

# TUBOOVARIAN ABSCESSSES IN POSTMENOPAUSAL WOMEN

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## SUMMARY

**Objective:** To compare the clinical features of tuboovarian abscess (TOA) in pre- and postmenopausal women.

**Materials and Methods:** Between January 1992 and December 2000, all patients with surgically documented TOA at National Taiwan University Hospital were enrolled into this retrospective study. Salient information with respect to the history, current illnesses, risk factors, physical findings, laboratory data, surgeries and postoperative complications was obtained from medical records.

**Results:** Of 74 patients with TOA, nine were postmenopausal women. Compared with the premenopausal group, postmenopausal patients were significantly more likely to have contributing medical disorders ( $p < 0.001$ ) and concomitant pelvic malignant tumors ( $p = 0.037$ ).

**Conclusion:** Thorough investigation for concomitant pelvic malignant tumors and meticulous medical care should be provided for postmenopausal women with TOA. [*Taiwanese J Obstet Gynecol* 2006;45(3): 234-238]

**Key Words:** menopause, pelvic malignancy, tuboovarian abscess

## Introduction

Tuboovarian abscesses (TOAs) are only considered to be a problem during a woman's childbearing years and the diagnosis appears to be rare in postmenopausal women. Before this retrospective study, we encountered several postmenopausal cases of TOA. Despite a wealth of information about management in women of reproductive age, there is little in the medical literature related to analogous care of postmenopausal women. A MEDLINE search showed several case series detailing the clinical features of the latter group [1-6], but the differences in clinical presentations between the two groups are only mentioned in two [1,2]. In this retrospective study, we have attempted to provide more detailed information related to TOA in postmenopausal women.

## Materials and Methods

The medical records for all patients with surgical confirmation of TOA between January 1, 1992 and December 31, 2000 at National Taiwan University Hospital were reviewed. Patients were stratified according to menopausal status, with menopause, which is physiologically correlated with declining estrogen secretion resulting from the loss of follicular function, defined as permanent cessation of menses ( $> 1$  year). Cases were analyzed with respect to age, parity, presenting clinical symptoms, significant medical conditions, history of intrauterine device (IUD) use, pre- and postoperative diagnoses, type of surgical procedure, and associated genital tract or other pelvic pathologies.

As the age and parity distributions were skewed, the two cohorts were compared using nonparametric methods, with the Wilcoxon rank sum test used for the comparison of pre- and postmenopausal patients with respect to age and parity. Categorical variables were compared by the  $\chi^2$  test with STATA version 7.0 (Stata Corp., College Station, TX, USA).

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## Results

A total of 74 patients with a surgical diagnosis of TOA were identified. Mean age was 43 years (range, 26–75), with 65 patients premenopausal and nine postmenopausal.

There was a history of IUD use in 20 premenopausal patients (31%), but none in the postmenopausal patients. The preoperative diagnosis of TOA was correct in 35 premenopausal patients (54%), but there were only two postmenopausal counterparts (22%; Table 1).

Only one subject (1.5%) in the premenopausal group had concomitant medical problems (i.e. noninsulin-dependent diabetes mellitus) that could have contributed indirectly to abscess formation. In contrast, however, potentially contributing medical problems were present in six postmenopausal patients (60%): five with noninsulin-dependent diabetes mellitus and one with chronic hepatitis C (Table 2).

Treatment for the postmenopausal patients comprised total abdominal hysterectomy and salpingo-oophorectomy ( $n = 5$ ; 55%), salpingo-oophorectomy ( $n = 2$ ; 22%), and laparotomic drainage ( $n = 2$ ; 22%). One of the two drainage patients subsequently underwent subtotal hysterectomy and bilateral salpingo-oophorectomy due to abscess recurrence.

Isolated TOA microorganisms were identified in 29 of the premenopausal group (45%) and seven of the postmenopausal group (78%); however, between-group comparison of the isolation rates was not statistically significant ( $p = 0.082$ ). The predominant organisms isolated from the abscess aspirates in premenopausal patients were *Escherichia coli* ( $n = 6$ ), *Bacteroides fragilis* ( $n = 4$ ), *Actinomyces* ( $n = 4$ ), other *Bacteroides* species ( $n = 3$ ) and *Klebsiella pneumoniae* ( $n = 3$ ). The predominant organisms isolated in postmenopausal patients were *E. coli* ( $n = 3$ ) and *Proteus* species ( $n = 2$ ).

