

SHORT COMMUNICATION

Iatrogenic perforation during an endoscopic examination of the gastrointestinal tract

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Abstract

Objective: The study was aimed to highlighting the situations leading to increased risk of iatrogenic perforation during an endoscopic examination of the GIT. The optimization of surgical care procedure following intestinal perforation was suggested as well.

Methods: We analysed 3897 colonoscopic examinations performed during the past 5 years. We have found 6 cases (0.15 %) of iatrogenic colon perforation.

Results: All six cases of iatrogenic GIT perforations were followed by surgical revision. A suture was done twice, stomy three times, resection once, and restomisation also once.

Conclusions: Polypectomy of thick polyps with a wider base and more rigid consistency is dangerous. The longer is the time and stronger the coagulation, the higher is the chance of iatrogenic perforation. Therefore we recommend laparoscopically assisted procedure. (Ref. 10.)

Key words: colonoscopy, iatrogenic perforation, operative restoration.

Colonoscopy colon perforation is the most serious complication of diagnostic and therapeutic colonoscopy (1, 2). Every qualified and experienced endoscopy team encounters complications whilst performing out endoscopic examinations.

Therefore it is necessary to take complications into account and, to minimise their potential effect.

The first presumption of minimisation is a high qualification of all members of the endoscopy staff and a high level of knowl-

edge in their field as well as a quality technical equipment and facilities.

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Another factor is an early recognition of complications and an immediate treatment.

The aim of our project was to define the situations that could lead to increased risk of iatrogenic GIT perforation during diagnostic and therapeutic colonoscopy. Analysing the treatment of patients after perforation we tried to optimise the treatment after complications.

Methods

In St. Anna's University Hospital in Brno is the colonoscopy treatment carried out at the Gastroenterology Department and at the First Department of Surgery. From 1998 to 2002 a total of 3890 diagnostic and therapeutic colonoscopy were performed.

The procedure is exclusively carried out by experienced and qualified surgeons, licensed to perform diagnostic and therapeutic colonoscopy. Colonoscopy is performed in patients after GIT emptying, in premedication and without full anesthesia.

A standardised examination method is used, with the possibility of an RTG check-up to ensure that equipment is correctly positioned.

If it is necessary, a surgical revision in the 24-hour emergency theatre is performed.

Results

Iatrogenic perforation of colon has been observed in 6 of 3897 patients in our monitored group (0.15 % of cases). Among these patients, two patients undergone diagnostic treatment and four patients were expected to undergo polypectomy treatment.

Diagnostic treatments once lead to colon perforation when the colonoscope entered the diverticle. The second patient undergone colonoscopy treatment through terminal sigmoidostomy.

The most common colon perforation occurred in four cases during a planned polypectomy. In all cases had the patients stronger polyps with a wider base (more than 2 cm) and higher density.

An extensive treatment was required in all patients with polypectomy. All removed polyps with subsequent colon perforation were stored in an antimesenterial way.

In all patients was GIT perforation diagnosed by the doctor performing the endoscopic treatment. Consequently, an urgent surgical revision was carried out in all patients, immediately after iatrogenic colon perforation.

The average period of the time between the perforation and surgical revision was around two hours and never exceeded three hours.

In four from six cases, the surgical revision in the operation theatre included the resection of the affected part of the perforated colon after Hartman; in one case of spot perforation it included suturing and the drainage of the abdominal cavity.

In patients with colon perforation during procedure through terminal stomy, the perforation occurred in the area of the colon bend at the peritoneum level. Therefore was the complication successfully treated by sewing a new terminal stomy.

The post-surgical phase led to recovery with no further complications in four patients. In two patients was the healing of surgery wound per secundum. No other complications occurred in patients.

Discussion

References in literature state that iatrogenic perforation of colon occurs in 0.20 % of colonoscopy patients. For example, in the overall statistics of 10000 colonoscopic treatments, after Haber-Gamma & Waye, the perforation occurs in 0.17 % of colonoscopy patients.

Rogers states, that there is a 0.21 % rate of perforation over 25000 colonoscopic treatments, Fruhmorgen, 0.14 % over 36 000 cases.

Perforation occurs mostly during the removal of so-called "difficult polyps". In some cases, the term "difficult polyp" is linked to "difficult colon", used to describe the colon's anatomic structure which makes it difficult to insert a surgical instrument (9).

When removing large polyps, the removal of separate parts of the polyp is suitable, using the so-called „piecemeal technique“ (3). This method has been proven suitable for polyps with a base larger than 1.5 cm in average, without a visible stem. This technique is considered to be safe regarding the perforation.

Another danger represents an arterial plexus in a wide polyp stem. A wide stemmed polyp is often difficult to identify (4).

If bleeding occurs, tissue-constriction substances might be instilled into the polyp base. The applied electrical coagulatory current must be short with short impulses. Therefore the treatment must be performed with patience.

Currently, when planning a polypectomy of so-called difficult polyps, we use laparoscopic assistance to check the colon from the free peritoneal cavity (5, 6, 7).

Video-laparoscopy during colonoscopic polyp removal enables us to monitor the surface of the colon in the area of the polypectomy. When colon serosis is detected (so-called colonic coagulation syndrome), a laparoscopic suturing of the injury is performed (7). Therefore we currently prefer laparoscopic assistance in polypectomy.

When perforation occurs in an otherwise intact colon, a laparoscopic suturing of the injury and a subsequent careful peritoneal lavage (8, 9) can be carried out.

If laparoscopic treatment is not possible, an immediate laparotomic revision must be performed.

When colon perforation occur in pathologically altered areas, it must be followed by segmented colon resection (10).

If colon injury occurs close to the stomy, restomisation appears to be suitable.

Early recognition of the injury and subsequent treatment appears to be the most significant factor in all cases of iatrogenic colon damage. Preventive measures in organ to avoid undesirable complications include not only a careful treatment, but also subsequent follow-up care. When iatrogenic colon damage appears during colonoscopic procedure, an urgent and immediate surgical treatment is crucial for the patient's recovery.

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