



## A Ten-Year-Old Girl with a Rare Cause of Acute Abdominal Pain

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### Abstract

Acute abdominal pain is often encountered during childhood and there are many causes for it. In this case report, a girl presented with vomiting and acute abdominal pain in the lower right side of her abdomen. Ovarian torsion is a rare diagnosis and is a gynecologic emergency. The clinical findings can vary and are non-specific, making it a diagnostic challenge. Most of the time, ovarian torsion occurs in women during their reproductive years. Transabdominal ultrasound can be of pivotal importance for the diagnosis. Laparoscopic detorsion and recovering the blood flow of the ovary is the initial treatment. A timely surgical intervention should be done to prevent the ovary from ischemia and necrosis for a favorable outcome.

**Keywords:** Ovarian torsion; Ovarium detorsion; Acute abdominal pain; Transabdominal ultrasound; Laparoscopy

### Introduction

Ovarian torsion is a very rare gynecologic emergency that can potentially lead to the loss of an ovary due to ischemia and necrosis. Ovarian torsion is estimated to be the cause in 2.7% of all women having acute abdominal pain in gynecology [1,2]. Non-specific symptoms that can vary often result in delayed or even missed diagnosis. The onset, nature, intensity and location of these symptoms can differ from patient to patient [3,4]. An ovarian mass is the primary risk factor for the occurrence of ovarian torsion [3,5]. The ovarian mass predisposes an ovary to rotate on its axis, and the risk of a torsion increases with the size of the mass [4,6]. Most women having an ovarian torsion are in their reproductive years, but it can occur in all ages, even in neonates [3,7]. The diagnosis is for the most part made with transabdominal ultrasound. A Doppler flow of the blood vessels is used to assess the blood flow at the time of the torsion [8]. The initial treatment of ovarian torsion is laparoscopy, especially when the ovary is not yet in a necrotic stage [9-11].

### Case Presentation

A ten-year-old girl came to the emergency department suffering from acute abdominal pain. Previously, she was healthy. The pain had started one day earlier and was getting increasingly worse. The pain was located at the lower right side of her abdomen. She had to vomit once. Her stool had been once a day, and was of standard color and consistency, without blood or mucus. She did not have any urinary tract symptoms (e.g., dysuria and hematuria). One hour before she came to the emergency department, she visited a general practitioner. Her general practitioner considered the complaints related to constipation and prescribed 5 mg bisacodyl and 30 ml lactulose 670 mg/ml. After intake of the medication, she had to vomit again. Her general practitioner referred her to the emergency department, suspecting an appendicitis. On physical examination, her heart rate was 128 bpm, arterial blood pressure 120/80 mmHg, and body temperature 37.5 degrees. She appeared pale and she experienced pain. She preferred to sit still with her knees pulled up. A smooth and slender abdomen was found at the abdominal examination with sparse peristalsis. There were no increased or decreased bowel sounds on auscultation. Mild pressure pain in the epigastrium region was present with evident rebound tenderness in the lower right abdomen with muscular relaxation. Blood tests did not show abnormalities. There was a low CRP. Also, the urine test was without any abnormalities. The next step was an ultrasound of the abdomen (Figure 1). There were no signs of an appendicitis. There was a little bit of fluid in the pouch of Douglas. Based on the clinical, laboratory, and ultrasound data, an ovarian torsion on the right side was suspected. An emergency laparoscopy was performed. During the laparoscopy, it was clear that the right ovary had an interrupted blood flow (Figure 2). There was a little cyst on the right ovary that was not seen on transabdominal ultrasound. This little cyst was probably causing the torsion. The cyst was not removed during the

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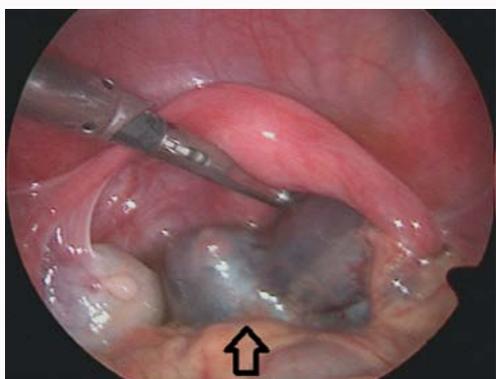
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**Figure 1:** The right ovary on the transabdominal ultrasound. The right ovary is enlarged with multiple small follicles. There is no blood flow present. There is an ovarian torsion on the right side.

