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CASE SERIES

Diverticular Disease with Unusual Presentations: A Case Series

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Abstract

Diverticular disease is a common colonic disorder in the elderly, most often presenting as diverticulitis or mild bleeding. On occasion, however, it manifests in unusual ways that mimic malignancy or genitourinary pathology, posing significant diagnostic challenges. We describe four patients with rare complications of diverticular disease: a colovesical fistula presenting with recurrent urinary tract infections, a stricture causing intestinal obstruction, massive lower gastrointestinal bleeding requiring embolisation, and a localised perforation simulating carcinoma that was managed by Hartmann's procedure with later reversal. Cross-sectional imaging, particularly contrast-enhanced CT and CT angiography, was central to diagnosis. All patients underwent appropriate surgical or interventional management and recovered without perioperative mortality. This series emphasises the need for awareness of atypical presentations, timely use of imaging, and individualised treatment strategies in complicated diverticular disease.

Keywords: Case Series, Colovesical Fistula, Diverticular Disease, Diverticular Stricture, Gastrointestinal Bleeding, Hartmann's Procedure, Perforated Diverticulitis, Unusual Presentation

1. Introduction

Diverticular disease of the colon is one of the most common acquired gastrointestinal conditions in older adults. Its prevalence increases with age, affecting nearly one-third of individuals over 50 years and more than 60% over 80 years in Western populations, with a rising incidence in Asia due to changing dietary patterns and lifestyle. The sigmoid colon is most frequently involved, attributed to its relatively narrow lumen and high intraluminal pressures.

Most individuals with diverticulosis remain asymptomatic, while 10-25% develop complications such as diverticulitis, haemorrhage, stricture, or fistula formation. Typical manifestations include left iliac fossa pain, fever, and leukocytosis in acute diverticulitis, or painless hematochezia in diverticular bleeding. However, diverticular disease may also present in atypical and deceptive ways — simulating colorectal carcinoma, Crohn's disease, or even urological and gynaecological pathology. Such presentations often delay diagnosis and complicate management.

Early recognition is essential, as prompt imaging and timely intervention can prevent morbidity and mortality. Cross-sectional imaging, particularly contrast-enhanced Computed Tomography (CT), has revolutionised the diagnostic approach by accurately identifying complications such as fistulae, strictures, abscesses, and perforations. In this paper, a series of four patients with unusual manifestations of diverticular disease were presented — colovesical fistula, stricture causing obstruction, massive bleeding, and localised perforation mimicking malignancy — and the relevant literature to emphasise diagnostic challenges and therapeutic strategies was reviewed.

2. Aim and Objectives

- To describe four cases of diverticular disease with unusual clinical presentations (Table 1).

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Table 1. Diverticular diseases with various presentations

Case	Age/Sex	Presentation	Imaging Findings	Intervention	Outcome
1	65/M	Recurrent UTIs, pneumaturia, fecaluria (CVF)	CECT: Sigmoid diverticulosis with bladder fistula	Sigmoid resection + bladder repair	Symptom resolution
2	58/F	Abdominal distension, vomiting (obstruction)	CECT: Sigmoid stricture with proximal dilatation	Sigmoid colectomy with anastomosis	Uneventful recovery
3	72/M	Painless hematochezia, shock	CT angiography: Active bleed in descending colon	Angiographic embolisation	Hemostasis, no recurrence
4	62/F	Acute abdomen, pericolic mass (suspected carcinoma)	CECT: Sigmoid thickening with an inflammatory mass	Hartmann's procedure → stoma reversal after 3 months	Histology: diverticular perforation; good recovery post-reversal

- To highlight diagnostic pitfalls and management strategies in such cases.
- To review literature on rare manifestations of diverticular disease.

