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Isolated Fallopian Tube Torsion on a Paratubal Cyst in a Young Woman: Diagnostic Challenges, a Case Report from the Teaching Hospital of Angre, Abidjan, Côte d'Ivoire

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Abstract

Isolated fallopian tube torsion associated with a paratubal cyst is a rare gynecological condition. Its diagnosis is frequently an incidental finding during laparotomy. We present the case of a 28-year-old primigravida, nulliparous woman with no significant medical history, except for a voluntary termination of pregnancy one year prior, who presented to the gynecological emergency department with pelvic pain. During laparotomy, right fallopian tube torsion associated with a paratubal cyst was identified. A right salpingectomy was performed due to ischemia confirmed after detorsion. This is often an incidental diagnosis that should be considered in any young woman presenting with acute pelvic pain to enable conservative management. This is the first case report described at Angre University Hospital.

Keywords

Fallopian Tube Torsion, Gynecological Emergencies, Diagnostic Laparoscopy

1. Introduction

Isolated fallopian tube torsion (IFTT) is defined as the twisting of the Fallopian tube around its own axis without torsion of the ipsilateral ovary [1]. It is a surgical emergency with a frequently difficult preoperative diagnosis, as clinical and ultrasound signs are non-specific, often leading to diagnostic delay [2] [3]. However,

prompt surgical intervention is crucial if tubal conservation is to be achieved in young women of reproductive age to preserve their future fertility [4]-[6]. Paratubal cysts constitute approximately 10% of adnexal masses and are generally small and asymptomatic, but can be associated with this complication [1] [7]. Based on the description of the first case of isolated tubal torsion occurring in our department, we aim, through a literature review, to identify more specific ultrasound signs that could facilitate a faster diagnosis.

2. Case Presentation

We report the case of B.K, a 28-year-old primigravida, nulliparous woman with a history of voluntary termination of pregnancy one year prior, who presented to the gynecological emergency department of the Teaching Hospital of Angre with right-sided pelvic pain evolving over several days without fever. The pain was severe enough to cause insomnia and appeared unresponsive to analgesics. Upon admission, the patient exhibited a prostrate posture in the fetal position. Her last menstrual period was 12 days prior; she reported regular menstrual cycles. Clinical examination revealed mild guarding in the right iliac fossa. Vaginal examination revealed a painful swelling of the pouch of Douglas and a palpable right adnexal mass. Beta-hCG levels were negative. The pelvic ultrasound performed one hour after her admission suggested a right ovary visualized separately with a homogeneous anechoic formation measuring 60mm x 40mm, consistent with a cystic appearance. The Doppler ultrasound showed unspecified abnormalities in adnexal vascular flow. Given this presentation of acute abdomen, an exploratory laparotomy was indicated on suspicion of ovarian cyst torsion. Unable to perform a laparoscopic examination, an emergency laparotomy was performed approximately two hours after admission. The emergency laparotomy revealed an isolated torsion of the right tube with two complete turns and a right paratubal fluid-filled cyst (see Figure 1 and Figure 2). After detorsion of the tube, ischemia was confirmed; the surgical procedure consisted of a right salpingectomy, including the paratubal cyst.

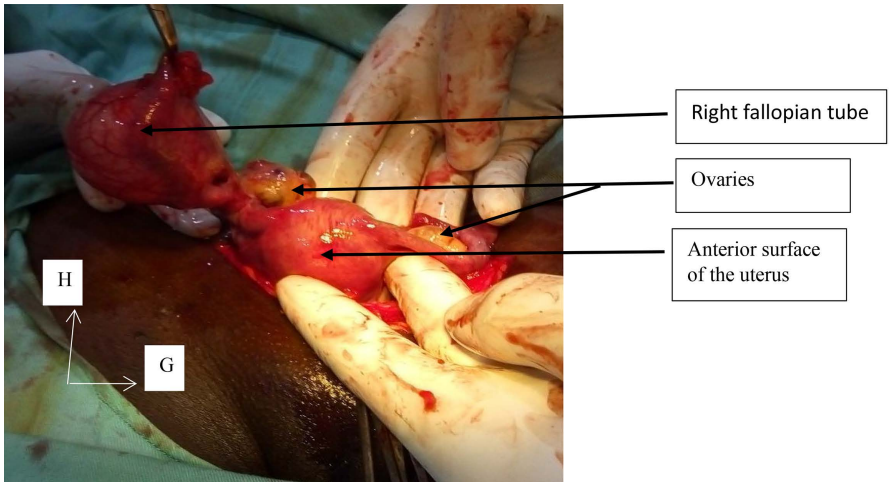

Figure 1. Intraoperative view during laparotomy.

