Case report

Multidisciplinary Management of a Gastrocolic Fistula Secondary to Gastric Cancer: A Case Report and Literature Review

Abstract

Gastrocolic fistula, an uncommon complication of gastric cancer, represents a significant clinical challenge due to its rarity and complex management. This report presents a case of a 65-year-old female presenting with epigastric pain, foul-smelling vomiting, weight loss, and abdominal distension. Clinical examination revealed a distended abdomen with positive bowel sounds, and laboratory findings showed anemia, leukocytosis, thrombocytosis, and elevated erythrocyte sedimentation rate (ESR). Imaging studies identified a fistulous tract connecting the distal stomach and mid-transverse colon, alongside liver metastasis, abdominopelvic ascites, and pleural effusion. Endoscopy confirmed gastric adenocarcinoma with a gastrocolic fistula. The patient underwent a multidisciplinary approach, including diagnostic laparoscopy, distal gastrectomy with gastrojejunal anastomosis, and systemic chemotherapy. This case highlights the importance of early detection and collaborative management in treating gastrocolic fistulas associated with gastric cancer, emphasizing the need for further research to optimize therapeutic strategies and improve patient outcomes.

Keywords: gastrocolic fistula, gastric cancer, clinical challenge

Introduction

A gastrocolic fistula is a rare condition characterized by an abnormal connection between the stomach and the colon, leading to the passage of gastric contents into the colon and resulting in various gastrointestinal symptoms [1,2]. This condition typically arises as a complication of underlying diseases such as malignancies, Crohn's disease (CD), or peptic ulcer disease (PUD) [3,4]. The exact prevalence is difficult to ascertain

due to its rarity and the varied nature of its causes, with malignancies being the most common etiology [4,5]. Although there is no clear gender predominance, it is more frequently reported in older adults [4,5]. This rare case of a gastrocolic fistula secondary to gastric cancer underscores the importance of early recognition, comprehensive diagnostics, and a multidisciplinary approach for optimal patient outcomes.

Case Presentation

A 65-year-old female presented with a three-month history of epigastric pain, foul-smelling vomiting, significant weight loss, and abdominal distension. On clinical examination, her abdomen was soft, distended, and mildly tender upon deep palpation, with positive bowel sounds and no visceromegaly. Systemic examination findings were unremarkable, with the respiratory system (normal vesical breathing+ no additional sound), cardiovascular system (S1+S2+ 0), and central nervous system (Glasgow coma scale 15/15) all within normal limits. Table *1* depicts an overview of the patient's key investigation results.

Table 1: Overview Of Different Laboratory Investigations Of The Patient

Parameter	Value	Normal Range
Hemoglobin	8.5 g/dl	13.8 to 17.2 g/dL (males), 12.1 to 15.1 g/dL (females)
Total Leukocyte Count (TLC)	17,000 /µL	4,000-11,000 cells/µL
Platelets	553,000 /µL	150,000-450,000 cells/µL
Erythrocyte Sedimentation Rate (ESR)	135 mm/hr	0-22 mm/hr
Albumin	2.1 g/dL	3.5 - 5.0 g/dL
AST	46 U/L	10 - 40 U/L
ALT	51 U/L	7 - 56 U/L
ALP	235 U/L	44 - 147 U/L
Urea	18 mg/dl	7 - 20 mg/dL
Creatinine	1.1	0.6 - 1.3 mg/dL

Hemoglobin (Hb), Total leukocyte count (TLC), Erythrocyte Sedimentation Rate (ESR), Aspartate Aminotransferase (AST), Alanine Aminotransferase (ALT), Alkaline phosphatase (ALP)

