Retrospective Analysis of Laparoscopically Treated Cases of Tubo-Ovarian Abscess

Laparoskopik Olarak Tedavi Edilmiş Tuba-Ovaryan Apse Olgularının Retrospektif Analizi

M. Anıl ONAN, MD,[a]
Çağatay TAŞKIRAN, MD,[a]
Onur KARABACAK, MD,[a]
Ayla AÇAR, MD,[a]
Ümit KORUCUOĞLU, MD,[a]
M. Bülent TIRAŞ, MD[a]

[a]Department of Obstetrics and Gynecology, Gazi University Faculty of Medicine, Ankara

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Yazışma Adresi/*Correspondence:*
Mehmet Anıl ONAN, MD
Gazi University Faculty of Medicine, Department of Obstetrics and Gynecology, Ankara, TÜRKİYE/TURKEY
maonan@gazi.edu.tr

ABSTRACT Objective: To analyze retrospectively laparoscopically treated cases of tubo-ovarian abscess (TOA). **Material and Methods:** This study is a retrospective analysis of cases treated for TOA via laparoscopy in a tertiary university care center between 1991 and 2004. By using preoperative findings (presence of acute abdomen, mass at the pelvic examination and ultrasonographic findings), patients were diagnosed. Laparoscopic findings were used as gold standard for the final diagnosis of TOA and to verify preoperative findings. **Results:** Overall, 12 of 18 (67%) TOA cases were treated solely via laparoscopy without complication or recurrence. The remaining 6 TOA cases (33%) were converted to laparotomy and treated successfully. Over the same study period, we had 230 cases undergoing laparoscopy with preoperative diagnosis of adnexial mass without signs and symptoms of infection but 2 of them had end diagnosis and treatment of TOA. **Conclusions:** Laparoscopy is an effective treatment modality along with antibiotics in TOA in different stages of the disease. The studied cases proved us TOA is an inflammatory process that can be noticed during laparoscopy within a wide range from acute purulent disease to silent cystic healed formation.

Key Words: Laparoscopy; abscess; pelvic inflammatory disease

ÖZET Amaç: Laparoskopik yolla tedavi edilmiş tuba-ovaryan apse olgularını retrospektif olarak incelemek. **Gereç ve Yöntemler:** Referans merkezi bir üniversite hastanesinde, 1991-2004 yılları arasında laparoskopik olarak tedavi edilen TOA olgularının retrospektif analizi yapılmıştır. Hastalar preoperatif bulgulara göre (akut karın varlığı, pelvik muayenede kitle varlığı, ultrasonografi bulguları) tanımlanmışlardır. Preoperatif bulguların doğrulanması ve TOA tanısının konabilmesi için laparoskopik bulgular altın standart olarak kullanılmıştır. **Bulgular:** 18 TOA olgusunun 12 (%67)'si herhangi bir komplikasyon ve rekürrens olmadan laparoskopi ile başarıyla tedavi edimiştir. Geri kalan 6 TOA olgusunda (%33) laparotomiye geçilerek başarılı yaklaşımda bulunulmuştur. Aynı çalışma dönemi sırasında, preoperatif tanısı adneksiyal kitle olan, enfeksiyon bulgusu ve semptomu bulunmayan, laparoskopi yapılan 230 olgunun ikisinde TOA tanısı konmuş ve başarıyla tedavi edilmiştir. **Sonuç:** TOA'ların değişik evrelerinde laparoskopik yaklaşımın, antibiyotiklerle beraber efektif bir tedavi modalitesi (olguların %67'sinde) olduğu görülmüştür. Bu çalışılan olgular bize TOA'nın, laparoskopide akut pürülan hastalıktan, sessiz kistik formasyona kadar değişebilen enflamatuvar bir proses olduğunu düşündürmüştür.

Anahtar Kelimeler: Laparoskopi; apse; pelvik enflamatuar hastalık

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Tubo-ovarian abscess (TOA) is a life-threatening condition if not diagnosed early and treated properly. This complication of pelvic inflammatory disease (PID) occurs by conglomeration of affected adnexa and adjacent intestinal segments.[1] Pelvic inflammation is an ongo-

ing process and therefore, symptoms of a patient, findings of pelvic examination and ultrasonographic appearance can be variable.[2] Consequently, the route of management also varies. Antimicrobial therapy may be the choice of treatment for PID, whereas surgical intervention is usually needed for an infective cyst or TOA. The mode of treatment should be determined accurately to avoid unnecessary or inappropriate surgical procedures. The purpose of this study was to evaluate laparoscopically treated patients for TOA.

