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Laparoscopy in iatrogenic colonoscopic perforation: A case report and literature review

Amin Tanveer, Sayed Ali Andrabi, Senthikumar Sundaramurthy

ABSTRACT

Bowel cancer incidence has been increasing worldwide. It is the fourth most common cancer among men and the third most common among women. Screening test like Faecal Occult Blood Test (FOBT) and Colonoscopy are particularly important for early detection of asymptomatic bowel cancer. Although colonoscopy is almost always safe but complications may occur. Most complications are mild and self-resolving, such as abdominal and anal pain, flatulence, and diarrhoea. The most serious complication of colonoscopy is iatrogenic colonoscopic perforation. The overall reported incidence of perforation ranges from 0.1–0.3% for diagnostic colonoscopy and from 0.4–1.0% for therapeutic colonoscopy. Since its first introduction in 1969, colonoscopy is considered the gold standard method for the diagnosis, treatment, and follow-up of colorectal cancer. Hereby, presenting a case study of an 83-year-old man, who had iatrogenic colonoscopic perforation post elective colonoscopy, which was successfully managed laparoscopically. Laparoscopic treatment seems to reduce the invasiveness and morbidity of major surgery. At the same time, it is more definitive than conservative treatment. Therefore, use of laparoscopic techniques have become the preferred method to treat colonoscopy related colonic perforations. Since colonoscopic perforations are rare, the management of this complication by laparoscopic procedure is poorly defined. By presenting this case study and review of literatures we would like to demonstrate that laparoscopic approach is a safe option for treatment and diagnosis of selected colonoscopic perforations.

Keywords: Bowel perforation, Colonoscopy, Laparoscopic approach

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INTRODUCTION

Bowel cancer incidence is increasing world wide [1], it is the second most common cancer affecting people in Australia, one in 21 men and one in 30 women will develop bowel cancer before the age of 75.

Screening test is particularly important for early detection of bowel cancer, which often has no symptoms in its early stages. Faecal occult blood test (FOBT) looks for microscopic traces of blood in the stools, which may be a sign of polyps, cancer or another bowel condition.

But it is only for low-risk people without symptoms of bowel cancer. Anyone with symptoms of bowel cancer or have a strong family history or a genetic condition linked to bowel cancer need screening colonoscopies.

Although colonoscopy is almost always safe [2, 3] but complications may occur. Most complications are mild and self-resolving, such as abdominal and anal pain, flatulence, and diarrhoea. The most serious complication of colonoscopy is iatrogenic colonoscopic perforation (ICP). The overall reported incidence of perforation ranges from 0.1–0.3% for diagnostic colonoscopy and from 0.4–1.0% for therapeutic colonoscopy [4, 5].

Laparoscopic treatment seems to reduce the invasiveness and morbidity of major surgery. At the same time, it is more definitive than conservative treatment, so that we now prefer to use laparoscopic techniques to treat colonic perforations related to colonoscopy.

Colonoscopic perforations is rare, therefore management of this complication, and appropriate approach such as laparoscopic surgery, has been poorly defined. By presenting this case and review of literatures we would like to demonstrate that laparoscopic approach is a safe option for treatment and diagnosis of selected colonoscopic perforations, we recommend multi centre randomised trials to show its effectiveness.

CASE REPORT

An 83-year-old man was admitted for elective gastroscopy and colonoscopy for investigation of anaemia. His past medical history included CCF, T2DM, HTN, and Prostate ca.

During the procedure he was sedated with propofol, fentanyl and midazolom, and the procedure was performed by a colorectal surgeon. He had an uncomplicated gastroscopy. Colonoscopy viewed to sigmoid colon, which revealed severe sigmoid diverticular disease and an acute bend of the sigmoid colon. Whilst passing through the sigmoid bend, the patient was noted to have developed abdominal distension, therefore, the procedure was abandoned.

A physical examination revealed severe abdominal distension, and it was recognised that the patient had iatrogenic colonoscopic perforation. After an informed consent was obtained from the family, the patient was proceeded to laparoscopic surgical management of the bowel perforation. Intra-operative finding revealed herniation of the sigmoid colon through the inguinal canal (Figure 1). After reduction of the hernia, sigmoid colonic perforation was identified (Figure 2) and repaired with 3/0 polydioxanone suture in two layers (Figure 3).

During the operation a decision was made to repair the hernia as an elective inpatient procedure with using a mesh. Due to tortuosity of the sigmoid colon the inguinal hernia was not detected during the colonoscopy.

