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## CLINICAL CASE

### Is intestinal malrotation the cause of intussusception? Waugh's syndrome, a case report<sup>☆</sup>



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#### KEYWORDS

Waugh's syndrome;  
Intestinal  
malrotation;  
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intussusception

#### Abstract

**Background:** Waugh's syndrome is the combination of intussusception and intestinal malrotation. The first case was described in 1911, with few cases being reported since then.

**Clinical case:** A 7 month-old infant with fever, vomiting and rectal bleeding. Distension and an abdominal mass was found on examination. An exploratory laparotomy was performed that found a combination of intussusception and intestinal malrotation, which was treated successfully.

**Conclusion:** We consider that this combination is not sufficiently diagnosed very often, leading to its disappearance.

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#### PALABRAS CLAVE

Síndrome de Waugh;  
Malrotación  
intestinal;  
Invaginación  
intestinal

¿Es la malrotación intestinal el agente causal de la invaginación intestinal? Síndrome de Waugh, reporte de un caso

#### Resumen

**Antecedentes:** El síndrome de Waugh se define como la asociación de invaginación y malrotación intestinal. Los primeros reportes de este síndrome fueron en el año 1911 y, a pesar de esto, existen muy pocos casos descritos.

**Objetivo:** Conocer la asociación que existe entre la invaginación y la malrotación intestinal como causa de obstrucción intestinal en el lactante.

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**Caso clínico:** Lactante varón de 7 meses de edad, que ingresa en urgencias por: fiebre, vómito y evacuaciones mucosanguinolentas. En el abdomen con: dolor, distensión, palpándose «morcilla» en cuadrante inferior izquierdo al tacto rectal con evacuaciones en «jalea de grosella». Se realiza laparotomía exploradora encontrando una relación entre invaginación y malrotación intestinal resuelta quirúrgicamente.

**Conclusión:** Consideramos que esta asociación no se diagnostica de forma adecuada, pasando normalmente desapercibida.

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## Background

In infants, intestinal intussusception is one of the main causes of intestinal obstruction. Intestinal malrotation is defined as an anomaly of the intestine, where intestinal fixation and rotation are altered.<sup>1</sup> According to some studies, intestinal malrotation might be an aetiological factor for intussusception.<sup>2</sup> Waugh's syndrome, first described in 1911, refers to the association of Intestinal intussusception with intestinal malrotation.<sup>1</sup>

## Clinical case

Seven-month-old male, started with a fever of 38.4°C, vomiting gastric content, and producing bloody/mucous stools. On admission to the Emergency Department the infant was hypoactive, with a distended, painful abdomen. A sausage-shaped mass was palpated in the lower left quadrant and on rectal examination he evacuated a current jelly stool. Standing abdominal X-ray showed irregular distribution of air, hydro-aerial levels and frank signs of mechanical intestinal obstruction (Fig. 1). A midline supra and infraumbilical incision was made and the head of the intussusception was found in the sigmoid colon, which was disinvaginated by taxis; Ladd bands were then observed and a mobile caecum with anomalous fixation of the colon. When the intussuscepted segment was recovered (ileum, caecum and colon) we performed the Ladd procedure.

In the post-operative period the infant was kept fasting for 48 h with an orogastric derivation tube, and antibiotic impregnation with a triple course of cefotaxime, amikacin and metronidazole.

The child progressed well and was discharged from the hospital for follow-up in the outpatient clinic. The infant is currently asymptomatic and is growing and developing normally for his age.

## Discussion

Is intestinal malrotation a risk factor for developing intestinal intussusception? In 1911, George E. Waugh described a disorder in 3 patients in whom there was an association between both disorders.<sup>1-3</sup> Although this syndrome was described barely more than a century ago, little is known



**Figure 1** Standing abdominal X-ray showing irregular distribution of air, hydro-aerial levels and frank signs of mechanical intestinal obstruction.

about it. Two causal factors have been described for this syndrome: abnormal fixation of the colon and the presence of a mobile caecum.<sup>3,4</sup> Six patients were described with Waugh's syndrome in the year 2000 and 39 documented cases were reported before 1999<sup>4</sup>; 7 more cases with Waugh's syndrome were reported after that date, in addition to the case reported in this article.<sup>5</sup>

It is suggested that malrotation is accompanied by a mobile right colon and this in turn represents a significant risk factor for intestinal intussusception.<sup>1</sup> The final stage of intestinal rotation is the fixation of the ascending colon to

the abdominal wall, a mobile colon being considered a malrotation, and associated with a prognostic factor for the terminal ileum to enter into the colon.<sup>4</sup>

In this case a diagnosis of Waugh's syndrome is supported more by the imaging studies than the clinical symptoms, since these studies reveal the presence of a mobile caecum. Therefore, if this syndrome is suspected it is essential to make a deliberate search for this association as the cause of intestinal intussusception.<sup>1,4</sup>

## Conclusion

These findings call into question failures to diagnose intestinal malrotation in a great number of patients with intestinal intussusception. Therefore, we consider that all patients with intestinal intussusception should undergo the necessary imaging studies to discover the extent of intussusception, and to locate the caecum<sup>4</sup> in order to prevent future relapses of intestinal intussusception secondary to the presence of a mobile caecum and intestinal malrotation.

## Conflict of interests

The authors have no conflict of interest to declare.

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