

SQUAMOUS CELL METAPLASIA IN THE RECTUM: A Case Report and Review of the Medical Literature

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Squamous cell metaplasia of colorectal epithelium is very rare. There have been only 29 cases previously reported in the English language medical literature. The cause and consequences of squamous cell metaplasia in the colorectum are unknown. We encountered a patient with squamous cell metaplasia in rectum who have had a curious history for more than 20 years. This case may be useful in attempting to understand the pathogenesis of squamous cell metaplasia in colorectum.

Key words : squamous cell metaplasia, colon, rectum

CASE PRESENTATION

A 69-year-old Egyptian-American woman was referred for evaluation of rectal bleeding. She gave a curious history of soaking her right index finger in warm water, then inserting the warm, lubricated digit into her rectum as a prelude to defecation. She had been performing this escatological ritual since undergoing a hemorrhoidectomy more than 20 years ago. Laboratory investigation revealed evidence of mild iron deficiency anemia (RBC $3.94 \times 10^6/\mu\text{l}$, Hgb 10.9 g/dl, Iron 55 $\mu\text{g}/\text{dl}$)

Colonoscopic findings

She underwent colonoscopy, which revealed patches of white mucosa extending in continuity from the anorectal margin into the rectum for approximately 5 cm (Fig. 1a, b). The remainder of the endoscopic examination was unremarkable. Large cup ("jumbo") biopsy forceps with a central needle and open diameter of 8 mm (Microvasive; Boston Scientific Corp., Natick, MA) were used to

obtain multiple biopsies from patches of white mucosa within the rectal vault.

Pathological findings

Biopsy specimens were processed by the UCLA GI Mucosal Biopsy Laboratory. Microscopic examination revealed squamous metaplasia (Fig. 2a, b) and rectal erosions. Regenerative changes with increased submucosal collagen were seen with trichrome stains. No evidence of dysplasia or malignancy was detected.

DISCUSSION

Squamous cell metaplasia in the colorectum is very rare. As shown in Table 1, there have been only 29 prior cases reported in the English literature – from David in 1938 to Chen in 1996 [1-19]. A demographic summary of these cases based-on available information, including our present patient, is as follows: 50 % of the cases were women, the mean age was 55 years (range from 34-80 years), 77 % located in the rectum or rectosigmoid, 40 % of cases had coincident

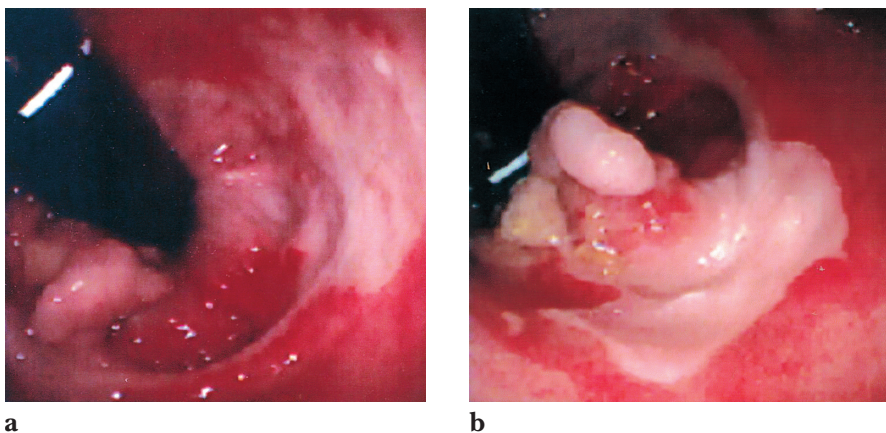


Fig. 1a, b Colonoscopy revealed patches of white mucosa extending in continuity from the anorectal margin into the rectum for approximately 5 cm.

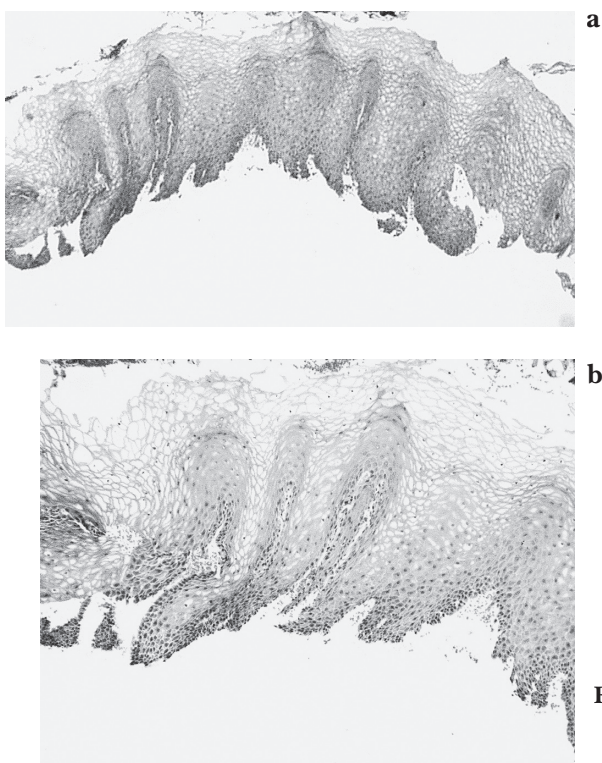


Fig. 2a, b Microscopic examination revealed squamous cell metaplasia.

adenomatous polyps detected, and 17 % had a history of ulcerative colitis.

