Effect of Endocuff-Assisted Colonoscopy on Adenoma Detection Rate: Meta-analysis of Randomized Controlled Trials

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Conclusion
Endocuff-assisted colonoscopy significantly improves the adenoma detection rate without the introduction of adverse events or an effect on procedure time.

Objective
To conduct a meta-analysis on the impact of the endocuff-technology on the adenoma detection rate (ADR) in colorectal cancer screening.

Design
Meta-analysis of randomized controlled trial comparing the endocuff-technology (first or second generation) attached to a colonoscope in comparison to standard colonoscopy. A search for articles published before the end of 2017 was carried out on Google Scholar and Pubmed.

Studies and Participants
Of the 265 identified articles, 12 RCTs have been included, reflecting a population of 8,376 patients (Endocuff: 4,225; standard colonoscopy: 4,151).

Results
• ADR was 7 percentage points higher within the endocuff-assisted colonoscopy group in comparison to standard colonoscopy (SC: 34.2% vs. endocuff-technology: 41.2%; p-value: 0.003).
• Improvement of ADR was with 11.1% significantly higher in studies reporting an ADR lower than 35% in both treatment arms (SC: 22.2% vs. endocuff-technology 33.3%; p-value: 0.003), whereas no differences in ADR were observed in studies reporting an ADR above 45% (SC: 53.0% vs. endocuff-technology: 53.4%; p-value 0.87).
• Endocuff-technology led to a significantly higher polyp detection rate (51.4% vs. 61.6%; p-value: 0.003).
• Adverse events related to the endocuff-assisted colonoscopy group were mostly mild mucosal erosions and occurred in 4% of all cases; in studies evaluating ENDOCUFF VISON™ (second generation), the incident rate of adverse events was 0.5%.

Key Findings
Endocuff-technology is able to improve the polyp and adenoma detection rates in colorectal cancer screening, while introducing no additional risk (e.g. adverse events) for the patient. Improvement was highest in operators with a low to moderate ADR (ADR <35%).

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Study Summary

Improved Adenoma Detection with ENDOCUFF VISION™: The Adenoma Randomized Controlled Trial

Ngu, Wee Sing; Bevan, Roisin; Tsiamoulos, Zachary P; Bassett, Paul; Hoare, Zoe; Rutter, Matthew D; Clifford, Gayle; Totton, Nicola; Lee, Thomas J; Ramadas, Arvind; Silcock, John G; Painter, John; Neilson, Laura J; Saunders, Brian P; Rees, Colin J

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Conclusion

ENDOCUFF VISION™ significantly enhances the adenoma detection rate in patients in the UK bowel cancer screening program in comparison to standard colonoscopy.

Objective

To evaluate the impact of ENDOCUFF VISION™ on the adenoma detection characteristics in a colorectal cancer screening population.

Design

Multicenter randomized controlled trial comparing ENDOCUFF VISION™-assisted colonoscopy to standard colonoscopy; enrollment of patients from seven hospitals and 48 colonoscopists in the UK.

Indication

Patients referred to colonoscopy as part of the postpolypectomy surveillance program or patients part of the Bowel Cancer Screening Program with a positive fecal occult blood test (FOBT).

Participants

Within the study, 884 patients were enrolled into the standard colonoscopy (SC) arm and 888 in the ENDOCUFF VISION™ arm. Of all patients, 797 were part of the UK Bowel Cancer Screening Program (BCSP) with a positive FOBT (SC n= 403; ENDOCUFF VISION™ n= 394). All other patients were non-BCSP patients and therefore not tested with a FOBT.

Results

· ENDOCUFF VISION™ significantly improved the ADR in the total population by 4.7 percentage points (SC 36.2% vs. ENDOCUFF VISION™ 40.9%; p <0.001).
· In the FOBT-positive subgroup ENDOCUFF VISION™ substantially improved ADR by 10.8 percentage points (SC 50.9% vs. 61.7% ENDOCUFF VISION™; p <0.001).
· Additionally, patients screened with ENDOCUFF VISION™ had higher mean adenomas per procedure and a larger number of left-sided, diminutive and small adenomas.
· No difference in adverse events was detected between the two groups.

Key Findings

ENDOCUFF VISION™ significantly increases the adenoma detection rate in a screening population, most clearly in a FOBT+ population.

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Study Summary

Adenoma Detection by Endocuff-Assisted versus Standard Colonoscopy in Routine Practice: A Cluster-Randomized Crossover Trial

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Conclusion
The study confirmed that the second generation of ENDOCUFF VISION™ also leads to an improvement of the adenoma detection rate of 10%, mostly by enhancing the detection of small adenomas.

Objective
To evaluate the impact of ENDOCUFF VISION™ on the adenoma detection rate (ADR) in routine colonoscopy.

Design
Prospective cluster-randomized crossover trial comparing ENDOCUFF VISION™-assisted colonoscopy to standard colonoscopy (SC). Endoscopists were allocated to one of two research groups, balanced for baseline ADR, case volume, and gender. Each group consisted of 11 investigators. One group was randomly assigned to enroll patients with ENDOCUFF VISION™, the other with SC. Groups switched methods after half of the required sample size was enrolled.

Participants
The two groups of endoscopists encompassed 2,058 patients (SC: 1,032; ENDOCUFF VISION™: 1,026) assigned to routine colonoscopy over a period of 41 weeks. Patient groups were comparable in terms of age, gender, FIT+, BMI, bowel prep, and family history.

Results
- The overall ADR with ENDOCUFF VISION™ was significantly higher than without (29.4% vs. 39.4%; p <0.001).
- Especially small (5-9 mm) and diminutive (<5 mm) adenomas were identified more frequently with ENDOCUFF VISION™ (small: 9.3% vs. 13.7%; p 0.002; diminutive: 20.4% vs. 27.9%; p <0.001).
- Among physicians with a baseline ADR higher than 30%, ADR with ENDOCUFF VISION™ was significantly increased (from 31% to 41%; p <0.001), whereas among physicians with a baseline ADR below 30%, no significant difference was identified (from 24% to 30%; p 0.11).
- No complications or adverse events occurred during or after colonoscopy.

Key Findings
The large, prospective randomized study confirmed that ENDOCUFF VISION™ impacts the ADR during routine colonoscopy by mechanically reducing blind spots. The results suggest a systematic utilization of the technology in screening colonoscopies.

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