Use of the Third Eye® Panoramic™ Device Expands the View of a Standard Colonoscope

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Background

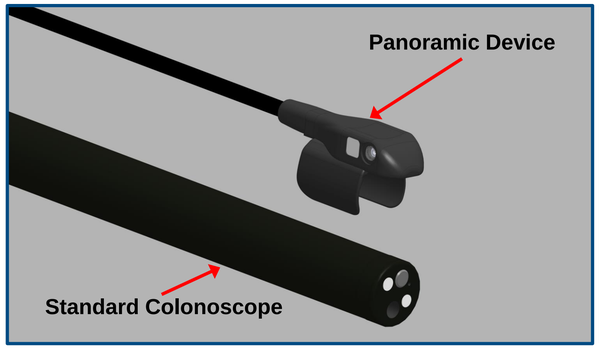
- High adenoma detection rates (ADR) are associated with a decrease in interval colon cancers.
- Methods to improve ADR include better preparation, timed withdrawal from the cecum and devices that improve visualization.
- An earlier device, the Third Eye Retroscope (TER, Avantis Medical Systems, Sunnyvale, California), provided an additional camera that detected lesions hidden behind folds and at flexures and increased the ADR by 23%.
- However, its adoption was limited by the need to insert and remove the device from the working channel during colonoscopy.
- A newer approach is the Third Eye Panoramic (TEP, Avantis), a device containing two side-viewing video cameras that combine with the forward view of the colonoscope to provide a panoramic view of over 300^{o}.
- The TEP clips onto the outside of the tip of any standard pediatric or adult-size colonoscope without blocking its channel.
- Because it complements existing endoscopic technology from Olympus, Pentax and Fujifilm, it requires no major capital investment.
- We report on the successful initial use of the Third Eye Panoramic device in human subjects.

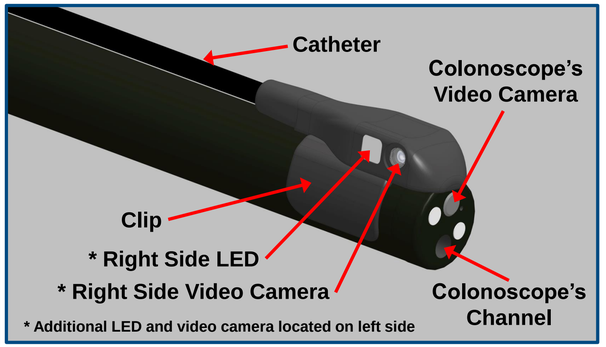
Methods

- For this study, the TEP device was used with a Fujifilm EC530-LS Slim Colonoscope®.
- The TEP device contains 2 CMOS video chips with left-lateral and right-lateral orientations and adjacent LEDs for illumination.
- A thin, flexible plastic catheter contains transmission wires and connects the device to an external video processor. The catheter runs parallel to the scope and is held in place by the fitted cap alone.
- The result is 3 distinct but partially overlapping images on a single screen.
- We recorded ADR, cecal intubation time, withdrawal time and total procedure time, which included time for lesion removal and intubation of the terminal ileum.
- A total of 34 patients were enrolled (19 male, 15 female), with a mean age of 60 years. Patients underwent screening, surveillance or diagnostic colonoscopy using the TEP along with a colonoscope. All patients gave informed consent.

Results

- 1 patient was excluded due to poor bowel preparation.
- The cecum was reached in all 33 of the remaining patients.
- Mean intubation time: 8.1 minutes.
- Mean withdrawal time: 10.1 minutes (including time for polypectomies).
- Mean total procedure time: 20.0 min.
- Adenoma Detection Rate: 45%.
- The side-viewing cameras revealed lesions behind folds and flexures.
- Many diverticula were seen *en face* with the lateral cameras, but not seen initially with the colonoscope camera.
- The device did not affect the quality of the colonoscope's high-definition image.
- Use of the device did not affect colonoscope handling characteristics, and there was no restriction of colonoscope mobility, tip deflection or retroflexion due to the device.
- There was no difficulty with use of accessories through the working channel, including snares & forceps.
- Since the device does not occupy the channel, it did not affect suction.
- The side-viewing lenses were cleaned by deflecting the colonoscope's water flush stream off of the wall of the colon.
- The cap remained fixed during insertion and withdrawal, including passage through the anus.
- There were no device failures or adverse events, and telephone follow-up at 24 hours found no report of abdominal or anorectal discomfort.



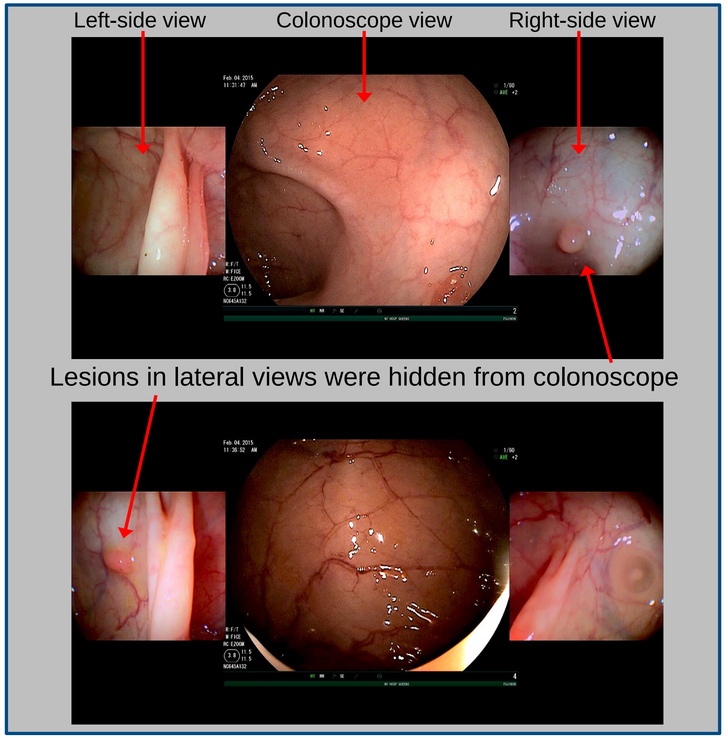


Conclusion

- In this initial feasibility study, the Third Eye Panoramic device was used successfully with a standard colonoscope to provide an extreme wide-angle view that revealed areas behind folds and flexures.
- Because the device works with existing technologies and infrastructure, endoscopists can utilize the device's wide-angle view without sacrificing the handling characteristics and HD image of their preferred colonoscopes, and there is no need for major capital investment.

Disclosures

- This study was sponsored in part by a grant from Avantis Medical Systems.
- All of the co-investigators report that they have no potential conflicts of interest.



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