FINAL SCRIPT: APPROVED FOR FILMING

Submission ID #: 68162
Scriptwriter Name: Sulakshana Karkala
Project Page Link: https://review.jove.com/account/file-uploader?src=20789458

Title: Structured Approach to Colonoscopy Technique Optimization: A Single-Center Experience with Novice Endoscopists

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Author Questionnaire

1. **Microscopy**: Does your protocol require the use of a dissecting or stereomicroscope for performing a complex dissection, microinjection technique, or something similar? **NO**

2. **Software:** Does the part of your protocol being filmed include step-by-step descriptions of software usage? **Yes**

   Videographer: Please capture the screen of the instrument for all shots labelled SCREEN.

   SCREEN: 2.2,2.3.2-2.3.3, 2.5.1, 2.5.4, 2.6.3, 2.7.1, 2.8.1-2.8.2

3. **Filming location:** Will the filming need to take place in multiple locations? **NO**

Current Protocol Length
Number of Steps: 09
Number of Shots: 22

Introduction

Videographer: Obtain headshots for all authors available at the filming location.

1.1. **Can Yao:** My research focuses on helping beginners learn endoscopy, specifically for early detection of gastrointestinal tumors **[1]**.

1.1.1. INTERVIEW: Named Talent says the statement above in an interview-style shot, looking slightly off-camera. *Suggested B.roll:2.2.1*

What technologies are currently used to advance research in your field?

1.2. **Can Yao:** We use high-definition endoscopes, AI software to spot tumors, and VR simulators to help beginners practice **[1]**.

1.2.1. INTERVIEW: Named Talent says the statement above in an interview-style shot, looking slightly off-camera.

What are the current experimental challenges?

1.3. **Danjie Shen:** Some challenges include improving early cancer detection, helping beginners learn faster, and reducing the chances of missing tumors **[1]**.

1.3.1. INTERVIEW: Named Talent says the statement above in an interview-style shot, looking slightly off-camera.

Videographer: Obtain headshots for all authors available at the filming location.

Testimonial Questions (OPTIONAL):

Videographer: Please ensure that all testimonial shots are captured in a wide-angle format, while also maintaining sufficient headspace, given that the final videos will be rendered in a 1:1 aspect ratio.

How do you think publishing with JoVE will enhance the visibility and impact of your research?

1.4. **Can Yao, Ph.D**: Publishing with JoVE boosts visibility and impact, especially in endoscopy and GI tumor detection, by combining written content with visual demonstrations that simplify complex procedures and broaden accessibility for early-career researchers.

1.4.1. INTERVIEW: Named Talent says the statement above in an interview-style shot, looking slightly off-camera.

Can you share a specific success story or benefit you've experienced—or expect to experience—after using or publishing with JoVE? (This could include increased collaborations, citations, funding opportunities, streamlined lab procedures, reduced training time, cost savings in the lab, or improved lab productivity.)

1.5. **Danjie Shen, Ph.D**: JoVE's global platform fosters collaborations by connecting researchers and clinicians through engaging visual content. Its video format enhances reproducibility, boosts citations, and accelerates training for new endoscopy professionals by clearly demonstrating complex procedures, leading to quicker learning and higher skill acquisition.

1.5.1. INTERVIEW: Named Talent says the statement above in an interview-style shot, looking slightly off-camera.

AUTHORS: Please deliver the statements in both Chinese and in English

Videographer: Please capture the statements in both Chinese and in English

Ethics Title Card

This research has been approved by the Institutional Review Board (IRB) at Shanghai Civil Aviation Hospital Committee

Protocol

2. Technique Optimization for Sequential Colon Segment Intubation

Demonstrator: Danjie Shen

2.1. To begin rectum exploration, introduce the colonoscope into the rectum of a sedated patient **[1].** Minimize the use of air and instead use water to reduce patient discomfort **[2]**.

