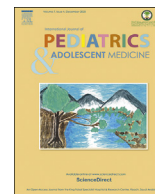


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Review article

Idiopathic congenital anomalous bands: About ten cases with systematic review of the literature

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ABSTRACT

Background and Objectives: Purpose: There are various causes and associated conditions in anomalous bands. Idiopathic congenital anomalous bands are extremely rare. The use of the term “congenital bands” may, in reality, not describe the same situation. The study aims to report our series of idiopathic anomalous bands and proposes an accurate and consistent classification of anomalous bands in order to clarify the origin of each band.

Methods: This study, conducted from January 2005 to January 2018, included all patients admitted to the emergency departments with a clinical diagnosis of intestinal obstruction resulting from bands that have no identifiable embryological or acquired basis called “idiopathic”. Recorded operative findings included the site of obstruction and the operative procedure to relieve it.

Results: The sample consists of seven boys and three girls with age range from one day to 9 years with symptoms and signs indicative of intestinal obstruction. Surgical intervention was performed, and intraoperative findings revealed a thick and vascularized idiopathic band, in different locations, which was responsible for intestinal obstruction in all patients. Clinical courses were uneventful in eight cases. **Conclusion:** Idiopathic anomalous congenital bands causing intestinal obstruction are not frequently encountered in surgical practice and these bands are often difficult to classify and define. We believe that our new classification is a practical communication tool for medical professionals to summarize and clarify the different types of anomalous bands.

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1. Introduction

Anomalous bands are well recognized as a differential diagnosis of intestinal obstruction in children [1]. Usually, the acquired causes of these bands are well known. However, “congenital band” is a term that remains confusing. Several authors have used the term to describe different situations. The aim of this study is to report our series of bands that have no identifiable embryological or acquired basis, and to propose a classification of anomalous bands in order to clarify the origin of each band.

2. Materials and methods

During the period between January 2005 and January 2018, 10

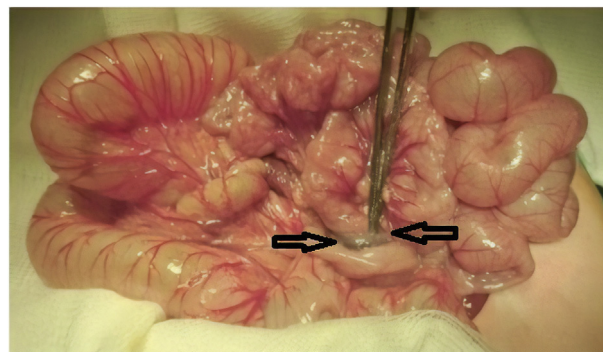


Fig. 1. Small bowel obstruction caused by a jejunocolic congenital band (Arrow).

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Table 1
Laparotomy findings and procedures performed.

Age/sex	Anatomic localization of anomalous congenital bands	Operative procedure
5 day/F	Anti-mesenteric wall of the jejunum to the root of mesentery	Adhesiolysis
6 day/M	Ascending colon and duodenum	Resection and ileostomy
48 day/F	Jejuno-jejunal	Adhesiolysis
32 months/M	Jejuno-jejunal	Adhesiolysis
14 months/M	Jejuno-jejunal	Resection and anastomosis
1 day/M	Jejuno-jejunal	Resection and ileostomy
3 day/M	Jejuno-jejunal	Adhesiolysis
9 years/F	Anti-mesenteric wall of the jejunum to the root of mesentery	Adhesiolysis
6 years/M	Ascending colon and terminal ileum	Adhesiolysis
3 years/M	Jejunum and cecum	Adhesiolysis

