BECKER'S HEALTHCARE OLYMPUS

Improving polyp detection in colonoscopy: How two physician leaders are driving ADR with innovation

Increased demand for colonoscopies has prompted healthcare leaders to hone preventive screening, service delivery and innovation strategies in recent years.[1]

While the detection of polyps during colonoscopies can reduce mortality,[2] precancerous lesions are often minuscule and easy to miss when using conventional endoscopic screening technology. Olympus is working to improve endoscopic screening with two novel tools that can improve detection of precancerous polyps while improving the ease of operations for clinicians.

Becker's Healthcare recently spoke with Noel Martins, MD, Division Chief of Gastroenterology at St. Luke's University Health Network (Bethlehem, PA), and Davinderbir Pannu, MD, Director of Endoscopy unit at McLeod Digestive Health Center (Florence, SC), about challenges they have faced in detecting polyps and the benefits of Olympus' innovative technologies.

Main themes from the conversation are summarized below.

New, advanced tools help physicians address operational challenges in colonoscopy

Colonoscopy is a common, well-established procedure used to detect precancerous polyps – the most common of which are called adenomas and can progress to colorectal cancer. A healthcare provider's adenoma detection rate (ADR) measures the rate at which endoscopists identify such polyps during colonoscopy in their patient population.

Given the notable increase in colon cancer rates in recent years, especially among people younger than age 50,[3] increasing the ADR is critical to catching potential problems early, preventing complications and reducing mortality.

While colonoscopies are considered relatively simple screening procedures, they are not without challenges. The most pressing clinical challenges include maintaining and improving the quality of the exam, decreasing the incidence of missed lesions, improving the ADR and performing a complete endoscopic mucosal resection to remove abnormal tissues from the lining of the colon.

If endoscopists have difficulty maneuvering the colonoscope to visualize the front and back of each fold in the colon, they may miss polyps, Dr. Martins noted, and the consequences of that may be dangerous. "Those missed polyps could continue to grow and turn into cancer before the next colonoscopy is performed," he said.

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>
> Dr. Davinderbir Pannu

Such challenges can be addressed if endoscopists have better visualization and scope control than what conventional technology affords. Two innovative technologies offered by Olympus – the ENDOCUFF VISION™ device and Texture and Color Imaging (TXI™) technology – bring the clarity and operational flexibility that physicians need. These tools are complementary, and both have been shown to help increase the endoscopist's ADR.

The ENDOCUFF VISION device is a distal attachment for the colonoscope that increases mucosal exposure by flattening mucosal folds, whereas TXI technology is a post-processing feature on Olympus' EVIS X1™ CV-1500 video system center that enhances an image's texture, color contrast and brightness. When used in combination, they allow the user to increase mucosal exposure and see more detail of the exposed mucosa.

"I find several advantages to using the ENDOCUFF VISION device, including my ability to visualize behind folds using the fingers of the device to slow the withdrawal and decrease the tendency of the scope to fall back in difficult areas," Dr. Pannu said. "Enhancing the exam further with TXI [technology] has been the icing on the cake."

Dr. Pannu described how using these tools in tandem has proven helpful, as well. "A major benefit of using these technologies in combination is that the ENDOCUFF VISION device allows you to anchor in one place, giving TXI [technology] a few seconds for image processing of the segment of colon being examined," he said.

The ENDOCUFF VISION device and TXI technology may assist physicians in finding more precancerous polyps – thereby benefiting patients

Improving ADR is one of the main goals of colonoscopy, yet a systematic review and meta-analysis has shown that up to 26% of adenomas are missed with standard colonoscopy.[4]

[1] Haeffele P. What leaders are saying about colonoscopies. Becker's ASC Review. https://www.beckersasc.com/gastroenterology-and-endoscopy/what-leaders-are-saying-about-colonoscopies.html. Published July 9, 2024. Accessed August 7, 2024.

[2] Zauber AG, Winawer SJ, O'Brien MJ, Lansdorp-Vogelaar I, van Ballegooijen M, Hankey BF, Shi W, Bond JH, Schapiro M, Panish JF, Stewart ET, Waye JD. Colonoscopic polypectomy and long-term prevention of colorectal-cancer deaths. N Engl J Med. 2012 Feb 23;366(8):687-96. doi: 10.1056/NEJMoa1100370. PMID: 22356322; PMCID: PMC3322371.

[3] Cleveland Clinic Research Reveals Unique Tumor-Related Bacteria Tied to Young-Onset Colorectal Cancer. Cleveland Clinic. https://newsroom.clevelandclinic.org/2024/02/05/cleveland-clinic-research-reveals-unique-tumor-related-bacteria-tied-to-young-onset-colorectal-cancer. Published February 5, 2024. Accessed August 7, 2024.