Post-operatively the patient made a good recovery, opened his bowel on day two and was able to tolerate normal diet. He had an uncomplicated open left inguinal hernia repair with a mesh on day four of the original operation and was discharged home the next day.

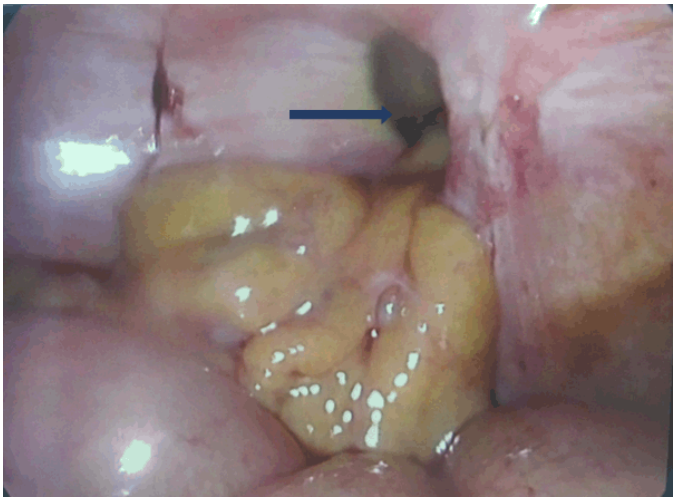

Figure 1: Loose deep inguinal ring.

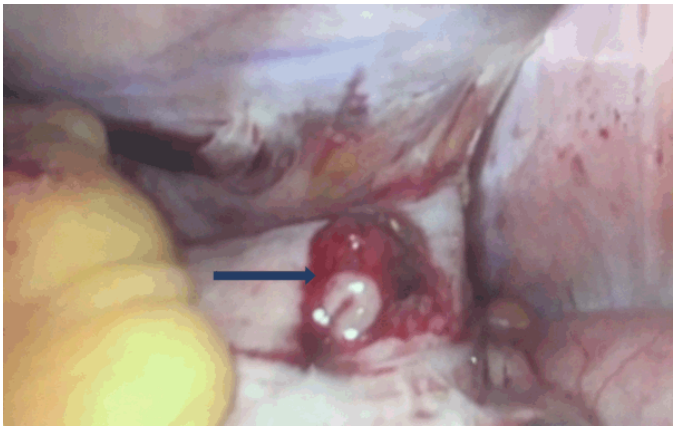

Figure 2: Perforated area of sigmoid colon.

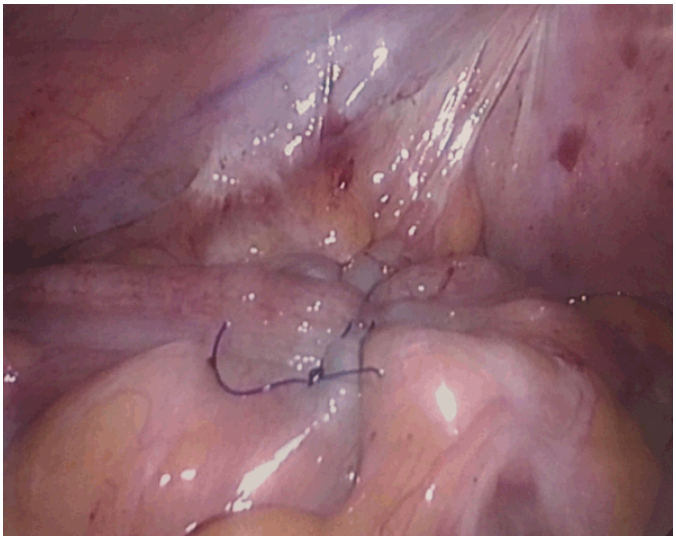

Figure 3: Repaired area.

DISCUSSION

Bowel cancer is the second most common cancer affecting people in Australia. It is estimated that about 15,000 people are diagnosed with bowel cancer every year. Since its first introduction in 1969, colonoscopy is considered the gold standard method for the diagnosis, treatment, and follow-up of colorectal cancer [6]. About one in 21 men and one in 30 women will develop bowel cancer before the age of 75. It is most common in people over 50, but it can occur at any age [7].

Screening test is particularly important for early detection of bowel cancer, which often has no symptoms in its early stages. Faecal occult blood test (FOBT) looks for microscopic traces of blood in the stools, which may be a sign of polyps, cancer or another bowel condition. But it is only for low-risk people without symptoms of bowel cancer. Anyone with symptoms of bowel cancer or have a strong family history or a genetic condition linked to bowel cancer need screening colonoscopies, or other less commonly used tests are CT colonography and flexible sigmoidoscopy.

