Pyrex Journal of African Studies and Development

Vol 2 (3) pp.22-25 September, 2016
Author(s) retain the copyright of this article
http://www.pyrexjournals.org/pjasd
ISSN: 2985-8763

Case Report

A Forgotten Clinical Entity: Meckel's Diverticulum (MD)

Kulbir Kaur*, Ravi Kant Sharma, Rajan Kumar Singla, Jagdev Singh Kullar and Neelam Bala

Department of Anatomy, Government Medical College, Amritsar, Punjab, India.

Accepted 21st September 2016

Abstract

According to the well-known statement of Charles Mayo, 'MD is frequently suspected, often looked for and seldom found.This paper presents and describes a case of Meckel's diverticulum. It was found in 55-year-old male cadaver during routine dissection in department of anatomy GMC Amritsar. It was located 50.5 cm proximal to the ileocaecal junction. It was 2.5cm in length with narrow tip and 0.95 cm in diameter. It was attached to antimesentric border. The tip was not attached by any fibrous band to umbilicus.

Keywords: Meckel's diverticulum, Ileocaecal junction, Mesenteric border.

INTRODUCTION

Meckel diverticulum is a congenital, intestinal blind pouch that results from an incomplete obliteration of the vitelline duct during the fifth week of gestation. Wilhelm FabriciusHildanus, a German surgeon, first described the diverticulum in 1598,(Jay *et al.,* 1950; Haber, 1947). However, the entity was not named until 1809, when Johann Friedrich Meckel the Younger first reported his research on the diverticulum's anatomy, pathology and embryology(Christie, 1931; Edmonson, 2001; Pollak, 2007).MD is a remnant of the omphalomesenteric or vitelline duct,(Yahchouchy*et al.,* 2001). The prevalence ranges from 2 to 4%. Anatomically, MD is a true diverticulum containing all layers of the small intestine, arising from the antimesenteric border of the ileum and receiving its blood supply from a remnant of the vitelline artery,(Dumper *et al.,* 2006).

MD involves a variety of complications, including intestinal obstruction, intussusceptions, ulceration, hemorrhage, vesicodiverticular fistulae, and tumors(Dumper et al., 2006; Sagar*et al.,* 2006; Sinha*et al.,* 2009; Leijonmarck*et al.,* 1986; Yamaguchi *et al.,* 1978).

Corresponding author email: drkkaur@yahoo.co.in

The incidence of complications differed between different articles, which analyzed only adults or pediatric populations. Although Meckel's diverticulum occurs in both sexes, it may cause complications more frequently in males, andtherefore is often diagnosed in males (Mackey and Dineen, 1983; Cullen *et al.,* 1994).Ninety per cent of diverticula are within 90 cm of distance to the ileocaecal valve, although diverticula up to 180 cm from ileocaecal valve have been observed. A person with Meckel's diverticulum has 4-6% lifetime risk of developing a complication,(Williams, 1981).The major complications are diverticulitis and perforation,(Cullen *et al.,* 1994).

CASE REPORT

During the gross anatomy dissection of the abdomen of an approximately 55 year old male cadaver in the department of anatomy, Govt Medical College, Amritsar; on examination of bowel, incidentally Meckel's Diverticulum was found.Following features were noted: the Meckel's Diverticulum was seen at 50.5cm proximal to illeocaecal junction; it was 2.5cm in length with narrow tip; it was 0.95cm in diameter; it was attached to antimesenteric border of ileum; its tip had no attachment via fibrous band to umbilicus.

