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Original Research

ASSESSMENT OF CLINICAL FEATURES, DIAGNOSTIC FINDINGS, AND TREATMENT OUTCOMES OF COLONIC DIVERTICULITIS AT THE DEPARTMENT OF GASTROINTESTINAL SURGERY, THONG NHAT HOSPITAL

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ABSTRACT: Colonic diverticulitis is increasing in Asia, yet data on clinical patterns in Vietnam remain limited. This study aimed to evaluate the clinical, laboratory, imaging characteristics, and treatment outcomes at Thong Nhat Hospital. A retrospective descriptive study was conducted on 105 patients from January 1 to September 1, 2025. Data on demographics, clinical features, laboratory tests, CT findings, WSES classification, treatment strategies, and outcomes were collected and analyzed using SPSS 26.0, with $p < 0.05$ considered statistically significant. The mean age was 53.9 ± 20.0 years, with 31.4% aged ≥65. Males accounted for 67.6%. The most common symptom was right lower quadrant pain (55.2%). CT revealed diverticula mainly in the sigmoid colon (40.0%), cecum (37.1%), and right colon (19.0%). WSES stages were: 1a (57.1%), 1b (19.0%), 2a (11.4%), 2b (7.6%), 3 (3.8%), and 4 (1.0%). Medical treatment was applied in 89.5% of cases, percutaneous drainage in 1.0%, and surgery in 9.5%. The mean hospital stay was 7.6 ± 4.4 days, significantly longer in complicated cases and those requiring invasive interventions ($p < 0.05$). Colonic diverticulitis in Vietnam often affects middle-aged males, with location varying by age: cecum/right colon in younger patients and sigmoid colon in the elderly. CT-scan plays a crucial role in diagnosis, staging, and guiding treatment.

Keywords: colonic diverticulitis; clinical features; CT-scan; WSES classification; medical treatment; surgery

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1. INTRODUCTION

Colonic diverticulitis is a common gastrointestinal disorder, particularly in Western countries, and has shown an increasing trend in Asia in recent decades. Colonic diverticula are formed by the herniation of the mucosa through the muscular layer of the bowel wall at sites of weakness. This condition is frequently associated with a low-fiber diet, obesity, advanced age, and a sedentary lifestyle. The prevalence in individuals over 60 years of age in Europe and North America ranges from 30% to 50%, and can reach up to 65% in those over 85 years old (1) .

Approximately 10% to 25% of patients with diverticulosis will develop diverticulitis during their lifetime(2). The clinical presentation of diverticulitis varies widely, ranging from mild, self-limiting cases requiring only conservative management to severe complications such as abscess, perforation, fistula, or generalized peritonitis. Hospitalization is required for approximately 20–30% of all patients with diverticulitis, with 15–25% of these cases necessitating invasive intervention or surgery. The mortality rate in patients with severe complications ranges from 2% to 20%, depending on the clinical status and management strategy(3).

In Western countries, the burden of diverticulitis is also reflected in healthcare costs and resource utilization. A study by Peery et al. demonstrated that the cost of care for diverticulitis in the United States accounts for a significant portion of the total expenditure for gastrointestinal diseases (4). Furthermore, recurrence is a significant concern: 5–15% of patients will experience at least one episode of recurrent diverticulitis within five years, particularly among younger patients.

In Asia, the prevalence was historically considered lower, with a predominance of right-sided involvement; however, incidence is currently rising due to dietary shifts and urbanization. This underscores the need for research within the regional context to better understand the differences in epidemiology, clinical characteristics, and treatment response.

Regarding treatment strategies, there has been a notable shift in recent international guidelines. Historically, Hartmann's procedure (colonic resection with end colostomy) was the standard indication for most cases of complicated diverticulitis. However, currently, the American Society of Colon and Rectal Surgeons (ASCRS, 2020) and the World Society of Emergency Surgery (WSES, 2020) advocate for a less invasive approach. For hemodynamically stable patients, medical management with antibiotics is recommended, with consideration of percutaneous drainage for abscesses larger than 3 cm. Elective or emergency surgery is indicated based on the specific clinical status (5).

Studies have also indicated that the use of diagnostic imaging, particularly contrast-enhanced abdominal CT, facilitates accurate diagnosis, severity classification (according to WSES), and treatment decision-making. International guidelines reach a consensus that CT is the gold standard for evaluating patients with suspected diverticulitis(6).

