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## Single Case

# Neoterminal Ileal Polyposis and Ulceration after Restorative Proctocolectomy with a Current Review of the Literature

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## Keywords

Ileal pouch anal anastomosis · Restorative proctocolectomy · Ulcerative colitis · Pouchitis · Polyposis of the pouch · Crohn's disease of the pouch · Inflammatory bowel disease

## Abstract

After ileal pouch anal anastomosis, one of the frequently encountered complications is polyposis of the pouch. We describe a case of proximal neoterminal ileal polyposis associated with deep ulceration suggestive of Crohn's disease and review the available literature. A 36-year-old male presented with resistant pouchitis 11 years after surgery for ulcerative colitis. With all-negative initial workup, pouchoscopy showed multiple deep ulcers in the proximal ileum with some polyps. Biopsy of polyps showed inflammatory polyps with negative immunohistological staining for IgG pouchitis. With no treatable etiology for pouchitis and the presence of inflammatory polyps, there are no guidelines for surveillance of this condition. Definitive diagnosis is challenging and there is no consensus or recommended guidelines on the management.

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## Background

Ileal pouch anal anastomosis (IPAA) or restorative proctocolectomy is a frequently used surgical option for the management of ulcerative colitis (UC) after colectomy [1]. Despite good postsurgical functional outcomes, including improvement in quality of life, the procedure is frequently associated with complications, such as pouchitis, pouch failure, fistula formation, and rarely malignancy in the pouch [2–4].

In addition, there are reports of de novo Crohn's-like disease or undefined immune-mediated inflammation in the pouch in patients known to have UC before IPAA [5, 6]. This has to be distinguished from pre-pouch ileitis if there is endoscopic disease found in the pre-pouch ileum, as the clinical course and treatment may vary. Pre-pouch ileitis is inflammation of the neoterminal ileum (also called pre-pouch or afferent limb) which has endoscopic and histological similarity to pouchitis [7–10].

Polyposis of the pouch (PP) is seen with a similar frequency in IPAA in patients with UC as compared to patients with familial adenomatous polyposis [11]. These are mostly associated with concomitant chronic inflammatory stigmata in the pouch [12]. There is low prevalence of PP in patients with de novo Crohn's-like disease of the pouch [12, 13]. Hence, as of now, there are no standard guidelines on surveillance and management of these patients.

We describe a case of proximal neoterminal ileal polyposis associated with deep ulceration suggestive of Crohn's disease and review the available literature. Definitive diagnosis is challenging and there is no consensus or recommended guidelines on the management.

## Case Report

A 36-year-old male presented with a 2-month history of increased frequency of bowel movements and urgency 11 years after IPAA for UC. At baseline, the patient had 2–3 bowel movements per day but the number went up to 5–6 bowel movements per day associated with significant urgency. There was no fever, chills, nausea, or abdominal pain associated with these symptoms. He had been treated with 1 month of oral ciprofloxacin and metronidazole for presumed pouchitis. He was diagnosed with UC 15 years prior to presentation, underwent a J-pouch IPAA, and had a benign 11-year post-pouch clinical course and occasional courses of ciprofloxacin for infrequent pouchitis.

Laboratory testing revealed normal complete blood count, serum electrolytes, renal function, and liver function test. Stool testing for clostridium difficile and other infective pathogens was negative. Pouch endoscopy showed diffuse inflammation in the pouch and several large pedunculated polyps (around 15–20 mm) at 5 cm proximal to the anastomosis. In addition, there were multiple deep ulcers in the proximal (neoterminal) ileum (Fig. 1, 2, 3) and rectal cuff. The polyps were removed by hot snare and biopsies of multiple areas were obtained by cold forceps. Biopsy of the neoterminal ileum, anastomosis, and pouch showed marked active erosive inflammation, moderate active inflammation, and chronic focally active inflammation, respectively, with no dysplasia. Biopsy of the polyps showed features compatible with inflammatory polypoid lesion with erosion and also showed no dysplasia. IgG and IgG4 immunohistochemical studies did not demonstrate increased IgG4 expression or IgG4/IgG ratio.

## Discussion and Conclusion

Pouchitis is an inflammation of the pouch after IPAA. It may be characterized by increased stool frequency, tenesmus, hematochezia, and pain. Endoscopy confirms inflammation in the absence of an infective etiology [2, 3, 14]. Postulated etiological factors include genetic predisposition, dysbiosis, aberrant microbiota-host interactions, and immune-dysfunction [3]. Pouch disorders may not be static and may change during the course of follow-up [5].