An ultrasound (USG) of the abdomen identified a well-defined hypoechoic area in the epigastric region, measuring 9.1 x 6.1 cm, with globulated margins and internal multiple crept and calcifications, with liver parenchymal changes. A non-contrast-enhanced abdomen and pelvis CT showed gross mass-like thickening of the distal stomach and midportion of the transverse colon, connected through a thick fistulous tract indicative of a gastric fistula. Endoscopic examination via gastroscopy revealed a normal esophagus with a competent lower esophageal sphincter (LES) at 38 cm. The stomach displayed an exophytic mass with hyperemic erythematous friable mucosa at the pre-pyloric area, including two openings containing necrotic mucosa with hard slough, leading to colonic mucosa. The pylorus had a normal opening, and the duodenum displayed normal mucosa in D1 and D2. Biopsies were taken from the exophytic mass/fistulous tract and the gastric mucosa. A colonoscopy, limited due to patient discomfort and inadequate preparation, reached the transverse colon. Examination of the anal canal, rectum, sigmoid colon, descending colon, splenic flexure, transverse colon, and hepatic flexure showed normal mucosa. However, the exact point of fistulous communication could not be identified. Figure *1* demonstrates the gastrocolic fistula, directly tracing a path from the gastric mucosa to the colonic mucosa.

