ONLINE ISSN :3007-309X
PRINT ISSN :3007-3081

Journal of Medical & Health Science Review

FREQUENCY OF MECKEL'S DIVERTICULUM IN ACUTE APPENDICITIS

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ARTICLE INFO

Keywords:
Meckel's Diverticulum, Acute Appendectomy, Congenital Anomaly.

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ABSTRACT

Meckel's diverticulum (MD) is the most common congenital anomaly of the gastrointestinal tract. Its incidence is increasing in the general population. Moreover, contemplation about the need to remove an incidentally discovered Meckel's diverticulum continues. To determine the frequency of Meckel's diverticulum in patients undergoing acute appendectomy. A cross-sectional study was conducted at the Department of Surgery, Jinnah Postgraduate Medical Center, Karachi. All patients aged 18 to 50 years of either gender who presented with acute appendicitis were enrolled in this study. Meckel's diverticulum was explored during surgery, and the Presence of a blind segment 3–6 cm long in the distal ileum, within 60–100 cm of the ileocecal valve, was considered as Meckel's diverticulum. The mean age of the patients was 31.19±10.17 years. The mean BMI of the patients was 28.60/m^2±1.50Kg/m^2. There were 385 (27.80%) females and 1001 (72.20%) males. Obesity was found in 18 (14.30%) patients. In our study frequency of Meckel's diverticulum was found in 11 (0.79%) acute appendectomy patients.

INTRODUCTION

Meckel's diverticulum (MD) is the most common congenital anomaly of the gastrointestinal tract. We found an incidence of 2-3% in the general population after reviewing a series of patients undergoing surgery, and 0.3% for research findings at autopsy. MD stems from the incomplete atrophy of the omphalomesenteric duct, which normally closes from the tenth week of embryological development and becomes a fibrous band that disappears.[1] Meckel's diverticulum is a congenital diverticulum possessing all three coats of the intestinal wall. Having its blood supply, it is vulnerable to infection and obstruction. Ectopic gastric or pancreatic mucosa is found in 50% of patients with Meckel's diverticulum. Rarely a colonic or hepatobiliary tissue is found.[2] One of the clinical features of it is Hemorrhage that occurs due to peptic ulceration and is the most common cause for painless major lower gastrointestinal bleeding in children aged less than 2 years.[3]

Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract and occurs in 2-3% of the population. 60% of patients come to medical attention before the age of ten years with the remainder of cases presenting in adolescence and adulthood.[4] Typically, the diverticulum is depicted as a contrast-filled outpouching, 0.5-20 cm long, that is located on the antimesenteric border of the ileum and has junctional fold pattern. The characteristic junctional fold appearances are triradiate fold pattern in which the loops are collapsed and a mucosal triangular plateau, in which loops are distended.[5]

In a retrospective study, incidental finding of Meckel's diverticulum was found in 21 (09%) patients during acute appendicectomy.[6] The actual burden of MD in local perspective is not available and the data is also scarce internationally. No work has been done even internationally in the last five years. Furthermore, the previous study done on it was a retrospective study and as the authenticity of retrospective study is always questionable. Therefore, this prospective study was planned to assess the actual magnitude of MD. Thereby some strategies could be developed to screen MD in all appendectomies and minimize further