Secondary pouchitis may result from infection, non-steroidal anti-inflammatory medications, pouch ischemia, or be immune mediated [3]. Immune-mediated pouchitis is characterized by non-response to antibiotic treatment, but may respond to anti-inflammatory medications. There may be serum auto-antibodies and presence of other immune-mediated disorders [15]. IgG4-associated pouchitis is a subset of immune-mediated pouchitis characterized by presence of IgG4 on pouch biopsies and/or elevated serum IgG4. It is postulated that it could be a part of the IgG4-related disease spectrum [16].

De novo Crohn's-like disease of the pouch is a long-term complication of the pouch that contributes to pouch failure [17]. It is characterized by endoscopic or histological findings of Crohn's-like findings in the pouch or any other part of the gastrointestinal tract. This must be differentiated from misdiagnosed Crohn's disease of the pouch which can happen in a minority of cases [8]. There are 3 classes of Crohn's disease of the pouch: inflammatory, fibrostenotic, or fistulizing types [18].

Polyps in inflammatory bowel disease could be "true" pseudo-polyps, inflammatory polyps, postinflammatory polyps, or neoplastic polyps. "True" pseudo-polyps have inflammation that occur simultaneously and parallel in the neighboring areas. Inflammatory polyps have isolated granulation tissue in the polyps' ulcerated epithelium. Postinflammatory polyps have a layer of normal or hyperplastic glandular epithelium. Neoplastic polyps could be adenomatous, dysplastic, or overt cancer [19]. In a single center study by Liu et al. [12], the incidence of PP was comparable to the incidence in familial adenomatous polyposis (FAP) patients who undergo IPAA.

Risk factors associated with PP include chronic pouch inflammation (evidenced by chronic antibiotic resistant pouchitis, Crohn's disease of the pouch, or cuffitis), which confers a greater than 2-fold increased risk (2.26, 1.35–3.79) [14]. Other postulated potential risk factors include the duration of the IPAA. However, this was not borne out on multivariate analysis [14]. The most common histological type is an inflammatory polyp (97%) and is usually asymptomatic. There were 2 major studies that looked at the attributes and outcomes of PP [12, 13]. Both studies reported the most common histological subtype as inflammatory polyp (91–97%) followed by dysplasia (3–9%). Also, the most common location is the pouch followed by the neoterminal ileum and the cuff. The mean size of the polyps in each study was 1.2 and 1.89 cm, respectively. The large polyps (>1 cm) are usually removed via snare polypectomy.

First-line therapy for acute pouchitis after ruling out surgery-related structural abnormalities and clostridium difficile infection is antibiotics. Options include oral ciprofloxacin or metronidazole for 2 weeks [20, 21]. Oral vancomycin is preferred for clostridium difficile infection. In cases of non-response to standard antibiotic therapy, an extended 4-week combination course of ciprofloxacin with metronidazole, rifaxamin, or tinidazole may be helpful as per the fecal coliform sensitivity testing [22–24]. If pouchitis is persistent after initial therapy, it is prudent to explore secondary causes including ischemia, cytomegalovirus infection, autoimmune pouchitis, primary sclerosis cholangitis, or structural pouch disorders [4].

Current recommendations for treatment strategies for secondary pouchitis are largely based on expert opinions in the absence of robust evidence from studies. This was even demonstrated in a large meta-analysis of 21 studies with great heterogeneity [25]. Topical or oral aminosalicylates may be beneficial in patients with pouchitis associated with backwash ileitis or cuffitis [26]. Oral budesonide as a first line is efficacious for primary sclerosis cholangitis related pouchitis or enteritis and IgG4-related pouchitis [27]. A combination of budesonide and low-dose mercaptopurine may be of some benefit in immune-mediated pouchitis. However, anti-tumor necrosis alpha agents (e.g., infliximab) have shown marginal efficacy in chronic pouchitis secondary to Crohn's disease of the pouch [28]. Patients with Crohn's disease of the pouch need prolonged therapy to avoid pouch failure or ileostomy [29]. There are no evidence-based guidelines on how frequently patients with PP have to be followed up with recurrent endoscopies to prevent or detect dysplasia.