2.1.1. WIDE: Talent introducing the colonoscope.

2.1.2. Talent switch to water instead of air for insufflation.

2.2. Switch to air insufflation if bowel preparation is insufficient for water exchange or immersion **[1-TXT]**. Using gentle motions, rotate the colonoscope while advancing through the rectum **[2]**.
Videographer: Please capture the screen of the instrument for all shots labelled SCOPE/SCREEN

2.2.1. SCREEN: Show a change in settings from Water mode to Air insufflation on the device. **TXT: Reschedule procedure if residual stool obstructs mucosal visualization**

2.2.2. SCOPE/SCREEN: The rectum is being explored.

2.3. For sigmoid colon exploration, adjust the tip of the colonoscope to slightly bend the lens for better navigation through the sigmoid colon **[1]**. At the first turn at the junction between the rectum and sigmoid colon, rotate counterclockwise at a large angle **[2]**, then proceed with a clockwise rotation along the rest of the segment **[3]**.

2.3.1. Talent manipulating the tip of the colonoscope to achieve a slight bend. Videographer's Note: Clip A01296576 00:35

2.3.2. SCOPE: The colonoscope is being rotated at a large angle counter clockwise at the rectum-sigmoid colon junction Videographer's Note: Clip A01296576 00:38

2.3.3. SCOPE: The colonoscope is being rotated by a clockwise rotation. Videographer's Note: Clip A01296576 00:48

2.4. Ensure that the colonoscope rotates and moves freely without resistance **[1]**. Identify and reduce any looping of the scope as needed **[2-TXT]**.

2.4.1. Shot of the colonoscope being rotated and moved freely. Videographer's Note: Clip A01296576 00:55

2.4.2. Talent identifying a loop and correcting it with slight withdrawal and torque. **TXT: Continue clockwise rotation as the endoscope is being withdrawn** Videographer's Note: Clip A01296576 01:10-01:30

2.5. Next, explore the descending colon by rotating the colonoscope clockwise **[1].** Gently withdraw its body and slightly pull back through the descending colon **[2]**. Keep the lens of the colonoscope steady to enhance visibility **[3]**. Rotate counterclockwise as the scope transitions into the transverse colon **[4]**.

2.5.1. SCOPE: The colonoscope is being rotated clockwise. Videographer's Note: Clip A01296576 01:35

2.5.2. Talent gently withdrawing and slightly pulling on the colonoscope. Videographer's Note: Clip A01296576 02:04

2.5.3. Shot of the scope's lens held steady inside the colon. Videographer's Note: Clip A01296576 02:18

2.5.4. SCOPE: The colonoscope is being rotated in the transverse colon.

2.6. Now, advance the colonoscope by lifting the lens slightly while inhaling gently **[1]**. Retract the scope carefully while pressing the lens down to maintain a stable position **[2]**. As the hepatic flexure approaches, inhale and rotate clockwise to enter the ascending colon **[3]**. Identify and resolve any looping of the scope **[4]**.

2.6.1. Talent lifting the scope lens and inhaling while advancing. Videographer's Note: Clip A01296576 03:05

2.6.2. Talent retracting the scope with downward pressure on the lens. Videographer's Note: Clip A01296576 03:10

2.6.3. SCOPE: A clockwise rotation is being performed near the hepatic flexure. Videographer's Note: clip A01306440 01:40

2.6.4. Talent detecting looping and adjusting scope position to correct it.

2.7. Inhale gently while continuing to advance the colonoscope through the ascending colon **[1]**. Proceed until the ileocecal valve is out of view, then rotate the scope counterclockwise while keeping its tip elevated **[2]**.

2.7.1. SCOPE: The colonoscope is being advanced through the ascending colon. Videographer's Note: clip A01313352 00:10

2.7.2. Talent rotating counterclockwise with the tip elevated once the ileocecal valve

is passed.

2.8. Observe the ileocecal valve as a visual marker confirming successful colonoscopy completion **[1]**. Carefully inspect the ileocecal region and the appendix opening to ensure no lesions are overlooked **[2]**.

