



**PRIMARY SQUAMOUS CELL CARCINOMA OF THE COLON WITH PERITONEAL
CARCINOMATOSIS: A CASE REPORT AND LITERATURE REVIEW**

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ABSTRACT

Background: Primary squamous cell carcinoma (SCC) of the colon is an exceedingly rare malignancy, accounting for only 0.1–0.25 per 1,000 colorectal cancers. Its etiology remains unclear, with proposed mechanisms including chronic inflammation, infection, prior radiation, or squamous metaplasia in a pre-existing adenoma. Due to its rarity, optimal management is not well defined and prognosis is often poor. We present a case of a young female patient with primary colonic SCC that rapidly metastasized, and we review the relevant literature. **Case Presentation:** A 38-year-old woman with no significant medical history presented with acute large bowel obstruction. An emergency right hemicolectomy was performed, and pathology revealed a poorly differentiated squamous cell carcinoma of the ascending colon. No glandular (adenocarcinomatous) component was identified. Immunohistochemistry showed tumor cells positive for p40, confirming squamous phenotype, and negative for cytokeratin (CK)7, CK20, CD56, GATA3, and synaptophysin, helping to exclude other carcinoma types. Extensive evaluation found no other primary tumor, establishing this as a primary colonic SCC. Postoperatively, a restaging CT scan at 6 weeks showed extensive peritoneal carcinomatosis. The patient received three cycles of palliative combination chemotherapy with 5-fluorouracil and cisplatin. Despite treatment, the disease progressed on imaging at three months. The patient's condition deteriorated, and she died five months after surgery. **Conclusion:** Primary SCC of the colon is a rare and aggressive disease. This case highlights the importance of thorough diagnostic evaluation to confirm the colonic origin and the challenges in management due to rapid metastatic progression. There is no established treatment protocol; surgery is typically the mainstay, while the benefits of chemotherapy or radiation remain uncertain. The prognosis of colonic SCC is significantly worse than that of conventional colon adenocarcinoma, especially in advanced stages. Further reports and research are needed to guide therapy for this unusual colorectal malignancy.

KEYWORDS: Colonic Neoplasms; Squamous Cell Carcinoma; Intestinal Obstruction; Immunohistochemistry; Peritoneal Neoplasms; Chemotherapy.

INTRODUCTION

Primary squamous cell carcinoma (SCC) of the colon is an extremely rare variant of colorectal cancer, with an incidence of only about 0.1–0.25 per 1000 colorectal malignancies.^[1] Fewer than 100 cases of colorectal SCC have been documented in the literature, most arising in the rectum, with the ascending colon being the next most frequent site of origin.^[2] The tumor typically affects patients in mid to late adulthood (mean age ~57 years), and some series have noted a slight female predominance. The pathogenesis of primary colonic SCC remains poorly understood. Proposed etiologic factors include chronic inflammatory conditions (e.g. ulcerative colitis), infections such as schistosomiasis or amoebic colitis, prior pelvic irradiation, or squamous differentiation arising within a pre-existing adenoma.^[3] In many cases, however, no predisposing factor is identified.

Diagnosing a primary colonic SCC requires meticulous exclusion of other potential primary sources. By classic criteria, the diagnosis is confirmed only if an SCC is found in the colon with no evidence of another primary SCC (e.g. in lung, esophagus, anus, cervix, etc.) and no contiguous extension or fistulous tract from a squamous-lined epithelium.^[3] Immunohistochemical studies aid in characterization: colonic SCC will typically express squamous markers (such as p63/p40 and high-molecular-weight cytokeratins) and lack glandular markers (e.g. CK20 or CDX2) that are seen in adenocarcinomas.^[4] Once a primary colonic SCC is confirmed, it poses a therapeutic challenge. No standardized treatment guidelines exist due to its rarity. Management has generally followed principles for colorectal adenocarcinoma, with surgical resection being the mainstay. The role of adjuvant chemotherapy or radiation is not well established, though these modalities have been utilized in some cases by analogy to anal SCC or on a case-by-case basis. Unfortunately, the prognosis of colonic SCC is often unfavorable. Historically, five-year survival as low as ~30% has been reported in small series, and even a recent systematic review noted an overall 5-year survival under 50% despite aggressive therapy. Advanced-stage disease confers a significantly worse outlook than comparable stages of adenocarcinoma. Here, we describe a rare case of primary SCC of the right colon in a 38-year-old woman who had a rapid, disseminating course. We discuss the clinical, radiologic, and pathologic features of this case in the context of the available literature, underscoring the diagnostic and management considerations for this unusual entity.

