



## Original research

## Pouch adenomas in Familial Adenomatous Polyposis after restorative proctocolectomy

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## H I G H L I G H T S

- This study adds data of pouch adenoma formation following restorative proctocolectomy for FAP.
- Complete follow-up in a tertiary referral centre with a large proportion of patients coming from rural areas is difficult.
- Our study supports current Australian guidelines recommending careful six to twelve monthly surveillance.
- Larger, long-term surveillance and polypectomy studies following pouch surgery in FAP are warranted.

## A R T I C L E I N F O

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## A B S T R A C T

**Introduction:** Australian Clinical Practice Guidelines suggest six to twelve-monthly endoscopic pouch surveillance in patients after restorative proctocolectomy for Familial Adenomatous Polyposis (FAP). There are several reports of adenomas and carcinomas forming within the ileum, ileal pouch mucosa or residual rectal mucosa. A retrospective clinical study was performed to audit pouch endoscopic surveillance at a large Sydney tertiary referral Hospital. The aim was to evaluate adenoma development after restorative proctocolectomy for FAP and the adherence rate to published clinical guidelines. **Methods:** Thirty-nine patients who had restorative proctocolectomy for FAP from 1985 to 2011 were identified. Demographic data, details of surgery, original histopathology and details of follow-up pouch endoscopy and pathology findings were obtained. **Results:** Of the thirty-nine patients, twenty-seven patients were included in this study. Adenomas were found in twelve of 27 (44%) patients. Mean time to first polyp formation was 88 months and median time was 72 months (range 18–249 months). All polyps were either tubular or tubulovillous in histology. One polyp had high grade dysplasia. The remainder had mild or moderate dysplasia. Polyps were excised either endo-anally or during pouchoscopy. None of the five patients who had a hand-sewn ileal pouch-anal anastomosis (IPAA) developed polyps on follow-up, compared with 12 of the 22 (55%) with a double stapled anastomosis (fishers exact test;  $p = 0.047$  (two-tailed)). Of those who developed pouch adenomas, eight (67%) developed further pouch adenomas on follow-up. **Conclusions:** This study supports guidelines recommending lifelong pouch surveillance after restorative proctocolectomy for FAP. Those who develop pouch adenomas may be at greater risk of developing further adenomas. Residual rectal mucosa at the pouch-anal anastomosis should be carefully examined.

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## 1. Introduction

Familial Adenomatous Polyposis (FAP) is an autosomal dominant disorder caused by a germline mutation in the adenomatous polyposis coli gene (APC) characterised by the development of large numbers (typically >100) colorectal adenomas. These develop at an

early age and contribute to a 100% lifetime risk of Colorectal cancer (CRC) [1–4].

Due to this high incidence of cancer, a prophylactic colectomy is recommended to prevent CRC in FAP patients. Colectomy with ileorectal anastomosis is an option as it preserves rectal mucosa innervation leading to better quality of life outcomes. This however necessitates regular surveillance as the risk of cancer, despite surveillance approaches 13–25% after 15–25 years [5–7]. Restorative proctocolectomy is commonly the treatment of choice because it avoids a permanent stoma as well as reducing the risk of carcinoma in residual rectal mucosa [8–10]. This is usually by way of an ileal pouch-anal anastomosis (IPAA). This was originally described by Parks et al. who included an anal mucosectomy to eliminate the risk of malignancy in the remaining anorectal mucosa [11]. Despite this there are several reports of adenomas and adenocarcinomas developing within the pouch after restorative proctocolectomy for FAP [12–18].

European expert guidelines [19] suggest endoscopic pouch surveillance every 6–12 months. This is consistent with Australian Clinical Practice guidelines [20,21]. Careful assessment of the anal canal, anal transitional zone, pouch-anal anastomosis, pouch and the pre-pouch ileum is advised [22].

The time since pouch surgery has been demonstrated as a consistent predictor of the formation of pouch adenomas. Parc et al. [15] reported eighty-five patients post-pouch procedure endoscopically surveyed at 5, 10 and 15 years. The risk of developing pouch adenomas was 7%, 35% and 75% respectively. Wu et al. [18] reported 42% of a series of 26 patients had adenomatous polyposis in the pouch, increasing in incidence with time from surgery. A relationship between adenomas and the age of the pouch was also found in 33 patients over 10 years [16]. This suggests that long term careful periodic pouch surveillance is required.

Tonelli et al. [23] found a significant relationship between the number of colonic adenomatous polyps at surgery and the occurrence of pouch adenomas. They found 46% of patients with >1000 colonic polyps at the time of surgery developed pouch adenomas at follow-up over 10 years compared with 25% of those with 200–1000 and none of those with <200 colonic adenomas.

