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Original article

Surgical approach of tubo-ovarian abscesses from theory to our minimally invasive practice

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ABSTRACT

Background: Tubo-ovarian abscesses are entities of infectious etiology, mostly as a result of pelvic inflammatory disease. Over the past decades we verified that the treatment is lifesaving and the approach can be, and should be, minimally invasive. The advent of antibiotics, its parenteral combined administration, and the appearance of techniques of drainage, made possible a better treatment of this pathological condition.
Objective: Analysis of our experience in tubo-ovarian abscess treatment.
Methods: Retrospective study, with database consultation, of all cases of tubo-ovarian abscesses treated in our department during a period of 4 years (2009–2012), with emphasis on our experience using a minimally invasive surgical approach, performed in 22 cases.
Results: Forty-five cases medically and surgically treated, with 17 cases undergoing a drainage procedure.
Conclusion: A minimally invasive procedure was performed in almost half of the cases with a faster clinical improvement and low morbidity.

Introduction

Tubo-ovarian abscess (TOA) is a consequence of an infectious process with collected pus involving adnexa. The infection is, in the majority of cases, polymicrobial, composed of anaerobic and gram-negative bacteria, that ascends to the pelvic space. TOA occurs in the context of pelvic inflammatory disease (PID) in about 30% of cases,[1] being classified as primary, or secondary when occurs as a consequence of other intra-abdominal processes.[1]

The diagnosis of TOA is made by clinical, laboratory, and imaging aspects. In the clinic evaluation, the more consistent symptom is abdominal pain (pelvic pain) and the principal sign is uterine tenderness; in laboratory studies the most important findings are elevation of white blood cells and inflammatory markers (C-reactive protein). The gold standard examination for the diagnosis of TOA is ultrasonography, mainly when executed with a vaginal transducer. The visualization of a complex cystic neoformation in the pelvic compartment, with heterogeneous compound and with high resistance index in Doppler studies, is very suggestive of abscess.[1,2]

In the past, the existence of an abdominal or pelvic abscess was a cause of mortality and the treatment was synonymous with surgery using a laparotomy approach. Currently, the treatment of TOA obligates to hospitalization for the introduction of parenteral combined ample spectrum antibiotherapy. The early diagnosis and the advent of these therapies permitted medical treatment success in about 70–75% of cases.[2] The others 25–30% of cases requires surgical drainage, which can be performed using minimally invasive surgical approaches, such as laparoscopic drainage or transvaginal punction and drainage with ultrasonographic control, this one considered the gold standard.[3,4]

The change in the management of TOA inspired us to perform a casuistic analysis of our department experience over a 4-year period (2009–2012).

Objectives and Methodology

This is a retrospective study, through database consultation, of all cases of TOA attending the Gynecology Department of Centro Hospitalar Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal

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during a 4-year period (from January 2009 to December 2012). An analysis of clinical presentation, management, and therapeutic results was performed.

All cases of TOA were treated with ample spectrum parenteral antibiotic therapy (1st line: gentamicin, 1.5 mg/kg every 8 hours, plus clindamycin, 900 mg every 8 hours). The surgical approach was applied in rupture (urgent procedure), or in TOA persistence. In some cases a minimally invasive procedure, transvaginal ultrasound-guided drainage, and sclerosis, were combined with the medical treatment or performed with TOA persistence, in women without signs of acute abdomen/peritonitis and clinically stable.

In cases with surgical indication, (signs of peritonitis or TOA persistence), laparotomy and laparoscopy were performed, with different associated procedures according to patient age and surgical findings: abscess drainage, salpingectomy (unilateral or bilateral), anexectomy (unilateral or bilateral), and hysterectomy.

Results

In the referred period 45 cases of TOA were admitted and treated in our center.

All cases started medical treatment immediately after hospitalization, with ample spectrum antibiotic association.

The average age of our population was 41, 9 years old (23–72 years). We verified the existence of other pathologies or medical conditions in 25 cases (Figure 1); 40 women were in reproductive age, 28 of whom were using contraception (Table 1); 30 women used some contraceptive method, of them an intrauterine device (IUD) was used in 19 cases (2 cases in women in postmenopause; Figure 2).

Previous surgery before 1 month in two cases (appendectomy and abdominal hysterectomy) and a postpartum period in one case (vaginal delivery).

Complementary examinations were performed in all cases with analytic and ultrasound study, with the appearance of a pelvic neoformation, heterogeneous and with high resistance fluxometry, suggestive of TOA (Table 2 and Figures 3 and 4).