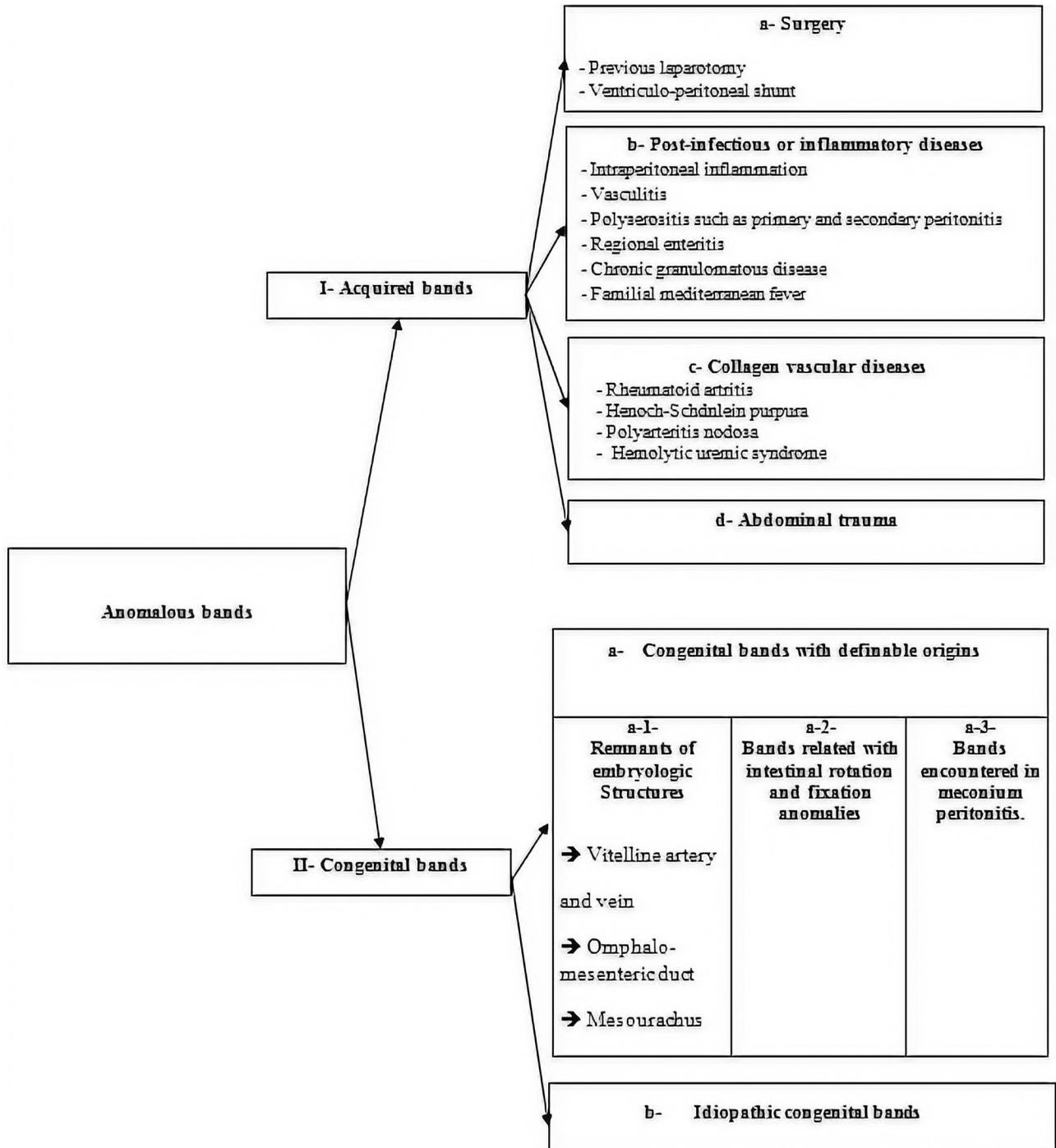


Fig. 2. Classification of anomalous bands.

Table 2

Reported cases of intestinal obstruction by idiopathic congenital bands in pediatric population [1,2,7,8–22].

N° patients	Author	Ranging in age	Site of obstruction
2	Touloukian et al. [8]	1–3 months	Proximal- Jejunum
8	Akgur et al. [1]	6 days - 6 years	Jejunum -Ascending colon
1	Lin et al. [9]	6 months	Sigmoid
1	Atta et al. [10]	15 years	Colon
1	Maeda et al. [11]	17 years	Ileum
1	Etensel et al. [12]	7 years	Ileum
1	Liu et al. [13]	2 years	Proximal jejunum
1	Itagaki et al. [14]	4 years	Jejunum
1	Dimitros et al. [15]	20 years	Ileum
1	Sung and Cho [16]	27 days	Ileum
1	Catania VD et al. [7]	2 months	Ascending colon
1	A. Galvan-Montano et al. [17]	1year	Ileum
1	Nouira et al. [18]	3 years	Ileum
2	Chang YT et al. [2]	3–5 years	Ileum
1	Albert AA [19]	16 years	Sigmoid
1	Aniello Maiese [20]	4 years	Ileum and sigmoid
1	Sarkar et al. [21]	8 years	Jejunum
14	Basak Erginel et al. [22]	4 days - 12 years	Jejunum- Ileum- Ascending colon

patients with intestinal obstructions were determined to have anomalous congenital bands. We retained the diagnosis of idiopathic anomalous band after the exclusion of acquired causes or other congenital bands with definable origin.

We retrospectively studied the clinical and para-clinical data, peroperative findings, and outcome of the patients with idiopathic anomalous bands.