Case Presentation

A 38-year-old North African woman with no prior medical history presented to the emergency department with acute abdominal pain, distension, and obstipation evolving over four days. She had progressive cramping pain, nausea, and no bowel movements but denied bleeding, vomiting, fever, or weight loss. Examination

revealed a distended, tender abdomen with high-pitched bowel sounds and an empty rectum. Blood tests showed mild leukocytosis (12,300/ μ L) and slight dehydration; hemoglobin was 11.8 g/dL. Liver and renal tests were normal, and tumor markers were not elevated.

A contrast-enhanced CT scan revealed a circumferential obstructing mass in the ascending colon with marked proximal dilatation and moderate ascites but no distant metastases. Emergency exploratory surgery was performed for impending perforation. Intra-operatively, a large obstructive tumor involving the proximal ascending colon and cecum was found, adherent to small-bowel loops. A right hemicolectomy with a bloc resection and primary anastomosis was performed, with regional lymphadenectomy. Recovery was initially uneventful, and the patient was discharged on postoperative day 7.

Histopathological examination showed a poorly differentiated carcinoma with polygonal, keratinizing cells forming intercellular bridges and keratin pearls features consistent with squamous differentiation. No glandular or mucinous elements were identified. The tumor invaded through the full colonic wall into pericolic fat, and 2 of 15 lymph nodes were metastatic. Histopathological examination of the resected specimen revealed an invasive, poorly differentiated carcinoma arising from the cecum and proximal ascending colon. On microscopic inspection, the tumor cells exhibited predominantly squamous features: they were polygonal with eosinophilic cytoplasm, distinct cell borders, and variably keratinizing irregular nuclei. Focal keratin “pearl” formation was observed, and intercellular bridges were noted between adjacent malignant cells (**Figure 1**). Immunohistochemistry demonstrated strong nuclear p40 positivity and negativity for CK7, CK20, CD56, synaptophysin, and GATA3, confirming a primary squamous cell carcinoma of the colon (**Figure 2**). Margins were clear.

Extensive investigations including chest CT, gynecologic evaluation, pelvic ultrasound, Pap smear, and pan-endoscopy found no other primary lesion, establishing the diagnosis of primary colonic SCC.

Six weeks postoperatively, the patient developed early satiety, bloating, and abdominal distension. Imaging revealed diffuse peritoneal nodularity and ascites consistent with carcinomatosis, with no recurrence at the anastomosis or liver metastases. A multidisciplinary tumor board recommended palliative chemotherapy with 5-fluorouracil and cisplatin, extrapolated from regimens for anal SCC. After three cycles, disease progression was noted with worsening peritoneal implants and new pulmonary nodules. Given her declining condition, supportive care was chosen. The patient’s health deteriorated rapidly, and she died about five months after surgery, illustrating the highly aggressive nature of primary squamous cell carcinoma of the colon.

