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### Articulation of Single-Use and Reusable Therapeutic Gastroscopes

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**Introduction:** Innovation in new therapeutic gastroscopes (TGs) has been relatively dormant after the discontinuation of the large-channel gastroscopes (GIF-XTQ160) in the United States (US). This left a need for scopes that can safely and efficiently navigate and suction fluids and blood from the upper gastrointestinal tract. With a new single-use therapeutic gastroscopes (SUTG) with a 4.2mm working channel (WC), this study sought to compare the potential navigation abilities of the pre-market SUTGs versus reusable therapeutic gastroscopes (RUTG).

**Methods:** The articulation of 2 RUTGs (3.7mm WC) with varying service histories were compared to 2 SUTGs (4.2mm WC) with and without the presence of tools (injection needle, biopsy forceps, and 10-Fr bipolar probe) in the WC. Each TG was clamped to a board and flexed forward and backwards where the maximum sustained angle was measured.

**Results:** The results indicate that on average, SUTGs have superior articulation compared to RUTGs for all tool states. SUTGs had increased retroflexion by 28.9% (168.5 vs. 237.0) without the presence of tools and over a 30% increase with tools (30.1% with injection needle, 28.7% with biopsy forceps, 35.0% with 10-Fr bipolar probe). SUTGs also had substantial improvement in forward flexion, with a 46.6% (78.5 vs 147.0) increase without tools and similar increase with the presence of tools (46.4% with injection needle, 47.8% with biopsy forceps, and 47.0% with 10-Fr bipolar probe).

**Conclusion:** With a new SUTG, it is important to understand performance differences. Overall, RUTGs have reduced articulation (backwards and forwards) from the manufacturer specifications which list the scopes retroflexion at 210 degrees (we found a max of 168.5) and forward at 90 degrees (we found a max of 78.5), likely due to daily deterioration during use and reprocessing while SUTGs have superior articulation to better access and treat critical patients (see Table 1).

**Table 1. Articulation of Therapeutic Gastroscopes**

Articulation of Therapeutic Gastroscopes (in degrees)						
Tool	Backwards Articulation (Retroflexion)			Forwards Articulation		
	GIF-1TH190	aScope Gastro Large	Difference	GIF-1TH190	aScope Gastro Large	Difference
	Avg (scope <sup>1</sup> , scope <sup>2</sup> )	Avg (scope <sup>3</sup> , scope <sup>4</sup> )		Avg (scope <sup>3</sup> , scope <sup>4</sup> )	Avg (scope <sup>3</sup> , scope <sup>4</sup> )	
None	168.5 (162, 175)	237.0 (232, 242)	28.9%	78.5 (75, 82)	147.0 (150, 144)	46.6%
Injection Needle	163.5 (157, 170)	234.0 (228, 240)	30.1%	74.5 (74, 75)	139.0 (148, 130)	46.4%
Biopsy Forceps	165.5 (157, 174)	232.0 (226, 238)	28.7%	71.0 (62, 80)	136.0 (143, 129)	47.8%
Gold Probe	153.5 (147, 160)	236.0 (231, 241)	35.0%	70.0 (63, 77)	132.0 (136, 128)	47.0%

<sup>1</sup>Olympus GIF-1TH190, 2016, Last Repair May 2018.

<sup>2</sup>Olympus GIF-1TH190, 2018, No Repairs.

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### Number of Biopsies Taken for Celiac Disease Is Associated With Specialty and Centre: A Quality Review

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**Introduction:** Duodenal mucosal biopsy is the gold standard for the clinicopathological diagnosis of celiac disease. Given that the disease can be patchy, multiple endoscopic biopsy samples (minimum 2 from duodenal cap and 4 from mid to distal portion) are recommended for histopathology assessment to support or exclude the diagnosis. The aim was to assess the number of endoscopic duodenal biopsies obtained from patients with a clinical suspicion for celiac disease and explore factors associated with postulated biopsy number variability.

**Methods:** Retrospective review of all duodenal biopsy cases obtained in 2023 from adult patients (18 years of age and older) undergoing upper gastrointestinal (GI) endoscopy performed at 2 academic and 3 community hospitals by gastroenterologists and surgeons. Pathology assessment of all cases was completed at one academic hospital pathology laboratory and reported by one of several GI subspecialty pathologists. Individual pathology reports were reviewed for patient age, endoscopist (including specialist type), procedure location, clinical indication for endoscopic examination, duodenal biopsy number and biopsy location (duodenal cap; mid to distal portion), total duodenal biopsy number, and pathology diagnosis. Cases with neoplastic disease were also excluded from analysis. Statistical analysis included descriptive statistics and comparison of means through student t test and ANOVA.

**Results:** One thousand one hundred and sixty patients had duodenal biopsies performed during the study period. The mean age was 58.7 (17.7) years. Thirty-four individual endoscopists from 5 hospitals were part of the cohort; 48.4% of samples were submitted by surgeons. When all duodenal biopsies were considered, the mean number of biopsies taken were 3.42. Gastroenterologists submitted a higher mean number of biopsies than surgeons - 4.14 (1.35) versus 2.65 (1.35) ( $P < 0.001$ ). Differences were also seen when hospitals were compared, with one hospital having the highest mean number at 4.11 (1.4) ranging down to the lowest at 2.5 (1.57) ( $P < 0.001$ ). When only duodenal biopsies submitted with the question "rule out celiac disease" were considered ( $n = 833$  patients), results were similar.

**Conclusion:** This study shows that duodenal biopsy patterns are not meeting standards, even when specifically assessing for celiac disease, with differences seen between centres and specialties. Next steps will include targeted interventions to attempt to correct.

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### Does Taking More Endoscopic Images Impact Adenoma Detection? A Quality Improvement Initiative at Our Tertiary Hospital

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**Introduction:** Endoscopic photo documentation (EPD) is vital for quality control and communication between providers, patients, and family members. The European Society of Gastrointestinal Endoscopy recommends documentation of 9 anatomical landmarks during colonoscopy. American Gastroenterology Association recommends that the cecal landmarks (appendiceal orifice and ileocecal valve) should be photo documented. We aim to study the impact of education about endoscopic photo documentation on adenoma detection amongst trainees.

**Methods:** We carried out a retrospective study analyzing the data collected over a 4-month period (July to August 2023 noted as PRE-education and September and October 2023 noted as POST-education). We reviewed the data related to screening colonoscopies images including the landmarks and adenoma detection for 2 months noted as PRE-education data. Subsequently, all the 9 GI fellows at our tertiary hospital were educated on endoscopic photo documentation based on ESGE guidelines. Reference cards with images were distributed and posted on monitor screens in all procedure rooms. A review of colonoscopy data over the next 2 months noted as POST-education period. The data was analyzed using Chi square and independent t-test for categorical and quantitative data, respectively.

**Results:** Seven hundred and eighty-one colonoscopy procedures were recorded, with 339 PRE education and 442 POST education. The increase in the mean total number of images obtained was statistically significant (PRE 10.82 + 4.15 vs. POST 12.69 + 4.50,  $P$  value 0.0001). As compared between PRE and POST analysis, improvements were statistically significant in all, but 2 categories (cecum/appendiceal orifice and retroflexed view of rectum). Adenoma detection was analyzed for screening colonoscopies only ( $n = 435$ , PRE: 208 and POST: 227). Mean age was comparable between the 2 groups (56.6 ± 8.8 vs 56.1 ± 9.0).