MATERIAL AND METHODS

Laparoscopically treated TOA cases between 1991 and 2004 were retrospectively evaluated. Patients were preoperatively diagnosed as TOA relying on presence of acute abdomen, mass at the pelvic examination and ultrasonographic findings. Acute abdomen was diagnosed if the patient had abdominal pain, distention and rebound tenderness. Mass was diagnosed after bimanual examination. According to the ultrasonographic findings, three different diagnostic definitions were made. Diagnosis of TOA relied on the presence of a non-circular or irregular, rough mass, with cogwheel appearance, having centrally mixed echogenicity or incompletely septated. Hyperechogenic margins >5 mm in thickness, breakdown of adnexial anatomy and/or presence of cul-de-sac fluid were other clues for the diagnosis of TOA. An infective cyst was suspected if the cystic mass was circular, centrally sonolucent with irregular, rough, hyperechogenic and >5 mm margins. A simple cyst was suspected if the mass was completely sonolucent, circular with thin and regular margins with no destruction of pelvic anatomy. These criteria were obtained from medical literature and helped us to determine the nature of pelvic mass.[3] Laparoscopic findings were used as gold standard to analyze the reliability or preoperative characteristics in the diagnosis of TOA.

During the study period, 23 patients with preoperative diagnosis of TOA were attempted for laparoscopic treatment. The mean age at the time of diagnosis was 33.7 (min 24, max 50). To detect the prevalence of abscess, 230 cases diagnosed preoperatively with ovarian cysts were used. This group served us as a control group and for calculation of TOA prevalance among patients with a preoperative diagnosis of adnexial cyst.

RESULTS

There were 4 cases with acute abdomen, no mass in pelvic exam, normal findings at vaginal ultrasound. Final diagnosis was PID without abscess formation according to laparoscopy in all cases. One case with swollen-red pyosalpinx was subjected to bilateral salpingectomy (Table 1). Therefore, if there is acute abdomen but no pelvic mass at the examination, and the ultrasonography (USG) is normal, diagnostic laparoscopy only confirmed the diagnosis of PID. Medical treatment without laparoscopy seems to suffice for minimal invasive approach, and laparoscopy may cause overtreatment by increasing surgical extention.

There were 3 cases with acute abdomen, mass in pelvic exam and indefinitive ultrasonographic findings. Diagnosis was TOA for all cases. In two cases laparoscopic drainage was performed. One case required laparotomy due to technical difficulty. If there is acute abdomen and mass at pelvic exam without definitive ultrasonographic findings, all patients had TOA at laparoscopy and required laparotomy in 33% (Table 1). Two thirds of the probable laparotomies were prevented by initial laparoscopic intervention.

There were 9 cases without acute abdomen, with mass in pelvic exam, infective cyst at vaginal ultrasound. Final diagnosis was TOA in 6 cases, and simple cyst in three patients. In patients with TOA, 1 had laparosopic drainage, 4 had laparoscopic salpingo-oophorectomy, and 1 had laparotomic salpingo-oophorectomy (Table 1). If there is a mass, but no acute abdomen; the ultrasound examination has important diagnostic capability. If TOA is not diagnosed at USG but reported as “might be infective”, accurate diagnosis is verified in 67% via laparoscopy.

There were 7 cases without acute abdomen, with mass in pelvic exam, TOA at vaginal ultrasound. Final diagnosis was TOA in all cases. In 3 pati-

ents who were treated with laparoscopy, 2 had unilateral salpingo-oophorectomy and 1 had drainage. On the contrary, in the group of patients treated with laparotomy due to technical difficulties, 2 had unilateral salpingo-oophorectomy and 2 had drainage (Table 1). If there is a mass but no acute abdomen, the USG has important diagnostic capability. If TOA is diagnosed at USG, it is also accurately diagnosed by the laparoscopy too, and laparotomy is required for greater than 50% of these cases.

There were 230 cases without acute abdomen, with mass in pelvic exam, and simple cyst at vaginal ultrasound. Interestingly, 2 of these patients had TOA (0.8%), and treated by laparoscopic drainage. For patients undergoing laparoscopy for a suspected simple cyst at vaginal ultrasound, the probability of a pelvic abscess at laparoscopy is around 0.8% (Table 1).

Overall 12 of 18 (67%) cases with TOA were treated successfully by laparoscopy alone without complication and recurrence. The remaining 6 TOA cases (33%) were converted to laparotomy and treated successively (Table 1). No recurrent therapy was needed for any patient either treated with laparoscopy or laparotomy.

CONCLUSION

There is limited number of tubo-ovarian abscess cases managed by laparoscopy. Our study might prove helpful in determining cases laparoscopic approach can be performed. Laparoscopic treatment of an ongoing pelvic infection depends on multiple factors. There are some guidelines in the medical literature, but most of them are classified according to the rupture of TOA. The results in the past 13 years showed that there was no case with a pre-diagnosis rupture of the TOA. Chronologically cases have been seen first in PID phase with acute abdomen; second, at the beginning of TOA with acute abdomen; third, having infective signs and symptoms turning to adnexial cyst or indefinite as TOA; fourth, with apperant TOA without acute abdomen; and fifth, even at the simple cyst treatment a formed and demarcated (healed) TOA rarely may exist at the cross section of time.