3. Results

There were seven boys and three girls, ranging in age from one day to 9 years. There was no history of abdominal surgery, trauma, inflammatory diseases, clinical hernia, or peritonitis.

All patients had no previous hospitalization because of abdominal pain or vomiting. Further questioning revealed a history of intermittent, non specific abdominal pain in three patients.

Clinical and radiological signs suggestive of intestinal obstruction were present in all cases.

All the patients were operated on. Surgical intervention revealed a thick and vascularized idiopathic band, with different locations, which was responsible for intestinal obstruction in all patients. It was between the anti-mesenteric wall of the jejunum to the root of mesentery in two patients, jejuno-jejunal in 5 patients (Fig. 1), ascending colon and terminal ileum in one patient, ascending colon and duodenum in one patient, and jejunum and caecum in one patient (Table 1).

Compression of the bowel was found in six patients and entrapment of an intestinal loop was found in four patients which were the two mechanisms of obstruction. For all our patients there was no associated rotation anomaly.

The band was responsible for a small bowel volvulus in three cases and complicated by stercoral peritonitis by perforation in two cases. The latter two died as a result of sepsis.

Clinical courses were uneventful in the rest. During a 10-year follow-up, no recurrent intestinal obstructions were encountered among six patients. Two patients had intestinal obstructions resulting from postoperative adhesions requiring adhesiolysis.

4. Discussion

No classification has been used over the years to accurately categorize patients with anomalous band. We propose a classification system (Fig. 2) highlighting the fact that anomalous band is a complicated disorder that can develop for a myriad of reasons.

The bands are grouped into 2 categories: acquired or congenital [1]. Acquired anomalous bands (AAB) develop due to an underlying disorder and are generally classified in relation to the underlying disease. AAB can be subdivided into four groups as specified in Fig. 2.

Intra-abdominal adhesions related to prior abdominal surgery are the etiologic factor in up to 75% of cases of AAB [2]. In a literature review conducted by Rui Zhao et al., [3] there were only three cases, in which intestinal obstruction, as a complication of a ventriculo-peritoneal shunt in children, was related to intestinal adhesions.

Acute intestinal obstruction due to AAB was reported in many cases [4] as a rare and severe abdominal manifestation of post-infectious, inflammatory, or collagen vascular diseases in the pediatric population and can be the only manifestation of disease activity.

Intestinal obstruction following abdominal trauma has also been described. Samira Zirk- Schmidt et al. [5] reports intestinal obstruction due to a single, definite fibrous band occurring few days after blunt abdominal trauma.

The diagnosis of congenital anomalous bands (CAB) obstruction was based on the exclusion of acquired causes.

In our classification, CAB are divided in two main groups (Fig. 2). The first group consists of congenital bands with definable origins, which can be further classified into three subgroups: bands related to remnants of embryologic structures, including the vitelline arteries and veins and the omphalomesenteric ducts, bands associated with intestinal malrotation and fixation anomalies, and bands encountered in meconium peritonitis. The second subgroup was classified into four types [6]. Ladd's Band corresponds to type 1.

The second group consists of CAB that are not the remnants of described embryologic structures and do not show an association with a previous intraperitoneal insult. This group corresponds to the type of anomalous band reported in our study. We can call them idiopathic congenital bands (ICB). Reports concerning an intestinal obstruction with such bands are sporadic. There are 40 cases of ICB described in the pediatric literature (Table 2), 16 case reports [2,7,8–21] and two series of respectively 8 [1] and 14 cases [22].

E. Habib et al. [23] reported the largest series of 16 adults who underwent a surgery for small bowel obstruction due to ICB. Through our study, we report the third pediatric series of this rare type of CAB.

Numerous theories have been proposed to explain the embryologic basis of the ICB. Akgur et al. [1] established that they

may be the result of the persistence of the intestinal ends of the ventral mesentery, such as the antimesenteric filmy membranes encountered among two cases of our series and the band between the terminal ileum and the caecum found in one of our patients.

Diagnosis is often difficult to achieve before surgery because there are no radiological examinations that allow a definitive pre-operative identification of extrinsic intestinal obstruction [1,2,20]. Unusual as it is, early diagnosis of ICB is important to prevent complications such as strangulation or overwhelming infection which resulted in the death of two of our patients.

The lack of a descriptive classification and the scarcity of ICB have led in many reports to confuse them with other types of congenital bands. We believe our new classification is a practical communication tool for medical professionals to summarize and clarify the different types of anomalous bands.

Ethical

This article does not contain any studies with human or animal subjects.

Declaration of competing interest

The Authors have no interests to declare.

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