



Clinical value of pouchogram prior to ileostomy closure after ileal pouch anal anastomosis

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Abstract

Background In patients who undergo restorative proctocolectomy (RPC) a pouchogram is often used to assess the integrity of the ileal pouch–anal anastomosis (IPAA) before closing the covering ileostomy. There are no good data to support this practice. The aim of the study was to investigate whether contrast pouchography was clinically useful after RPC.

Methods We conducted a retrospective study of patients who had undergone RPC with a covering ileostomy between September 2013 and September 2015.

Results 61 patients were included. 7 (11%) presented with anastomotic leak and 2 (3%) with pelvic collection, detected on cross-sectional imaging for early postoperative symptoms. In the remaining 52 patients, without immediate postoperative complications, pouchography was performed at a median of 14 weeks (range 7–71 weeks) after RPC. Each patient also underwent examination under anaesthesia (EUA) to assess the integrity of the IPAA on the day of the ileostomy closure. One asymptomatic patient (2%) had an anastomotic leak demonstrated on pouchogram which was subsequently confirmed at EUA. Two patients (3%) with a normal pouchogram, 1 symptomatic and 1 asymptomatic, subsequently had an anastomotic leak demonstrated at EUA.

Conclusions Pouchogram has a low sensitivity in identifying anastomotic leak before ileostomy reversal in patients after RPC and only rarely changes management. In our series it identified the diagnosis of anastomotic leak in only 1 patient and gave false reassurance in two others. Complications are more frequently detected by clinical history and formal EUA before ileostomy closure.

Keywords Proctocolectomy · Restorative · Ileoanal pouch · Pouchogram · Anastomotic leak

Introduction

Restorative proctocolectomy (RPC) with formation of ileal pouch–anal anastomosis (IPAA) is the procedure of choice for patients with medically refractory ulcerative colitis (UC) and some patients with familial adenomatous polyposis (FAP) [1, 2]. Formation of a protective proximal diverting stoma is common practice in the management of patients undergoing a low pelvic anastomosis [3]. The purpose of performing temporary ileostomy is to limit the short- and long-term morbidity associated with leakage from a low pelvic anastomosis [4]. Routine radiological examination of the ileal pouch (pouchogram) prior to ileostomy closure

is commonly used to assess the integrity of the pouch and the pouch–anal anastomosis. The current literature does not provide data to support the routine use of pouchography [5–7]. The aim of this study was to determine whether routine pouchogram before ileostomy closure was clinically useful in our patients following RPC.

Materials and methods

We conducted a retrospective study of patients with UC and FAP who had undergone RPC (two stage RPC) or restorative proctectomy following previous colectomy (three stage RPC) with temporary ileostomy at St Mark's Hospital between September 2013 and September 2015. Our routine practice is to have a pouchogram performed by an experienced consultant Gastrointestinal Radiologist, 8–12 weeks after IPAA, and examination under anaesthetic (EUA) of

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the IPAA immediately before closing the ileostomy, under the same general anaesthetic. Patients who had not had the pouchogram done, as they were not ready for stoma reversal because of ongoing chemotherapy or for personal reasons, were excluded. The data collected included gender, age, indication for RPC, previous operations, whether surgery was open or laparoscopically assisted, two or three stage RPC, postoperative complications (using Clavien–Dindo grading), length of stay, date of pouchogram and results, other radiological investigations, date of EUA and subsequent closure of ileostomy (if done) and follow-up. We analysed the correlation of the contrast pouchogram and EUA findings in the detection of leakage before ileostomy closure.

Statistical analysis

Summary statistics, sensitivity, and specificity calculations were carried out in Microsoft Excel 2010.

Results

There were 64 patients, 3 of whom were excluded since they had not had pouchography as stoma reversal was to be delayed because of personal reasons in 1 patient and chemotherapy for colorectal cancer in 2 patients. Of 61 included patients, 36 (59%) were male and 25 (41%) female. The mean age of the patients was 39 years (SD \pm 13.9). The underlying diagnosis was UC in 48 (79%) patients and FAP in 13 (21%). One patient with UC had a redo IPAA. A two stage procedure (RPC with loop ileostomy) was performed in 20 patients (33%), whereas 40 (67%) had a three stage procedure (colectomy, restorative proctectomy with loop ileostomy).

Laparoscopically assisted surgery was performed in 34 patients (56%). The majority of the pouches were ‘J pouch’, 16–18 cm long, created using several firings of a 75 mm linear stapler, and with a CDH 29 mm circular stapler used to perform the IPAA 0.5–2 cm above the dentate line. Five patients (8%) had a hand sewn IPAA. The median length of stay was 9 days (range 4–23 days). Fifty two patients were discharged without any postoperative complications. A contrast pouchogram was done at a median of 14 weeks (range 7–71 weeks) after the IPAA.