2.8.1. SCOPE: Visual of the ileocecal valve, indicating successful reach. Videographer's Note: clip A01316878

2.8.2. SCOPE: Slow examination of the ileocecal region and appendix orifice for abnormalities. Videographer's Note: clip A01316878

2.9. After the colonoscopy, monitor the patient closely for any abdominal symptoms such as nausea, abdominal pain, or vomiting following the colonoscopy **[1-TXT]**.

2.9.1. Talent checking in with the patient, observing and noting any symptoms. **TXT: Allow consumption of semi-liquid foods two hours post-procedure**

Results

3. Results

3.1. More than 1600 colonoscopies were performed over a course of a month, both with and without anesthesia **[1].** The average patient age was approximately 32 years, with the majority being women **[2].**

3.1.1. LAB MEDIA: Table 1 *Video Editor: Please highlight the "number of cases" and "anesthesia" columns*

3.1.2. LAB MEDIA: Table 1 *Video Editor: Please highlight the "Average age" and "Gender" columns. Highlight the "F" rows in the Gender column*

3.2. A success rate of about 95% in reaching the ileocecal region was achieved **[1]**. The average procedure time was 9 minutes **[2].**

3.2.1. LAB MEDIA: Table 1 *Video Editor: Please highlight the "Completion rate column*

3.2.2. LAB MEDIA: Table 1 *Video Editor: Please highlight the "Average time" column*

Pronunciation Guide:

1. colonoscope
Pronunciation link:
https://www.merriam-webster.com/medical/colonoscope
youtube.com+3youtube.com+3youtube.com+3merriam-webster.com+15merriam-webster.com+15dictionary.cambridge.org+15
IPA: /koʊˈlɑːnəˌskoʊp/
Phonetic Spelling: koh-LAH-nuh-skohp

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2. sigmoid
Pronunciation link:
https://www.merriam-webster.com/dictionary/sigmoid merriam-webster.commerriam-webster.com+15merriam-webster.com+15merriam-webster.com+15
IPA: /ˈsɪgˌmɔɪd/
Phonetic Spelling: SIG-moide

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3. ileocecal
Pronunciation link:
https://www.merriam-webster.com/medical/ileocecal merriam-webster.com+13merriam-webster.com+13howtosayguide.com+13
IPA: /ˌɪli.oʊˈsiːkəl/
Phonetic Spelling: il-ee-oh-SEE-kul

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4. insufflation
Pronunciation link:
https://www.merriam-webster.com/dictionary/insufflation
snhhealthcare.comsnhhealthcare.com+15collinsdictionary.com+15youtube.com+15merriam-webster.com+15merriam-webster.com+15forvo.com+15
IPA: /ˌɪnsəˈfleɪʃən/
Phonetic Spelling: in-suh-FLAY-shun

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5. peristalsis
Pronunciation link:
https://www.merriam-webster.com/dictionary/peristalsis
sciencehub.blog+1youtube.com+1merriam-webster.com+10merriam-webster.com+10wordreference.com+10
IPA: /ˌpɛrəˈstɔlsɪs/
Phonetic Spelling: per-uh-STOL-sis

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6. hepatic
Pronunciation link:

https://www.merriam-webster.com/dictionary/hepatic dictionary.cambridge.org+9merriam-webster.com+9dictionary.cambridge.org+9merriam-webster.com+4merriam-webster.com+4merriam-webster.com+4
IPA: /hɪˈpætɪk/
Phonetic Spelling: hi-PAT-ik

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7. anus
Pronunciation link:
https://www.merriam-webster.com/dictionary/anus youtube.com+15merriam-webster.com+15youtube.com+15dictionary.cambridge.org+15merriam-webster.com+15dictionary.cambridge.org+15
IPA: /ˈeɪnəs/
Phonetic Spelling: AY-nuhs

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8. rectum
Pronunciation link:
https://www.merriam-webster.com/dictionary/rectum merriam-webster.com+6en.bab.la+6thetimes.co.uk+6merriam-webster.com
IPA: /ˈrɛktəm/
Phonetic Spelling: REK-tuhm
