

# Abstract

**Introduction** ScopeGuide™ magnetic imaging provides a real-time 3 D reconstruction of the position and configuration of the endoscope within the colon, and enables rapid identification and resolution of newly-formed loops. Previous studies have shown benefits in terms of completion rates and comfort scores and the technology has an established role in training.<sup>1</sup>

This study aims to analyse the looping patterns of the sigmoid and transverse colons during colonoscopy, their relation to completion times in experienced hands and the configurations of these colonic segments in undisturbed cadavers.

**Methods** 103 ScopeGuide™ videos of consecutive normal colonoscopies performed by one bowel cancer screening (BCS) colonoscopist with comfort scores on the BCS 50<sup>th</sup> centile were analysed. Repeated inspection of the videos enabled standard definitions to be introduced for looping patterns of the sigmoid and transverse colons. In addition, the configurations of the sigmoid and transverse segments of the colons in the undisturbed abdomens of 81 cadavers were investigated and their relation to the colonoscopic data explored. The association between completion time and the different configurations seen at colonoscopy were analysed with a one-way ANOVA and sex differences in mobility in live cases and cadavers by Fisher's exact test.

**Results** For the colonoscopies, significant sex differences were found in both sigmoid ( $p = 0.0233$ ) and transverse ( $p = 0.0006$ ) colonic configurations. While sigmoid loops in this sample conformed to the usual four categories of straight, N-, alpha and reverse alpha loops, a supplementary classification is proposed for the transverse colon, with straight, intermediate and deep loops which are distinct and clearly defined. In the cadaveric data, there was a significant sex difference in the mobility of the transverse colon ( $p < 0.0001$ ) but not the sigmoid. There were no significant differences in the proximal or distal completion times in both sexes with regards to colonic configuration.

**Conclusion** This study supports the role of ScopeGuide™ in real time analysis of colonic looping patterns and introduces a supplementary classification for transverse loops. There are significant sex differences between the transverse looping configurations for both in vivo and cadaveric colons. However, no significant correlation between looping configurations and completion times were observed in experienced hands. Familiarity with the looping patterns and the techniques for resolution may explain these results which remain a significant challenge to intermediate trainees.

**Reference** 1 Holme *et al.* Magnetic endoscopic imaging versus standard colonoscopy in a routine colonoscopy setting: a randomised, controlled trial. *Gastrointest Endosc* 2011 Jun;**73**(6):1215–22.