

# Uterine torsion in the second trimester of pregnancy

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*Submitted:* 2018-10-18    *Accepted:* 2018-11-08    *Published online:* 2018-11-28

*Key words:*            **uterine torsion; appendectomy; uterine fibroid; pregnancy complications; case report**

Neuroendocrinol Lett 2018; **39**(6):423–426    PMID: 30796791    NEL390618C01    © 2018 Neuroendocrinology Letters • [www.nel.edu](http://www.nel.edu)

## Abstract

**OBJECTIVES:** Torsion of the pregnant uterus is a very rare complication. It may occur at any gestational age. The treatment depends on the intensity of symptoms, intraoperative ischemic signs and the gestational age.

**MATERIAL AND METHODS:** We present a case report of 33-year-old primipara accidentally diagnosed with uterine torsion during appendectomy.

**CASE DESCRIPTION:** The patient underwent surgery at 19<sup>th</sup> week of gestation due to severe pain in the right iliac fossa and increased levels of inflammation markers. Intraoperatively acute appendicitis and levorotation of the uterus by about 100 degrees were found. As the signs of ischemia were absent, the uterus was returned into its normal position. Intraoperative and postoperative period was uncomplicated. Close outpatient monitoring was introduced and the pregnancy continued without further complications. The patient underwent cesarean section at 36 weeks of pregnancy due to early leakage of amniotic fluid and failure to progress during first stage of labor.

**CONCLUSIONS:** Uterine torsion may present with non-specific symptoms or be asymptomatic. Urgent laparotomy and rotation of the uterus into its normal anatomical position gives chance for normal course of pregnancy. Subsequent close outpatient care is obligatory to assess viability of the fetus and early detection of possible pregnancy complications.

## INTRODUCTION

The first case of torsion of the pregnant uterus in humans was reported in 1876 (Biswas *et al.* 1990). This is a very rare condition, which may occur at every stage of pregnancy. Uterine torsion is defined as rotation of more than 45 degrees around the long axis of the uterus, with the pivot point most often located at the level of the isthmus. In the literature, there have been reported several cases of uterine torsion from 6 weeks up to 43 weeks of pregnancy (O'Grady, 2008). During

pregnancy the uterus is physiologically rotated to the right along the long axis, what is caused by the location of the sigmoid colon loop on the left side of the peritoneal cavity. However, physiological rotation does not exceed 45 degrees. Excessive rotation of the uterus is usually between 45 and 180 degrees. In the literature there have been reported isolated cases of uterine torsion of 360 degrees or, in extreme cases, up to 720 degrees (Jenson, 1992). Torsion of pregnant uterus may be a highly serious complication, potentially dangerous to the mother and the developing fetus

(LaHood & You, 2018). Even though the condition is very rare, it may recur in subsequent pregnancies (Farhadifar *et al.* 2014).

## MATERIAL AND METHODS

We present a case report of 33-year-old primipara accidentally diagnosed with uterine torsion during other surgical procedure.

## CASE STUDY

A 33-year-old primipara at 19th week of pregnancy has attended the Emergency Department, due to severe pain in the right iliac fossa radiating to the spine. The first symptoms had occurred four days before and persisted despite self-treatment with drotaverine, magnesium and paracetamol. Until this day the course of pregnancy was uncomplicated. The patient reported a history of right-sided hydronephrosis and intramural fibroid on the right side of the uterine fundus.

On admission, the woman was hemodynamically stable, in general fine condition. A physical examination was performed. On palpation significant tenderness in the right iliac fossa as well as abdominal guarding were detected. The Murphy's sign was bilaterally negative and Chelmonsky's sign was negative too. Additional tests showed an increase in inflammatory markers: C-reactive protein of 211 [mg/L] and the white blood count of 15.4 [G/L]. Urinalysis was within the normal range. An ultrasound examination revealed a single viable fetus with vertex presentation. Fetal morphology was of normal range and biometric parameters were estimated to 19 to 20 weeks of gestation. The placenta was located on the right lateral wall of the uterus. Furthermore large right-sided leiomyoma 125 x 112 x 95 mm, located near the uterine fundus was visualized. On gynecological examination, the uterine fundus was at the level of the umbilicus. On palpation, the uterus was slightly tender and painless. The patient was admitted to the General Surgery Ward for further observation.