In Vietnam, several studies have investigated the epidemiological and clinical characteristics of colonic diverticulitis. Research by Nguyen Van Hai and Le Huy Luu has documented the prevalence of right-sided diverticulitis and established the safety of laparoscopic diverticulectomy (7). More recently, Nguyen Tuan Anh et al. highlighted the challenges in managing perforated left-sided cases (8). However, most of these studies were conducted in specific settings or focused on surgical techniques, leaving a lack of comprehensive data on prognostic factors and treatment outcomes at major geriatric referral centers. This gap necessitates a more systematic evaluation to optimize local management protocols.

Therefore, this study was conducted at the Department of Gastrointestinal Surgery, Thong Nhat Hospital, with the following specific objectives: 1. To describe the clinical features, laboratory findings, and diagnostic imaging characteristics of colonic diverticulitis, with a specific focus on the severity stratification according to the WSES classification. 2. To evaluate treatment outcomes, specifically determining the rate of surgical intervention versus conservative management, the length of hospital stay, and short-term complications.

2. MATERIALS AND METHODS

Study Design and Population: This was a cross-sectional study utilizing retrospective data collection. The study was conducted at the Department of Gastrointestinal Surgery, Thong Nhat Hospital, Ho Chi Minh City. The study population comprised all patients admitted for inpatient treatment of colonic diverticulitis during the period from January 1, 2025, to September 1, 2025.

Eligibility Criteria and Sampling: Patients were included if they had a confirmed diagnosis of colonic diverticulitis based on clinical presentation and contrast-enhanced abdominal CT scans (considered the gold standard). Inclusion required the availability of complete medical records, including clinical data, laboratory results, and imaging findings. We excluded patients with unclear diagnoses, incomplete data, or incidental findings of diverticulosis without inflammation (asymptomatic cases). A total sampling technique was employed, in which all 105 eligible cases admitted during the study period were included in the final analysis.

Data Collection and Statistical Analysis: Data were retrieved from Electronic Medical Records (EMR), the Picture Archiving and Communication System (PACS), and operative reports. Key variables included demographics (age, gender, comorbidities), clinical symptoms, laboratory markers (WBC, CRP), CT findings (location, WSES classification), and treatment outcomes (medical vs. surgical management, length of stay). Data analysis was performed using SPSS software version 26.0. Continuous variables were expressed as mean ± standard deviation (SD) or median (interquartile range - IQR) depending on distribution, while categorical variables were presented as frequencies and percentages. Comparisons were made using the Chi-square test, Fisher's exact test, Student's t-test, or Mann–Whitney U test, with a p-value < 0.05 considered statistically significant.

3. RESULTS

A total of 105 patients met the inclusion criteria and were included in the final analysis. The study population was classified into two groups based on WSES severity: uncomplicated (n=80) and complicated (n=25). The flow of patient selection and management outcomes is illustrated in Figure 1.

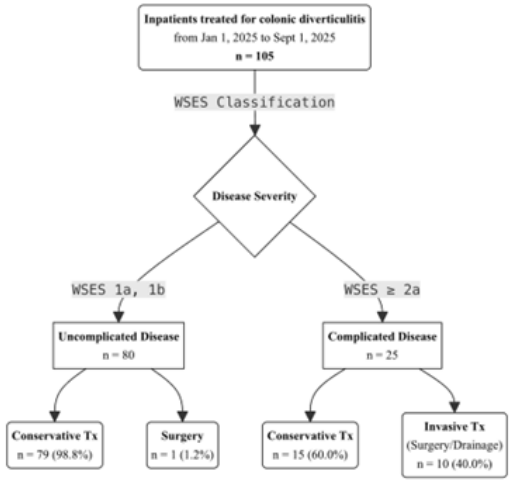

Figure 1. Study Flow Diagram

3.1. Demographic and clinical characteristics

A total of 105 eligible patients were included in the final analysis. The demographic and clinical profiles of the study population are summarized in Table 1.

The mean age of the patients was 53.9 ± 20.0 years, with a male predominance of 67.6% (male-to-female ratio approximately 2:1). The majority of patients had no comorbidities (72.4%); among those with comorbidities, hypertension was the most prevalent (26.7%).

At admission, right iliac fossa pain was the most common clinical symptom, accounting for 55.2% of cases, followed by left iliac fossa pain (31.4%). Systemic symptoms such as fever were recorded at a low rate (6.7%). Positive abdominal guarding was observed in 41.9% of patients.

Table 1. Demographic and clinical characteristics of the study population (n = 105).

