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Managing Iatrogenic Colon Perforations: Strategies and Considerations

Dr. Buch:
This is *GI Insights* on ReachMD. I'm Dr. Peter Buch, and today I'm joined by Dr. Mark Benson to discuss the prevention and management of iatrogenic colonic perforations. Dr. Benson is an advanced endoscopist and Associate Professor in the Division of Gastroenterology and Hepatology at the University of Wisconsin School of Medicine. He is also passionate about endoscopic quality.

Welcome to the program, Dr. Benson.

Dr. Benson:
Thank you very much. I appreciate it.

Dr. Buch:
So, Dr. Benson, let's start out with some background. How often do iatrogenic colonic perforations occur, and why does this happen?

Dr. Benson:
That's a good question. So we typically consent people for a one in 1,000 chance of causing a perforation when we're doing our procedures, but there was a large study published about 10 years ago and they looked at thousands of procedures, and the actual rate of colon perforation during a colonoscopy was only about one in 2,000, so it's rare. The problem is, when it happens, it can lead to significant consequences.

There are things that we have been taught in training that have been shown to really decrease the risk of causing these types of perforations. When we're doing a colonoscopy, we have to take the scope and try to go to the very beginning part of the colon and insufflate to look for colon polyps, but as we're doing that, there are known techniques to decrease the risk for causing these perforations. For example, when we're introducing the scope and you realize that there's a fixed resistance to you trying to advance the scope proximally, you should not force it against that kind of resistance. And as technology advances, our scopes are becoming more flexible and have a smaller diameter, so it enables us to get through smaller "fixed areas" of the colon. Also, just due to the nature of the shape of the colon being kind of a question mark shape, sometimes when we're advancing the colonoscope to the cecum, we introduce what's called a loop—basically a loop in the sigmoid colon—and that loop can cause problems like tears in that area and some significant patient discomfort, and so you really want to try to use the techniques to avoid putting in these loops.

Also, more and more, we should be using cold snares. So what that refers to is when we're taking off a polyp, we can either take it off with a hot snare with electrocautery that cuts through the mucosa, or you can do a cold snare polypectomy, and that is where you just take the mucosa and you snip it off using that loop, and that's been shown to decrease the risk of causing a perforation. The chance that you would cause a perforation with a cold snare polypectomy is low. It's not zero, but it's exceedingly low. Also, when we're taking off big polyps, we often recommend that those polyps are lifted up off the MP layer, and so when you're taking off those polyps, you inject below it—something to raise it off the muscularis propria—and then you can safely resect it. And, actually, I'm surprised at the size of the polyps that I'm able to resect safely using that technique. Given the appropriate amount of time and the appropriate conditions, we can take off very large pieces of the mucosa—the lining of the colon—safely.

Dr. Buch:
Great. And let's move on. How should all endoscopists be using carbon dioxide insufflation?

Dr. Benson:
So when we're doing our procedures, we have to distend the lumen of the GI system for us to safely see and evaluate different areas,

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and using carbon dioxide has been shown to reduce post-procedure abdominal pain and discomfort. It's rapidly absorbed and expelled through the lungs, and it doesn't cause complications. So basically, I would say for almost all GI procedures, we should be using CO2 and not room air.

Dr. Buch:
Thank you. Most iatrogenic colonic perforations happen in the sigmoid. Do you have any additional recommendations on how to avoid splenic injuries during colonoscopy?

Dr. Benson:
It's a good question. So splenic injuries or splenic lacerations are rare, but they are a challenge to treat, and they're a challenge to recognize after a procedure. When I started, I thought it was just due to direct trauma from the scope pushing on a big spleen, but that's actually not the case. It's my understanding that it's due to tension on the splenocolic ligament. And in order to decrease that risk, you basically want to use the same techniques that will avoid perforations in general. That is, you don't want to introduce a large loop; you've got to be cognizant of some patients that have known splenomegaly. I wouldn't be very forceful when I'm introducing the colonoscope, and I would be very cautious that when I do my reductions, I'm doing them safely. I'm mindful of the fact that you could cause a significant tear in the spleen and lead to significant poor outcomes for that patient.

Dr. Buch:
Thank you. So for those just tuning in, you're listening to *GI Insights* on ReachMD. I'm Dr. Peter Buch, and I'm speaking with Dr. Mark Benson about the prevention and management of iatrogenic colonic perforations.

So, Dr. Benson, for patients who experience iatrogenic colonic perforations, when is it appropriate to manage it endoscopically?