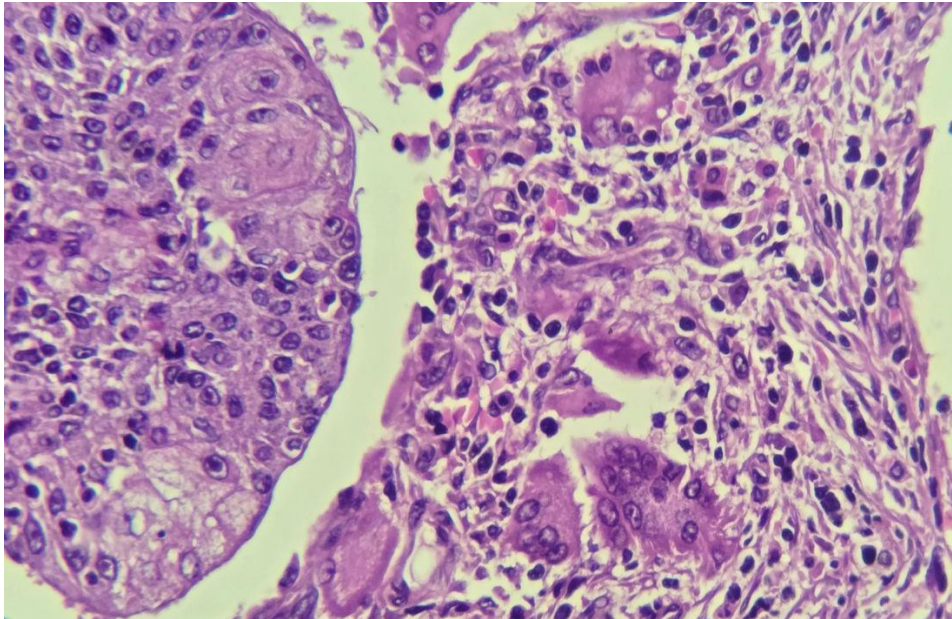


Figure 1: Carcinomatous tumor proliferation composed of cords showing, in some areas, squamous differentiation.

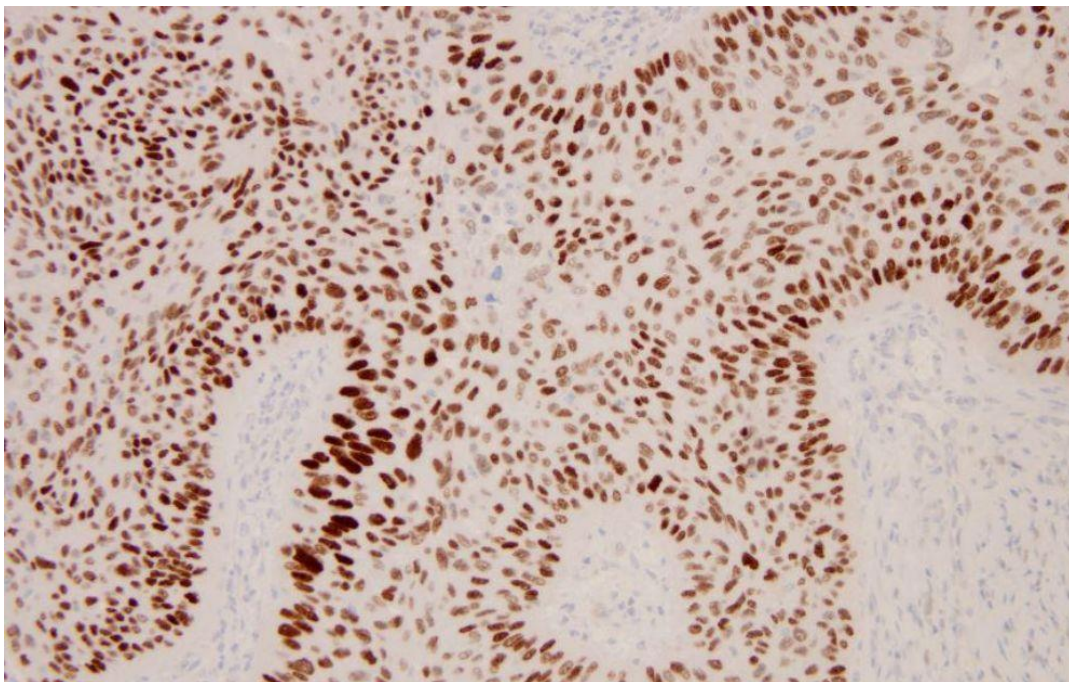


Figure 2: Strong expression of the anti-P40 antibody by the carcinomatous tumor proliferation (IHC $\times 200$).