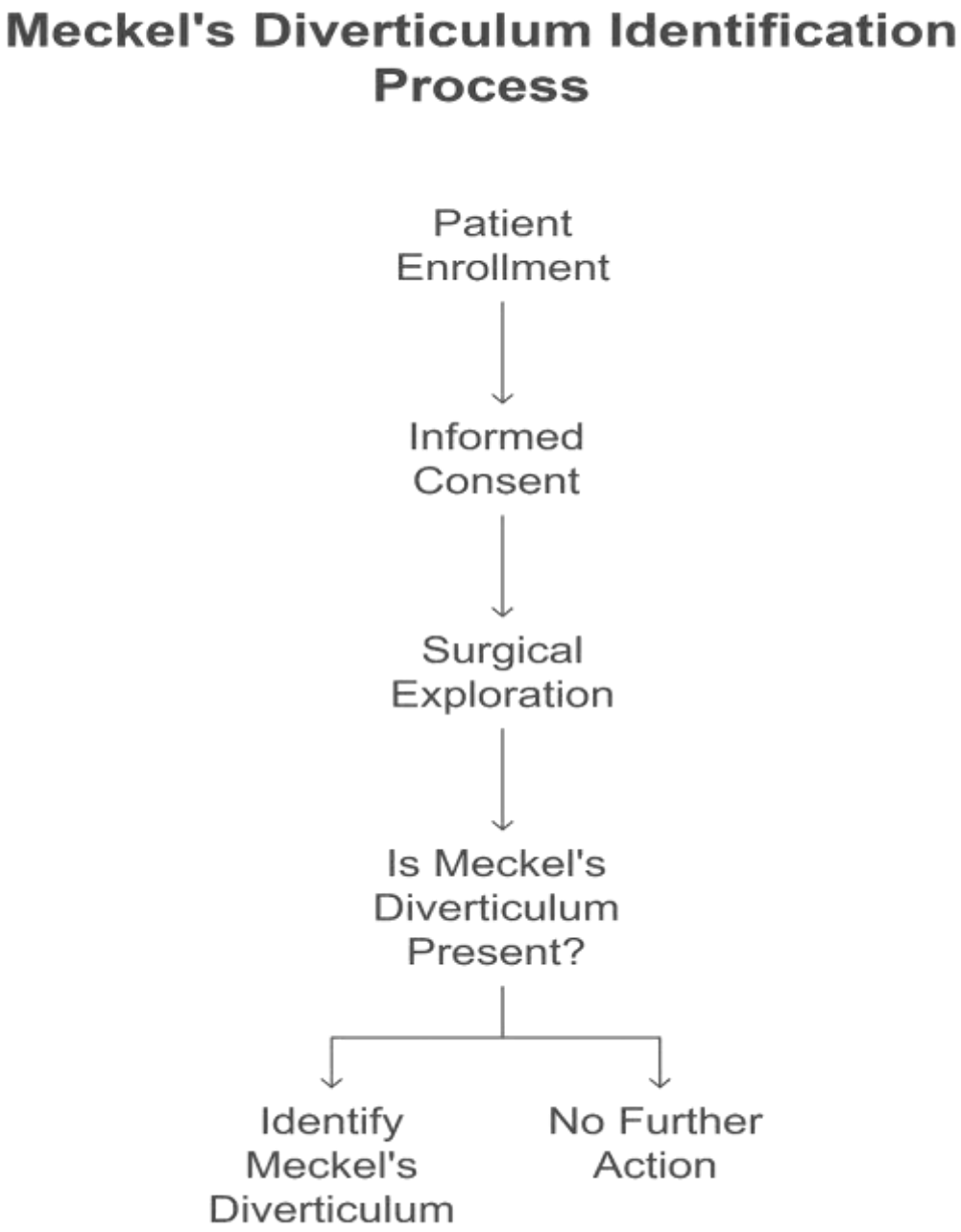

Figure 1: Meckel's Diverticulum Identification Process.

MATERIALS AND METHODS

This cross-sectional study was conducted at the Department of Surgery, Jinnah Postgraduate Medical Center, Karachi. All patients aged 18 to 50 years of either gender who presented with acute appendicitis were enrolled in this study. Informed and written consent was taken by the Principal Investigator of this study after explaining about the purpose, procedure, risks and benefits of the study. Meckel's diverticulum, was explored during surgery and presence of blind segment of 3–6 cm long in the distal ileum, within 60–100 cm of the ileocecal valve was considered as Meckel's diverticulum.

RESULTS

Mean age of the patients was 31.19 ±10.17 years. Mean BMI of the patients was 28.60 ±1.50Kg/m^2. Male preponderance was found to be higher 1001 (72.20%) as compared to females 385 (27.80%).