C-reactive protein (CRP) analysis may be used a discriminator of infective cysts in acute period of inflammation. Because our study has many chronic cases, if CRP analysis was added, would be negative.

Ultrasonographic aspiration of cystic masses to determine the nature of the cyst is not always a rational procedure. Aspiration can not be accepted as a definitive treatment option. There are considerable recurrence rates, abdominal cavity may get contaminated, intestinal complications may arise and atypical cells in case of an incidental malignancy may spread.[4]

In the management of PID/TOA, non-invasive antibiotic treatment is a first line management choice. Reserving laparoscopy for patients with failure of antibiotic treatment, might cause severe de-

TABLE 1: Distribution of patients with tubo-ovarian abscess.

	(n= 4)	(n= 3)	(n= 9)	(n= 7)	(n= 230)
Preoperative Findings					
Acute abdomen	+	+	-	-	-
Mass at exam	-	+	+	+	+
USG	Normal	Indefinitive-no cyst	Infective cyst	TOA	Simple cyst
Laparoscopic confirmation	TOA: 0 PID: 4	TOA: 3	TOA : 6 Simple cyst:3	TOA: 7	TOA: 2
Laparoscopy	Diagnostic:3 Bilateral salpingectomy:1	Drainage:2	Simple cyst: 3 Salpingoophorectomy:4 Drainage: 1	USO: 2 Drainage:1	Drainage: 2
Laparotomy	-	Drainage: 1	Salpingoophorectomy:1	USO: 2 Drainage:2	-
Convertion rate to laparotomy	-	33%	16.7%	57.1%	-

struction of pelvic organs. Therefore, if acute abdomen is present with a mass at pelvic exam and ultrasonography showing infective cystic mass, antibiotics should not be a treatment of choice.

To diagnose rupture of TOA through physical exam is not conclusive, imaging is also not easy to understand rupture. The only sign may be the acute abdomen with decreasing size of adnexial mass over hours with worsening laboratory data confirming acute infection. Eschenbach stated that palpable adnexal mass, abdominal rebound tenderness, duration of abdominal pain and elevated white blood cell count have low predictive value and are not reliable in the individual patient to distinguish severity of the disease.[5] Slap et al had similar findings in their study including 206 cases of PID, of which 56% had TOA. They investigated ESR, history of previous PID, palpable mass, ultrasonography, elevation of WBC, heart rate, recent menstrual history, and stated the patients might have fewer signs of acute illness than those without TOA, and might develop symptoms later in the menstrual cycle. None of the tests was conclusive by itself at the time of diagnostic approach for TOA.[6]

In this study, we realised most importantly that PID is an ongoing process and clinical presentations of patients vary according to different periods of the inflammatory process. Diagnosis of TOA relied on presence of acute abdomen, presence of a pelvic mass on pelvic examination and ultrasonographic findings. Computerized tomography, magnetic resonance imaging or leukocyte sintigraphy are reserved since these tests are expensive and time consuming.[7,8]

During 13 years, there were 2 cases of TOA in a group of 230 patients who had a preoperative diagnosis of benign ovarian cyst on transvaginal ultrasound. None of the cases had any signs and symptoms of infection. These two cases were treated effectively by laparoscopy and did not need laparotomy. Patients that have an ovarian cyst on transvaginal ultrasound which will be treated laparoscopically have a very low probability of ending with a diagnosis and treatment of TOA (0.8%).

Patients with a pelvic mass at exam and a diagnosis of infective mass on transvaginal ultrasound are prone to dense adhesion formation, pelvic pain and infertility. First line of treatment may be laparoscopy and only cases with technical problems should be converted to a laparotomy. If acute abdomen is present, generally pointing to the early stage of TOA, there is a high chance of successive laparoscopic treatment without need for laparotomy. It can be speculated that early adhesions are prevented and infection is treated before organ destruction, but on the other hand the increasing percent of laparotomies which is invasive for drainage requires improvement in laparoscopic technique. If acute abdomen was negative and ultrasound was not definitive in diagnosis of TOA, but an infective cyst was suspected, we had 34% of cases ending at laparoscopic simple cyst resection (true mass positive, disease negative-false TOA diagnosis).

In conclusion, laparoscopy is an effective treatment modality along with antibiotics in TOA in groups with pelvic mass in exam and infective mass at ultrasound independent of the presence of acute abdomen. This has also been reported previously by other authors.[9] If there is no infective mass at acute abdomen, diagnostic laparosopy has no superior value over antibiotics and should be reserved as a second line treatment to unresponsive cases. TOA may be seen in about 0.8% of cases with a preoperative diagnosis of simple adnexial cyst.

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