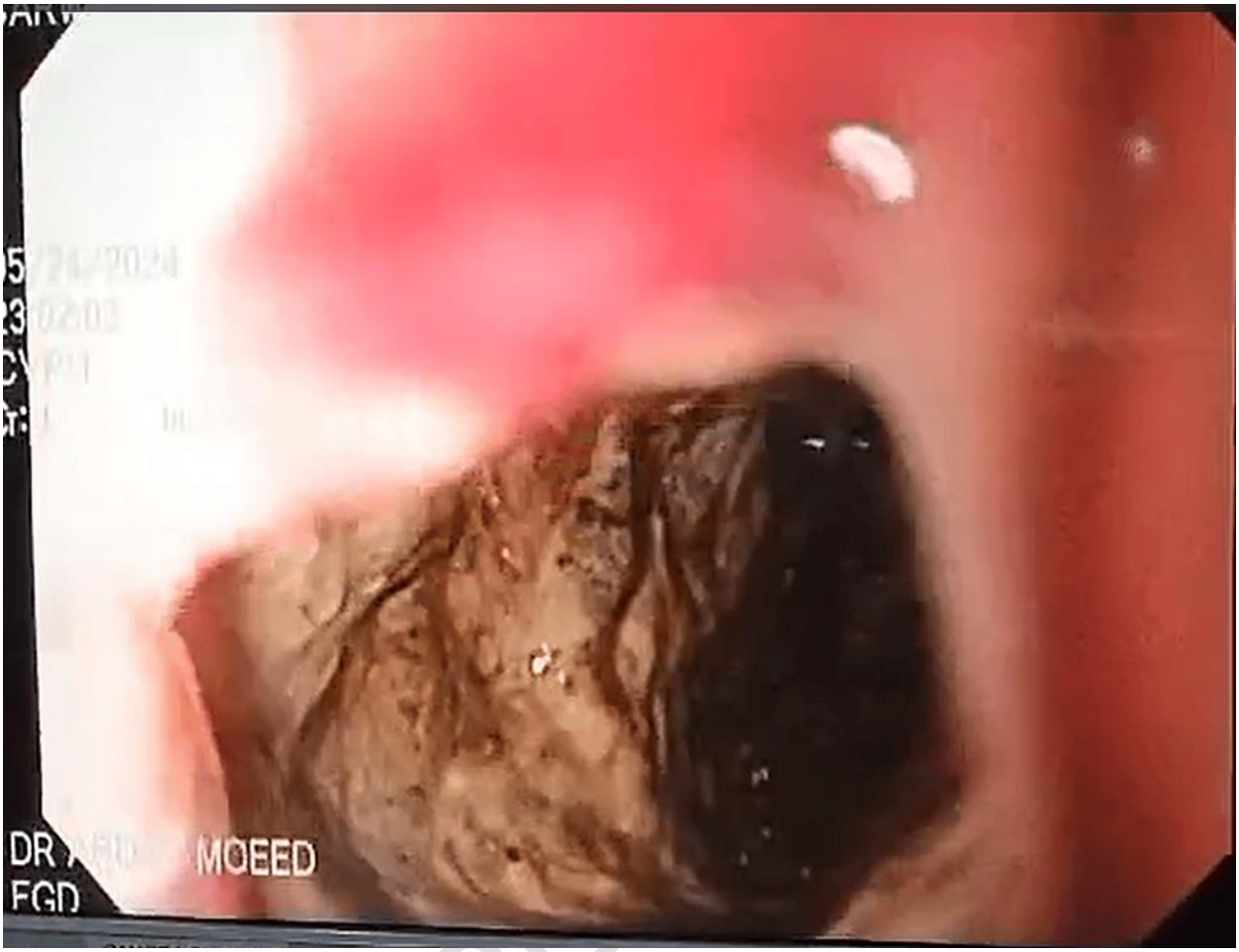

Figure 1: Endoscopic Visualization of Gastric Mucosa Traversing Directly to Colonic Mucosa

Histopathological analysis of the stomach's exophytic mass revealed features consistent with poorly differentiated gastric adenocarcinoma, while a gastric mucosa biopsy showed inflammatory changes. The malignancy was confirmed to be of gastric origin through immunohistochemistry (IHC) with positive cytokeratin and EMA, distinguishing it from colonic malignancy. The involved colonic segment and the fistula tract were resected as part of the surgical management. Figure *2* shows signet ring cell adenocarcinoma from a biopsy taken from the stomach's exophytic mass.

