Is Unsedated Colonoscopy Gaining Ground Over Sedated Colonoscopy?

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Abstract: Colorectal cancer (CRC) is a prevalent cancer with high global incidence and a leading cause of cancer death worldwide. CRC screening is important for early cancer detection and prevention. Most premalignant adenomas can be identified and removed before they become malignant. Colonoscopy plays a vital role in reducing the risk for developing CRC. Although screening programs with colonoscopy have been implemented in many countries and considered beneficial for a number of people, this technique is generally associated with anxiety, embarrassment, pain, and discomfort, resulting in lack of adherence to the recommended screening guidelines. In the US, colonoscopy is mostly performed under sedation, thereby causing amnesia and analgesia. In contrast to sedated colonoscopy, which has been associated with some disadvantages, unsedated colonoscopy exhibits advantages and has been preferred over sedated colonoscopy in numerous cancer centers worldwide. This review enumerates the features of sedated and unsedated colonoscopy with the use of the current relevant evidence-based literature. Unsedated colonoscopy can be a reasonable option for routine and unscheduled CRC screening.

Keywords: Colorectal cancer■Screening■Unsedated colonoscopy■Diagnosis

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INTRODUCTION

Colonoscopy has been advocated as the preferred strategy for the prevention and detection of colorectal cancer (CRC).[1–5] As CRC is the current third leading cause of cancer in men and women in the US and a leading cause of cancer worldwide, it presents a significant economic burden on healthcare systems.[6–8] Colonoscopy can be used to detect tumors in asymptomatic patients and is thus vital for CRC screening.[9] Colonoscopy screening has significantly reduced the overall incidence and mortality associated with CRC.[10,11] Nevertheless, colonoscopy has been correlated with pain and discomfort among the general public. Colonoscopy presents many challenges upon its initiation over four decades ago but has progressed as a safe and efficient tool for gastroenterologists worldwide.[12] This procedure can be performed under sedation or without sedation (unsedated and sedation-free).[13,14] This review aims to highlight the advantages and disadvantages of sedated and unsedated colonoscopy and recommend a reasonable option in the current scenario. The Pubmed database was searched for relevant articles with the following keywords: "colonoscopy," "colorectal cancer screening," "unsedated colonoscopy," "sedation-free colonoscopy," and "sedation colonoscopy."

UNSEDATED COLONOSCOPY

As colonoscopy induces fear and anxiety among patients, it has been incorporated with hypnosis, music, and aroma therapies.[15–17] Patients opt for unsedated colonoscopy for various reasons. In a study on unsedated colonoscopy for a group ($n = 123$) of Veteran Affairs (VA) personnel, 80% of the patients were satisfied that an escort was not needed in this technique, 87% became interested after being told that they could communicate with the colonoscopist during the procedure, and 33% were happy that they could return to work on the day of the procedure.[18]

A significant number of colonoscopists worldwide are proponents of unsedated procedures for their associated advantages (Table 1).[19] Countries such as Japan, Saudi Arabia, and Italy have pursued unsedated colonoscopy with great success. In certain countries, such as China, where colonoscopy is not covered by health insurance, the cost of unsedated colonoscopies poses a significant burden to patients. Most experts in the field agree that experienced endoscopists are most likely to succeed in unsedated colonoscopies because they can maneuver the colon without causing pain and discomfort to patients. Hence, most countries have provided robust training programs regarding unsedated colonoscopy.

At the primary healthcare delivery level, active counseling by primary care physicians (PCP) can increase the number of patients opting for unsedated colonoscopy.[20] The rates of patients who preferred unsedated colonoscopies significantly increased when PCPs provided counseling through leaflet information (39.0%), and more patients were willing to participate in colorectal screening after counseling.

Successful colonoscopy involves cecal intubation and visualization. The time needed to reach cecum is

Table 1. Advantages of unsedated colonoscopy.

- No medications, no side-effects
- Does not require an escort
- Can immediately resume work
- No hindrance for self-driving soon after procedure
- Can communicate with colonoscopist during procedure
- Can alert for pain
- Can be given choice for minimal sedation (requested/need based)
- No need for paramedical staffing/monitoring, total time taken for procedure is decreased
- Total time for overall colonoscopy admission is less
- Reduces overall cost to patient and healthcare facilities
- Beneficial in reducing burden of colorectal cancer screening

approximately similar to the time required in sedated procedures (12 min vs. 11.7 min).[19] Perforation risk is also believed to be less during unsedated colonoscopy because the pain felt by patients can alert the endoscopist. Unsedated patients could also be discharged 30 min after the procedure, whereas sedated patients would need at least an hour and a half of observation before being discharged.[14] Furthermore, unsedated patients could immediately resume their normal routine after the procedure without needing an assistant, as evidenced in study on VAs.

Unsedated colonoscopy has been extensively investigated in the past few years. Various techniques have been developed to avoid discomfort during unsedated colonoscopy. Currently, colonoscopists can use minimal air insufflation and several water-related techniques to minimize patient discomfort, pain, and the need for minimal sedation, with equal success as cecal intubation.[21] A meta-analysis of nine randomized controlled trials reported that sedation rate and pain scores significantly decreased in water intubation treatment compared with those in air insufflation.[22] The rates of cecal intubation and disease detection remained at par in both procedures. In unsedated patients, air insufflation can cause more discomfort by increasing colonic looping and increasing difficulty of cecal intubation. This limitation can be addressed using the water method. Several trials were performed to explore replacements for air insufflation to allow completion of scheduled unsedated colonoscopy without causing pain, anxiety, and discomfort in patients.[23] Warm water is theorized to reduce colonic spasms in the left lateral position adopted by the patient because the weight of water would straighten the sigmoid and prevent looping, thus requiring scope insertion and reducing pain. In the water immersion method, endoscopists can rapidly intubate the cecum. This method has been successfully conducted in unsedated patients, although initial trials had used minimal sedation or sedation based on demand of the subjects.[24] Water may also be infused, and air from the colon can be removed through an air pump as an exchange mechanism.[25] In cases contaminated with residual fecal matter, the air pump is turned off, the infused water is aspirated, and clear water is reinfused for clear visualization of the colonic lumen while advancing the colonoscope. Water is also aspirated to avoid distension or lengthening of the colon. Nonetheless, water infused should be minimized to avoid looping of the colon and 98% of the water infused should be aspirated during scope insertion. A randomized controlled single-center trial from Asia confirmed that water exchange and water immersion methods were superior to air insufflation; the former significantly reduced insertion pain than the latter, but a longer time was consumed for scope insertion and cecal intubation.[26] Similar findings were reported in two other recently published randomized controlled trials with head-to-head comparison of the three methods; insertion was reported to be painless in these trials.[27,28] Another head-to head systematic review on adenoma found that the detection rates of adenomas proximal to the splenic flexure was higher with water exchange.[29] High polyp detection rates have also been reported.[30,31]

The "collapse-submergence method" employs complete air suction from the rectum to the descending colon through disposable syringes. This method enables a clear view through the transparency of water as the medium to the straightened recto-sigmoid colon, thereby preventing the looping of the colon and eliminating patient discomfort and pain, even when the procedure was performed by trainee endoscopists.[32] A randomized trial was conducted to explore pain in subjects ($n = 338$) who underwent colonoscopy with water exchange and air insufflation; the results showed that the water group presented lower pain and sedation rates but significantly higher overall adenoma detection rate than the air-insufflation group (25.8% vs. 19.1%); higher proximal adenoma detection rate was also observed in screening-only patients in the water exchange group (18.9% vs. 7.4%; $P = 0.015$).[33]