Nine patients developed abnormalities including vomiting, tachycardia, abdominal pain or pyrexia while in hospital during the immediate postoperative period (grade IIIa/b Clavien–Dindo classification); they were investigated by computed tomography (CT) scan or magnetic resonance imaging (MRI) and 7 anastomotic leaks and 2 pelvic collections without detectable leak were diagnosed. Following discharge, 1 previously well patient presented with a painful fissure within the anal canal; the pouchogram was

subsequently negative for leak, but showed ‘distortion of the most distal aspect of the pouch’ and the EUA performed afterwards identified a small defect in the IPAA. Two further asymptomatic patients had anastomotic leaks. One of these was seen on both pouchogram and subsequent EUA, and one was not seen on the pouchogram and was only discovered on EUA prior to ileostomy reversal (Fig. 1). The contrast pouchogram findings were normal for the remaining 49 patients (80%) who had an uncomplicated postoperative period.

Overall, 10 patients had postoperative anastomotic leak (16%) and 2 patients presented with pelvic collection without leak (3%). The ileostomy was closed at a median interval of 26 weeks after IPAA (range 10–92 weeks) in 56 patients (92%), but not in the remaining 5 patients (8%) because 2 had anastomotic leak and were still having treatment, 1 patient had a persistent presacral collection, 1 had an anastomotic leak and was also on chemotherapy for cancer, and 1 had required pouch excision. The median length of follow-up was 44 weeks (range 5–123 weeks). There was no mortality. There was no morbidity in 34 (56%) patients during follow-up.