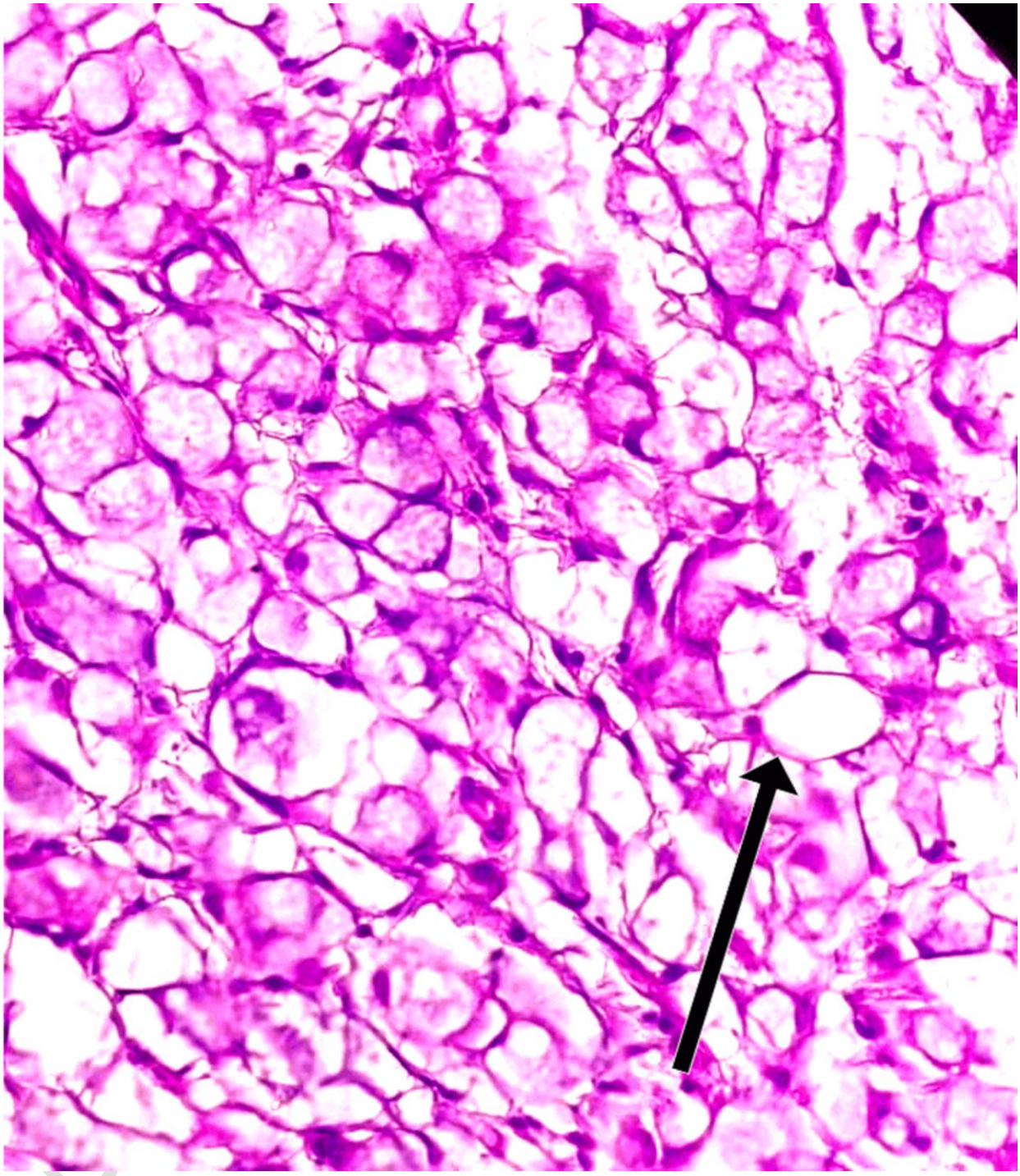

Figure 2: Signet Ring Cell Adenocarcinoma of gastric origin.
The black arrow indicates the signet ring cell.

The patient underwent further imaging, including a CT of the chest, abdomen, and pelvis (CTCAP) with IV contrast, that showed additional findings of liver metastases,

abdominopelvic ascites, and left-sided pleural effusion with bilateral pulmonary nodules. Figure *3* shows the gastric mass indicated by the arrow.