DISCUSSION

Primary squamous cell carcinoma (SCC) of the gastrointestinal tract is an exceedingly rare malignancy when it arises in the colon or rectum, although SCC is a far more common cancer in the esophagus and anal canal. The first well-documented report of a pure colonic SCC dates back to Schmidtman in 1919.^[2] Since then, fewer than 150 cases of colorectal SCC have been described in the medical literature, most of which involved rectal tumors.^[3] In a recent systematic review, Schizas et al. identified only 99 cases of primary colorectal SCC, emphasizing its extreme rarity. Approximately 60–65% of reported cases occur in the

rectum, with the remaining cases located in the colon most frequently in the cecum and right colon.^[2-3] This anatomical distribution has led some authors to propose that chronic irritation, infection, or local predispositions in the anorectal region may promote squamous transformation.

Our case is distinctive because it involved a tumor arising in the proximal colon (ascending colon) of a relatively young patient. The patient's age (38 years) is well below the usual range for this malignancy, as most cases of colonic SCC present in the fifth or sixth decade of life.^[1] Moreover, she lacked any predisposing

conditions known to be associated with SCC of the colon, such as inflammatory bowel disease, previous pelvic radiation, or chronic fistulous tracts. These factors make her presentation particularly unusual and highlight the unpredictable nature of this disease.

Several theories have been proposed to explain the pathogenesis of primary SCC in the colon. One of the leading hypotheses suggests that chronic inflammation or infection of the colonic mucosa may induce squamous metaplasia of glandular epithelium, which could later undergo malignant transformation. Supporting this idea, several reported cases of colonic SCC were associated with chronic ulcerative colitis, anal fistulae, or infectious conditions such as amoebiasis or schistosomiasis in the affected segment. Another theory posits that pluripotent progenitor or stem cells within the colonic mucosa or even within pre-existing adenomatous polyps may acquire the potential for divergent differentiation, giving rise to squamous cell carcinoma.^[3]

Rarely, adenosquamous carcinoma of the colon has been reported, containing both glandular and squamous malignant elements, which supports the concept of an adenoma–carcinoma sequence followed by squamous differentiation. In our patient, histopathologic examination revealed a purely squamous carcinoma with no glandular or adenomatous component, confirming a “pure” SCC rather than an adenosquamous carcinoma. A third and critical diagnostic consideration is that such a lesion could represent a metastasis or direct extension from another primary SCC site. Williams *et al.* (1979) established diagnostic criteria stipulating that a colorectal SCC should only be considered “primary” if there is no evidence of SCC in another organ that could metastasize or directly invade the colon, and if there is no continuity with an anal SCC extending proximally. In our patient, an extensive diagnostic workup including imaging, colonoscopy, and pelvic evaluation showed no alternative primary tumor, and the anal canal appeared completely normal. Thus, the diagnosis of primary colonic SCC was confirmed according to these established criteria.

Immunohistochemistry and Diagnostic Confirmation

Histopathology and immunohistochemistry (IHC) are key to confirming the diagnosis. In our case, the tumor demonstrated strong positivity for p40, a specific marker of squamous differentiation, while typical adenocarcinoma markers such as CK20 and CDX2 were negative. This immunoprofile supports a squamous phenotype and excludes poorly differentiated adenocarcinoma, neuroendocrine carcinoma, or metastatic urothelial carcinoma. Although IHC alone cannot determine the primary site of origin, it remains invaluable in excluding histologic mimics. Therefore, the diagnosis of primary colonic SCC remains one of exclusion, requiring both pathological confirmation of squamous morphology and the absence of another primary SCC elsewhere.

Clinical Features and Presentation

Clinically, colonic SCC presents with symptoms similar to conventional colorectal adenocarcinoma, including abdominal pain, altered bowel habits, rectal bleeding, and weight loss.^[2] However, SCC tends to be more aggressive and often presents at an advanced stage or even as a surgical emergency. Approximately 15–20% of cases are diagnosed during acute complications such as bowel obstruction or perforation.^[4] Previous reports have documented cecal SCCs presenting with perforation that required emergency surgery. Our patient likewise presented emergently with intestinal obstruction, reflecting the tumor’s rapid growth and invasive nature. In most cases, the definitive diagnosis is established postoperatively, as preoperative biopsies are either infeasible in urgent settings or yield necrotic, non-diagnostic tissue.