Characteristics	n (%) or Mean ± SD
Demographics	
Age (years)	53.9 ± 20.0

Age group ≥ 65 years	33 (31.4)
Male gender	71 (67.6)
Comorbidities	
No comorbidities	76 (72.4)
Hypertension	28 (26.7)
Diabetes mellitus	11 (10.5)
Cushing's syndrome	3 (2.9)
Clinical Symptoms at Admission	
Right iliac fossa pain	58 (55.2)
Left iliac fossa pain	33 (31.4)
Hypogastric Generalized pain	14 (13.3)
Fever	7 (6.7)
Abdominal guarding	44 (41.9)

3.2. Laboratory and imaging findings

The laboratory results and diagnostic imaging characteristics of the study cohort are detailed in Table 2. The mean white blood cell (WBC) count was 11.9 ± 3.9 $\times 10^9$/L, and the median C-reactive protein (CRP) level was 52.4 mg/L (IQR 13.0 – 115.0 mg/L).

Regarding imaging findings, contrast-enhanced abdominal CT scans revealed that diverticula were most frequently located in the sigmoid colon (40.0%) and the cecum (37.1%). Other locations, such as the right colon (19.0%) and left colon (2.9%), were less common.

According to the WSES classification, the majority of patients (76.2%) presented with uncomplicated diverticulitis (Stage 1a–1b). Complicated diverticulitis (Stage ≥ 2a) was observed in 23.8% of cases, with Stage 2a being the most common complicated form (11.4%).

Table 2. Laboratory and diagnostic imaging findings (n = 105)

Characteristics	Statistics
Laboratory Findings	
WBC ($\times 10^9$/L), mean ± SD	11.9 ± 3.9
C-Reactive Protein (mg/L), median (IQR)	52.4 (13.0 – 115.0)
CT Scan - Diverticular Location, n (%)	
Sigmoid colon	42 (40.0)
Cecum	39 (37.1)
Right colon	20 (19.0)
Other (Transverse/Left colon)	4 (3.9)
CT Scan - WSES Severity, n (%)	
Uncomplicated Diverticulitis	80 (76.2)
- Stage 1a	60 (57.1)
- Stage 1b	20 (19.0)
Complicated Diverticulitis	25 (23.8)
- Stage 2a	12 (11.4)
- Stage 2b	8 (7.6)
- Stage 3	4 (3.8)
- Stage 4	1 (1.0)

3.3. Treatment strategies and outcomes

The management strategies and treatment outcomes are summarized in Table 3. The vast majority of patients (89.5%) were successfully managed with conservative medical treatment alone. Invasive interventions were required in 11 cases (10.5%), comprising one case (1.0%) of percutaneous drainage and ten cases (9.5%) of Hartmann's procedure.

The median length of hospital stay (LOS) for the entire cohort was 6 days (range: 2 – 28 days). Statistical analysis revealed that disease severity significantly impacted hospitalization time. Patients with complicated disease (WSES ≥ 2a) had a significantly longer median LOS compared to those with uncomplicated disease (12 days vs. 6 days, $p = 0.035$). Similarly, patients requiring invasive interventions experienced a significantly prolonged hospital stay compared to the conservative group (median 14 days vs. 6 days, $p < 0.001$).

Table 3. Treatment strategies and outcomes

Variables	n (%) or Median (IQR)
Management Strategy	
Conservative treatment	94 (89.5)
Invasive intervention (Surgery/Drainage)	11 (10.5)
Length of Hospital Stay (days)	
Overall cohort (Mean ± SD)	7.6 ± 4.4
Overall cohort (Median, Range)	6 (2 – 28)
LOS by Disease Severity (Median)	
Uncomplicated vs. Complicated	6 vs. 12 (p = 0.035)
LOS by Treatment (Median)	
Conservative vs. Invasive	6 vs. 14 (p < 0.001)

3.4. Factors associated with diverticular location and severity

Table 4 summarizes the key associations between patient characteristics and disease features. Analysis revealed a distinct age-related pattern in diverticular localization ($p < 0.001$). While younger patients (< 65 years) showed a predilection for right-sided diverticulitis (cecum and right colon), the elderly cohort (≥ 65 years) predominantly presented with sigmoid involvement (81.8%).

Regarding gender, no statistically significant difference was observed in diverticular location ($p = 0.456$). Both males and females exhibited a comparable distribution: in females, diverticula were equally prevalent in the cecum (38.2%) and sigmoid colon (38.2%), while in males, the sigmoid colon (40.8%) and cecum (36.6%) were the most common sites. Gender was also not associated with disease severity ($p = 0.513$).