Although colonoscopy is almost always safe [2, 3] but complications may occur. Most complications are mild and self-resolving, such as abdominal and anal pain, flatulence, and diarrhoea. The most serious complication of colonoscopy is iatrogenic colonoscopic perforation. The overall reported incidence of perforation ranges from 0.1% to 0.3% for diagnostic colonoscopy and from 0.4% to 1.0% for therapeutic colonoscopy [4, 5].

There are various risk factors such as advanced age, female gender, multiple comorbidities, and therapeutic intervention that may play a role in iatrogenic colonoscopic perforation [8]. Other factors included are endoscopist skill [9, 10], and training level, and effect of sedation on colonoscopic perforation [11, 12–14].

Inguinal hernia increases risk of incarceration as well as risk of perforation. Left sided inguinal hernia being the most common. Most Importantly, a careful history and a thorough physical examination of the inguinal region should be performed before a patient undergoes colonoscopy to avoid the risk of colonoscopeic incarceration and perforation.

The most common site of perforation is the sigmoid colon (53–65%), followed by the cecum, the ascending colon, the transverse colon, the descending colon, and the rectum [15–19].

If a perforation is suspected an upright or decubitus abdominal radiographs can detect small amounts of free peritoneal air, but they are insensitive to the presence of fluid. If the clinical suspicion of ICP persists after a normal plain radiograph, a computed tomography (CT) scan with contrast enhancement can easily detect small amounts of both free intra-peritoneal air and fluids, and in some cases the foci of the gas congregating near the perforation site [20].

There are different treatment alternatives for ICP, including conservative, endoscopic, and surgical approaches. In order to minimize morbidity and mortality, prompt operative intervention is the best strategy in most patients once perforation occurs [21]. Traditionally exploratory laparotomy, bowel resection with or without stoma has been performed for the colonoscopic perforation [15].

To reduce the invasiveness of major surgery and avoid the risk of conservative treatment failure, laparoscopic techniques are the preferred method to deal with iatrogenic colonic perforations. The role of laparoscopy in the management of iatrogenic colonoscopic injuries has increased as numerous case reports and case series have described the successful management of this complication using various laparoscopic approaches [21–25].

The main advantages of the laparoscopic approach include an improved ability to localise the site of the perforation and, where appropriate, secure repair under direct vision [26]. The benefits of minimally invasive surgery are reduced postoperative ileus and pain, leading to a reduced length of stay and early return to normal activities [23].

However, indication for the procedure, quality of the bowel preparation, level of abdominal contamination and details of the suspected perforation site may assist in making a decision regarding appropriate approach [24].

Discussion with the endoscopists regarding details of the suspected perforation may assist in forthcoming decision re appropriate approach. Information regarding the indication for the procedure and quality of bowel preparation may assist in the forthcoming decision making [24] while presenting clues regarding contamination. Furthermore, discussion with the endoscopist may yield details regarding the suspected perforation site, cause of the perforation, other polyp location(s), and whether the injury and its extent were visualised [22] which are also vital adjuncts to decision making.

The decision to convert to a laparotomy should be considered based on the surgeon's skill, patient's stability, and concern regarding the integrity of repair or difficulty identifying the perforation site [27–29]. The application of diagnostic laparoscopy to identify the perforation site, followed by conversion to a focused mini-laparotomy, has also been described [28–32] and is a safe option.

Colonoscopic perforations is rare, therefore management of this complication, and appropriate approach such as laparoscopic surgery, has been poorly defined.Similarly, the low incidence of this condition has contributed to the lack of prospective randomized studies to solidify evidence showing the benefits of laparoscopic repair.

CONCLUSION

Laparoscopic treatment seems to reduce the invasiveness and morbidity of major surgery. There is a need for a multi centre prospective randomized studies to solidify current evidence showing the benefits

of laparoscopic repair in iatrogenic colonoscopic perforations.