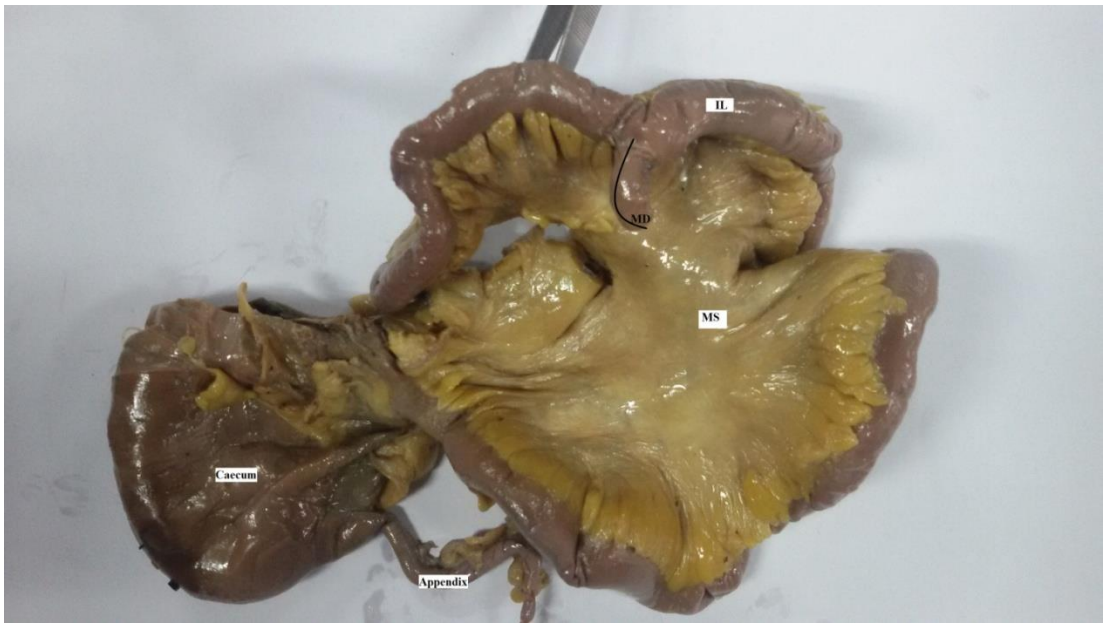

Figure 1.Meckel's Diverticulum (MD) attached to antimesenteric border i.e to Ileum (IL). MS (Mesentry)

Table 1. Complications of Meckel's Diverticulum

Complications	Percentage of symptomatic Meckel's Diverticulum (%)
Haemorrhage	20–30
Intestinal obstruction	20–25
Diverticulitis	10–20
Umbilical anomalies	≤10
Neoplasm	0.5-2

ONTOGENY

The omphalomesentericduct (omphaloentericduct, vitelline duct or yolk stalk) normally connects the embryonic midgut to the yolk sac ventrally, providing nutrients to the midgut during embryonic development. The vitelline duct narrows progressively and disappears between the 5th and 8th weeks gestation.In Meckel's diverticulum, the proximal part of vitelline duct fails to regress and involute, which remains as a remnant of variable length and location.

The solitary diverticulum lies on the antimesenteric border of the ileum (opposite to the mesenteric attachment) and extends into the umbilical cord of the embryo. The left and right vitelline arteries originate from the primitive dorsal aorta, and travel with the omphaloenteric duct. The right becomes the superior mesenteric artery that supplies a terminal branch to the diverticulum, while the left involutes. Having its own blood supply, Meckel's diverticulum is susceptible to obstruction or infection.

COMPLICATIONS AND INVESTIGATIONS

Though MD are silent, lifetime risk for a person with Meckel's diverticulum to develop certain complications is about 4–6%. Gastrointestinal bleeding, peritonitis or intestinal obstruction may occur in 15–30% of symptomatic patients (Table 1). Only 6.4% of all complications require surgical treatment; and untreated Meckel's diverticulum has a mortality rate of 2.5–15%.

Abdominal ultrasound and computed tomography are valuable radiological investigations in MD patients without the classical history of painless hemorrhage, (Thurley*et al.,* 2009). The utility of Tc99m-pertechnetate scintigraphy in the diagnosis of ectopic gastric mucosa is well-established, particularly in the case of MD; despite

substantial variation in the reported sensitivity, (Chan, 2009).Laparoscopy is useful in both diagnosis and treatment.

MANAGEMENT

The management of symptomatic Meckel's diverticulum comprises surgical resection. A wedge resection of the Meckel's diverticulum is generally carried out, and occasionally some ileum is resected by end-to-end anastomosis diverticulectomy for Meckel's diverticulum found incidentally has been criticized. The results of surgical excision are generally excellent. Among the patients operated on for complications of Meckel's diverticulum, the cumulative incidence of early post-operative complications was 12%, including mainly wound infection (3%), prolonged ileus (3%), and anastomotic leak (2%).

The mortality rate was 1.5%. The cumulative incidence of late post-operative complications during a 20 years follow-up was 7%. Incidental diverticulectomies are safer, with an overall rate of morbidity of 2% and a mortality of 1%, (Carteneseet *al.,* 2001).Due to the difficulty of diagnosing a pathologic Meckel's diverticulum pre-operatively; many surgeons recommend prophylactic diverticulectomy in those found incidentally(Seth and Seth, 2011). This recommendation is based on lower morbidity rates when compared to the resection of pathologic diverticula, (Seth and Seth, 2011).

DISCUSSION

Pre-operative diagnosis is rare in uncomplicated cases, and the diverticulum is usually observed incidentally, during other procedures for various reasons, (Altaf and Aref, 2014).Meckel's diverticulum may remain completely asymptomatic, or it may mimic disorders such as Crohn's disease, appendicitis and peptic ulcer disease. Ectopic tissue found in approximately 50% of cases consists of gastric tissue in 60-65% of cases and pancreatic tissue in 5-16% Meckel's diverticulum occurs more commonly in individuals born with other congenital malformations especially exomphalos, esophageal atresia, anorectal atresia and gross malformations of the cardiovascular and central nervous system. Hemingway and Allisan reported an association between angiodysplasia of the caecum and ascending colon with Meckel's diverticulum in five patients aged between 13 and 21 years,(Simms and Corkery, 1959). "Rule of two" is characteristic for Meckel's diverticulum, which includes the prevalence in 2% of the population; it is usually diagnosed under the age of two; it is in two-inches size and 2 cm diameter, two feet proximal to the ileocaecal valve, twice frequent in men, and symptomatic in 2% of the patients,(Altaf and Aref, 2014; Murrusteet *al.,* 2014).

