently and verified for accuracy by the other reviewer. Any disagreement was resolved by consensus. The following data were extracted from each study: first author, year of publication, indication for index colonoscopy, study design, number of participants, age, gender, information on location, and number of adenomas found with each method, number of patients with at least 1 adenoma, advanced adenomas (≥10 mm, high-grade dysplasia, or villous features), flat adenoma, diminutive and small adenomas, and effect estimates with 95% confidence intervals (CIs) and adjustments.

Right-sided adenomas, strictly speaking, are limited to the cecum and ascending colon, whereas proximal colon adenoma includes adenomas found in the cecum, ascending colon, and transverse colon segment proximal to the splenic flexure. However, most inclusion studies reporting right-sided ADRs (r-ADRs) likely incorporated information on proximal colon adenomas. Therefore, for this meta-analysis we analyzed pooled rates of r-ADRs (inclusive of proximal colon adenoma) as reported in inclusion studies and incorporated information on adenomas in the proximal colon and the final calculation. ADR was defined as the number of patients with at least 1 adenoma. The following outcomes were measured among CC and SC groups: r-ADR, flat ADR, and flat adenoma per person; number of sessile serrated adenoma/polyps (SSA/P); total number of right-sided adenomas and number of right-sided adenomas per person; advanced ADR and advanced adenoma per person; and information on diminutive (≤5 mm), small (6-9 mm), and large (≥10 mm) adenomas. Study quality was assessed using the Newcastle-Ottawa scale (score ≥ 7 considered high quality).[15]

Statistical analysis

The number of patients found to have at least 1 right-sided adenoma was extracted from the study results and

TABLE 1. Continued

Male:female	Mean age (y)		Right-sided ADR n (%)		Right-sided adenomas n		Right-sided adenoma per person	
	CC	SC	CC	SC	CC	SC	CC	SC
398:22	60.7	61.3	117 (56%)	90 (43%)	278	169	1.32	.8
549:474	55.0	54.44	139 (27%)	86 (16.9%)	236	129	.45	.25
1484:817	65.4	64.8	221 (19%)	136 (12%)	358	261	.31	.23
685:654	60	60	104 (16%)	115 (17%)	164	171	.25	.25
57:43	61	62.9	NA	NA	71	88	1.37	1.83
709:404	62	61.5	NA	NA	321	309	.57	.56

used to calculated r-ADRs. Similarly, data were gathered for detection rate of advanced adenomas, flat adenomas, SSA/Ps, and diminutive adenomas from studies. Information on different types of adenomas by location was collected, and the number of right-sided adenomas was calculated for CC and SC groups. The number of right-sided adenomas and number of total participants or patients were used to calculate right-sided adenomas per person.

The measure of effect of interest was the odds ratio (OR), an estimate of high chances of detection of intervention compared with the control. The primary outcome of interest pooled rate of r-ADR was calculated with 95% CIs with a random-effects model if heterogeneity was identified. Corresponding forest plots were constructed for pooled estimates of these outcomes, and weights of individual studies are represented by size of individual squares. All meta-analytic computations, including the estimates and 95% CIs for detection rates, ORs, and number needed to treat, as well as the measurement of heterogeneity (measured as I^2 statistics) were performed using statistical software Review Manager v5.3 (The Nordic Cochrane Centre, Copenhagen, Denmark). An I^2 value of 0% to 40%, 30% to 60%, 50% to 90%, and 75% to 100% were indicated as low, moderate, substantial, and considerable heterogeneity, respectively.

For right-sided adenomas per person, where sufficient data were not present for a meta-analytic treatment of the issue, those average values per person were calculated from summary statistics in the publications for the CC and SC groups, with those average values taken as the unweighted units of observation in an analysis performed by the 2-sample Student *t* test of means comparing the CC versus the SC groups using Microsoft Excel software v2016 (Microsoft, Redmond, Wash, USA). Because these were not meta-analytic calculations, without their appropriate meta-analytic weightings, they should be taken as descriptive results only. $P < .05$ was considered statistically significant for all outcomes. Publication bias was not derived because of the small number of eligible studies.

