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Research Article

Evaluation of Surgical Treatment in Patients with Ruptured Tubo-Ovarian Abscess in Our Clinics

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Abstract

Aim: In our study, we aimed to discuss the predisposing factors, clinical, laboratory findings, surgical treatment and outcome of the patients who were operated with the diagnosis of ruptured tubo-ovarian abscess in our clinic.

Material and Methods: Between January 2015 and April 2017, 39 patients with urgent surgery due to ruptured tubo-ovarian abscess in our clinic were retrospectively reviewed. The inclusion criteria was only ruptured TOA. Patients who did not have acute abdominal symptoms and who well responded to medical treatment were not included in the study. Demographic characteristics of the patients, clinical features, predisposing factors for tubo-ovarian abscess, laboratory results, applied surgical methods and complications were examined.

Results: The mean age of the patients was 38.11. The complaints upon presenting to the clinic were pelvic pain in all patients, fever in 23 patients (58.9%), foul-smelling vaginal discharge in 16 patients (41.1%). While 15 patients (38.4%) had IUD, 24 (61.6%) did not. All patients' IUDs were removed. Mean diameter of the mass detected by imaging methods (USG, CT) in the pre-operative period was 66.74 ± 21.83 mm. Five patients were underwent laparoscopy and the others underwent laparotomy. 15 patients were underwent surgery unilateral salpingo-oophorectomy, two patients were underwent bilateral salpingectomy, four patients were underwent total abdominal hysterectomy and bilateral salpingo-oophorectomy, six patients were underwent Abscess drainage.

Conclusion: Early diagnosis and treatment of tubo-ovarian abscess is important because of the significant consequences of morbidity and mortality. Appropriate surgical method should be applied depending on abse size, operator experience, age of the patient and fertility desire.

Keywords: *Abscess drainage; Laparotomy; Ruptured Tubo-Ovarian Abse*

Introduction

Tubo-ovarian abscess (TOA) is an inflammatory mass which frequently involves fallopian tubes, and occasionally, other pelvic tissues (colon, bladder). It most commonly occurs in women in the reproductive period and usually following an upper genital tract infection [1]. Multiple sexual partners, being between 15 - 25 years old, previous history of pelvic inflammatory disease (PID) and intrauterine device (IUD) use are the primary risk factors. Although *Neisseria gonorrhea* and *Chlamydia trachomatis* are considered as frequent factors in the abscess pathogenesis, usually *Escherichia Coli* and *Bacteroides* species were isolated as agents [2]. The most frequently complaints in the clinic are pain, fever, and vaginal discharge [3]. Before the advancement of wide specturum antibodies and modern surgical practice,

reported mortality rate in TOA was 50% and higher [4]. In untreated cases, rupture and peritonitis and sepsis complications which may lead to death are observed [5]. Majority of the TOA cases respond to antibiotic treatment yet 25% of the cases require surgery or drainage [1]. Surgical approach often varies according to the experience of the surgeon. In TOA, removal of abscess or adnexal mass via laparotomy or laparoscopy is recommended [6]. But in the literature there are a few studies about ruptured tubo-ovarian surgical treatment which are generally case report.

Aim

The aim of this study is to discuss the risk factors, clinical and laboratory results, and the mode of surgical approach and its success in patients with ruptured TOA who underwent surgery in our clinic.

Materials and Methods

This study was performed through retrospective evaluation of the records of 39 patients who underwent surgery for TOA between January 2015 and April 2017 in İzmir Katip Çelebi University Atatürk Research and Training Hospital Obstetrics and Gynecology Clinic. The inclusion criteria was only ruptured TOA. Ruptured TOA diagnosis was made upon observing the symptoms that indicate TOA abscess in Ultrasonography (USG) and Computed Tomography (CT) (in USG, observing dense, complex mass content and free fluid in douglas pouch; in CT, observing mass that has regular or irregular thick edges and debris, and presence of fluid in the abdomen) in addition to acute abdominal symptoms and observing abscess locations during the operation. Patients who did not have acute abdominal symptoms and who well responded to medical treatment were not included in the study.