REFERENCES

1. Jemal A, Center MM, Ward E, Thun MJ. Cancer occurrence. Methods Mol Biol 2009;471:3–29.
2. Pierzchajlo RP, Ackermann RJ, Vogel RL. Colonoscopy performed by a family physician. A case series of 751 procedures. J Fam Pract 1997 May;44(5):473–80.
3. Rodney WM, Dabov G, Cronin C. Evolving colonoscopy skills in a rural family practice: The first 293 cases. Fam Pract Res J 1993 Mar;13(1):43–52.
4. Kavic SM, Basson MD. Complications of endoscopy. Am J Surg 2001 Apr;181(4):319–32.
5. Nelson DB, McQuaid KR, Bond JH, Lieberman DA, Weiss DG, Johnston TK. Procedural success and complications of large-scale screening colonoscopy. Gastrointest Endosc 2002 Mar;55(3):307–14.
6. Wolff WI, Shinya H. Colonofiberoscopy. JAMA 1971 Sep 13;217(11):1509–12.
7. Australian Institute of Health and Welfare (AIHW), Australian cancer incidence and mortality (ACIM) books: Colorectal cancer (also called bowel cancer), AIHW, Canberra, 2017. [Availabe at: https://www.aihw.gov.au/reports/cancer/acim-books/contents/acim-books]
8. Panteris V, Haringsma J, Kuipers EJ. Colonoscopy perforation rate, mechanisms and outcome: From diagnostic to therapeutic colonoscopy. Endoscopy 2009 Nov;41(11):941–51.
9. Lorenzo-Zúñiga V, Moreno de Vega V, Doménech E, Mañosa M, Planas R, Boix J. Endoscopist experience as a risk factor for colonoscopic complications. Colorectal Dis 2010 Oct;12(10 Online):e273–7.
10. Rabeneck L, Paszat LF, Hilsden RJ, et al. Bleeding and perforation after outpatient colonoscopy and their risk factors in usual clinical practice. Gastroenterology 2008 Dec;135(6):1899–906.e1.
11. Rex DK, Khalfan HK. Sedation and the technical performance of colonoscopy. Gastrointest Endosc Clin N Am 2005 Oct;15(4):661–72.
12. Walker JA, McIntyre RD, Schleinitz PF, et al. Nurse-administered propofol sedation without anesthesia specialists in 9152 endoscopic cases in an ambulatory surgery center. Am J Gastroenterol 2003 Aug;98(8):1744–50.
13. Hansen JJ, Ulmer BJ, Rex DK. Technical performance of colonoscopy in patients sedated with nurse-administered propofol. Am J Gastroenterol 2004 Jan;99(1):52–6.
14. Jimenez-Perez J, Pastor G, Aznarez R, et al. Iatrogenic perforation in diagnostic colonoscopy related to the type of sedation. Gastrointest Endosc 2000;51AB:3351.
15. Panteris V, Haringsma J, Kuipers EJ. Colonoscopy perforation rate, mechanisms and outcome: From diagnostic to therapeutic colonoscopy. Endoscopy 2009 Nov;41(11):941–51.
16. Iqbal CW, Chun YS, Farley DR. Colonoscopic perforations: A retrospective review. J Gastrointest Surg 2005 Dec;9(9):1229–35.
17. Iqbal CW, Cullinane DC, Schiller HJ, Sawyer MD, Zietlow SP, Farley DR. Surgical management and outcomes of 165 colonoscopic perforations from a single institution. Arch Surg 2008 Jul;143(7):701–6.
18. Anderson ML, Pasha TM, Leighton JA. Endoscopic perforation of the colon: lessons from a 10-year study. Am J Gastroenterol 2000 Dec;95(12):3418–22.
19. Korman LY, Overholt BF, Box T, Winker CK. Perforation during colonoscopy in endoscopic ambulatory surgical centers. Gastrointest Endosc 2003 Oct;58(4):554–7.
20. Kim DH, Pickhardt PJ, Taylor AJ, Menias CO. Imaging evaluation of complications at optical colonoscopy. Curr Probl Diagn Radiol 2008 Jul–Aug;37(4):165–77.
21. Lüning TH, Keemers-Gels ME, Barendregt WB, Tan AC, Rosman C. Colonoscopic perforations: A review of 30,366 patients. Surg Endosc 2007 Jun;21(6):994–7.
22. Tulchinsky H, Madhala-Givon O, Wasserberg N, Lelcuk S, Niv Y. Incidence and management of colonoscopic perforations: 8 years' experience. World J Gastroenterol 2006 Jul 14;12(26):4211–3.
23. Bleier JI, Moon V, Feingold D, et al. Initial repair of iatrogenic colon perforation using laparoscopic methods. Surg Endosc 2008 Mar;22(3):646–9.
24. Thill V, Simoens Ch, Mendes da Costa P. Management of latrogenic perforation after gastrointestinal endoscopy. Hepatogastroenterology 2010 Nov–Dec;57(104):1465–8.
25. Miranda L, Settembre A, Piccolboni D, Capasso P, Corcione F. Iatrogenic colonic perforation: Repair using laparoscopic technique. Surg Laparosc Endosc Percutan Tech 2011 Jun;21(3):170–4.
26. Schlöricke E, Bader FG, Hoffmann M, Zimmermann M, Bruch HP, Hildebrand P. Open surgical versus laparoscopic treatment of iatrogenic colon perforation - results of a 13-year experience. [Article in German]. Zentralbl Chir 2013 Jun;138(3):257–61.
27. Kilic A, Kavic SM. Laparoscopic colotomy repair following colonoscopic polypectomy. JSLS 2008 Jan–Mar;12(1):93–6.
28. Ng WT. Re: Laparoscopic repair of colonoscopic perforations. Surg laparosc endosc percutan tech. 2006;16:49–51. Surg Laparosc Endosc Percutan Tech 2007 Feb;17(1):68–9.
29. Schlinkert RT, Rasmussen TE. Laparoscopic repair of colonoscopic perforations of the colon. J Laparoendosc Surg 1994 Feb;4(1):51–4.
30. Hansen AJ, Tessier DJ, Anderson ML, Schlinkert RT. Laparoscopic repair of colonoscopic perforations: Indications and guidelines. J Gastrointest Surg 2007 May;11(5):655–9.
31. Allam M, Piskun G, Fogler R. Laparoscopic-assisted repair of extensive rectosigmoid injury after colonoscopy. Laparoendosc Adv Surg Tech A 1997 Apr;7(2):127–30.
32. Bleier JI, Moon V, Feingold D, et al. Initial repair of iatrogenic colon perforation using laparoscopic methods. Surg Endosc 2008 Mar;22(3):646–9.