Advanced age, however, was identified as a significant risk factor for disease severity ($p = 0.002$). The prevalence of complicated diverticulitis was markedly

Table 4. Factors associated with diverticular location and disease severity

Factors	Category 1	Category 2	p-value
Diverticular Location by Age	< 65 years	≥ 65 years	< 0.001
Cecum & Right colon	54 (75.0%)	5 (15.1%)	
Sigmoid & Left colon	18 (25.0%)	28 (84.9%)	
Diverticular Location by Gender	Female	Male	0.456
Cecum	13 (38.2%)	26 (36.6%)	
Sigmoid colon	13 (38.2%)	29 (40.8%)	
Other locations	8 (23.6%)	16 (22.6%)	
Severity by Age	Uncomplicated	Complicated	0.002
< 65 years	61 (84.7%)	11 (15.3%)	
≥ 65 years	19 (57.6%)	14 (42.4%)	
Severity by Gender	Female	Male	0.513
Uncomplicated	28 (82.4%)	52 (73.2%)	
Complicated	6 (17.6%)	19 (26.8%)	
Treatment by Severity	Conservative	Invasive	< 0.001
Uncomplicated	79 (98.8%)	1 (1.2%)	
Complicated	15 (60.0%)	10 (40.0%)	

higher in the elderly group compared to their younger counterparts (42.4% vs. 15.3%).

Finally, disease severity served as the primary determinant for therapeutic decision-making ($p < 0.001$). Conservative management was successful in 98.8% of uncomplicated cases, whereas invasive intervention was required in 40.0% of complicated cases.

4. DISCUSSION

Our study is one of the recent investigations into the clinical and paraclinical characteristics, as well as treatment outcomes, of colonic diverticulitis in Vietnam. The results indicated that the mean patient age was > 50 years, which is consistent with international literature stating that the incidence of the disease increases with age, particularly after the age of 50 (2, 5). However, in contrast to the pattern observed in Western populations—where the disease is predominantly localized to the left colon—the majority of cases in our study presented in the right iliac fossa, which is consistent with numerous reports from Asia (9). This suggests epidemiological and risk factor variations based on geography, diet, and genetics.

Regarding clinical presentation, localized abdominal pain was the predominant symptom, with right iliac fossa pain accounting for a significant proportion. This presentation frequently mimics acute appendicitis; therefore, careful clinical examination and paraclinical support are essential to avoid misdiagnosis. The incidence of fever and leukocytosis in our study was consistent with the literature(10). Computed tomography (CT) has been proven to be a diagnostic modality with high sensitivity and specificity. Furthermore, it facilitates severity grading according to the WSES/Hinchey classification, thereby guiding treatment strategies(11).

Regarding management strategies, the majority of cases in our study were managed with medical therapy, antibiotics, and observation, yielding favorable outcomes. This aligns with current guidelines from the World Society of Emergency Surgery (WSES, 2020) and the American Gastroenterological Association (AGA, 2021), which emphasize that the majority of uncomplicated diverticulitis cases can be successfully managed conservatively, thereby avoiding unnecessary surgical intervention.

In patients presenting with complications (such as abscess, perforation, or obstruction), surgery or percutaneous drainage was indicated, in accordance with international recommendations. Preliminary results indicate that the treatment efficacy at our institution is comparable to domestic and international reports, with the mean length of hospital stay being consistent with the literature (12).

Notably, comparative analysis between the uncomplicated and complicated diverticulitis groups, as well as between medical management and surgical/drainage interventions, revealed statistically significant differences regarding length of hospital stay and complication rates. These findings reinforce the concept that risk stratification and the selection of individualized treatment strategies play a pivotal role. In particular, patients with complicated diverticulitis required a significantly prolonged treatment duration, reflecting the severity of this pathology.

It is important to acknowledge certain limitations of our study, including its retrospective design, limited sample size, and short follow-up period, which precluded a comprehensive assessment of late complications or recurrence. Nevertheless, these results contribute valuable clinical data from Vietnam, serving as a basis for comparison with international literature and helping to guide future improvements in diagnostic and therapeutic protocols.

5. CONCLUSIONS

Our study confirms a distinct age-related pattern of colonic diverticulitis in the Vietnamese population: right-sided predominance in younger patients and sigmoid involvement in the elderly. Contrast-enhanced CT scans are critical for accurate diagnosis and severity stratification according to the WSES classification. Regarding management, conservative treatment remains the standard of care for uncomplicated diverticulitis (WSES 1a–1b), yielding excellent outcomes. Conversely,

advanced age and higher WSES grades (≥ 2a) are significant predictors for surgical intervention and prolonged hospitalization. Future research should focus on prospective, multi-center studies with long-term follow-up to evaluate recurrence rates and validate prognostic models for the Asian population.

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