3. Review of Literature

3.1 Epidemiology and Burden

Diverticular disease is among the most common colonic disorders in older adults. The prevalence rises steeply with age, affecting nearly 30% of individuals over 50 years and more than 60% over 80 years in Western populations[1,2]. With increasing westernisation of diet and lifestyle, incidence is rising in Asia as well[3]. While the majority remain asymptomatic, approximately 10-25% develop complications such as acute diverticulitis or bleeding[2,3].

3.2 Pathophysiology and Spectrum of Complications

Colonic diverticula are *pseudodiverticula* — herniations of mucosa and submucosa through the muscularis propria at points of vascular penetration. The sigmoid colon is most often involved due to high intraluminal pressures[3,4]. Complications include:

- Inflammation and perforation (micro- to macroperforation)
- Fistulation (most often colovesical)
- Stricture formation (inflammatory/fibrotic)
- Haemorrhage (arterial bleeding from vasa recta at the diverticular neck)[3-5]

3.3 Colovesical Fistula (CVF)

CVF is the most frequent fistula type in diverticulitis, reported in roughly 2-4% of patients with complicated disease[4,6]. The classic symptoms are pneumaturia and fecaluria with recurrent urinary tract infections. Contrast-enhanced CT (with oral or rectal contrast) is the investigation of choice—it identifies diverticulosis, air within the bladder, and loss of the fat plane between the sigmoid colon and bladder. Cystoscopy and colonoscopy help exclude malignancy or other causes[5,6].

Operative management remains definitive: segmental sigmoid resection with primary anastomosis and bladder repair yields high rates of symptom resolution and low recurrence[4,5].

3.4 Diverticular Stricture and Large-Bowel Obstruction

Chronic inflammation can result in a fibrotic stricture that causes subacute or acute obstruction, often mimicking colorectal carcinoma on imaging or endoscopy[3,7]. Preoperative distinction is difficult because biopsies may be nondiagnostic in narrowed segments. Hence, oncologic-style segmental colectomy is recommended both to treat obstruction and to exclude malignancy histologically[3,6].

Laparoscopic resection is feasible in non-emergent, selected cases per international guidelines[4,5].

3.5 Massive Lower Gastrointestinal Bleeding

Diverticular bleeding is a leading cause of acute lower gastrointestinal haemorrhage in older adults,

accounting for up to 30–50% of cases[3,6,8]. Bleeding is typically painless and brisk; while often self-limiting, about 10–15% of patients require intervention[6,8,9].

CT angiography is rapid and reliable for localising active bleeding, guiding therapy, and selecting patients for intervention. Catheter-directed embolisation is first-line where feasible, achieving high hemostatic success with minimal ischemic risk. Surgery is reserved for uncontrolled or recurrent bleeding or when localisation is not possible[6,8,9].

3.6 Localised Perforation Mimicking Malignancy

Perforated diverticulitis can range from a contained microperforation to generalised peritonitis. The Hinchey classification remains the standard for grading severity and guiding managemen[10]. Contained or localised perforations may appear on CT as asymmetric mural thickening with a pericolic phlegmon or "mass," mimicking carcinoma. When malignancy cannot be ruled out, resection is appropriate[11,12]. In purulent peritonitis, minimally invasive options like laparoscopic lavage have been explored; randomised trials suggest this may be an option for carefully selected Hinchey III patients, though resection remains standard in many centers[8,10].

3.7 Diagnostic Approach

High-quality contrast-enhanced CT is the key diagnostic tool across all presentations—it detects diverticula, inflammatory changes, extraluminal air or fluid, fistula tracts, and active bleeding[3-6]. CT angiography is preferred for hemodynamically significant hematochezia[7,10]. Colonoscopy after stabilisation helps exclude malignancy and assess disease extent, but its acute use depends on stability and bowel preparation. In cases with strictures or mass-like lesions, colonoscopic biopsy may be nondiagnostic, making surgical histology definitive[7].

3.8 Management Principles and Guideline Perspective

Modern guidelines (ASCRS, WSES) emphasise individualised care based on presentation, comorbidities, and physiologic status[4,5,9].