Medical treatment was performed in all cases with combined clindamycin and gentamicin in 27 cases, clindamycin, gentamicin, and penicillin in 14 cases, and clindamycin, gentamicin, and metronidazole in four cases.

Surgical drainage was realized in the 45 cases (100%); the average days of previous medical treatment was 1,9 (0–13) days. The surgical procedures are described in Table 3.

The drainage procedure, ultrasound guided, was held in 17 cases. All of these abscesses were primary, with no response to medical treatment in an average of 3 days. The procedure occurred without immediate complications, with need for more than one drainage in two cases and a laparoscopy procedure in another two cases, due to abscess persistence.

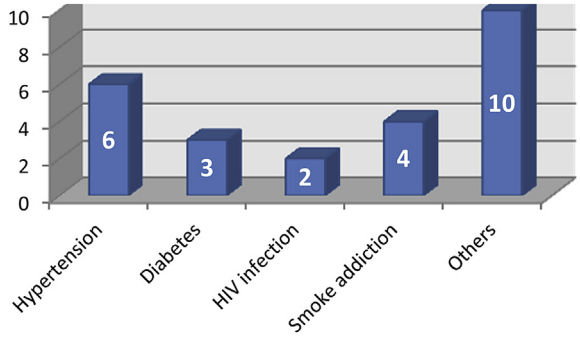

Figure 1. Comorbidities in 25/45 cases. Others = severe endometriosis, depression and respiratory disease.

Table 1
History and sociodemographic characteristics of study population.

Sociodemographic characteristics	*N*
Age (y)	
23–29	4
30–39	16
40–49	14
50–59	10
≥ 60	1
Race	
White	44
Black	1
Other	0
Reproductive history	
Gravidity	
0	5
1–2	25
≥ 3	15
Parity	
0	5
1–2	33
≥ 3	7
Contraception	
Menopause	6
None	3
Hysterectomy	1
Condom use	4
Tubal ligation	6
Intrauterine device	19 (no *)
Oral contraceptives	1

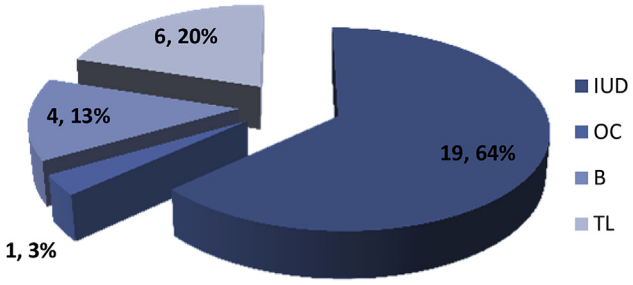

Figure 2. Contraceptive methods in 30 cases. B = barrier; IUD = intra uterine device; OC = oral contraception; TL = tubal ligation.

Table 2
Clinical characteristics by presence of tubo-ovarian abscess.

Clinical characteristics	*N*
Symptoms	
Pelvic pain	45
Median duration of pain	6 days
Abnormal bleeding	8
Cervical discharge	20
Signs	
Fever	24
Cervical discharge	26
Uterine tenderness	42
Complementary examinations	
WBC (mean)	15,3
WBC	
< 10	6
10–15	8
> 15	31
CRP elevated	37
CT performed	9
US performed	45
Unilateral abscess	37
Bilateral abscess	8
Largest abscess size (mean) (range = 1.6–10.2 cm)	
0–4 cm	5
5–8 cm	24
> 8 cm	16

CRP = C-reactive protein; CT = Computed tomography; US = ultrasonography; WBC = white blood cells.

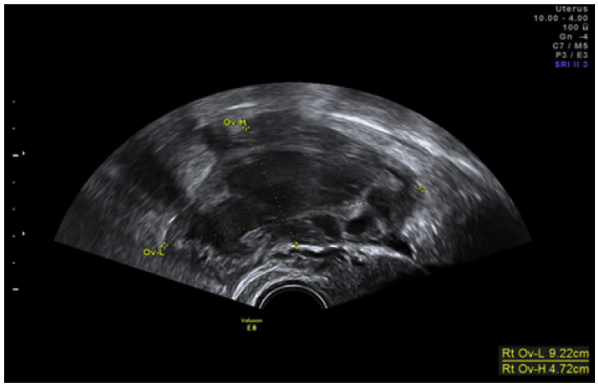

Figure 3. Heterogeneous pelvic neoformation.