Restorative proctocolectomy can leave either an intact anal transitional zone (ATZ) with a double stapled anastomosis technique or excise the ATZ with an anal mucosectomy and hand sewn anastomosis technique. A double-stapled technique is simpler and has been shown to have a better functional outcome and is now often preferred by surgeons [8–10,24].

The aims of this study were to assess the incidence of pouch adenomas and pouch cancer and also to assess compliance with current guidelines on pouch surveillance in patients from a Sydney tertiary-referral Hospital who had restorative proctocolectomy for familial adenomatous polyposis.

## 2. Methods

Patients from 1984 to 2011 were retrospectively identified using a thorough database of restorative proctocolectomy patients maintained at Royal Prince Alfred Hospital. FAP patients were identified by the presence of more than 100 colorectal adenomas.

Patient demographic data, surgical details, pathology reports and details of follow-up endoscopy were collected for each patient from the database and patient medical records. Ethical approval for the study was obtained from Sydney South West Area Health Service.

The time to polyp formation was defined as the time from the date of surgery to the date of the first histologically confirmed adenoma. The number, size, site and histopathology of polyps seen at endoscopy were recorded where available.

## 3. Results

Thirty-nine patients were identified as having restorative proctocolectomy for FAP, and for twenty-seven (14 male, median age at surgery 31 years, range 14–65 years) follow-up data was available. Of the other twelve patients, eleven were from regional and rural areas, and were followed-up elsewhere, and we did not have follow-up data available. One patient died from post-operative septic complications at three months and therefore did not have pouch surveillance.

Adenomas were found in twelve (44%) patients. Mean time to first polyp formation was 88 months and median time was 72 months (range 18–249 months). The size, number and location of the adenomas were not accurately documented in all reports and were not included in the analysis. Fig. 1 shows an endoscopic image of an ileal pouch adenomatous polyp.

All polyps were either tubular or tubulovillous in histology. One polyp had high-grade dysplasia. The remainder had mild or moderate dysplasia. Polyps were excised either endo-anally or during pouchoscopy. Some patients were followed up post-polyp removal annually, while others were followed up after a longer interval. Of those who developed pouch adenomas, eight (67%) developed further pouch adenomas on follow-up.

Despite the small numbers in the study, an interesting observation was noted about the type of original anastomosis and the relationship to the development of polyps. None of the five patients who had a hand-sewn ileal pouch-anal anastomosis (IPAA) developed polyps on follow-up, compared with 12 of the 22 (55%) patients with a double stapled anastomosis (fishers exact test;  $p = 0.047$  (two-tailed)).

## 4. Discussion

Pouch adenomas are not uncommon post restorative proctocolectomy for FAP. Groves [14] found adenomatous polyps in the pouches of 57% of patients with a total of 362 polyps (range 0–50 per patient). Friederich [25] calculated the cumulative risk of adenoma or carcinoma in the pouch at 10-year follow-up as 45% and 1% respectively. Parc [15] found an increased risk of adenoma formation with time—at 5, 10, and 15 years, the incidence of adenomas was 7%, 35%, and 75%, respectively.

Our study findings were similar. Adenomas were found in

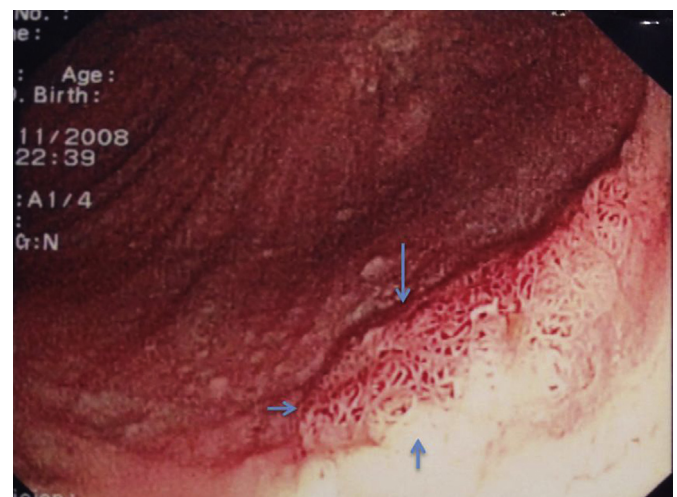


Fig. 1. A 20 mm sessile adenomatous polyp (arrows) in the ileal pouch of a patient with familial adenomatous polyposis, just above the pouch-anal anastomosis.

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