RESULTS

Study characteristics

The initial literature search identified 686 records. The method of screening and selection is depicted in Figure 1. After the inclusion and exclusion criteria were applied, a total of 4 studies reported r-ADRs with 2546 patients that had undergone CC and 2547 patients that had undergone SC. These 4 studies were analyzed for determination of pooled estimate of r-ADR. Six studies were identified that reported the total number of right-sided adenomas with 3159 patients in the CC group and 3137 patients in the SC group. Details of these studies are shown in Table 1. These studies were either randomized controlled trials (n = 3), retrospective studies (n = 2), or tandem randomized studies (n = 1). The study population either underwent screening or surveillance colonoscopy with CC or SC. The mean age of participants as reported by individual studies ranged from 54 to 65.4 years, and most study participants were men (n = 3882, 61%). Inclusion study quality was assessed by the Newcastle-Ottawa scale, which showed that most inclusion studies were of high quality in terms of representation of inclusion cohorts and ascertainment of study outcomes (Supplementary Table 2).

Primary aim: r-ADRs

CC detected right-sided adenomas in 6% more individuals than SC. Pooled estimate of r-ADRs was significantly higher with CC compared with SC (23% vs 17%; pooled OR, 1.49; 95% CI, 1.08-2.05). This result was statistically significant ($P = .01$; $I^2 = 79\%$; $P = .003$) (Fig. 2). The number needed to treat was 16.7%, indicating that 17 colonoscopies are required with a distal cap attachment (CC) to detect an additional patient with at least 1 right-sided adenoma.

Because the study by Horiuchi et al[12] excluded information on transverse colon adenomas in their calculation of r-ADRs and carried the largest study power (weight 32% of pooled data), we performed sensitivity analysis excluding this study. CC detected more right-sided adenomas compared with SC (26% vs 21%);

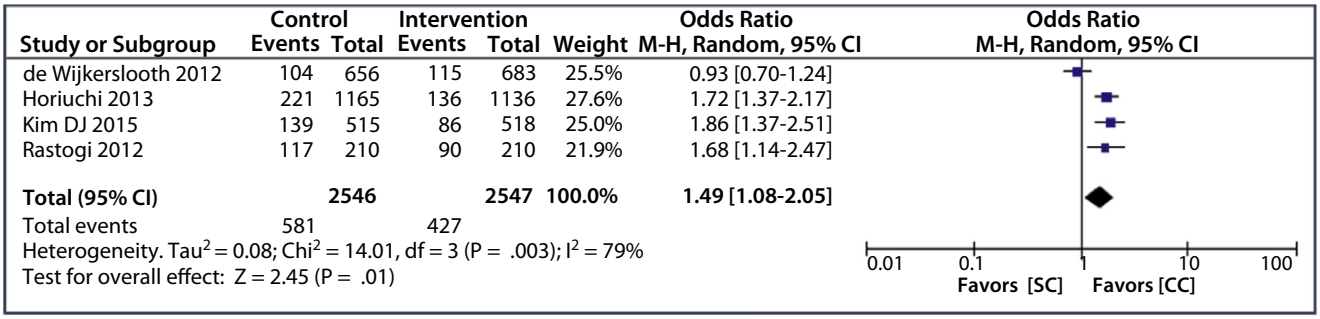

Figure 2. Forest plot of right-sided adenoma detection rate using cap-assisted colonoscopy versus standard colonoscopy. *CI*, Confidence interval.

however, results were statistically nonsignificant (pooled OR, 1.42; 95% CI, .90-2.23; $P = .13$; $I^2 = 83\%$).

