Original Article

Meckel’s Diverticulum and Patent Vitello-Intestinal Duct in Children: A Review of 5 Years of Experience with 16 Cases

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Abstract:
Aim: The aim of this study was to review the management of symptomatic Meckel’s diverticulum and patent vitello-intestinal duct (PVID) in children.

Patients and Methods: This retrospective study included children who underwent exploratory laparotomy for the management of symptomatic Meckel’s diverticulum and PVID between Jan 1, 2012 to Dec 31, 2016.

Results: During last 5 years, 16 (14 boys and 2 girls) children were treated for symptomatic Meckel’s diverticulum and PVID under 14 years were n=14 (87.5%) boys and n=2 (22.5%) girls with a male to female ratio of 7:1. Six (37.5%) were infants, 4 (25%) were 1 to 5 years and 6 (37.5%) were 6 to 14 years of age.

Conclusions: Symptomatic Meckel’s diverticulum and PVID is also an important cause of acute abdomen/intestinal obstruction in infants and children and delay in seeking treatment is not only associated with morbidity but prone to mortality as well.

Key word: meckel’s diverticula, intestinal obstruction, gut gangrene, perforation peritonitis

I. Introduction

Meckel diverticula is a remnant of the omphalomesenteric or vitelline duct which connects the yolk sac to the midgut through the umbilical cord. Failure of this duct to obliterate during the eighth week in utero can result in several abnormalities including enterocyst, omphalomesenteric fistula or Meckel’s diverticulum¹. In this retrospective study we examined 5 years records of patients from Jan 2012 to Dec 2016 and analysed to review the incidence, presentation and evaluation of Meckel’s diverticulosis and diverticulitis

II. Material & method

This is a retrospective, single institution study in children aged below 14 years, who underwent exploratory laparotomy for symptomatic Meckel’s diverticulum and PVID. It was conducted in the department of paediatric surgery over a period of 5 years from Jan 2012 to Dec 2016. Details of clinical presentation, diagnosis and management of above patients were reviewed

III. Result

sixteen (13 boys and 3 girls) exploratory laparotomies were performed at the department of paediatric surgery for symptomatic Meckel’s diverticulum and PVID in children between Jan 2012 to Dec 2016 and these children were included in this study. Age and sex distribution of above 16 cases is given in [Table-1]. children presented as intestinal obstruction n=8 (50%) which included 3 cases of intussusception where Meckel’s diverticulum was lead point and 3 cases of meckels diverticula with band & 2 cases has inflamed diverticula adherent to surrounding gut. n=2 (12.5%) patients presented as diverticulum perforation peritonitis, n=3 (18.75%) as umbilical faecal discharge (PVID) and n=3 (18.75%) as incidental findings during laparotomy for others. Preoperative diagnosis of patent VID with faecal fistula was obvious & Rest of n=13 (81.25%) cases were diagnosed of having Meckel’s diverticulum during laparotomy for intestinal obstruction/perforation peritonitis.

Findings at laparotomy in order of frequency were: Meckel’s diverticulum with gangrene of bowel (n=3), Meckel’s diverticulum with bands (n=2) & perforated Meckel’s n=2 was present.
IV. Discussion

In the paediatric population, males comprised 74% of cases of resection for symptomatic Meckel’s Diverticulum; overall, diverticulectomy was two times more common in paediatric males than females\(^2\). The frequent complications of Meckel’s diverticulum are haemorrhage, intestinal obstruction and diverticulitis. Intestinal obstruction is the second most common complication of Meckel’s diverticulum\(^3\).

This present study was not an age, sex, or disease-matched study. The objective was to review our 5 years of experience with laparotomies done for symptomatic Meckel’s diverticulum and PVID, in the department of paediatric surgery. This study comprised 16 children below 14 years of age and included \(n=14(87.5\%)\) boys and \(n=2 (22.5\%)\) girls with a male to female ratio of 7:1. Six (37.5%) were infants, 4 (25%) were 1 to 5 years and 6 (37.5%) were 6 to 14 years of age.

There are plenty of mechanisms for bowel obstruction arising from a Meckel’s diverticulum. Obstruction can be caused by trapping of a bowel loop by a mesodiverticular band, a volvulus of the diverticulum around a mesodiverticular band, and intussusception, as well as by an extension into a hernia sac (Littre’s hernia)\(^4\).

With the exception of the paediatric patient presenting with lower gastrointestinal bleeding, differential diagnosis for any other patient group presenting with abdominal complaints, diagnosis is usually made intra-operatively, therefore pre-operative history, exam findings and supportive imaging’s are essential to making a timely diagnosis. Plain radiographs may help

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<td>Age</td>
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Fig 1  mackel’s as lead point

Fig 2  perforated meckel’s with foreign body (button cell )
Identify complications such as perforation and small bowel obstruction, however there are no findings which are specific enough to confirm or exclude the possibility of Meckel’s Diverticulum on plain radiographs. Ultrasound is not the most sensitive technique for detecting Meckel’s Diverticulum, and an inflamed Diverticulum may appear similar to a duplication cyst. Abdominal CT is used for complicated cases such as intussusceptions. CT can help to confirm the presence of intussusception and distinguish between lead point and non-lead point intussusceptions.

The Meckel’s scan uses technetium-99m pertechnetate which is taken up by ectopic gastric mucosa. This nuclear medicine scan is highly specific at 95%, however the sensitivity is around 85% in children and decreases to 54-60% in adults. False positive results may be seen in duodenal or jejunal duplication cysts which contain gastric mucosa, also in cases of volvulus, inflammatory bowel disease and in post-op patients. False negative scans may be seen in cases of Meckel’s Diverticulum where ectopic gastric mucosa is absent. Endoscopically, the use of capsule endoscopy and double balloon endoscopy and identify areas of abnormality, particular in patients who present with symptoms such as bleeding.

Surgical resection is the treatment for symptomatic Meckel’s Diverticulum; this may include simple diverticulectomy or bowel resection. Diverticula with a broad base or those associated with complications such as hemorrhage are removed by bowel resection.

V. Conclusion

Meckel’s diverticulum constitutes the most common benign malformation of the digestive tube and it may present as intestinal obstruction, perforation peritonitis and diverticulitis, lower GI bleeding and many of them with gangrenous bowel. Urgent surgical intervention is needed to prevent morbidity as well as mortality.

References