[4] Zhang C, Cheng X, Chen H, Hu Y, Wang Y & Wu Z. (2019). Magnitude, Risk Factors, and Factors Associated With Adenoma Miss Rate of Tandem Colonoscopy: A Systematic Review and Meta-analysis. Gastroenterology. 2019 Feb 6; 156(6), 1651-1664. doi: 10.1053/j.gastro.2019.02.034

In using Olympus' colonoscopy-assisting technologies, endoscopists can significantly increase the detection of polyps. One meta-analysis evaluating the effectiveness of the ENDOCUFF VISION device in screening and surveillance procedures across five studies and 3,294 patients found that endoscopists' ADR increased from 49.3% without the device to 55.8% with the ENDOCUFF VISION device.[5] Another RCT evaluating the effectiveness of TXI technology compared to white light showed that it led to an ADR increase from 41.0% to 54.6%.[6]

"At St. Luke's, in cases where we don't use the ENDOCUFF VISION device, we're finding precancerous polyps 41.2% of the time," Dr. Martins said. "For those where we do use it, we're finding precancerous polyps 52.2% of the time. So, with the ENDOCUFF VISION device, there's a significantly better chance of finding precancerous polyps and removing them."

There is a learning curve associated with successfully using the device, but this learning curve is not daunting, Dr. Martins said. "It's important to try it out and give it some time to really feel comfortable with it," he said. "The more our doctors use it, the more comfortable they feel, both with insertion and withdrawal of the scope. Now, many of us want to use it for every colonoscopy case."

In leveraging Olympus' technology, Dr. Pannu noted similar improvements at his practice in a short amount of time. "I have used the ENDOCUFF VISION device and TXI technology in combination for approximately six months and have seen an increase in ADR for both male and females in my practice by about 15% to 18%," he said. He explained TXI technology is particularly helpful in the detection of flat lesions, which are typically hard to see in white light – the conventional visualization mode that TXI technology also supports. He has also noticed a significant improvement in margin detection and surface pattern recognition while using TXI technology in underwater EMR.

Dr. Pannu acknowledges there is a learning curve in maximizing the use of TXI technology, as well. "One gets used to it quickly, within a few uses," he said, noting that working with a local Olympus representative, who can help program the touch panel on the CV-1500 video system center or the endoscope buttons to easily switch between white light and enhanced visualization, is essential to getting comfortable with the technology.

Olympus' data-enriching tech creates opportunities for quality improvement

Because ADR is an important quality metric, increasing ADR through the use of the ENDOCUFF VISION device and TXI technology during colonoscopies can be an important quality improvement opportunity for hospitals and GI practices. "We have one-on-one meetings with all of our doctors, during which we review each doctor's quality data and talk about what a doctor feels is going well and what they think could go better," Dr. Martins said.

One way the ENDOCUFF VISION device supports colonoscopy quality improvement initiatives is by standardizing the withdrawal of the colonoscope from the colon, which is the optimal moment for detecting and removing precancerous polyps.

"We take at least six minutes on average during withdrawal," Dr. Martins said. "There's very good evidence that doctors who withdraw the scope quicker than that are not finding precancerous polyps as often."

At Dr. Pannu's facility, using the ENDOCUFF VISION device and TXI technology – sometimes in combination with additional artificial intelligence technologies – also helps standardize the colonoscopy procedure, which is an important consideration given existing differences in physician skill levels.

Effectively leveraging Olympus' advanced colonoscopy tools requires consistency and collaboration

Healthcare organizations interested in adding the ENDOCUFF VISION device and TXI technology to their colonoscopy toolkits should first consider several best practices and recommendations.

For one, they should view acquiring these advanced tools as an investment in technology that improves patient care, Dr. Pannu said. Once organizations have adopted these technologies, they should give physicians enough time to familiarize themselves with each tool's features one by one, before moving on to the next.

Then, organizations should strive to operationalize the ENDOCUFF VISION device and TXI technology consistently for all colonoscopy patients and track the respective ADRs, which will give a realistic picture of the true ADR.

Finally, collaborating closely with Olympus representatives to obtain the necessary education and training is essential to implementing these tools in a way that meets physicians' needs and comfort levels.

"Olympus has been instrumental in providing training to staff and physicians, being available in person for weeks at a time; setting up rooms with the new technology outside of our regular working hours; fine-tuning each room; and even programming buttons for physicians based on their preference," Dr. Pannu said.

Dr. Martins shared a similar, hands-on experience – Olympus representatives worked with his team onsite and coached them through the process of using the ENDOCUFF VISION device.

While introducing new clinical tools requires financial investment, organization-wide commitment, and the patience to navigate learning curves and change, both physicians agreed the effort is well worth it.

"Adopting new technology can change the quality of patient care significantly, if done step by step with good support," Dr. Pannu said.

[5] Patel HK, Chandrasekar VT, Srinivasan S, Patel SK, Dasari CS, Singh M, Le Cam E, Spadaccini M, Rex D, Sharma P. Second-generation distal attachment cuff improves adenoma detection rate: meta-analysis of randomized controlled trials. Gastrointest Endosc. 2021 Mar;93(3):544-553.e7. doi: 10.1016/j.gie.2020.09.045. Epub 2020 Oct 5. PMID: 33031786.

[6] Young E, Rajagopalan A, Tee D, et al. Texture and color enhancement imaging improves colonic adenoma detection: A multicenter randomized controlled trial. Gastroenterology. 2024;166(2):338-340.e3.