Secondary aims

Flat adenoma, diminutive adenoma, and SSA/P detection. CC was also found to detect higher numbers of patients with at least 1 flat adenoma (2 studies, 8% vs 4%; OR, 2.08; 95% CI, 1.35-3.20; $P < .01$) as well as a higher number of total flat adenomas per person (3 studies, OR, 2.44; 95% CI, 1.8-3.30; $P < .01$) compared with SC.

We examined detection rates of diminutive (≤5 mm), small (6-9 mm), and large (≥10 mm) adenomas among both groups. We calculated this rate as the detection rate of diminutive, small, or large adenomas compared with overall ADR. CC significantly improved the detection rate of diminutive polyps (pooled OR, 1.18; 95% CI, 1.03-1.34; $P = .01$) but not small polyps (pooled OR, .92; 95% CI, .67-1.26; $P = .58$) or large polyps (OR, 1.12; 95% CI, .83-1.50; $P = .47$) (Fig. 3).

We also examined the detection rate of SSA/Ps among both groups compared with overall ADR. The use of CC detected more SSA/Ps compared with SC (3 studies, pooled OR, 1.33; 95% CI, 1.01-1.74; $P = .04$).

Right-sided adenomas per person. CC found higher numbers of right-sided adenomas compared with SC: 1428 adenomas detected on the right side (60% of overall adenomas) with CC versus 1127 adenomas detected on the right side (58% of overall adenomas) with SC. CC detected more right-sided adenomas per person compared with SC (CC group: .71 ± .5 adenomas per person, vs SC group: .65 ± .62 adenomas per person [mean ± standard deviation]), but the results were nonsignificant ($P = .43$ using the Student *t* test to compare the average values per person from each study rather than a meta-analytic method because of shortcomings in the available data). Even with the latter caveat, because of the great distance from significance it would appear to suggest that no significant difference would have been found meta-analytically even if sufficient data were available.

Advanced adenoma detection. The detection of at least 1 advanced adenoma (3 studies, 11% vs 9%; OR, 1.19; 95% CI, .93-1.53; $P = .16$) and advanced adenomas per person (4 studies, OR, 1.22; 95% CI, .75-1.96; $P = .42$) were not significantly different between CC and SC. Only 1 study reported a higher rate of proximal advanced ADR with CC versus SC (3% vs 2%, $P = .007$). Supplementary Table 3 (available online at www.giejournal.org) provides detailed characterization and number of advanced adenomas, flat adenomas, and diminutive adenomas reported in both groups among inclusion studies.

DISCUSSION

Our meta-analysis showed that attaching a transparent hood or cap at the tip of the colonoscope increases the number of individuals with right-sided adenomas (r-ADR) compared with SC. A cap- or hood-assisted procedure led to detection of 6% more individuals with right-sided or proximal adenomas. These results indicate that a cap could be used to improve the detection of right-sided or proximal colon lesions compared with conventional colonoscopy alone. In addition, CC also increased detection of flat adenomas by 4% and diminutive adenomas by 3% compared with SC. SSA/P detection rate was improved by 3% when a cap was used in addition to SC. These additional outcomes support the use of a cap because overall it will increase the quality of screening colonoscopy and would detect more lesions that would otherwise would be missed by SC, especially right-sided adenomas and flat lesions. This may be helpful for those endoscopists with low ADRs. Yague et al[16] presented a prior meta-analysis on r-ADR but only included studies before 2012. Our analysis provides an updated systematic review and pooled rates of CC for r-ADRs and other outcomes from published literature. We also provide pooled rates of flat adenoma, diminutive adenoma, and SSA/P detection rates from available studies.