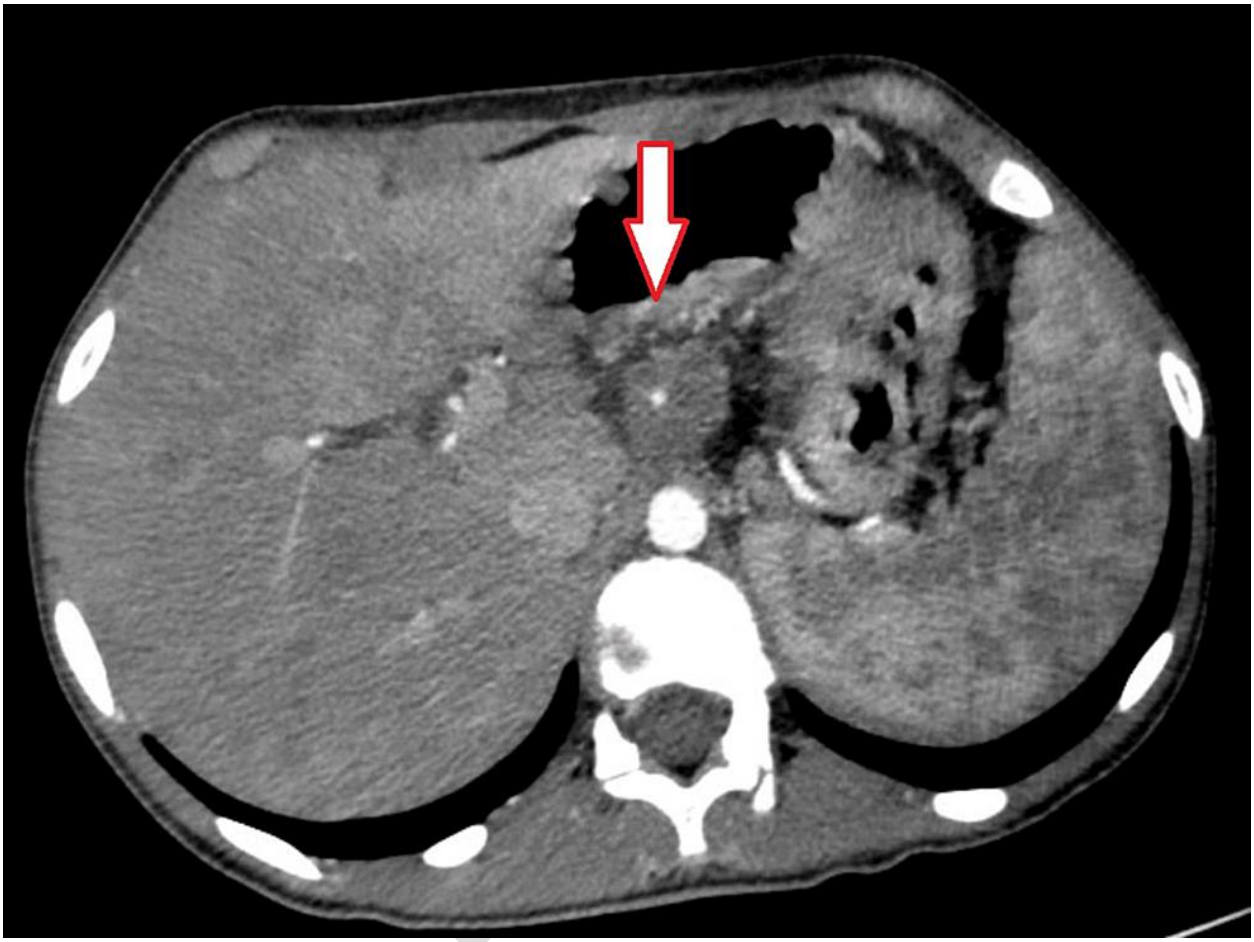

Figure 3: Contrast-enhanced CTCAP showing gastric mass indicated by the arrow.

CTCAP: CT scan of the chest, abdomen and pelvis

The multidisciplinary team (MDT) formulated a comprehensive management plan. Initially, a diagnostic laparoscopy was performed to explore peritoneal metastases, followed by a distal gastrectomy with gastrojejunal anastomosis to manage symptoms and improve the patient's quality of life. Post-surgery, systemic chemotherapy was planned to address any residual disease. The hospital provided the FOLFOX regimen at no cost, consisting of oxaliplatin (85 mg/m²) and leucovorin (400 mg/m²) on day 1, followed by 5-fluorouracil (5-FU) (400 mg/m² bolus and 2400 mg/m² continuous infusion over 46 hours), repeated every 2 weeks. Post-operative complications included infection, bleeding, and nutritional deficiencies. Infections were managed with broad-spectrum antibiotics, bleeding required blood transfusions, and nutritional deficiencies were addressed with appropriate nutritional support. The outcome for the patient

involved significant symptom relief, including reduced pain, vomiting, and weight loss, leading to an improved quality of life. While the primary goal of palliative surgery was symptom management, the combination with systemic chemotherapy also contributed to prolonged survival. However, the risk of recurrence and metastasis remained, requiring ongoing monitoring and treatment. The patient provided informed written consent. She was fully informed about the report's purpose and the use of her details and images. Written consent was provided, ensuring adherence to ethical guidelines. This report emphasizes the difficulties in diagnosing and managing the conditions associated with gastrocolic fistula, a rare but severe complication of conditions such as CD and gastric cancer. Gastrocolic fistula should be considered in patients presenting with chronic gastrointestinal symptoms and significant weight loss. Early diagnosis and multidisciplinary management are critical for improving patient outcomes. Further studies and case reports are essential to enhance the understanding of treatment strategies for this condition.

Discussion:

Gastrocolic fistula, an abnormal connection between the stomach and the colon, is a rare condition that allows the passage of gastric contents into the colon, leading to symptoms such as diarrhea, weight loss, and feculent vomiting [1,2]. The etiologies of gastrocolic fistula include Crohn's disease (CD), tuberculosis (TB), peptic ulcer disease (PUD), colorectal cancer (CRC), and gastric cancer [2-5]. Factors such as diabetes mellitus and smoking can elevate the risk of related complications [6-8]. CD is a significant cause of gastrocolic fistulas due to chronic and transmural inflammation, which can lead to tract formation that connects different parts of the gastrointestinal tract [2]. Genetic mutations, including NOD2/CARD15, increase the susceptibility to CD and subsequent fistula formation [2,4]. Management typically involves medical and surgical approaches, with biologics and immunosuppressants vital in preventing inflammation and recurrence [2,4]. In regions with high TB prevalence, the disease can damage the digestive tract, particularly the ileocecal region, leading to fistula formation through caseating granulomas and ulceration [5].