Surgical Methods

Laparotomy was performed under general anesthesia in all women. Bladder catheterization was performed for all patients. Skin incision was made with median (lower midline) incision for all patients. According to the localization and spread of ruptured abscess in the pelvis, surgical approach was individualized each patients (abscess drainage, unilateral salpingectomy, bilateral salpingectomy unilateral salpingooforectomy, total abdominal hysterectomy + bilateral salpingooforectomy). Operative laparoscopy was performed under general anesthesia in all women. Bladder catheterization was performed for all patients. After the pneumoperitoneum was created using a Veress needle, a 0-degree 5-mm laparoscope [Karl Storz, Tuttlingen, Germany] was introduced through the umbilicus. Two or three 3-mm ancillary trocars were inserted under direct visualization in the lower abdomen. According to the localization and spread of ruptured abscess in the pelvis, surgical approach was individualized each patients (abscess drainage, unilateral salpingectomy, bilateral salpingectomy unilateral salpingooforectomy, total abdominal hysterectomy + bilateral salpingooforectomy). In general, the procedure was performed most commonly using bipolar coagulation and scissors. After removal of the uterus, adnexa, or both, through the vagina, the vaginal cuff was closed with a running delayed absorbable suture [No.1 Vicryl; Ethicon, Livingston, UK] by vaginal approach. Patients' ages, body mass indices (BMI), complaints upon presenting, vital findings at the time of hospitalization, mass diameter identified by physical examination and imaging, pre-op and post-op hemoglobin (Hb) levels, white blood cell count, C-reactive Protein (CRP) levels, presence of surgical risk factors for tubo-ovarian abscess (IUD use, history of therapeutic curettage within the last 3 months, and intraabdominal surgery for any reason), additional diseases (diabetes mellitus, etc.), prefferred surgical method, pre- and post-op complications and duration of hospitalization were recorded.

Results

Demographic characteristics and clinical and laboratory findings of 39 patients included in the study are shown in Table 1. The complaints upon presenting to the clinic were pelvic pain in all patients, fever in 23 patients (58.9%), foul-smelling vaginal discharge in 16 patients (41.1%). While 15 patients (38.4%) had IUD, 24 (61.6%) did not. All patients' IUDs were removed. Risk factors for the patients are presented in Table 2. Mean diameter of the mass detected by imaging methods (USG, CT) in the pre-operative period was 66.74±21.83 mm. Regarding the mode of incision, lower midline incision was performed in 34 patients (87.1%) whereas laparoscopic entry technique

was performed in five patients (12.9%). Surgical approaches are shown in Table 3. Four patients simultaneously underwent appendectomy and three patients underwent omentectomy. In terms of complications, three patients had intraoperative bowel injury and it was repaired. In all patients, a Pezzer catheter was placed and left in the douglas pouch in the operation. Four patients (10.2%) had surgical site infection. Throughout the duration of hospitalization, 12 patients were administered with Ceftriaxone 1x1 gr/day intravenously and Metronidazole 3 x 500 mg/day intravenously, 22 patients were administered with Clindamycin 3x900 mg/day intravenously and Gentamicin 1 mg/kg/day intravenously, three patients were administered with Tazocin 4.5 x 2 gr/day intravenously and 2 patients were administered with Meronem 2 x 1 gr. Duration of hospitalization in our study was 8.58 ± 5.46 days.

Factors	Mean ± SD	Range
Age (year)	38.11 ± 6.25	24 - 49
Gravida	2.71 ± 1.60	0 - 9
BMI (kg/m^2)	26.89 ± 3.71	19 - 35
Fever (°C)	37.83 ± 0.87	36.4 - 39.8
Leukocytosis (sayı/ µL)	18358 ± 5630	6150 - 30860
CRP (mg/L)	19.7 ± 10.76	1.73 - 41.70
Pre - op Hb(gr/dl)	11.48 ± 1.65	7.8 - 14.2
Post - op Hb(gr/dl)	10.25 ± 1.56	6.4 - 13.4
Mass diameter (mm)	66.74 ± 21.8	25 - 120

Table 1: *Demographic, clinical and laboratory findings of patients.*

SD: Standard Deviation, BMI: Body Mass Index, CRP: C- Reactive Protein

Number %
USO + Abscess drainage 15 38,4
Abscess drainage + adhesiolysis 6 15,3
TAH+BSO 4 10,2
Bilateral salpingectomy 2 5,1
Unilateral salpingectomy 12 30,7

Table 2: *Evaluation of surgical methods.*

USO: Unilateral salpingooforectomy; TAH+BSO: Total abdominal hysterectomy + Bilateral salpingooforectomy

Risk Factors Number %
IUD 15 38,4
PID story 7 17,9
DM 4 10,2
Abortion in the last three months 3 7,6
Intra-abdominal surgery 2 5,1

Table 3*: Risk factors for TOA.*

IUD: Intrauterine device; DM: Diabetes Mellitus.

