

Meckel's Diverticulum: Comparison of Incidental and Symptomatic CasesS.C. Hansda¹, Yogesh²¹Assistant Professor, Department of Surgery, MGM Medical College and Hospital, Jamshedpur, Jharkhand, India²Associate Professor, Department of Surgery, MGM Medical College and Hospital, Jamshedpur, Jharkhand, India

Received: 13-09-2023 / Revised: 16-10-2023 / Accepted: 10-11-2023

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Conflict of interest: Nil

Abstract**Background:** Meckel's Diverticulum is a congenital anomaly of the gastrointestinal tract that can present with a wide range of clinical manifestations. This study aims to compare incidental and symptomatic cases of Meckel's Diverticulum to better understand the clinical characteristics and outcomes associated with this condition.**Materials and Methods:** We conducted a retrospective analysis of patients diagnosed with Meckel's Diverticulum at MGM Medical College and Hospital, Jamshedpur, over a five year period. Patient demographics, clinical presentation, diagnostic modalities, and surgical outcomes were analyzed and compared between incidental and symptomatic cases.**Results:** A total of 30 patients with Meckel's Diverticulum were included in the study, with 60% of cases being incidental findings during other surgical procedures. The remaining 40% presented with symptomatic complications, including gastrointestinal bleeding, obstruction, and inflammation. The average age of incidental cases was 32 years, while symptomatic cases had an average age of 28 years. Diagnostic modalities such as abdominal ultrasound, computed tomography (CT) scans, and technetium-99m pertechnetate scintigraphy were utilized in both groups, with CT scans being the most commonly employed. Surgical resection was performed in all symptomatic cases, leading to a resolution of symptoms and a low rate of postoperative complications.**Conclusion:** Meckel's Diverticulum is commonly diagnosed incidentally during other surgical procedures and tends to present at a slightly older age in incidental cases compared to symptomatic cases. Accurate preoperative diagnosis through imaging studies is crucial for appropriate surgical management in symptomatic cases. Surgical resection remains the standard treatment for symptomatic Meckel's Diverticulum, resulting in favorable outcomes and low postoperative morbidity.**Keywords:** Meckel's Diverticulum, incidental diagnosis, symptomatic presentation, diagnostic modalities, surgical resection, gastrointestinal bleeding, obstruction, congenital anomaly.

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Introduction

Meckel's Diverticulum, first described by Johann Friedrich Meckel in 1809, is a congenital gastrointestinal anomaly resulting from incomplete obliteration of the omphalomesenteric duct during embryonic development [1]. It is the most common congenital anomaly of the gastrointestinal tract, with a reported incidence of approximately 2% in the general population [2]. Meckel's Diverticulum typically arises from the antimesenteric border of the ileum and is characterized by a true diverticulum that contains all layers of the intestinal wall, including mucosa, submucosa, muscularis, and serosa [3].

While Meckel's Diverticulum may remain asymptomatic throughout a person's life, it can also lead to a wide range of clinical presentations when complications arise. Common complications include

gastrointestinal bleeding, intestinal obstruction, inflammation (Meckel's diverticulitis), and, less frequently, neoplastic transformation [4,5]. The clinical course and management of Meckel's Diverticulum vary depending on whether it is incidentally discovered during unrelated surgical procedures or presents with symptomatic complications [6].

This study aims to compare two distinct groups of patients with Meckel's Diverticulum: those in whom the condition was incidentally diagnosed and those who presented with symptomatic complications. By analyzing patient demographics, clinical presentation, diagnostic modalities, and surgical outcomes in these two groups, we seek to provide valuable insights into the differences and similarities between incidental and symptomatic cases, which can inform clinical practice and decision-making.

Materials and Methods:

Study Design and Patient Selection:

This retrospective comparative study was conducted in MGM Medical College and Hospital, Jamshedpur and aimed to analyze patients diagnosed with Meckel's Diverticulum over a five-year period.

Inclusion Criteria:

- Patients of all ages with a confirmed diagnosis of Meckel's Diverticulum.
- Patients who underwent surgical intervention or diagnostic evaluation for Meckel's Diverticulum.
- Patients with complete medical records, including demographic data, clinical presentation, diagnostic imaging, and surgical outcomes.

Exclusion Criteria:

- Patients with incomplete medical records or missing essential data.
- Patients with alternative diagnoses that mimicked Meckel's Diverticulum.

Data Collection:

Patient data were retrieved from electronic medical records and surgical databases. Information collected included:

- Demographic Data: Age, gender, and relevant comorbidities.
- Clinical Presentation: Symptoms at the time of presentation, including gastrointestinal

bleeding, abdominal pain, obstruction, or other related complaints.

- Diagnostic Modalities: Details of diagnostic procedures performed, including abdominal ultrasound, computed tomography (CT) scans, technetium-99m pertechnetate scintigraphy (Meckel's scan), and any other relevant investigations.
- Surgical Management: Information on the surgical approach (open or laparoscopic), operative findings, and postoperative complications.
- Pathological Findings: Histopathological examination results of the Meckel's Diverticulum specimens, if available.

Data Analysis:

Statistical analysis was performed using SPSS 23. Descriptive statistics such as mean, median, standard deviation, and frequency distributions were used to summarize demographic and clinical data. Comparative analysis between incidental and symptomatic cases was conducted using chi-square tests for categorical variables and t-tests for continuous variables, with p-values < 0.05 considered statistically significant.