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Author Contributions

Amin Tanveer – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Sayed Ali Andrabi – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published
Senthi Kumar Sundaramurthy – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

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Guarantor of Submission

The corresponding author is the guarantor of submission.

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Consent Statement

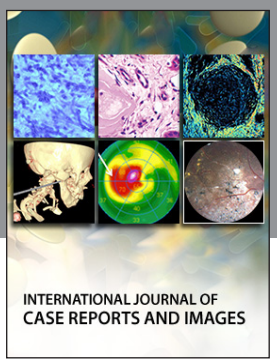
Written informed consent was obtained from the patient for publication of this case report.

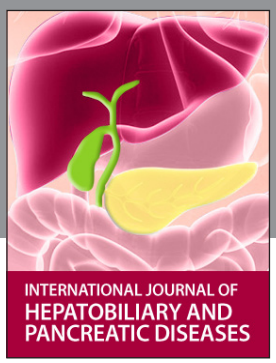
Conflict of Interest

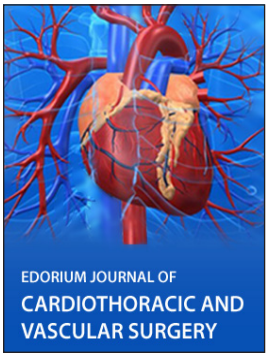
Authors declare no conflict of interest.

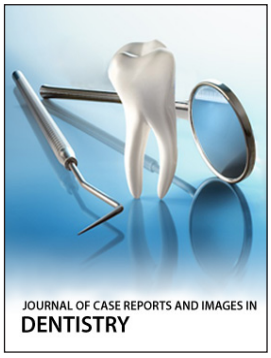
Data Availability

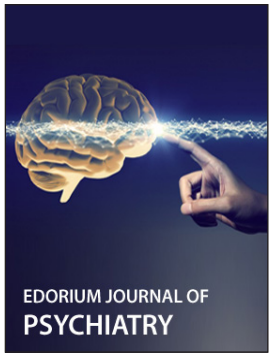
All relevant data are within the paper and its Supporting Information files.

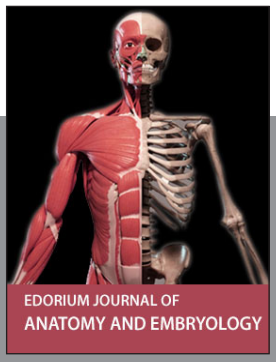


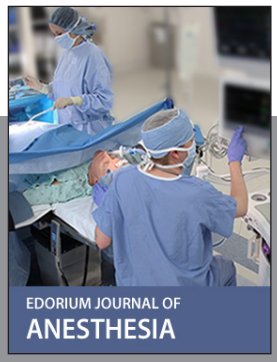












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