- *Fistulae (CVF)*: Elective single-stage sigmoid resection with primary anastomosis and bladder repair is standard; diversion is reserved for sepsis or poor tissue quality[4-6].
- *Stricture/Obstruction*: Segmental colectomy with primary anastomosis where safe; diversion when contamination or instability exists[4,5,7].
- *Bleeding*: Resuscitation → CT angiography → embolisation when possible; surgery for failures or recurrent bleeding[6,8,9].
- *Perforation*: Drainage for localised abscesses; resection for generalised peritonitis or failed non-operative therapy; laparoscopic lavage may be considered for selected Hinchey III cases[9-11].

3.9 Outcomes and Recurrence

With timely, tailored management, outcomes are generally favourable across these atypical presentations.

- CVF repair yields high symptom resolution and low recurrence[4,5,6].
- Resection for strictures achieves excellent long-term outcomes when diseased segments are fully excised.
- Embolisation for bleeding achieves high immediate hemostasis; recurrent haemorrhage is usually manageable with repeat therapy[6,8,9].
- Outcomes for perforated disease depend on Hinchey stage and physiologic status; early source control and critical care remain key[10-12].

3.10 Practice Implications for Surgeons

Elderly patients presenting with painless hematochezia, recurrent UTIs with pneumaturia/fecaluria, left-sided obstruction, or a sigmoid "mass" should raise a strong suspicion for diverticular complications. CT and CT angiography expedite diagnosis, while resection provides both definitive therapy and diagnosis when cancer cannot be excluded. Multidisciplinary collaboration with urology, interventional radiology, and critical care optimises outcomes.

4. Materials and Methods

This retrospective descriptive study was conducted at the Institute of General Surgery, Madras Medical College, between 2022-2025. Patients with diverticular disease and atypical presentations were included. Data

were collected from clinical records, operative notes, imaging, and follow-up details.

Medical records were reviewed to identify patients with diverticular disease who presented with atypical clinical features. Inclusion criteria were patients with radiologically or intraoperatively confirmed diverticular disease presenting with unusual complications such as fistula, stricture, massive bleeding, or localised perforation. Patients with uncomplicated diverticulitis or typical presentations were excluded.

Data collection: Information regarding demographics, clinical presentation, laboratory parameters, radiological findings, colonoscopy results, operative details, and outcomes was collected from hospital records.

Diagnostic approach: All patients underwent baseline haematological and biochemical investigations. Contrast-Enhanced Computed Tomography (CECT) of the abdomen and pelvis was the primary imaging modality. CT angiography was performed in patients presenting with lower gastrointestinal bleeding. Colonoscopy and biopsy were undertaken when obstruction or malignancy was suspected.

Management strategy: Treatment was individualised depending on presentation, hemodynamic status, and intraoperative findings. Options included segmental colectomy with or without primary anastomosis, bladder repair in fistulous disease, or angiographic embolisation for bleeding.

Follow-up: Patients were followed clinically in the outpatient department to assess symptom resolution and detect recurrence.

5. Results (Including Observations)

A total of four patients with diverticular disease presenting in unusual ways were included. The age of patients ranged from 58 to 72 years (mean 64 years). There were two males and two females.

5.1 Clinical Presentations

Colo vesical fistula with recurrent urinary tract infections.

Intestinal obstruction due to diverticular stricture.

Massive lower gastrointestinal bleeding.

Localised perforation with inflammatory mass simulating carcinoma.

5.2 Investigations

Contrast-enhanced CT (CECT) abdomen and pelvis was performed in all patients. CT angiography localised active bleeding in the haemorrhage case. Colonoscopy and biopsy were performed in patients with suspected malignancy or stricture.

