

## An analysis of a series of patients of Meckels Diverticulum in a hospital in Asia

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### Abstract

Meckels Diverticulum is a true diverticulum, situated 2 feet from the ileocecal valve proximally. Due to its varied presentation, the analysis of a series of patients was undertaken to understand the topic further. We present a clinical profile of 18 such patients treated in our hospital.

### Materials and methods

We did a retrospective analysis of such patients over the last 6 years June 2015 to June 2021. All patients which were admitted and managed on emergency basis as Meckels Diverticulum in our hospital were included in the study. Those patients who were diagnosed to have Meckels Diverticulum during the course of surgery for other conditions were also included in the study. Both adults and children were included in the study. Those patients in whom the Meckels Diverticulum was diagnosed incidentally during the course of radiology or imaging but were not operated were not included in the study.

### Results

18 patients were admitted in our hospital over these six years. We found that 9 were children and 9 were adults. Out of 18 patients 12 patients were operated for emergency situations and 6 were diagnosed while patients were being operated for other elective procedures. Out of 12 emergency patients all were operated and out of 6 incidentally diagnosed patients only 3 were operated while three were not disturbed. Out of 15 patients 12 had normal histology on histopathology while 3 had ectopic gastric mucosa. Out of the 18 cases in total, three patients had other diverticula (in colon) and 15 had no diverticulum associated. In all the patient's various cases had different presentations. Out of 12 cases who presented as emergency, 6 cases were taken as appendicitis but they proved to be Meckels Diverticulum, 3 presented as hemorrhage, 3 cases presented as obstruction.

### Conclusion

Meckels diverticulum is an entity which needs to be always kept in mind in analyzing the problems of abdomen especially in emergency. We recommend diverticulectomy or resection depending on the situation.

**Keywords:** Meckels diverticulum, Incidental, Vitellointestinal duct, Appendicitis

## INTRODUCTION

Meckels Diverticulum is the most common anomaly of the small intestine that results from incomplete

closure of vitellointestinal duct. It is a congenital sac or blind pouch about 6-10 cm long shaped like a glove

finger, found in the lower portion of ileum, approx 2 feet from the ileocaecal valve (representing the persistent proximal end of the yolk stalk which is a vestige of ductus omphalomesentericus which normally disappears completely). Diagnostic challenge arises when it presents as a hemorrhage or intestinal obstruction or as contents of a hernial sac.

#### Material and methods

This is a retrospective analysis of 18 patients admitted in our hospital whereby diagnosis of Meckel's diverticulum was made. All the children and adults were included. Patients in whom there was the incidental discovery of Meckel's Diverticulum done, were also included.

#### Results

Table 1 shows distribution of these patients in the two age groups of adults and children. It shows that half of the total patients were adults, and half the patients were children.

Table 2 shows that out of 18 patients 06 were diagnosed while the patient was evaluated for other

elective procedure while as 12 patients were diagnosed in emergency.

Table 3 shows that out of the 15 patients operated 12 had a normal mucosa while as 3 patients had ectopic gastric mucosa on histopathology.

Table 4 shows that out of 18 patients 3 had diverticulum in other organs while as 15 had no other diverticulum.

Table 5 shows the different presentations of those 12 patients who presented in emergency. 6 patients had appendicitis like features, whereas the 3 had features of obstruction and 3 other patients had features of hemorrhage. Table 6 shows the gender distribution in our series showing 15 patients to be the females and 03 patients were male. Table 7 shows the anatomical variations in the Meckel's diverticula showing that out of the 6 patients of Meckel's diverticulum who were discovered incidentally, 3 patients had length of lesser than 2 cm whereas the 3 patients had the length of Meckel's Diverticulum as more than 2 cm.

Age group	Number	Percent
Children	9	50
Adults	9	50
Total	18	100

**Table 1 showing the age categorization**

Type of the presentation	Number	Percent
Elective	6	33
Emergency	12	66
Total	18	100

**Table 2 showing the emergency versus the incidental presentation**

Histopathology	Number	Percent
Normal	12	75
Gastric mucosa	3	25
Total	15	100

**Table 3 showing the histopathology of the 15 patients who were operated**

If other diverticula present	Number	Percent
Present	3	16.6
Not present	15	83

**Table 4 showing the association with different diverticula in other organs**

Presentation	Number	Percent
Features of appendicitis	6	50
Obstruction	3	25
Hemorrhage	3	25

**Table 5 showing the varied presentation of 12 patients who came as emergency**

Gender	Number	Percent
Male	3	15
Female	15	85

**Table 6 showing the gender distribution in our series of 18 patients**

length of the diverticulum	Number	Percent
Diverticulum was Less than 2 cm long	3	50
Diverticulum was More than 2 cm long	3	50

**Table 7 showing length of the diverticulum in 6 patients in whom the diverticulum was an incidental finding.**

Outcome	Number	Percent
Uneventful Recovery	9	75
Recovery with sepsis	3	25

**Table 8 showing the outcome of management in 12 emergency patients**

Outcome	Number	Percent
Recovery	5	86
Recovery with wound sepsis	1	14

**Table 9 shows the outcome of management in 6 elective patients**

## Discussion

Meckels diverticulum, one of the most common congenital defects of the intestine is found in 2- 3 percent of the general population (1). It is among the most common congenital defects of the gastrointestinal tract. The classic “rule of 2” says the diverticulum is located 2 feet from the ileocecal valve. It has two types of heterotopic mucosa. Is 2 inches long, is an important diagnosis in children younger than 2 years who have GI bleeding. The incomplete resolution of omphalomesenteric duct can cause an enteroumbilicofistula (a fibrous cord between umbilicus and intestine) and an umbilical sinus or a Meckels Diverticulum (2). When the patients present with symptoms, diagnosis is complicated because features are similar to other GI conditions.