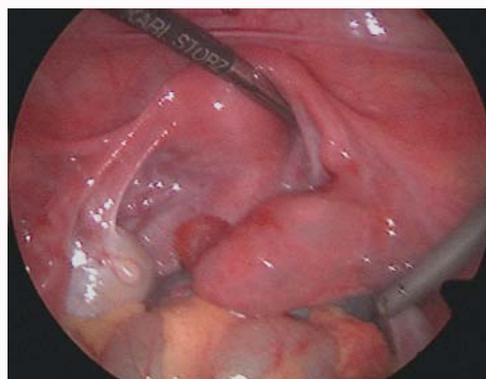


**Figure 2:** Intraoperative image of the right ovarian torsion. Above the arrow, the right ovary was stained blue, and the blood flow was interrupted. The blood flow of the left ovary was good with a normal blood flow and without abnormalities.

surgery. The detorsion of the right ovary was successful, the blood flow was recovered, and the ovary was saved (Figure 3). The day after the laparoscopy, she did not complain of pain anymore and she could leave the hospital.

## Discussion

An ovarian torsion is a very rare condition, especially in girls in their premenarchal years [3,7]. This is one of the reasons it can be challenging to make the diagnosis, and it is therefore often missed. The clinical presentation associated with an ovarian torsion includes acute abdominal pain, nausea and vomiting, and a normal body temperature [3,4]. These symptoms can mimic many other diseases associated with abdominal pain and vomiting. However, when an ovarian torsion is present, it is critical to perform surgery as quickly as possible to recover the blood flow and avoid necrosis of the ovary [1]. The present case was a girl who was not yet menstruating, had acute abdominal pain, and non-specific symptoms. Despite the young age, it is crucial that the diagnosis of ovarian torsion is suspected in all young patients with acute abdominal pain. In most cases, a cyst is the cause of ovarian torsion. Most of these masses are benign tumors [3,5]. The ovarian cyst predisposes the ovary to rotate on its axis. The bigger the size of the cyst, the bigger the risk of a torsion. When the cyst is too big, there is no space anymore to rotate. Furthermore, a higher rate of right-sided ovarian torsions has been reported, probably due



**Figure 3:** A picture at the end of the surgery.

to the relative hypermobility of the right adnexa compared to the left side [4,6]. An ovarian cyst seems to be the cause of the torsion in the present case. An abdominal ultrasound is the primary component for children to make the diagnosis for apparent reasons. The ultrasound is performed concurrently with a Doppler flow. The torsed ovary is enlarged on ultrasound and can be up to twelve times bigger than the other side [8]. When the ovary is not enlarged, transabdominal ultrasound can be less specific. The Doppler flow shows a good blood flow despite the torsion most of the time. Due to the dual blood supply of an ovary the interruption of blood supply can be missed with a Doppler flow [10]. The sonographic findings in this present case showed the ovarian torsion, the enlarged ovarian, and the interrupted blood flow. These findings made the diagnosis clear. There was enough reason to perform surgery. The treatment of ovarian torsion depends on age, presence of a menstrual cycle, and wish of fertility in the future. In the past, an oophorectomy was the initial treatment. At present, a laparoscopy is a preferred treatment, especially when the ovarian is not yet completely necrotic. Detorsion of the ovary is done and the blood flow is recovered during laparoscopy [9-11]. The prognosis for children is good, so the blood flow is recovered, and the ovary is saved in almost all cases. Four to six weeks after laparoscopy, the ovary gets smaller and the blood flow is further improved [12].

## Conclusion

Ovarian torsion should be suspected in a girl with acute abdominal pain, even with no menstrual cycle yet. The diagnosis can be challenging to make due to the non-specific clinical manifestations. A transabdominal ultrasound is a promising imaging technique to make an accurate diagnosis. The treatment with laparoscopic detorsion should be performed as soon as possible to recover the blood flow and save the ovary.

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