

## Complete Intestinal Malrotation in Adult Associated to Intestinal Sub-Occlusion: Case Report

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### Abstract

Intestinal malrotation is a congenital anomaly which includes all alterations that may occur in the rotation or fixation of the intestine during embryological development. Typically, it is evidenced in the first months of life, thus being a diagnostic challenge in symptomatic adults. The anomaly may remain asymptomatic or present a variety of symptoms, such as nausea, vomiting, diarrhea, abdominal pain and other dyspeptic symptoms. The treatment of choice is surgical and consists of the Ladd procedure. A case of intestinal malrotation was reported in a 49-year-old male patient, as well as a review of the literature on epidemiology, diagnosis and treatment.

**Keywords:** Gastrointestinal Diseases; Congenital Abnormalities; Intestinal Obstruction

### Introduction

Intestinal malrotation is a congenital anomaly which includes all alterations that may occur in the rotation of the intestine in the axis of the superior mesenteric artery, or in its fixation during embryological development [1,2]. It may occur as incomplete rotation, non-rotation or alterations in the intestinal fixation between the 10<sup>th</sup> and 12<sup>th</sup> week of gestation [1,2]. Typically, it is evidenced in the first months of life, being rare in adulthood [1,3]. However, when the symptoms appear in adolescents and adults it represents a diagnostic challenge, generating difficulty and depending on a high degree of suspicion, due to the similarity of the symptoms to several other abdominal pathologies [1]. In adults, when symptomatic the malrotation may be shown in acute form or chronic form, although most cases are seen in asymptomatic patients, who are diagnosed accidentally [4]. A case of intestinal malrotation was reported in a 49-year-old male patient, as well as a review of the literature on epidemiology, diagnosis and treatment.

### Case Report

A 49-year-old male patient, caucasian, with history of severe epigastric pain, irradiated to the back, worsened after feeding and accompanied by nausea, vomiting and constipation. On physical examination, he presented mild abdominal distention, flaccid abdomen, with diffuse pain on palpation and no signs of peritoneal irritation. Computed tomography scan of the abdomen was performed, evidencing the presence of complete intestinal malrotation (small intestine on the right and colon on the left) and left kidney in pelvic position (Figure 1). The gastrointestinal transit X-ray also showed intestinal alterations described in the Computed Tomography (Figure 2). He presented a congenital hearing deficit and a history of recent previous videocolicectomy. Considering the tomographic findings, the patient underwent exploratory laparotomy with a median longitudinal incision. A large number of bridles were identified in the cavity and Ladd bands, associated to complete malformation with the entire small intestine located in the right hemiabdomen, absence of the angle of Treitz and colon positioned integrally to the left. A cryptorchid testicle was also identified in the topography of the left iliac fossa. Thus, the complete release of the bridles and Ladd bands was performed, in addition to the surgical treatment according to the Ladd technique (Figure 3).



**Figure 1:** Abdominal Computed Tomography with contrast. Complete intestinal malrotation: (a) Small intestine on the right, (b) Large intestine on the left and (c) inverse relationship between the superior mesenteric artery (SMA) and the superior mesenteric vein (SMV)

### Discussion

Intestinal malrotation is usually evidenced in the first months of life but rare in adulthood [1,3]. In 30-60% of the cases, it is associated with other malformations, mainly with congenital defects of the abdominal wall and the diaphragm [2,4]. It is more frequent in boys (up to 2:1) and presents a very variable prevalence, with estimates of 1:200 and 1:500 live births. However, this rate decreases to 1:6,000 live births if

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Received May 02, 2018; Accepted May 16, 2018; Published May 24, 2018

**Citation:** Navarini D, Albuquerque AB, Boeira Rovani AL, Henrique Waltrick de Albuquerque DD, et al. (2018) Complete Intestinal Malrotation in Adult Associated to Intestinal Sub-Occlusion: Case Report. J Hepatol Gastroint Dis 4: 161. doi: 10.4172/2475-3181.1000161

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**Figure 2:** Bowel transit time test with oral water-soluble contrast. Intestinal transit slowed with minimal progression of contrast after 12 hours of examination. Anomalous position of the duodenum and small intestine loops located entirely on the right, compatible with complete intestinal malrotation.



**Figure 3:** Bowel transit time test with oral water-soluble contrast. Post-operative anatomical configuration, showing restitution of habitual position of the small intestine (centralized) and large intestine (peripheral), with significant improvement of bowel transit.

only symptomatic patients are considered [2,5]. Its true incidence in adults is difficult to estimate, since most adult cases are asymptomatic and often never diagnosed [1,5,4]. Thus, when in adolescents and adults, it represents a diagnostic challenge, due to symptoms similar to several other abdominal pathologies [1]. Among symptomatic patients, the evolution may occur in acute form – with vomit and abdominal pain as intestinal obstruction and ischemia associated with intestinal or ileocecal volvo – or chronic, with vague and intermittent abdominal pain, although most cases are seen in asymptomatic patients, who are diagnosed accidentally [6]. Among symptomatic patients, the evolution may occur in acute form - with vomiting and abdominal pain that may progress to ischemia and intestinal necrosis, derived from volvulus or internal hernias or in chronic form, presenting nonspecific symptoms, such as intermittent abdominal pain, diarrhea, early satiety, recurrent nausea and vomiting [1,4]. The diagnosis is based on the contrast radiographic study of gastrointestinal transit, which identifies the duodeno-jejunal junction to the right of the midline either showing intestinal obstruction or midgut volvo, combined with computed tomography, which is also very useful to reveal the abnormal position of the small intestine [5,7]. The treatment of choice is surgical and consists of the Ladd procedure [5], which is described as an association of mobilization of the duodenum and right colon and adherence section near the superior mesenteric artery. In addition, counterclockwise volvo reduction, if present, and appendectomy are performed. The purpose of this procedure is to reduce the risk of acute volvulus by locating the small intestine in a non-rotating position and widening the base of the mesentery. Appendectomy is done prophylactically because of the eventual difficulty in diagnosing acute appendicitis in the future, being the cecal appendix distant from the usual position [6].

## Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

## Acknowledgements

The authors reported no conflict of interest and no funding was received for this work.

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