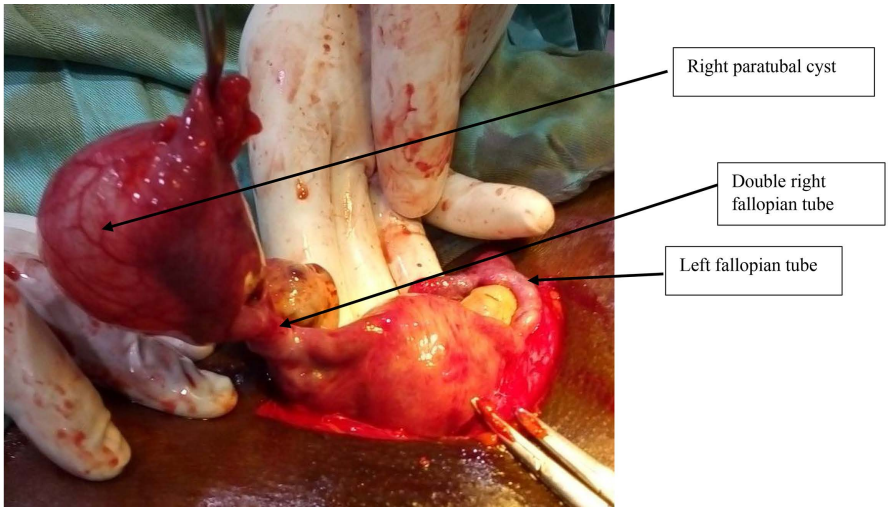

Figure 2. Double torsion of the fallopian tube around its axis with ischemic changes.

Furthermore, the uterus, right ovary, and left adnexa were unremarkable. The postoperative course was uneventful. Histopathological examination confirmed a hydrosalpinx and a paratubal cyst, with no evidence of malignancy.

3. Discussion

Isolated fallopian tube torsion is a rare cause of acute pelvic pain in women of reproductive age. Its incidence is estimated at one case per 1,500,000 [2]. It is less frequent than ovarian torsion and is generally isolated and unilateral. The diagnosis is rarely made preoperatively. However, this diagnosis must be considered and should prompt rapid surgical intervention due to the risk of secondary necrosis [2] [6]. Symptoms are most often non-specific. The clinical presentation is typically that of an acute abdomen in a patient of reproductive age. It is a rare but serious gynecological emergency, often manifesting as acute abdominal pain, which makes differential diagnosis difficult with other conditions such as ovarian torsion, appendicitis, or ectopic pregnancy [8]. This was the case for our patient, whose preoperative diagnosis was ovarian cyst torsion. Thus, adnexal pathology is suspected. Clinical semiology is paramount for establishing the diagnosis of isolated tubal torsion. A history of a similar pain episode that resolved spontaneously is significant. Indeed, these represent episodes of intermittent torsion that should be sought during patient interviewing in the preceding weeks or months [3]. Furthermore, the sudden onset of symptoms is a critical element. Pain generally occurs abruptly, described as "stabbing", and is frequently disabling. In our case report, it was the exacerbation of pain combined with the failure of analgesics that prompted the young woman to seek emergency care.

In the literature, isolated tube torsion, due to its rarity, is primarily the subject of case reports.

In the Hagege [6] study, over a 3-year period, 64 patients underwent laparoscopy owing to confirmed torsion, of which 55 had adnexal torsion, and 9 had

IFTT. Patients with IFTT tended to be younger. The most common procedure was detorsion in both groups. Most patients who underwent detorsion of the tube had a normal ultrasound scan on follow-up examination.

In the literature, whether in adults or children, visualization of the mesosalpinx torsion coils remains the most specific sign, but it is difficult to detect. Doppler flow in the ovary does not rule out tubal torsion. In children, unlike in adults, tubal flow is often preserved initially, which can delay diagnosis [7] [8]. However, all the authors claiming the whirlpool sign to be pathognomonic for the diagnosis of IFTT used a transvaginal approach [7] [9].