CLINICAL IMPLICATIONS

It is difficult to make a pre-operative clinical diagnosis of Meckel's diverticulum and most of the times it is an intra-operative diagnosis .Knowledge of Meckel's diverticulum is important for surgeons to avoid complications during various abdominal surgeries. It is also important for radiologists while doing ultrasound examination and evaluating radiographs.

REFERENCES

Altaf A, Aref H. A case report: Cecal volvulus caused by Meckel's diverticulum. Int J Surg Case Rep 2014;5:1200-2.

Cartenese C, Petitti T, Marineli E, Pignateli A, Maetingnetti D, Zuccarino M. Ferrozzi: Intestinal obstruction caused by torsed gangrenous Meckel's diverticulum encircling ileum. World J GastrointestSurg 2001;27:106-9.

C.-E. Leijonmarck, K. Bonman-Sandelin, J. Frisell, and L. Raf, "Meckel's diverticulum in the adult," British Journal of Surgery, vol. 73, no. 2, pp. 146–149, 1986. View at Google Scholar · View at Scopus.

Chan KW. Perforation of Meckel's diverticulum caused by a chicken bone: A case report. J Med Case Rep. 2009;3:48.

Christie A. Meckel's diverticulum: a pathologic study of 63 cases. Am J Dis Child. 1931;42:544–553.

C.K. Sinha, J. Fishman, and A. Clarke, "Neonatal meckel'sdiverticulum:spectrum of presentation," Pediatric Emergency Care, vol. 25, no. 5, pp. 348–349, 2009. View at Publisher · View at Google Scholar · View at Scopus

Cullen JJ, Kelly KA, Moir CR, Hodge DO, Zinsmeister AR, Melton LJ 3rd. Surgical management of Meckel's diverticulum. An epidemiologic, population-based study. Ann Surg. 1994; 220; 564–569.

Edmonson JM. Johann Friedrich Meckel the younger: Meckel's diverticulum. GastrointestEndosc. 2001;54:19A–20A. [PubMed]

E. K. Yahchouchy, A. F. Marano, J.-C. F. Etienne, and A. L. Fingerhut, "Meckel's diverticulum," Journal of the American College of Surgeons, vol. 192, no. 5, pp. 658–662, 2001. View at Publisher · View at Google Scholar · View at Scopus

Haber JJ. Meckel's diverticulum: review of literature and analytical study of 23 cases with particular emphasis on bowel obstruction. Am J Surg. 1947;73:468–485. [PubMed]

Jay GD III, Margulis RR, McGraw AB, et al. Meckel's diverticulum: a survey of 103 cases. Arch Surg.1950;61:158–169. [PubMed])

J. F. Meckel. Über die Divertikel am Darmkanal. Archivfür die Physiologie, Halle, 1809, 9: 421–453.

J. Dumper, S. Mackenzie, P. Mitchell, F. Sutherland, M. L. Quan, and D. Mew, "Complications of Meckel's diverticula in adults," Canadian Journal of Surgery, vol. 49, no. 5, pp. 353–357, 2006. View at Google Scholar · View at Scopus

J. Sagar, V. Kumar, and D. K. Shah, "Meckel's diverticulum: a systematic review," Journal of the Royal Society of Medicine, vol. 99, no. 10, pp.501–505, 2006. View at Publisher · View at Google Scholar · View at Scopus.

M. Yamaguchi, S. Takeuchi, and S. Awazu, "Meckel's diverticulum. Investigation of 600 patients in Japanese literature," The American Journal of Surgery, vol. 136, no. 2, pp. 247–249, 1978. View at Google Scholar · View at Scopus

Mackey WC, Dineen P. A fifty year experience with Meckel's diverticulum.SurgGynecol Obstet. 1983; 156: 56–64.

Murruste M, Rajaste G, Kase K. Torsion of Meckel's diverticulum as a cause of small bowel obstruction: A case report. World J GastrointestSurg 2014;6:204-7.

Pollak Raymond: Adjunctive Procedure in Intestinal Surgery. Mastery of surgery Fifth edition.Edited by: Fischer JE. 2007, 1392-1393

Seth A, Seth J. Axial torsion as a rare and unusual complication ofa Meckel's diverticulum:A case report and review of the literature. J Med Case Rep 2011;5:118.

Simms MH, Corkery IJ. Meckel's diverticulum; a clinical and histological study.ActaChir Scand. 1959; 248 (Suppl 10): 1.

Thurley PD, Halliday KE, Somers JM, Al-Daraji WI, Ilyas M, Broderick NJ. Radiological features of Meckel's diverticulum and its complications. ClinRadiol. 2009;64(2):109-18.

Williams RS.Management of Meckel's diverticulum.Br J Surg. 1981; 68: 477–480. Wikipedia cited 0n 9th August 2015