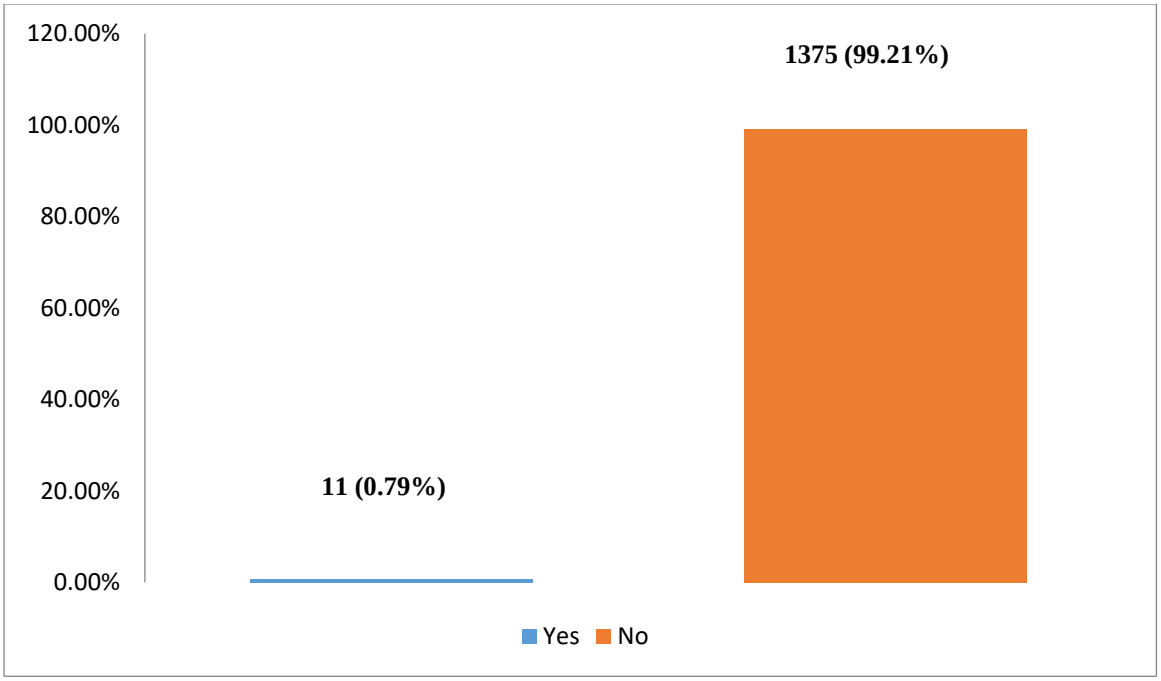

Figure 2: Prevalence of Meckel's Diverticulum

Frequency of Meckel's Diverticulum was found to be 11 (0.79%) patients (Figure 1).

Comparison of general characteristics with Meckel's Diverticulum is shown in table 1. Meckel's Diverticulum was found significantly higher 5 (27.8%) among obese patients as compared to non-obese 6 (5.6%) (p-value 0.002).

Male and Female Percentages:

1001 males (72.30%) and **385 females (27.70%)**.

The total patient count is **1386**, **1001 males** and **385 females**,

DISCUSSION

Meckel's diverticulum is a congenital diverticulum possessing all three coats of the intestinal wall. Having its own blood supply, it is vulnerable to infection and obstruction. Ectopic gastric or pancreatic mucosa is found in 50% of patients with Meckel's diverticulum. Rarely a colonic or hepatobiliary tissue is found.[2] Meckel's

diverticulum is the most common congenital anomaly of the gastrointestinal tract and occurs in 2-3% of the population. 60% of patients come to medical attention before the age of ten years, with the remainder of cases presenting in adolescence and adulthood.[4]

Typically, the diverticulum is depicted as a contrast-filled outpouching, 0.5-20 cm long, that is located on the antimesenteric border of the ileum and has a junctional fold pattern. The characteristic junctional fold appearances are a triradiate fold pattern in which the loops are collapsed and a mucosal triangular plateau, in which loops are distended.[5]

In a retrospective study, an incidental finding of Meckel's diverticulum was found in 21 (09%) patients during acute appendectomy.[6] The incidence of Meckel's diverticulum in the general population has been estimated to be about 2 percent; reports from autopsy and retrospective studies range from 0.14 to 4.5 percent.[7,8–14]

In this study Frequency of Meckel's Diverticulum was found to be 11 (0.79%) patients. Although Meckel's diverticulum occurs equally in both sexes,[12–14] it causes complications more frequently in males[7,14,15] and, therefore, is more often diagnosed in males.[12] Early literature[16,17] has quoted complication rates as high as 25 percent; however, results of a 15-year study set the risk of developing complications at 4.2 percent.[18]

A currently disputed issue is whether the incidence of complications decreases with advancing age. The 15-year study stated that the incidence of complications decreases with age.[18] Two retrospective studies of patients diagnosed with Meckel's diverticulum also reached this conclusion.[7,9]. A population-based study[15] from 1950 to 1992 found the incidence of a diverticular complication to be 87.4 per 100,000 person-years, translating to a 6.4 percent lifetime risk (lifetime = 80 years of age) of a person developing a complication related to the diverticulum. In this study,[15] there was no decrease in the likelihood of complications with age. More recently, a 10-year retrospective study[8]also reported an even age distribution in patients with complications. This issue of correlating age with the incidence of complications is not settled; therefore, age alone should not be the sole criterion for a decision to perform an incidental diverticulectomy.

CONCLUSION

The frequency of Meckel's diverticulum was observed in 11 out of 1036 patients, constituting [0.79%] of those undergoing acute appendectomy. While no significant association was found between MD and age or gender, a statistically significant correlation was observed between MD and obesity. These findings suggest that increased vigilance during surgery in obese patients may aid in early detection of MD. Further large-scale prospective studies are recommended to validate these findings.

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Table 1: Comparison of Meckel's Diverticulum with General Characteristics

Variables	Meckel's Diverticulum (Yes)	Meckel's Diverticulum (No)	Total	p-value
Age (in years)				0.823
≤34	7 (8.3%)	847 (91.7%)	924 (100%)	
>34	4 (9.5%)	418 (90.5%)	462 (100%)	

Gender				0.506
Male	7 (7.7%)	924 (92.3%)	1001 (100%)	
Female	4 (11.4%)	341 (88.6%)	385 (100%)	
Obesity				0.002
Yes	5 (27.8%)	143 (72.2%)	198 (100%)	
No	6 (5.6%)	1122 (94.4%)	1188 (100%)	