During hospitalization an inflammatory markers were increasing and the pain become more severe. Acute appendicitis was suspected and laparotomy was performed. The abdominal wall was opened with a right-side pararectal incision. The inflamed appendix was removed in a standard manner and the stump was inverted using the purse-string suture. The Meckel's diverticulum was checked and no abnormalities were found. During the surgery the patient was consulted by a gynecologist. The right uterine appendages were shifted towards the anterior abdominal wall and the right uterine horn was significantly shifted to the left. An intramural leiomyoma of about 100 mm was found on the right side of the anterior uterine wall. The patient was diagnosed with asymptomatic levo torsion of the uterus of approximately 100 degrees. As no

symptoms of ischemia were observed, the uterus was rotated into the normal position. After the surgery, the viability of pregnancy was confirmed. On the 4th day following the surgery, the patient in general fine condition was discharged home. A histological examination of the appendix showed symptoms of inflammation with features of *Appendicitis simplex*. For the rest of the pregnancy the patient attended the outpatient clinic. The patient returned for follow-up visits every 2 to 3 weeks. Any distressing symptoms nor abnormal laboratory tests were observed. The gynecological examination was performed in special manner to detect the position of the uterine cervix. Ultrasound scans were performed in 22<sup>nd</sup>, 28<sup>th</sup> and 32<sup>nd</sup> week of gestation. At every visit fetal well-being as well as size and location of the uterine fibroid were assessed.

In 36<sup>th</sup> week of pregnancy, the patient was re-admitted to hospital due to premature rupture of amniotic membranes. During the hospitalization, the patient experienced spontaneous contractions of the uterus, but due to failure to progress in the first stage of the labor, a cesarean section was performed. The abdominal cavity was opened using a transverse suprapubic approach. During the surgery the position of the uterus was found to be normal. The patient gave birth to a premature female newborn of 1950 g weight and 48 cm long in general good condition. The mother and her child were discharged home in their general good condition on the 7<sup>th</sup> day after surgery.

## DISCUSSION

In 1956, Nesbit and Corner reviewed 106 cases of torsion of the pregnant uterus. The authors did not find any significant correlation between the incidence of uterine torsion and factors as age, parity and duration of pregnancy (Nesbitt & Comer, 1956). Similarly, Wilson *et al.* reviewing 38 case reports concerning uterine torsions gave similar conclusions.

Nowadays, neither the precise mechanism nor etiology of this condition is known. Some authors have suggested that the major risk factors of pathological uterine torsion are different abnormalities in the lesser pelvis. The torsion of the uterus most often occurs in patients with peritoneal adhesions, ovarian tumors or transverse lie of the fetus (Anupreet *et al.* 2006). Other predictors include uterine myoma, uterine malformations, polyhydroamniosis, twin pregnancy, sudden rapid movements of the fetus and significant weakness of uterus ligaments (Nielsen, 1981; Visser *et al.* 1983; Barr & Bergman, 1984; Crona & Bachrach, 1984; Bakos & Axelsson, 1987). In presented patient, a significant risk factor of uterine torsion was large intramural fibroid interfering the normal anatomy of the lesser pelvis. Previous findings reported in the literature also pointed a causal relationship between pathological uterine torsion and a history of previous cesarean section. Kawakami *et al.*'s reported the results

of MRI monitoring of scar healing after cesarean section. The results suggest that abnormal healing may lead to the elongation and weakening of the cervix, increasing the risk of uterine torsion during the subsequent pregnancy (Kawakami *et al.* 1994).