This meta-analysis showed the advantages of using a cap with SC to enhance detection of proximal colon lesions for the following reasons. Right-sided colon adenomas are easily missed because of several factors. Polyps located in proximity to the haustral folds are difficult to detect during colonoscopy. Haustral folds located in the right side of the colon are thin and fragile as opposed to those present in

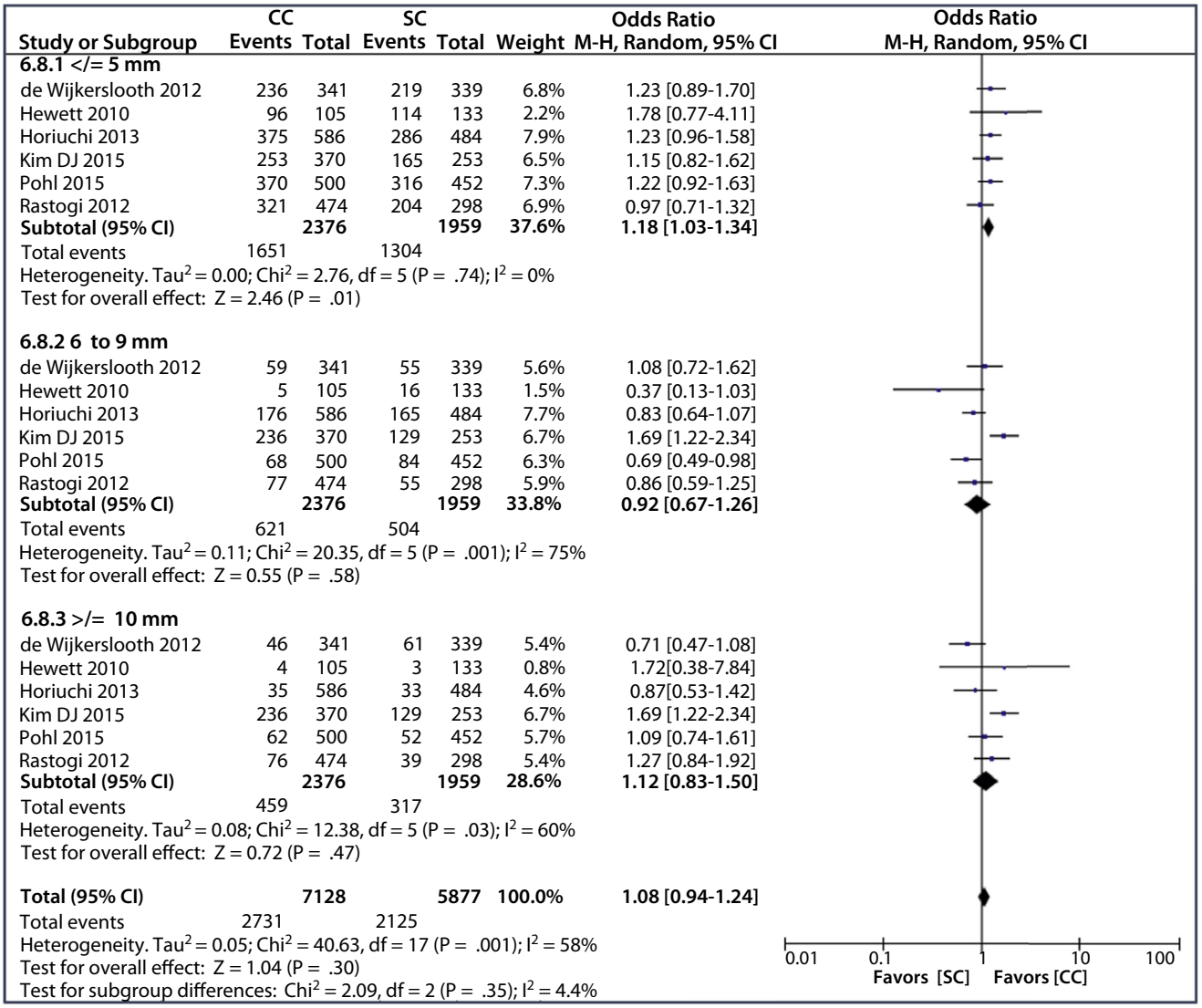

Figure 3. Forest plot of diminutive polyp detection using Cap-assisted colonoscopy versus standard colonoscopy. *CI*, Confidence interval.