Although the true origin of squamous cell metaplasia remains obscure, there have been many hypotheses about the cause of squamous cell metaplasia in the colorectum. According to our review of the literature, 12 out of 30 cases were accompanied by adenomatous polyps. The incidence of squamous differentiation in colonic polyps has been es-

timated at 0.4 %. Williams *et al.* [9] suggested that squamous cells arise from dysplastic adenomatous epithelium by aberrant differentiation. Hayashi [14] postulated that colonic adenomas are pluri-potent tissues, and that external and internal factors subsequently lead to squamous cell metaplasia.

Another theory of histogenesis suggests that stem cells located at the base of mucosal crypts may be stimulated to differentiate

Table 1 Reported cases of squamous cell metaplasia in colorectum.

No	First Author	Year	Sex	Age	Region	Complicated disease
1	David	1938	M		rectum	no
2	S/A	1938	M		rectum	no
3	S/A	1938	M	30 to 65	rectum	no
4	S/A	1938	M		rectum	no
5	S/A	1938	M		rectum	no
6	Dukes	1949	M	elderly	rectum	no
7	Drennan	1959	F	47	rectum	SCC and basal cell ca
8	Zirkin	1963	F	34	rectum	UC for 10 years, SCC
9	Hohm	1964	F	34	rectum	UC for 9 years, SCC
10	S/A	1964	F	51	rectum	UC for 25 years, SCC
11	Polivy	1964	F	50	rectum	no
12	Cabrera	1967	F	56	rectosigmoid	no
13	Minkowitz	1967	F	49	rectosigmoid	SCC
14	Williams	1979	F	72	rectum	villous adenoma
15	S/A	1979	F	57	transverse	villous adenoma
16	S/A	1979	M	39	rectosigmoid	tubulovillous adenoma
17	S/A	1979	M	54	rectosigmoid	villous adenoma, SCC, Adeno ca
18	Chen	1981	F	69	rectum	adenomatous polyp
19	Almagro	1984	M	76	rectum	adenomatous polyp
20	S/A	1984	M	77	rectum	villotubular polyp, Adeno ca
21	Forouhar	1984	M	80	sigmoid	adenomatous polyp, Adeno ca
22	Hayashi	1984	F	44	sigmoid	tubular adenoma
23	Hayashi	1985	M	66	ascending	tubular adenoma
24	Kontozoglou	1985	M	70	rectum	tubular adenoma
25	S/A	1985	F	50	sigmoid	villotubular polyp
26	Woods	1987	F	57	rectum	SCC
27	Adamsen	1988	M	41	transverse & sigmoid	UC for 27 years
28	Maruoka	1990	M	34	sigmoid	UC for 15 years
29	Chen	1996	F	34	rectum	no
30	Our Case	2004	F	69	rectum	no

into squamous cells by chronic mucosal injury such as those occurring in prolonged ulcerative colitis [4, 19]. Polivy [6] stated that squamous cell metaplasia of the rectum may be a result of chronic inflammatory reaction. Chronic local mucosal injury may have an important role in the occurrence of squamous cell metaplasia in the colorectum [7, 10, 11, 19]. Dukes [2] described an interesting case of squamous cell metaplasia in the rectum. The patient was a lunatic who admired Napoleon, carried a small bust of the emperor in daytime and put it into his rectum before sleep in order to prevent stealing by others. Unfortunately, he was misdiagnosed as a rectal cancer and died after his operation. The operation specimen showed a whitish papillary lesion encircling the rectum. Dukes [2] did not describe the duration of patient's curious habit or con-

sider its possible etiologic role in producing squamous cell metaplasia.

Our case is in many ways similar to that described by Dukes. For more than 20 years, our patient inserted her finger into her rectum having soaked it in warm water just before having a bowel movement in order to defecate. She too was found to have a whitish lesion in the rectum – though the diagnostic test was endoscopy rather than surgery. We postulate that chronic mechanical irritation to rectal mucosa, such as that produced by a finger or a foreign body, can lead to squamous cell metaplasia. Chronic mechanical irritation should be added to the list (adenomatous change, chronic inflammation from ulcerative colitis) of potential etiologic agents for squamous cell metaplasia of the colorectum.

Squamous cell metaplasia may also be

implicated in the pathogenesis of colorectal cancer. Our review of the literature found 2 cases of associated adenocarcinoma and 1 case of adenocarcinoma and squamous cell carcinoma. Hayashi [13] presumed that squamous epithelial polyp, squamous cell carcinoma, adenosquamous carcinoma and mucoepidermoid carcinoma may be derived from colonic adenoma with squamous metaplasia.

Squamous cell carcinoma of the colon arises from neoplastic colonic polyps [9, 12] and Williams *et al.* [9] suggested that squamous cell metaplasia in colorectal polyps is the precursor of primary squamous cell carcinoma of the colorectum. In the review of the literature, 5 cases out of 30 cases had over 9 years (mean 17.2 years) history of ulcerative colitis, and 3 cases developed squamous cell carcinoma. Minkowitz [8] reported a case of squamous cell carcinoma and squamous cell metaplasia in the rectosigmoid colon. He hypothesized that some sort of carcinogen may act on colonic mucosa to produce squamous metaplasia and that further exposure to this material may cause squamous cell carcinoma.

Because of the small number of cases, the rate of progression, if any, from squamous cell metaplasia to squamous cell carcinoma of the colorectum is unclear. We have recommended annual surveillance proctoscopy with random rectal biopsies to our patient. In addition, we have eliminated the proposed inciting agent and given her a medical therapy to facilitate rectal evacuation without the need for manual disimpaction.

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