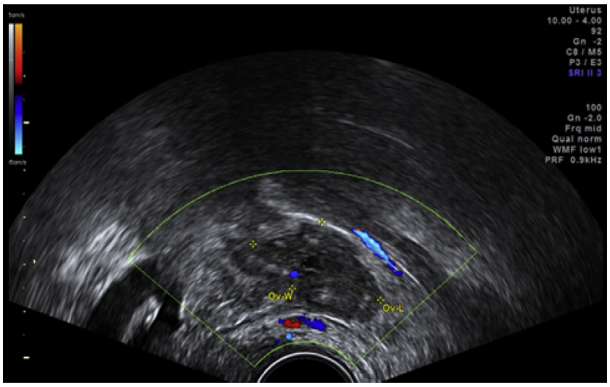

Figure 4. Periferic vascularization of high resistance.

Table 3
Surgical procedures realized ($n = 45$).

Laparotomy	Laparoscopy	Transvaginal puncture and aspirative drainage
23[a]	7[b]	17

[a] One case needed a puncture procedure 3 days after.
[b] Two cases done after a puncture procedure.

There were 10 cases that had complications after the surgical procedure, 8 of 10 after laparotomy (Table 4). The average days of hospitalization by procedure were: 12 days in laparotomy, 6 days in transvaginal puncture with aspirative drainage and 5 days in laparoscopy.

A microbiology result was possible in 33 of 45 cases and the most frequent isolated agent was *Escherichia coli* (Figure 5). The infection was polymicrobian in 10 cases and in seven cases there was no growth.

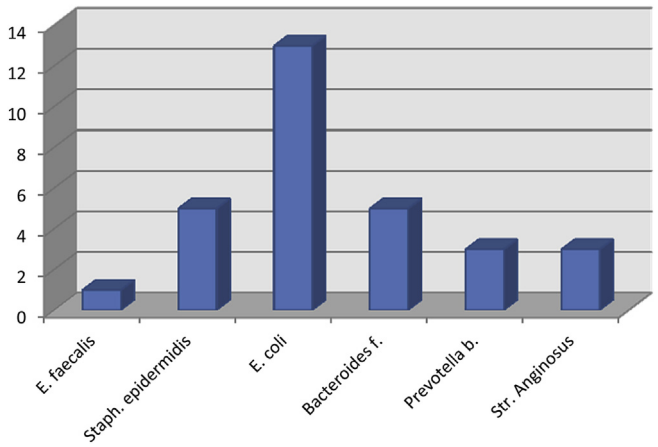

Figure 5. Microbiologic results.

Discussion

This small casuistic show a population with average age superior to that described in literature. Although the IUD is not considered a risk factor to PID, only within the first 3 weeks after insertion,[2] it was the most used contraceptive method in this population. Risk factors for TOA were identified in three cases and were related to recent pelvic surgery and postpartum period.

The 45 patients admitted to our center had TOA that were mostly a consequence of PID (41 primary abscesses), and secondary to other pelvic conditions in four cases (after acute appendicitis; associated with a rectal cancer; associated with an ovarian complex cyst and after laparoscopic cholecystectomy). All cases were medically treated with combined antibiotherapy, in majority of cases with clindamycin and gentamycin association. In IUD carriers, penicillin was added due to higher risk of *Actinomyces* infection.

The need for surgical drainage was universal to all cases, and this was the greatest difference relative to published statistics. A minimally invasive procedure was performed in 22 of 45 cases (48.8%), by laparoscopy approach and transvaginal ultrasound-guided drainage and sclerosis, without complications and with less morbidity and hospitalization time.

According to data drainage procedures, an ultrasound-guided procedure may be a first-line procedure for the treatment of TOA, in a stable patient without peritonitis.[4–6] Although the medical treatment can be successful, an earlier intervention with this technique can improve the results and minimize morbidity, hospitalization time, and costs. The complications reported in our study were mostly in patients who underwent laparotomy, in this group with important morbidity and hospitalization time. Our experience, despite the small number of cases, also supports that TOA should be treated with a drainage procedure, ultrasound-guided, a simple and safe intervention.

Table 4
Complications after surgery.

Complications	N°	Procedure performed	Treatment
Wound infection	2	Laparotomy	Medical (ATB)
Vaginal vault hematoma	1	Laparotomy	Digital permeabilization
Wound dehiscence	2	Laparotomy	Surgical correction
Faecal peritonitis	1	Laparotomy	Re-laparotomy (Ca rectum)
Maintenance abdominal masses	1	Laparotomy	Re-laparotomy (partial enterectomy)
Persistence of pelvic abscess	1	Laparotomy	Aspirative drainage
Persistence of pelvic abscess	2	Vaginal aspirative punction	Laparosocpy

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