



MALROTATION WITH MIDGUT VOLVULUS IN AN ADULT: CASE REPORT AND REVIEW OF LITERATURE

Albail Singh Yadav

Assistant professor, Department of Surgery, M.L.B. Medical College, Jhansi & Type 4/26, Medical College Campus, Jhansi

Sachitra Sachan*

Assistant Professor, Department of Radiology, M.L.B. Medical College, Jhansi & P.S.R. House M-88, Sarandhra Nagar, Hansari, Jhansi *Corresponding Author

Om Kumar Sharma

Junior Resident, Department of Surgery, M.L.B. Medical College, Jhansi & Room No 48, Married Hostel, ML.B. Medical College, Jhansi

Rakesh Faujdar

Senior Resident, Department of Surgery, M.L.B. Medical College, Jhansi & Room No 41, Married Hostel, AIL.B. Medical College, Jhansi

ABSTRACT

Malrotation: Midgut volvulus classically present in neonatal period. It occurs much less frequently in adults and is often misdiagnosed. Prognosis is directly related to the degree and duration of intestinal ischemia. We describe a case of malrotation with midgut in an adult patient who presented as acute intestinal obstruction. He did not give any previous history of similar event in past although the contrary is more common. He underwent exploratory laparotomy and Ladd's procedure was done. After repeated follow-up of 2 years, the patient is totally asymptomatic. Our goal is to describe the case report and review of literature, so that surgeon should have a high index of suspicion in any adult patient presenting with bilious vomiting and be familiar with this procedure and should be able to identify the anomaly on table and to be able to correct it.

KEYWORDS : Malrotation, Midgut volvulus

INTRODUCTION

Intestinal malrotation is more common in neonatal period but adult presentations are uncommon. These patients present diagnostic dilemma for the surgeon and so the treatment. We report a case of malrotation with midgut volvulus in an adult highlighting the importance of early diagnosis with the help of CT scan with its characteristic whirlpool sign or cork screw sign and the familiarity of the surgeon with abnormal anatomy of malrotation so as to deal with the disease on table without any problem.

CASE REPORT

A 25 year old man was referred from a hospital to our institute as a case of intestinal obstruction in emergency department. He had history of abdominal pain with vomiting which was predominantly bilious. On examination he had mild tachycardia (100 per min) and abdominal fullness especially in upper part. Abdominal radiograph did not show any specific abnormality. CT scan was done with showed characteristic whirlpool sign (Figure-2). There was inverse relationship of SMA and SMV consistent with midgut volvulus (Figure-1).



Figure 1



Figure 2

DISCUSSION

Malrotation with obstruction occurs in 1 in 500 births and the incidence is relatively uncommon in adult. Midgut volvulus is a complication of bowel malrotation. During embryological development intestinal rotation occurs in midgut (through 270°), the segment of bowel supplied by superior mesenteric artery. During the late stage of rotation, fixation of the mesentery and the bowel to posterior abdominal wall occurs. The normal mesenteric attachment is broad and extend from left hypochondrium region to right iliac fossa. In malrotation the duodenojejunal junction remains on the right side (instead of its normal, left sided position). This makes the mesenteric root to be narrow which creates an ideal scenario for the volvulus to occur. Additionally because of incomplete rotation the caecum lies in right hypochondrium just above the duodenum. Malrotation is associated with Ladd bands. These bands are nothing but the peritoneal thickening which normally fix the caecum and ascending colon to retroperitoneum. Now when incomplete rotation occurs caecum lies in right hypochondrium overlying the duodenum which lies on the right side instead of its normal left sided position. In this abnormal anatomy these peritoneal fibers extend from caecum to posterior abdominal wall and in there course they compress the duodenum causing duodenal obstruction which is a characteristic feature of this disease thereby presenting as bilious vomiting.

Secondly because of the duodenojejunal junction being on the right side the normal/attachment of mesentery of midgut to posterior abdominal wall is also missing. So the entire midgut has a narrow mesentery around the superior mesenteric artery which again creates the scenario for the bowel to undergo volvulus. This volvulus compounds the problem of malrotation and if not dealt with early gangrene of a large part of midgut can occur. The volvulus is clockwise and one has to rotate bowel counter clockwise to correct the volvulus as a first step in Ladd procedure. The further steps after derotation are division of Ladd fibers, broadening the base of the mesentery by dividing the inter bowel adhesion and bringing the caecum to left lower abdomen and appendectomy to avoid future mis diagnosis. Caecal fixation is optional, some authors recommend other don't. The same procedure was done in this patient. We did not do caecopexy. Post operative course was uneventful and patient was discharged on 7 post operative day. He is on regular follow up for last 2 years and is total asymptomatic.