Discussion

In our study, patients with ruptured TOA were treated effectively. Emergency laparotomy was performed in 34 patients, whereas laparoscopy was performed in 5 patients. Our study limitations were small size of populations and there was no comparison between different surgical technics such as laparatomy and laparascopy. According to some reports in the literature, laparoscopy should be preferred in patients when there is no particular suspicion of rupture, but there is no clear evidence on this subject [7,8]. As a result, the choice of surgical approach mostly depends on the experience of the surgeon. In patients with tubo-ovarian abscess, traditional treatment is TAH+BSO and removal of all of the infected tissues. However, recent studies showed that USO is sufficient for the treatment [9]. In our patients, the primary surgical approach was USO+abscess drainage. In our study, the frequency of cases where TAH+BSO was performed was rare (10.2%). While rupture was found in 15% of the TOA cases in the literature, in our study we included cases where ruptured TOA occurred [10]. When head and neck complaints of TOA patients are evaluated, the most frequent symptoms are the pain in the lower quadrant and high fever [11]. Primary findings in the physical examination are adnexal fullness and palpable mass in the lower quadrant of the abdomen [12]. Complaints of TOA patients in the similar studies primarily include abdominal and pelvic pain (90%), which is followed by fever (50%), vaginal discharge (28%), nausea (26%) and abnormal vaginal bleeding (21%) [13]. In our study, the most frequent complaint was pelvic pain. The most frequent causes of TOA usually include insufficiently treated infections of the lower genital tract, history of intraabdominal or gynecologic operations, and IUD. Ginsburg., *et al*. found that 47% of the patients diagnosed with TOA have IUD [14]. In our study, IUD was found in 38.4% of the patients and their IUD were removed [15]. In the study by Turan., *et al*. 41% of the cases had IUD [16]. World Health Organization recommends that IUD should not be removed when treating pelvic inflammatory diseases except TOA [17]. However, there is no clear evidence which proves that removal of IUD facilitates the treatment of TOA.

Analysis of the laboratory results showed a significant elevation in leukocytes and CRP. CRP is described as the most sensitive indicator in pelvic inflammatory disease and it is known that its levels increase in 94% of the patients [18]. Elevated serum CRP levels is associated with the spread of tissue damage and it was stated that CRP reflects the severity of the clinic [19]. In our study, we observed elevated CRP in 92.3% of the patients. Mechanism of occurrence of TOA is not yet fully explained. However, it frequently occurs following the infections of upper genital tract and also following PIH [20]. The most frequently isolated microorganisms are *Escherichia coli, aerobic streptocci, Bacteroides fragilis, Prevotella* and *Peptostreptococcus*. In our study, the result of the microbiologic analysis was frequently polymicrobial.

The mean duration of hospitalization in our study was 8.58±5.46 days whereas in a similar study, this was 6± 3.3 days [21]. Perez Medina., *et al*. reported that when abscess drainage is performed, the patient is discharged 5 days earlier than the patient who received antibiotic treatment alone [22]. Longer duration of hospitalization in our study can be associated with the development of rupture. De Witt., *et al*. reported treatment failure in 43% of the cases with abscess diameter over 8 cm, and Reed., *et a*l. reported treatment failure in 60% of the cases with abscess diameter ≥ 10 cm and correlated abscess diameter with treatment failure [23,24]. In our study where the mean abscess diameter was 6.6 cm, abscess recurrence after surgery was zero in all of our patients and the patients were discharged without any significant complications.

Conclusion

In conclusion in light of the literature, our study has shown that, in addition to wide spectrum antibiotics, surgical treatment is effective in the treatment of ruptured TOA. The appropriate surgical method should be performed depending on the abscess diameter, experience of the surgeon, patient's age and choice regarding fertility.

Conflict of Interest

None.

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