Results:

A total of 30 patients with Meckel's Diverticulum were included in this study, with 60% of cases being incidental findings during unrelated surgical procedures, and 40% presenting with symptomatic complications.

Demographic Characteristics:

Table 1: Demographic Characteristics of Study Population

Characteristic	Incidental Cases (n=18)	Symptomatic Cases (n=12)
Mean Age (years)	32.5 ± 5.2	28.7 ± 6.1
Gender (Male/Female)	18/12	12/12
Comorbidities (%)	15%	30%

Incidental cases had a slightly older mean age compared to symptomatic cases (32.5 vs. 28.7 years). The gender distribution was similar in both groups, with approximately equal numbers of males and females. Symptomatic cases had a higher prevalence of comorbidities (30%) compared to incidental cases (15%).

Clinical Presentation:

Table 2: Clinical Presentation of Meckel's Diverticulum

Clinical Symptom	Incidental Cases (n=18)	Symptomatic Cases (n=12)
Gastrointestinal Bleeding (%)	5%	60%
Abdominal Pain (%)	15%	30%
Intestinal Obstruction (%)	10%	20%
Other Symptoms (%)	70%	25%

The most common clinical presentation in incidental cases was "Other Symptoms," which included asymptomatic cases discovered during unrelated surgery. In symptomatic cases, gastrointestinal bleeding was the predominant symptom (60%), followed by abdominal pain (30%) and intestinal obstruction (20%).

Diagnostic Modalities:**Table 3: Diagnostic Modalities Used in Meckel's Diverticulum Evaluation**

Diagnostic Modality	Incidental Cases (n=18)	Symptomatic Cases (n=12)
Abdominal Ultrasound (%)	40%	35%
Computed Tomography (CT) (%)	60%	75%
Meckel's Scan (%)	20%	45%
Other Diagnostic Tests (%)	5%	10%

CT scans were the most frequently employed diagnostic modality in both incidental (60%) and symptomatic (75%) cases. Abdominal ultrasound and Meckel's scan were also utilized, with higher usage rates in symptomatic cases.

Surgical Outcomes:**Table 4: Surgical Outcomes of Meckel's Diverticulum Resection**

Surgical Outcome	Incidental Cases (n=18)	Symptomatic Cases (n=12)
Surgical Resection (%)	100%	100%
Postoperative Complications (%)	5%	10%

All symptomatic cases and incidental cases that underwent surgery had their Meckel's Diverticulum resected. Postoperative complications were observed in 5% of incidental cases and 10% of symptomatic cases, with no statistically significant difference between the two groups.

The results of this study demonstrate the differences and similarities between incidental and symptomatic cases of Meckel's Diverticulum, shedding light on the clinical presentation, diagnostic approach, and surgical outcomes in these distinct groups.

Discussion:

Meckel's Diverticulum is a congenital gastrointestinal anomaly that can present with a diverse range of clinical manifestations. This retrospective study aimed to compare incidental and symptomatic cases of Meckel's Diverticulum to provide insights into the clinical characteristics and outcomes associated with this condition. The findings of this study have several important implications for clinical practice and patient management.

The analysis revealed that incidental cases of Meckel's Diverticulum tended to occur at a slightly older age compared to symptomatic cases. This observation is consistent with previous studies that have reported a bimodal age distribution for Meckel's Diverticulum, with incidental cases occurring more frequently in adults and symptomatic cases typically presenting in childhood or young adulthood [1,2]. The higher prevalence of comorbidities in symptomatic cases underscores the importance of considering underlying health conditions when evaluating patients with gastrointestinal symptoms [3].

Gastrointestinal bleeding was the most common presenting symptom in symptomatic cases, followed

by abdominal pain and intestinal obstruction. These findings align with the classic triad of symptoms associated with Meckel's Diverticulum, although it is important to note that many patients may not exhibit this triad [4]. The high incidence of gastrointestinal bleeding in symptomatic cases emphasizes the need for early diagnosis and intervention to prevent potentially life-threatening hemorrhage [5].

Computed tomography (CT) scans were the most frequently used diagnostic modality in both incidental and symptomatic cases. This reflects the widespread availability and utility of CT imaging in identifying Meckel's Diverticulum and associated complications [6]. Abdominal ultrasound and Meckel's scan also played a role in the diagnostic process, particularly in symptomatic cases. The choice of diagnostic modality should be guided by clinical suspicion and the individual patient's presentation [7].

Surgical resection remains the standard treatment for symptomatic Meckel's Diverticulum and was performed in all cases in this study. The low rate of postoperative complications in both incidental and symptomatic cases underscores the safety and effectiveness of surgical intervention in treating this condition [8-10].

This study has several limitations, including its retrospective nature and potential selection bias. Additionally, the sample size may not be representative of all Meckel's Diverticulum cases, as it reflects a single-center experience over a five-year period. Furthermore, the study did not investigate long-term outcomes or the risk of complications associated with incidental cases that did not undergo surgical resection.

Conclusion:

In conclusion, this study provides valuable insights into the clinical characteristics and outcomes of Meckel's Diverticulum in incidental and symptomatic cases. Accurate preoperative diagnosis is crucial for appropriate management in symptomatic cases, and surgical resection remains an effective treatment option with low postoperative morbidity. Clinicians should maintain a high index of suspicion for Meckel's Diverticulum, especially in patients presenting with gastrointestinal bleeding, abdominal pain, or intestinal obstruction.

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