left side of the colon, which are complex, truncated, and bulbous. The cap can easily depress slender haustra in the proximal colon, accounting for improved r-ADRs. Frieling et al[17] reported that CC significantly extends visualization in the right side of the colon when directly compared with examination without the cap in a randomized back-to-back fashion in a colonic training model by 5 investigators. It will be interesting to know whether this relatively simple and inexpensive technique can reduce the 10-year interval cancer development rate. No prior studies have examined the utility of the cap in detecting right-sided lesions as primary outcomes in controlled study or in improving the detection rate of interval cancer.

ADR is a surrogate marker for CRC detection and is used to assess the quality of colonoscopy.[18] The finding of an improved r-ADR with the use of CC compared with conventional endoscopy in the current meta-analysis could be explained by the fact that use of the cap (or hood) can improve higher rates of cecal intubation.[19] A higher rate of reaching the cecum may be linked in association with other technical advantages of CC with increased rates of adenomas in the proximal colon. In a study, cap-assisted chromoendoscopy detected even more proximal adenomas and serrated polyps in a female older population, suggesting the necessity of high-quality colonoscopy and individualized screening approach for the better prevention of the proximal CRC.[20] Future studies using the cap as well as the cap in addition to other novel colonoscopic modalities should be conducted to investigate better methods for examination of the proximal colon to achieve higher r-ADRs.[21]

The present analysis also found that CC was able to detect more flat adenomas, SSA/Ps, and diminutive lesions compared with SC. However, we were only able to include data from 3 or fewer eligible studies. Therefore, it is

difficult to derive any conclusions. In addition to a post-hoc analysis of a randomized controlled trial,[22] there are no studies focused on these outcomes. We recommend future clinical trials to incorporate information on these outcomes because SSA/Ps and flat lesions are increasingly recognized as dysplastic and easily missed as well by conventional colonoscopy.[23-25] If CC or hood-attached colonoscopy is able to improve detection of these lesions, it will lead to improved ADRs and reduce overall CRC burden when detected at an easily resectable stage.

This analysis has the following limitations. Only 4 studies were available for pooled analysis of r-ADRs. We contacted study authors when indicated, but ADRs for right-sided only lesions either were not available or not possible to extrapolate because of the study design. We used and analyzed secondary outcomes data from individual studies. These studies were mainly focused on overall ADRs as primary outcome. Because of the lack of direct assessment of right-sided lesions, these findings should be interpreted with caution before generalization because more studies are needed to confirm validity. As stated earlier, r-ADR data as secondary outcomes in individual studies likely incorporated proximal colon adenomas (proximal to splenic flexure). While interpreting outcomes of this pooled analysis, we would underscore that it should be viewed as CC improving the detection rate of proximal colon adenomas, and it may positively impact detection of right-sided adenomas. Furthermore, the studies are from tertiary facilities or expert centers where patient populations could be different from the general population. In addition, the use of the cap and detecting proximal lesions both need expertise, which was likely a hidden factor among these studies. Studies using expert and trainee performers, on the contrary, showed higher rates of adenoma detection overall and on the right side when the cap was used compared with SC.[13] Previous studies have reported using the cap and retroflexion improves ADRs on the right side of the colon.[26,27] In the present analysis, we were not able to estimate the effect of retroflexion in the right side of the colon because of the unavailability of variables of interest. Finally, although study power was adequate, the number of inclusion studies was low, and pooled rates are subject to selection bias with impact from the study with the highest power. Despite these limitations, we were able to evaluate and extract outcomes from more than 5000 patients.

In summary, this pooled analysis of studies comparing CC versus SC demonstrates that more right-sided or proximal adenomas were detected using a distal cap or hood. This may pave the way for future use of the cap to improve detection of right-sided lesions, to improve r-ADRs, and to improve the quality of colonoscopy with the ultimate hope of reducing the incidence of right-sided colon cancer. We recommend large-scale randomized controlled trials to evaluate the use of the cap to improve detection of adenomatous and flat lesions in the proximal colon.