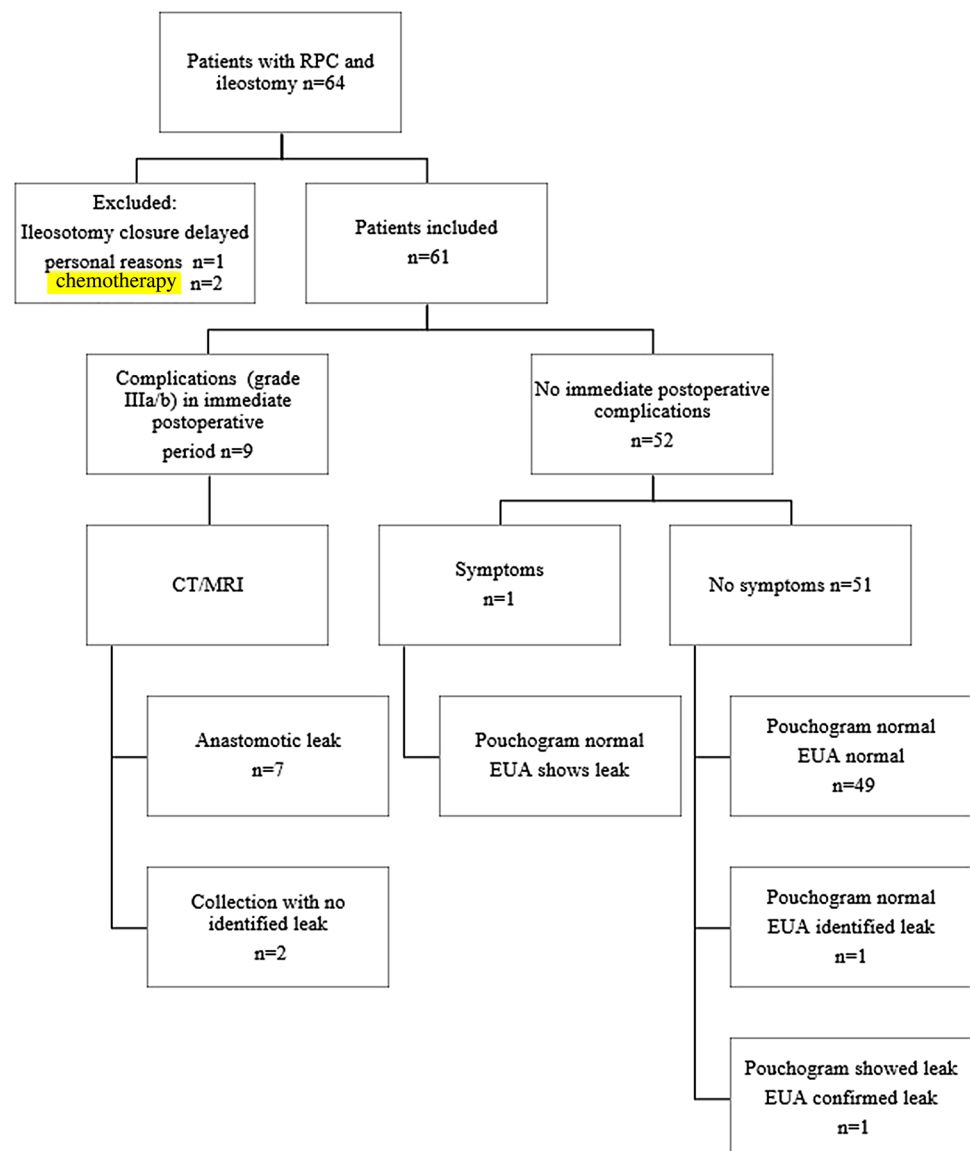
Discussion

Identification of anastomotic complications in the period of time between IPAA and closure of temporary ileostomy may be difficult especially in asymptomatic patients. Pouchogram prior to closure of the ileostomy is performed with the intention of identifying pouch abnormalities that would preclude stoma reversal. Whether this investigation is sufficiently sensitive to identify patients with otherwise undetected anastomotic leak is debatable.

In the patients with postoperative symptoms (15%) after IPAA, all were investigated with CT and/or MRI and had anastomotic leak or pelvic collection diagnosed in this fashion before having a pouchogram. In the group without immediate postoperative complications two pouchograms were false negative for anastomotic leak. One of these was in a patient symptomatic with anal pain after discharge from hospital. Only one pouchogram represented a true positive for anastomotic leak.

Overall in our experience, routine pouchogram before closure of ileostomy in patients without postoperative complications or subsequent symptoms showed a sensitivity and a specificity for the prediction of anastomotic leaks of 50 and 100%, respectively, detecting anastomotic leak in only 1 asymptomatic patient. The false negative rate on pouchogram in this group was 50% for previously undiagnosed leaks and there was only 1 case (2%) in which the pouchogram might have changed management: although no leaks were discovered on pouchogram that

Fig. 1 Outcome of patients undergoing restorative proctocolectomy. *RCP* restorative proctocolectomy, *EUA* examination under anaesthesia, *CT* computed tomography, *MRI* magnetic resonance imaging



were not subsequently found at EUA, it is possible that in the single case where a pouchogram was positive in an asymptomatic patient the sensitivity of the subsequent EUA was improved by advance knowledge of the probable leak. It is unlikely that any clinically significant leaks were missed at both pouchogram and EUA as no complications occurred on subsequent follow-up. Evaluating the pouch before ileostomy reversal allows for a pragmatic approach to the management of associated complications, delaying the surgery while allowing the anastomosis to heal [8] or perianastomotic sinus to mature.

In 1 asymptomatic patient who had a normal contrast pouchogram the subsequent EUA identified anastomotic leak. Therefore, even though some authors [9] suggest that EUA should only be performed before ileostomy closure if symptoms are present; we believe that EUA should be

performed in every patient regardless of symptoms and pouchogram report.

Examination under anaesthetic appears to be more sensitive at identifying small defects in the pouch anal anastomosis than a contrast pouchogram. Indeed, careful digital anal examination can provide more useful clinical information when compared with contrast enema evaluation in patients with low pelvic anastomosis undergoing workup for stoma reversal [10]. Moreover, the benefits of performing a routine examination should be weighed against cost, radiation exposure and patient discomfort.

Making a distinction between symptomatic and asymptomatic patients is also very important. In the group of postoperative symptomatic patients, all were investigated by cross-sectional imaging without using pouchogram. Only 1 patient who had symptoms, which occurred after discharge from

hospital, had a pouchogram, which gave a false negative result. The management of patients in whom an anastomotic leak is diagnosed in the immediate postoperative period may include pouchography at a later date, but this is a different clinical context from that addressed in this study.

Conclusions

The pouchogram has a low sensitivity in identifying clinically unsuspected anastomotic leak prior to ileostomy closure in patients following RPC. Despite its low sensitivity, it is still used. Routine EUA seems to have a higher sensitivity in detecting IPAA defects. Overall, the use of the pouchogram prior to ileostomy closure in patients without postoperative complications or symptoms is of limited value and certainly does not replace clinical assessment. Our next aim is to investigate whether MRI pouchography is a more satisfactory diagnostic technique than fluoroscopic pouchography in these cases.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval This article does not contain any studies with human participants performed by any of the authors.

Informed consent As this was a retrospective service review, informal consent was not required.

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