Due the rarity of this condition in adult there are only case report or

small case cerise in literature. Patient presents either as a case of acute obstruction or may be more commonly as chronic non specific symptoms like IBS, Crohn's, pancreaticobiliary disease. Which makes the diagnosis to be missed out.

The CT appearance of midgut volvulus can be diagnostic. The bowel's wrapping around the superior mesenteric artery creates a distinctive whirl pattern. The relationship of the superior mesenteric vein to the superior mesenteric artery as shown by CT can suggest the diagnosis of bowel mal rotation but is not pathognomonic. The proximal superior mesenteric vein is normally anterior and to the right of the superior mesenteric artery. The superior mesenteric vein position can be to the left of the superior mesenteric artery in bowel malrotation. However, a normally positioned superior mesenteric vein does not exclude the diagnosis of bowel malrotation. An upper gastrointestinal examination with a small-bowel follow-through can be used to diagnose malrotation and midgut volvulus, particularly in infants. The small bowel's wrapping around the superior mesenteric artery on an oral contrast-enhanced study has a spiral or corkscrew appearance that is diagnostic of midgut volvulus. Obstruction from either the volvulus or Ladd's bands can be depicted.

After corrective surgery, about a 7% recurrence rate of volvulus occurs in children. The recurrence rate in adults is not known. If the diagnosis or treatment of midgut volvulus is delayed, bowel necrosis and death can result.

CONCLUSIONS

Malrotation leading to midgut volvulus is rare in adults. The CT findings in midgut volvulus can be pathognomonic if the classic whirl pattern around a central superior mesenteric artery is seen. CT allows the rapid diagnosis and surgical treatment of this unusual condition in the adult patient presenting with abdominal pain or bowel obstruction of uncertain cause. The treating surgeon should have a sound knowledge of abnormal developmental anatomy so as to treat this condition on time. Timely diagnosis is important for urgent treatment to prevent the complication of gangrene and its consequence of increasing morbidity and mortality.

REFERENCES:

1. Synder WH Jr, Chaffin L. Embryology and pathology of the intestinal tract: presentation of 40 cases of malrotation. *Ann Surg* 1954;140:368-180.
2. Touloukian RJ, Smith EI. Disorders of rotation fixation. In: O'Neil JA, ed. *Pediatric surgery*. Vol 2. 5th ed. Baltimore: Mosby; 1998. P 1199-203.
3. Ladd WF. Congenital obstruction of the duodenum in children. *N. Engl J Med* 1932; 206: 277-80.
4. Dietz DW, Walsh RM, Grundfest-Broniatowski S, Lavery IC, Fazio VW, Vogt DP. Intestinal malrotation: a rare but important cause of bowel obstruction in adults. *Dis Colon Rectum* 2002;45:1381-6. [PubMed]
5. Buchmiller T. Intestinal Malrotation in Adults. <http://www.uptodate.com> (21 January 2017, date last accessed).
6. Pansky B. Review of Medical Embryology. <http://www.lifemapsc.com/library/review-of-medical-embryology> (25 January 2017, date last accessed).
7. Durkin ET, Lund DP, Shaaban AF, Schurr MJ, Weber SM. Age-related differences in diagnosis and morbidity of intestinal malrotation. *J Am Coll Surg* 2008;206:658-63.
8. Devlin HB, Williams RS, Pierce JW. Presentation of midgut malrotation in adults. *Br Med J* 1968;1:803-7. [PMC free article]
9. Hsu SD, Yu JC, Chou SJ, Hsieh HF, Chang TH, Liu YC. Midgut volvulus in an adult with congenital malrotation. *Am J Surg* 2008;195:705.
10. Fisher JK. Computed tomographic diagnosis of volvulus in intestinal malrotation. *Radiology* 1981;140:1455-146.
11. Bongher LI. Malrotation of the intestine with midgut volvulus: a unique case in an adult with a new radiographic finding. *Am Surg* 1970;36:455-458.
12. Pelucio M, Haywood Y. Midgut volvulus: an unusual case of adolescent abdominal pain. *Am J Emerg Med* 1994;12:1675-171.
13. Rowsomif, Sullivan SN, Girvan DP. Midgut volvulus in the adult. *J Clin Gastroenterol* 1987;9:212-216.
14. Fukuya T, Brown BP, Lu CC. Midgut volvulus as a complication of intestinal malrotation in adults. *Dig Dis Sci* 1993;38:4385-6.
15. Gohi ML, DeMeester TR. Midgut nonrotation in adults: an aggressive approach. *Am J Surg* 1975;129:3195-323.
16. Konings-Beetsra EI, Van der Jagt EI. Malrotation of the midgut: a rare complication in an adult patient. *Eur J Radiol* 1990;11:73E-77.
17. Bodard E, Monheim P, Machiels F, Mortelmans LL. CT of midgut malrotation presenting in an adult. *J Comput Assist Tomogr* 1994;18:5015-502.