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Abbreviations: ADR, adenoma detection rate; CC, cap-assisted colonoscopy; CI, confidence interval; CRC, colorectal cancer; OR, odds ratio; r-ADR, right-sided adenoma detection rate; SC, standard colonoscopy; SSA/P, sessile serrated adenoma/polyp.

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SUPPLEMENTARY TABLE 1. Search terms

Search terminology in MEDLINE database	"(((((cap) OR cap assisted) OR hood)) AND "Colonoscopy"[Mesh]) AND "Adenoma"[Mesh]"
Search terminology in EMBASE	(('adenoma'/exp IR adenoma) AND colonoscopy) AND (cap OR (cap AND assisted) OR hood)

SUPPLEMENTARY TABLE 2. Newcastle-Ottawa scale for assessment of quality of included studies

Study	Selection			
	Representativeness of the exposed cohort	Selection of the non-exposed cohort	Ascertainment of exposure	Demonstration that outcome of interest was not present at start of the study
de Wijkerslooth et al 2012[10]	Yes	Yes	Yes	No
Hewett et al 2010[28]	Yes	No	Yes	No
Horiuchi et al 2013[12]	Yes	Yes	Yes	No
Kim et al 2015[13]	Yes	Yes	Yes	No
Pohl et al 2015[29]	Yes	Yes	Yes	No
Rastogi et al 2012[11]	Yes	Yes	Yes	No

SUPPLEMENTARY TABLE 3. Number of advanced adenomas, flat adenomas, and diminutive adenomas reported in both groups among inclusion studies

Author, year	Advanced ADR (%)		Advanced adenomas per person n/total subjects		Flat ADR (%)		Flat adenomas per person n/total subjects	
	CC	SC	CC	SC	CC	SC	CC	SC
Rastogi et al 2012[11]	40/210 (19%)	32/210 (15%)	79/210	39/210	50/210 (24%)	21/210 (10%)	103/210	35/210
Kim et al 2015[13]	NA	NA	NA	NA	NA	NA	NA	NA
Horiuchi et al 2013[12]	NA	NA	48/1165	33/1136	NA	NA	36/1165	24/1136
de Wijkerslooth et al 2012[10]	63/683 (9%)	51/656 (8%)	64/656	81/683	16/656 (2%)	14/683 (2%)	13/656	14/683
Hewett et al 2010[28]	NA	NA	NA	NA	NA	NA	NA	NA
Pohl et al 2015[29]	55/561 (9.8%)	49/552 (8.9%)	67/561	61/552	NA	NA	NA	NA

ADR, Adenoma detection rate, *CC*, cap-assisted colonoscopy; *SC*, standard colonoscopy; *NA*, not available.

SUPPLEMENTARY TABLE 2. Continued

Comparability	Outcome			
Comparability of cohorts on the basis of design or analysis	Assessment of outcome	Was follow-up long enough for outcomes to occur?	Adequacy of follow-up of cohorts	Score
Yes	Yes	Yes	Yes	8
Yes	Yes	Yes	Yes	7
Yes	Yes	Yes	Yes	8
Yes	Yes	Yes	Yes	8
Yes	Yes	Yes	Yes	8
Yes	Yes	Yes	Yes	8

SUPPLEMENTARY TABLE 3. Continued

Diminutive adenoma n ≤ 5 mm		Diminutive adenomas 6-9 mm, n		Diminutive adenomas ≥10 mm, n		Total adenomas n	
CC	SC	CC	SC	CC	SC	CC	SC
321	204	77	55	76	39	298	474
165	253	NA	NA	NA	NA	253	370
375	286	176	165	35	33	484	586
236	219	59	55	46	61	339	341
96	114	5	16	4	3	133	105
370	316	68	84	62	52	452	500