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Use of an Abdominal Compression Device in Colonoscopy Significantly Decreases Cecal Intubation Time as Compared to Conventional Colonoscopy: A Systematic Review and Meta-Analysis

544

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INTRODUCTION:

Looping of the endoscope is a common issue encountered during colonoscopy. A number of tools and techniques including the use of abdominal pressure devices have been utilized as an aid to reduce looping and thereby decrease the cecal intubation time. We conducted a meta-analysis comparing outcomes of colonoscopy with and without abdominal pressure devices.

METHODS:

A comprehensive electronic database (PubMed, Cochrane, and Google Scholar) search was conducted to identify studies using abdominal pressure devices. Prospective randomized studies that reported colonoscopy outcomes with and without the use of abdominal compression devices were included in the analysis. The primary outcome was the difference in cecal intubation time (in minutes) between the intervention (colonoscopy using abdominal pressure devices) and control (colonoscopy without these devices) groups. Secondary outcomes assessed: need for manual pressure and patient position changes during colonoscopy. Review manager 5.3 and R version 3.5 were used for statistical analysis.

RESULTS:

A total of 6 prospective (4 randomized) studies were included in the final analysis. There were 673 patients in the intervention group as compared to 903 patients in the control group. The mean patient age was 56.2 years with 36.9% males. 3 studies used the ColoWrap device, one used an obstetric binder, one used a commercial elastic corset, and one used the N-Doe Pillow™. For the primary outcome, cecal intubation time was significantly shorter in the intervention group (colonoscopy with abdominal compression device) compared to the control

group; -1.68 minutes (95% CI: -2.5 to -0.86, I2 = 86%). Similarly, the requirement for manual pressure during colonoscopy (OR: 0.17; 95% CI: 0.07-0.43, I2 = 91%) and need for patient position change (OR: 0.25; 95% CI: 0.15-0.42, I2 = 43%) was significantly lower in the abdominal compression devices versus the control group.

CONCLUSION:

The results of this systematic review and meta-analysis demonstrate that the use of abdominal compression devices is associated with a significantly decreased cecal intubation time, need for manual pressure, and for patient position change during conventional colonoscopy. These devices should be considered for use during colonoscopy especially when looping of the endoscope is anticipated.

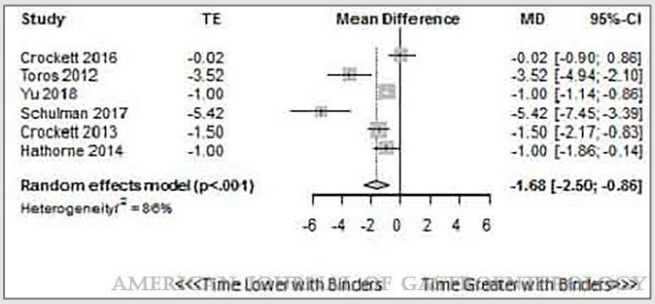

Figure 1.: Forest plot comparing cecal intubation time between abdominal pressure devices vs controls.

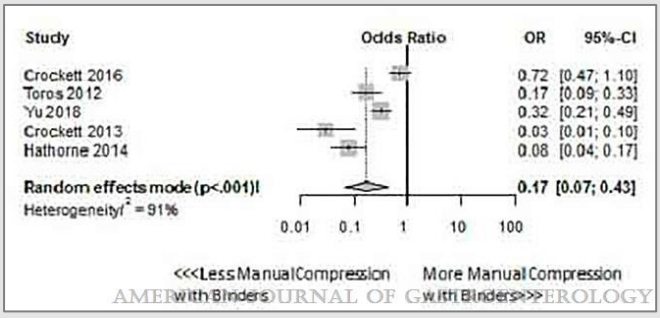

Figure 2.: Forest plot comparing odds ratio of requiring manual compression between abdominal pressure devices vs controls.

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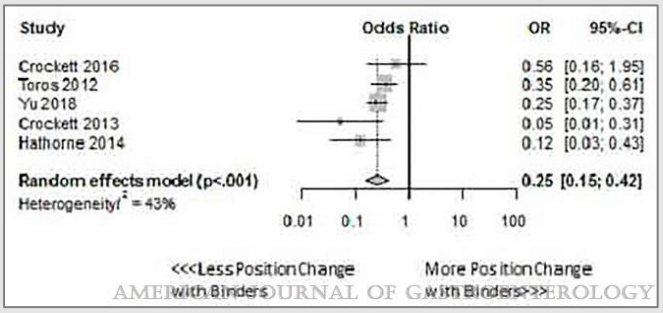

Figure 3.: Forest plot comparing odds ratio of requiring patient position change between abdominal pressure devices vs controls.