Treatment Strategies

There is no established treatment protocol for primary SCC of the colon due to the rarity of this malignancy. Nevertheless, surgical resection with regional lymphadenectomy remains the cornerstone of therapy and provides the best opportunity for disease control. In localized cases, curative resection is achievable, and outcomes are generally best when complete tumor removal is accomplished.^[5] Our patient underwent an urgent right hemicolectomy, which aligns with current surgical recommendations for resectable right-sided tumors causing obstruction.

The role of adjuvant chemotherapy or radiotherapy remains uncertain. Due to the absence of clinical trials, most reported treatments have been adapted from protocols used for squamous cell carcinomas at other anatomical sites, particularly anal or head-and-neck SCCs. For instance, Juturi *et al.* described two cases of colonic SCC responding to a combination of 5-fluorouracil (5-FU) and cisplatin.^[6] Similarly, Copur *et al.* observed tumor regression in a metastatic colon SCC treated with a 5-FU/cisplatin regimen.^[7] Some studies have also combined mitomycin C with 5-FU, similar to the classic Nigro protocol used for anal SCC.^[3] In our patient, a palliative combination of 5-FU and cisplatin was administered once metastases were identified, but unfortunately, no therapeutic response was achieved. Radiotherapy has been more frequently employed in rectal SCC where the anatomy allows focused irradiation but is rarely used in colonic SCC, especially in the right colon, because of the risk of small bowel toxicity and lack of evidence for benefit.

Emerging Role of Immunotherapy

Recent advances in oncology have renewed interest in immunotherapy for refractory colorectal malignancies, particularly those with deficient mismatch repair. However, most colorectal SCCs are microsatellite stable (pMMR/MSS)^[8], which limits their responsiveness to immune checkpoint inhibitors. Nevertheless, a remarkable case reported by Liu *et al.* described a patient

with metastatic SCC of the ascending colon (pMMR, PD-L1 positive) who achieved significant partial remission using combined PD-1 checkpoint blockade and chemotherapy. That patient's tumor harbored a BRAF V600E mutation and exhibited high PD-L1 expression. After eight cycles of chemoimmunotherapy followed by local ablation of residual disease, the patient remained alive and in remission.^[9] These findings suggest that immunotherapy could hold potential in selected molecularly characterized cases, though further research is necessary. In our patient, immunotherapy was not attempted due to a lack of actionable biomarkers and rapid clinical deterioration.

Prognosis and Outcomes

Prognosis for primary colonic SCC is generally poorer than for conventional adenocarcinoma. This difference likely results from late-stage diagnosis, more aggressive tumor biology, and the absence of standardized systemic therapies. A comprehensive review published in 2022 estimated an overall five-year survival rate of approximately 50% for colorectal SCC. Early-stage, node-negative tumors may achieve outcomes comparable to adenocarcinoma, but once lymph node or distant metastases develop, survival decreases dramatically. Other studies have reported five-year survival rates as low as 30% in advanced cases, and nearly 80% of patients experience recurrence within three years of surgery.^[10] Consistent with these findings, our patient developed widespread metastatic disease within weeks of resection and succumbed to her illness within a few months, illustrating the highly aggressive nature of this tumor.

CONCLUSION

Primary squamous cell carcinoma of the colon is an exceptionally rare and aggressive neoplasm that poses diagnostic and therapeutic challenges. Recognition of this entity requires careful histopathologic evaluation and exclusion of metastatic disease from other primary sites. When diagnosed, management should involve a multidisciplinary team, with surgery as the mainstay of treatment. Adjuvant chemotherapy typically based on platinum and 5-FU combinations may be considered on a case-by-case basis, while immunotherapy and molecularly targeted approaches represent promising but still experimental options.^[11] Given the scarcity of cases, continued documentation, molecular profiling, and collaborative research are essential to better understand its biology and to develop more effective therapeutic strategies. Early detection, complete surgical resection, and close postoperative surveillance remain crucial to improving patient outcomes in this formidable disease.

Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this case report. No financial support or sponsorship was received for this study. The authors have no relevant financial or personal relationships to disclose.

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