5.3 Management and Outcomes

Colovesical fistula: Sigmoid resection with primary anastomosis and bladder repair. Symptom resolution. Diverticular stricture: Sigmoid colectomy with primary anastomosis. Uneventful recovery. Massive bleeding: Angiographic embolisation-controlled haemorrhage. No recurrence on follow-up. Localised perforation: Segmental colectomy with proximal colostomy (Hartmann's procedure) was performed due to inflammation and contamination. The patient recovered well, and stoma reversal with colorectal anastomosis was successfully carried out three months later. Final histopathology confirmed diverticular perforation.

All patients recovered without perioperative mortality. Follow-up (3–12 months) showed symptom resolution and no recurrence of complications.

6. Discussion

Diverticular disease is typically encountered as uncomplicated diverticulitis or self-limited lower gastrointestinal bleeding. However, our series illustrates its capacity to present in diverse and deceptive ways, each mimicking alternative abdominal or genitourinary pathologies.

Fistula formation remains one of the more frequent but under-recognised complications. Our patient with colovesical fistula presented with recurrent urinary tract infections, pneumaturia, and fecaluria — the classical triad described in the literature[4,6]. CT proved diagnostic, and single-stage resection with bladder repair provided durable resolution. Current guidelines endorse this approach in stable patients, reserving staged procedures for sepsis or poor tissue quality[5].

Diverticular stricture in another patient produced large-bowel obstruction and closely simulated carcinoma radiologically. The inability to reliably distinguish diverticular stricture from malignancy has been well documented[7]. Hence, definitive resection is

advocated, both for relief of obstruction and to exclude malignancy, as was undertaken in our patient.

Massive diverticular bleeding accounted for one of the acute presentations in this series. In keeping with published experience, the haemorrhage was brisk, painless, and hemodynamically significant[6,8]. CT angiography allowed rapid localisation, and trans-arterial embolisation achieved definitive hemostasis. Surgery is now reserved for refractory or recurrent bleeding, reflecting the central role of interventional radiology in modern practice.

Perforated diverticulitis remains a life-threatening complication. Our patient had a localised perforation with a mass suspicious for carcinoma. Given the degree of inflammation and contamination, Hartmann's procedure was selected. Stoma reversal was successfully performed after three months, achieving bowel continuity. This reflects contemporary practice: while some surgeons advocate primary anastomosis in carefully selected Hinchey III cases, Hartmann's remains widely performed when contamination or sepsis is significant[9-12].

Across all cases, contrast-enhanced CT was pivotal in diagnosis. Intraoperative findings and histopathology provided definitive confirmation. Outcomes were favourable, with no perioperative mortality and durable resolution of symptoms on follow-up.

Our experience underscores several key lessons: Diverticular disease can masquerade as malignancy, Crohn's disease, or genitourinary pathology. Imaging, particularly CT and CT angiography, is indispensable in atypical scenarios. Management must be individualised, ranging from resection with primary anastomosis to staged procedures or embolisation. Early recognition and tailored intervention yield good outcomes even in complicated cases.

Limitations of this series include its retrospective nature, small sample size, and limited follow-up. Nonetheless, the cases highlight the diagnostic dilemmas and management strategies of rare presentations of diverticular disease in a real-world setting.

7. Summary and Conclusion

This case series highlights the protean nature of diverticular disease, which, beyond the common presentations of diverticulitis and minor bleeding, may rarely manifest with fistula formation, stricture-induced obstruction, life-threatening haemorrhage, or localised perforation mimicking malignancy. Each of our four patients presented with an unusual complication requiring careful diagnostic workup and individualised management.

Contrast-enhanced CT and CT angiography in bleeding cases proved invaluable for accurate diagnosis and surgical planning. Definitive treatment ranged from resection with primary anastomosis to Hartmann's procedure with later reversal, as well as angiographic embolisation for haemorrhage. All patients achieved good recovery with resolution of symptoms.

In conclusion, diverticular disease can masquerade as a wide spectrum of abdominal and pelvic disorders. Awareness of these atypical manifestations, judicious use of imaging, and tailored surgical or interventional strategies are critical to avoid misdiagnosis and ensure favourable outcomes.

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