There are no universally accepted evidence-based guidelines for treatment or surveillance in the described presentation. In the absence of any concerning histological features, we opted for prudent clinical follow-up with endoscopic follow-up every other year. Further large multicenter studies are needed to help guide therapy and endoscopic follow-up intervals.

### Statement of Ethics

For this case report, written consent was obtained from the patient.

### Disclosure Statement

The authors declare that they have no competing interests.

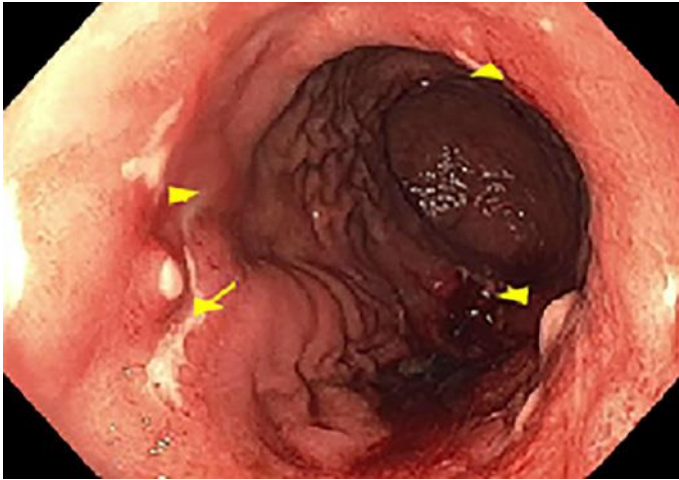
### Author Contributions

V.S.G.: writing initial draft and final edits; N.R.: helped editing the draft; K.C.: helped with the initial idea, editing the draft, and final edits. All authors have read and approved the manuscript and ensure that this is the final product.

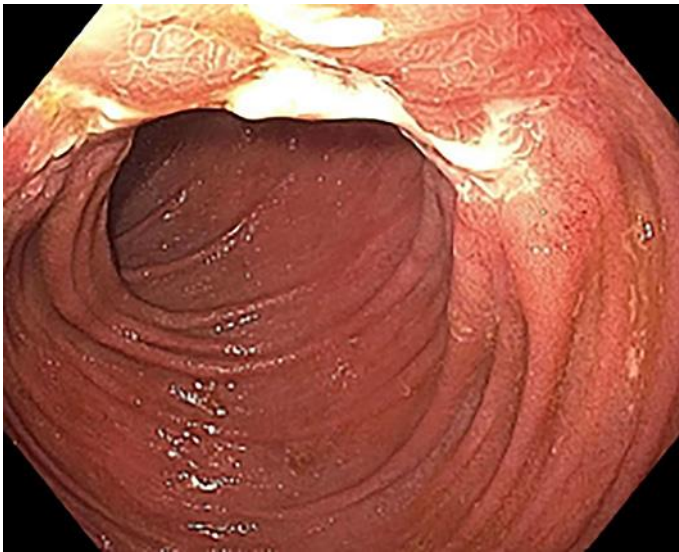
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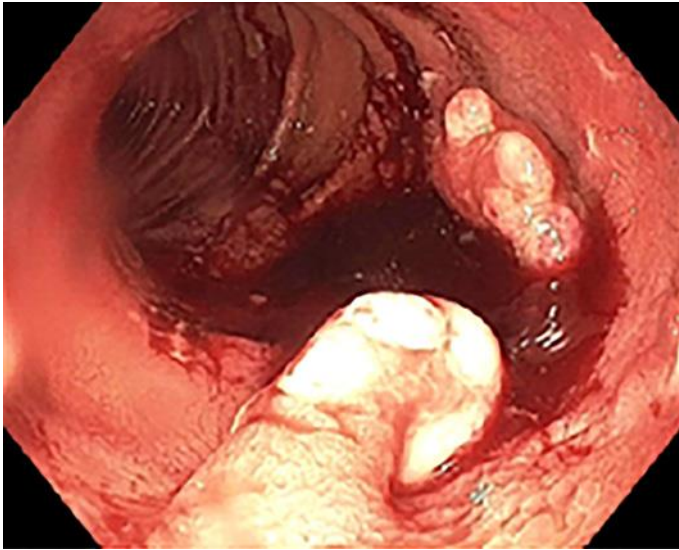
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**Fig. 1.** Rectal cuff with ulcers showed by the yellow arrowheads.



**Fig. 2.** Proximal J-Pouch with ulcer.



**Fig. 3.** Proximal J-Pouch with polyps.