Symptomatic Meckels Diverticulum are more common in children but do occur in adults. (3) In this study by Piner et al it was concluded that Meckels Diverticulum should be suspected when there are signs of obstruction or GI bleed in children (3). The most common symptom in patients aged below 5 years is bleeding. Diverticulitis can occur at any age but is more common in older children. Tumours can occur in mainly adults but these are rare. Regarding sex distribution there is evidence that Meckel divert is twice as common in men as in women, though some experts may dispute it.

Evidence suggests that complications in Meckels Diverticulum are twice as common in men as in women with the approximate ratio of 2:1. But a ratio of 4:1 has been reported in some series (3,4,5,6).

Regarding the role of male gender, it is pertinent to mention that some case series specifically note a peak in complication from the diverticulum (in the form of bleeding or perforation) during the 4<sup>th</sup> and 5<sup>th</sup> decade of life. That is why such experts suggest that incidentally discovered diverticulum should be removed in male patients only if they are younger than 40 years or which have high risk of complications like ectopic mucosa or anchoring fibrous connection. (7)

Debate about the need to remove the incidentally discovered diverticulum has not stopped. Finally, it is probably settled that ability to remove the diverticulum should be the deciding factor in this debate.

Contraindications to resection of an incidentally discovered diverticulum include patient instability,

presence of ascites, presence of gross contamination of abdominal cavity by faeces (in the perforated intestine).

The treatment of symptomatic Meckels Diverticulum is surgical and can range from diverticulectomy to resection. (2).

Diverticulectomy is adequate for incidentally discovered Meckels Diverticulum or when diverticulitis affects the tip of the diverticulum.

Segmental resection is recommended if the base is inflamed or if the patient presents with melena. It is so because the site of bleeding is located on the bowel wall adjacent to the opening of the diverticulum and is caused by secretions from the ectopic gastric tissue in the Meckels Diverticulum.

Diverticulectomy by open or laparoscopic methods can be undertaken even in complicated diverticulum (8). In our study we found that there were associated diverticuli in other parts of intestine in certain patients but we have not found any such correlation in literature.

Complications do occur in Meckels Diverticulum. Diverticulitis can progress to perforation. Even a fistula between appendix and Meckels Diverticulum has been reported (9). However elective prophylactic resection of asymptomatic Meckel's diverticulum identified on imaging is not recommended for both children and adult (8).

The gastrointestinal bleeding from a Meckel's Diverticulum is a rare complication, but when encountered, a segmental small bowel resection followed by end-to-end ileoileostomy rather than simple diverticulectomy is preferred [10]. Proton-pump inhibitor therapy should also be initiated on these patients. We have not studied the difference between the resection and diverticulectomy although it has been previously found that morbidity after intestinal resection was higher than after diverticulectomy (3). Some people suggest that morphology of the diverticulum needs to be considered to decide about the extent of surgery i.e. in the short broad-based diverticulum there is possibility of trapping of enteroliths leading to inflammation, hemorrhage or obstruction. While as in the long thin diverticulum there is risk of volvulus, intussusception and torsion (11).

The laparoscopy has a role in the diagnosis of complicated Meckels Diverticulum, because of the difficulties posed by other methods of imaging., laparoscopy allows for complete resection of the lesion during the same procedure (12)(13). In a study of adults, it was shown that diverticulectomy was safe and effective for long Meckels Diverticulum, but for the short Meckels Diverticulum resection with a piece of small bowel also is recommended. so that any gastric mucosa or if gastric cancer is present in the Meckels Diverticulum, the whole pathology comes out (14). We have found that 3 patients had associated diverticula in the colon, but there seems no correlation between colonic diverticulum and Meckels Diverticulum. the colonic diverticula have a different pathology as compared to the Meckels Diverticulum. The colonic diverticula are acquired (only mucosal projections between the muscles of the wall) while as Meckels Diverticulum is congenital (true diverticulum with all the layers. ) Though the diverticulum has been described by the Meckels two centuries back in 1809 (15), the debate about its treatment continues. We need to formulate the guidelines for its definitive management in non-emergency cases for the future surgeons.

## Conclusion

We conclude we feel that resection of the portion of small intestine or diverticulectomy should be undertaken in all patients in whom the Meckels Diverticulum is found incidentally. But this procedure should be undertaken only if the general condition of the patient allows so.

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