Dr. Benson:
So this has evolved. When I started and it felt like there was a perforation, it would automatically cause a fair amount of stress and concern for the patient's well-being, and that has changed over time. So more and more, we can repair these types of defects, and the decision to repair this depends on several factors. So first, you want to make sure that the patient is stable without signs of pneumoperitoneum or significant abdominal pain, and the colonic prep needs to be excellent. So if there is a poor prep, the patient is at risk for feculent peritonitis, and you need to be very careful of that. So I would not repair a perforation that I saw if there was poor prep.

You want to make sure that that perforation is easy to visualize and that you have good scope control, and that you yourself are very calm and feel like you're ready to tackle this. The thing is, most perforations—especially the ones that occur in the ascending colon or in the wake of taking off, say, a large polyp—those are relatively easy to recognize, and they are recognized very quickly at the time of the procedure. And those can be repaired just using through-the-scope clips, and those are clips that are readily available to most endoscopists.

I would avoid trying to repair a colonic perforation if you yourself don't have the tools available or the skill set necessary to repair those, or if the patient is showing some signs of clinical deterioration, because that would just delay care for that patient, who potentially would need a surgery.

Dr. Buch:
Can you tell us a little about your techniques?

Dr. Benson:
Sure. So I, like most busy endoscopists, have not had many colon perforations. The most recent one I had, I was taking off a large cecal polyp which had been attempted to be removed by a different endoscopist. A tattoo was placed at that polyp, which you generally don't need to do . If you're going to place a tattoo, I'd place it at least 5 centimeters away from where the polyp is. And this was in the cecum, so it did not need to be tattooed, because I could find that. In any case, it was fibrotic, and I recognized that there was a small perforation after resecting some tissue. The patient was stable, the prep was excellent, and I felt like I had good scope control, so I just sealed that up. In that case, I used through-the-scope clips, and you basically want to align them perpendicular to the perforation so it seals that. The through-the-scope clips basically seal the mucosa, whereas an over-the-scope clip can grab larger tissue. So I will use over-the-scope clips if I detect or if I'm trying to help out seal a preparation, and those larger defects usually occur in the sigmoid colon. But I mostly use through-the-scope clips when I'm repairing these. Again, I just place them adjacent to each other to completely seal the defect. I often will then get the patient admitted and monitored on IV antibiotics and bowel rest to make sure that they're clinically stable and doing well. I touch base with my colorectal surgical colleagues. The last time that happened to me, the patient did just fine and avoided the need for surgery, fortunately.

Dr. Buch:

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So when we talked about the kind of perforations that happen during the procedure, we want to compare that now to perforations that are diagnosed after the completion of colonoscopy. What would you say to that?

Dr. Benson:
That's a good question. So about 40 percent of these perforations are not recognized, and they are only apparent after the procedure when the patient develops significant abdominal pain and has fever, and then will have cross-sectional imaging showing a perforation. So a very small subset of those patients can be admitted and treated conservatively. That is, they can be given IV antibiotics and bowel rest. You really need to watch them closely. A surgical consult is warranted as with serial abdominal exams, but a very small subset of those patients can be managed just with conservative therapy, and they can do just fine. Universally, though, those patients should be admitted. I would not manage that as an outpatient because, again, the patients can deteriorate rather quickly. That would lead to poor outcomes if they get suboptimal care or there's a delay in care.

Dr. Buch:
Thank you. And as we approach the end of our conversation, Dr. Benson, do you have any final takeaways you'd like to share?

Dr. Benson:
Yeah. I would just like to encourage those providers that are doing thousands of colonoscopies a year that, when they encounter a perforation and the conditions are correct, you can attempt to try to repair it, get them admitted afterward, and talk to the patient about what happened; often they can avoid the need for surgery. You can repair most defects at a rate of about 90 percent. I feel like most endoscopists have the skill set necessary to do that, and so I would encourage people to try that. I would also encourage people to recognize when this is something that is not going to be repairable, and then get that person to be seen by surgery sooner than later. But I think people will find that more and more we're able to repair these endoscopically.

Dr. Buch:
I want to thank my guest, Dr. Benson, for sharing best practices in managing iatrogenic colonic perforations. Dr. Benson, it was a pleasure speaking with you today.

Dr. Benson:
Thank you very much. I really appreciate it.

Dr. Buch:
For ReachMD, I'm Dr. Peter Buch. To access this and other episodes in this series, visit *GI Insights* on ReachMD.com, where you can Be Part of the Knowledge. Thanks for listening, and looking forward to learning with you again very soon.

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