Diagnosis is confirmed via imaging, endoscopy, and histopathology, which shows acid-fast bacilli [5]. Treatment involves anti-TB therapy and surgical intervention when necessary [5]. Historically a leading cause of gastrocolic fistulas, PUD leads to gastric acid erosion, penetrating the stomach wall to create a fistula with the colon [1,3]. The incidence has decreased with the advent of PPIs and H. pylori eradication [1,3]. When PUD-related fistulas occur, they present with upper abdominal pain, hematemesis, and melena [1,3]. Management includes treating the ulcer, surgical repair of the fistula, and

H. pylori eradication [1,3]. CRC can lead to fistula formation when the tumor invades adjacent structures [2]. Symptoms include rectal bleeding and altered bowel habits [7].

Diagnosis typically involves colonoscopy, biopsy, and imaging studies [2,7]. Management involves surgical resection of the tumor and fistula, often followed by chemotherapy or radiation, depending on the cancer stage [2,7]. Gastric cancer is one of the most common malignancies associated with gastrocolic fistulas, typically through tumor erosion into the colon [11]. Patients often present with weight loss, abdominal pain, nausea, and vomiting [11]. Diagnosis is confirmed through endoscopic biopsy and imaging, with staging following the TNM classification system [11,12]. Management requires a multidisciplinary approach, including surgical resection, chemotherapy, and radiation therapy [13,14]. The prognosis depends on the stage and extent of the disease [13,14]. In this case, a non-contrast CT scan was initially performed, which might not have been the most appropriate choice if a fistula was suspected. A contrast-enhanced CT scan would provide a more precise visualization of the fistula and involved structures, avoiding unnecessary radiation exposure from repeated imaging. Comparing this case with others in the literature reveals different management strategies and outcomes based on etiology. For instance, Sugi et al. reported a case of a gastrocolic fistula due to transverse colon cancer, managed with en-bloc surgical resection without neoadjuvant chemotherapy, resulting in no recurrence one-year post-surgery [4]. This contrasts with our case, where the patient had liver metastases and required systemic chemotherapy post-surgery, highlighting the varied prognosis based on cancer type and metastasis presence [4]. Mansour et al. emphasized gastrocolic fistulas' rarity and diagnostic challenges, particularly from malignant diseases like gastric cancer [1]. The advanced disease and liver metastases in our patient highlight the aggressive nature and poor prognosis associated with gastric cancer-related fistulas [1].

Conclusions

This case of a 65-year-old female with a gastrocolic fistula secondary to gastric cancer highlights the challenges in diagnosing and managing this rare condition. Comprehensive diagnostic investigations and a multidisciplinary approach are essential. Future research should focus on improving diagnostic accuracy and developing standardized management protocols, while advances in minimally invasive surgery and targeted therapies promise better outcomes. Clinicians should be vigilant for gastrocolic fistulas in patients with chronic gastrointestinal symptoms and significant weight loss.

Individualized treatment plans and coordinated care are crucial for optimizing patient outcomes.

Limitations:

This case report is limited by its single-case nature, reducing its generalizability. Comprehensive studies are needed for firmer conclusions on treatment and outcomes. Insufficient genetic analysis and a short follow-up limit insights into genetic factors and long-term prognosis. Additionally, the report does not fully explore varied management practices across healthcare settings. Future research should address these limitations, emphasizing early detection and a multidisciplinary approach for optimal patient outcomes.

Disclaimer (Artificial intelligence)

Author(s) hereby declare that generative AI technologies such as ChatGPT (GPT-4) from OpenAI were used during the writing and editing of this manuscript. AI was utilized to structure sections, improve clarity and coherence, format, and draft specific sections based on provided content and research notes. The use of AI does not affect the original data, scientific content, or the integrity of the research; all scientific interpretations, conclusions, and original data are the authors' work.

Ethical Approval:

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

Consent
As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

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