Furthermore, paraovarian or paratubal cysts, present in approximately 10% of all adnexal masses, originate from the epoophoron, which is located in the broad ligament and consists of secretory canaliculi. Cavity distension often deforms the epithelium, making absolute differentiation difficult [10] [11]. In the study by Qian [5], the mean cyst diameter during torsion was approximately 5 cm (minimum 2 cm, maximum 9 cm). Cystic distension could increase the mobility of adnexal tissues, which may induce inversion, particularly when cysts reach 5 cm [9], as in our observation. Cysts may twist spontaneously or predispose to isolated tubal torsion. The distinction between the two situations before surgery is difficult, and the main clinical manifestation is abdominal pain [12].

Regarding prognostic aspects, Mazouni *et al.* [13] reported that the risk of adnexal necrosis increased significantly when the delay before surgery exceeded 10 hours. A study conducted in 2017 also revealed that patients suffering from pain for more than 24 hours were more likely to undergo salpingectomy, suggesting that longer periods of torsion may lead to more tissue necrosis [14]. To date, the most important factor is that diagnosis and surgical intervention be performed rapidly; this remains the most effective means to avoid salpingectomy, unlike in our observation. Assessing tubal non-viability remains a challenge for surgeons in emergency situations. Given the blackish discoloration visible in several areas of the fallopian tube after detorsion, combined with the absence of immediate tubal refill and the lack of spontaneous tubal peristalsis, a salpingectomy was performed. However, some authors suggest that tubal preservation may still be possible [15].

The laparoscopic approach allows for easy diagnosis in the presence of acute pelvic pain as well as treatment, though conservation is rarely possible due to frequent diagnostic delay [12] [16] [17]. At the Angre University Hospital, we have only one laparoscopy column, which is not always available for emergencies for various reasons.

The majority of fallopian tube torsions occurred on the left side in the series by Qian [5], contrary to our observation. The most probable explanation is that the sigmoid colon on the left provides a buffer effect to prevent torsion by limiting twisting activity, and patients suffering from right-sided abdominal pain more often undergo surgery due to suspicion of appendicitis [18].

In the study by Qian [5], 15 of the 20 cases recorded the number of torsion rotations, and the mean number of torsion rotations was 2.38. There was no sig-

nificant difference in torsion time between the salpingectomy group and the preservation group (P = 0.651), demonstrating that necrosis was not associated with torsion duration.

Ultrasound was performed as the first diagnostic examination in all cases. Exploration involves analyzing the trajectory of the tubes on axial slices by following the tubo-ovarian vascular network from the uterine cornua to the ovary. The infraovarian and infratubary arcades are indeed the "guiding landmarks" of the tubes. The spiral may appear as an echogenic mass with decreased vascularization, potentially associated with hyperechoic thickening of the adjacent mesosalpinx. Some authors report a "whirlpool" appearance, suggesting a tortuous vascular pedicle [19]. The "beak sign" was also another specific sign of isolated tube torsion, showing narrowing at the end of the tube due to torsion [20].

Furthermore, ultrasound with color Doppler effect can detect tubal blood flow, which may also be detected in cases of incomplete obstruction, so that the presence of flow cannot completely exclude torsion. However, a high-impedance waveform with diastolic flow reversal could be useful, which implies tube torsion [21]. Compared to ultrasound, pelvic MRI could facilitate diagnosis by highlighting dilated tubes, beak signs, and twisted pedicles. Jokić *et al*. [22] reported that MRI and ultrasound could provide credible information without the risks associated with radiation, which is particularly useful for pregnant patients. In our practice setting in Sub-Saharan Africa, pelvic MRI is largely inaccessible due to technical platform limitations and cost. The severity of this emergency lies in the fact that it affects the fertility of women who are often young and have a desire for procreation. Thus, the trend would be to favor conservative treatment after a laparoscopic approach with detorsion; however, the diagnosis is often late and remains a diagnosis of exclusion.

4. Conclusion

Isolated fallopian tube torsion is a rare surgical emergency. To facilitate early management, this diagnosis must be systematically considered in any woman presenting with pelvic pain, particularly if there is a history of recurrent, less severe episodes. Prompt intervention is crucial to preserve fertility in these young patients.

Ethical Aspects

The patient gave her consent to publish this case. The ethics committee of the Angre University Hospital approved the publication of this case in strict compliance with the obligations of scientific research.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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