As the symptoms are non-specific and non-invasive diagnostic methods do not give unambiguous results, the diagnosis of torsion of the pregnant uterus before diagnostic laparotomy is difficult. The most frequent complaints include abdominal pain, distention, nausea, vomiting, diarrhea, anuria, hematuria, increased tension of the uterine muscle or early leakage of amniotic fluid. In extreme cases the uterine torsion can lead to restrictions in blood flow within the placenta. This condition may be accompanying by acute abdomen symptoms and the need for an emergency surgical intervention (Kovavisarach & Vanitchanon, 1999). Prominent symptoms on internal examination include tensed round ligaments of the uterus, increased pulsatility of the uterine artery which can be felt at the front of the uterus, and deformed vagina or cervix (Jensen, 1990). The first step in the diagnosis of uterine torsion should be the identification of pathologies of the uterus and uterine appendages increasing the risk of this complication. A valuable tool in the diagnosis of most of the above risk factors of excessive uterine torsion is an ultrasound scan. Additionally, a Doppler ultrasound can help to evaluate the accompanying abnormal perfusion of uterine or ovarian vessels. Another tool utilized in pre-operative management is a MRI scan (magnetic resonance imaging) (Nicholson *et al.* 1995). MRI is safe procedure used to visualize and monitor uterine pathologies during pregnancy e.g. uterine myomas (Tomasik *et al.* 2014). Patients with acute symptoms require an urgent diagnostic and therapeutic laparotomy. Some cases, however, remain asymptomatic and are diagnosed during surgical interventions for other reasons e.g. caesarean section (Farhadifar *et al.*, 2014; Vavrinkova & Binder, 2015). In presented patient uterine torsion was diagnosed accidentally during laparotomy carried out due suspected acute appendicitis. Undoubtedly, both conditions should be simultaneously taken into account in differential diagnosis of the complaints listed above. It cannot be ruled out that the inflammation in the abdominal cavity and the pelvis contributed to the development of uterine torsion. However, no reports have been found on such relationship. According to our best knowledge, this is the first description of torsion of the pregnant uterus diagnosed during a surgery for acute appendicitis.

The treatment as well as the prognosis for further course of pregnancy usually depend on the gestational age, degree and duration of uterine torsion. If ischemia is irreversible, hysterectomy should be performed immediately. Sometimes, uterine appendages must also be removed. If torsion does not cause a hemodynamically significant ischemia, the treatment should depend

on the gestational age. In patients who are less than 24 weeks pregnant, the treatment usually includes laparotomy and repositioning of the uterus. Sometimes, additionally, the round ligaments may be plicated to reduce the risk of torsion recurrence. In pregnancies which are more advanced at the moment of diagnosis of uterine torsion (over 32-34 weeks of gestation), a cesarean section after uterus repositioning should be considered. Perioperative tocolysis is worth considered to prevent preterm labor (Carson, 2004). In cases where detorsioning is not possible, a cesarean section using the posterior approach should be performed, followed by repositioning. There have been reports of isolated cases of delivery through a deliberate posterior transverse hysterotomy when the uterine torsion was diagnosed during labor (Pelosi & Pelosi, 1998). Because, in the presented case the expected duration of ischemia was short, the gestational age was young and the fetus was viable, a decision was made to reposition the uterus and apply conservative treatment. The treatment was effective and the pregnancy continued until 36 weeks. Afterwards close outpatient monitoring was introduced in order to assess fetal wellbeing and early detect relapse of the uterine torsion (Rytlewski *et al.* 2009). No abnormalities in the uterine position were observed during the cesarean section carried out 17 weeks after surgery. It seems that in the case of uterine torsion surgical treatment and repositioning of the pregnant uterus is safe treatment. However, it has not been yet established if each asymptomatic case requires surgical intervention.

## CONCLUSIONS

Uterine torsion may give non-specific symptoms or be asymptomatic. An ultrasound may be insufficient for final diagnosis. Even though uterine torsion is very rare, it should be taken into account in differential diagnosis in pregnant patients presenting with non-specific abdominal pain. If torsion is suspected, the patient usually needs an urgent laparotomy to rotate the uterus to its normal anatomical position. Effective management gives chance for further appropriate fetal development. Subsequent close outpatient care is obligatory to assess viability of the fetus and early detection of possible pregnancy complications.

## ACKNOWLEDGMENTS

Nothing to declare.

## STATEMENT

All procedures performed in studies involving human participants were in accordance to the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

## CONFLICT OF INTERESTS / FINANCIAL DISCLOSURE

The authors declare that there is no financial interests in this manuscript and no affiliations (relationships) to disclose.

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