Additional abnormal pathology was identified in 12 premenopausal patients (18%): endometriosis ( $n = 7$ ; concomitant with adenomyosis and cervical intraepithelial neoplasm II [CIN II] in one case each);

isolated adenomyosis ( $n = 4$ ); and stage IA1 cervical cancer ( $n = 1$ ). Additional abnormal pathology was diagnosed in four postmenopausal patients (44%). Rectosigmoidal diverticulitis was suspected as the cause of TOA in one case (case 7) perisurgically. One subject (case 8) had squamous cell carcinoma (SCC) or CIN III of the cervix on her Pap smear 9 months after the initial surgical intervention; however, the woman was subsequently lost to follow-up. The other two patients were found to have associated gynecologic malignancy. One had a preoperative diagnosis of sigmoid colon cancer, and experienced an uneventful course after segmental resection of the colon, total hysterectomy and left salpingo-oophorectomy. The other suffered frequent abscess recurrences, with a large advanced pelvic adenocarcinoma with bladder invasion discovered 12 months after the initial abscess surgery; endometrial origin was strongly suspected because of the extremely inhomogeneous thickening detected in the endometrium. Diagnostic curettage was not performed, however, due to the patient's poor medical condition.

Group comparison showed significantly lower median parity (Table 1) for the premenopausal subjects, while the postmenopausal women were more likely to have contributing medical disorders and concomitant pelvic malignant tumors (Table 3).

## Discussion

TOA in postmenopausal women is rare; Blumenfeld et al found that only 10 of 587 postmenopausal patients (1.7%) had TOA [3]. In our series, however, the incidence of TOA was higher (12%), which is in line with the findings of Hoffman et al (14%) and Protopapas et al (18%) [1,2]. Although abdominal pain (89%) remained the most frequent complaint in our postmenopausal TOA patients, fever (22%) was reported less often than in other studies (60–80%) [7]. Further, the rate of correct preoperative diagnosis of TOA in our postmenopausal patients was relatively low (54% vs. 22%); however, the result is not statistically

**Table 1.** Clinical characteristics of patients with tuboovarian abscesses

Characteristic	Premenopausal ( $n = 65$ )	Postmenopausal ( $n = 9$ )	$p$
Median age (yr)	42	65	< 0.001
Median parity	2	5	< 0.001
IUD history	20	0	0.10
Contributing medical factors	1	6	< 0.001
Preoperative diagnosis of TOA	35	2	0.15

IUD = intrauterine device; TOA = tuboovarian abscess.

**Table 2.** Characteristics of postmenopausal patients with tuboovarian abscesses

Case	Age (yr)	Presenting symptoms	Contributing medical factors	Preoperative diagnosis	Postoperative diagnosis	Initial surgery	Microorganism	Associated pathology
1	56	Fever Lower abdominal pain	Diabetes	Acute appendicitis	Right TOA	RSO	Not cultured	None
2	63	Lower abdominal pain	Diabetes	Sigmoid colon cancer and pelvic mass	Left TOA	TAH, LSO	<i>Proteus vulgaris</i> , $\beta$ - <i>Streptococcus</i>	Sigmoid colon carcinoma
3	69	Fever Abdominal distention	Diabetes	Acute appendicitis	Right TOA	TD	<i>Enterococcus</i> species	Pelvic adenocarcinoma
4	67	Lower abdominal pain	Diabetes	TOA or adnexal malignancy	Rupture of right TOA	BSO	<i>E. coli</i>	None
5	53	Lower abdominal pain	Chronic hepatitis	Left adnexal tumor, suspicious degenerative myoma	Left TOA	TAH, BSO	Not cultured	None
6	68	Lower abdominal pain Vaginal discharge	—	Left adnexal tumor, suspicious ovarian cancer	Left TOA	TAH, BSO	<i>Bacteroides fragilis</i>	None
7	75	Lower abdominal pain	—	Pelvic tumor, suspicious degenerative myoma or adnexal malignancy	Right TOA	TAH, BSO	<i>Proteus mirabilis</i> , <i>E. coli</i>	Rectosigmoidal diverticulitis
8	57	Fever Lower abdominal pain	Diabetes	TOA	Right TOA	TD	<i>E. coli</i>	SCC or CIN III of cervix
9	55	Lower abdominal pain	—	Adnexal tumor, suspicious adnexal malignancy	Left TOA	TAH, BSO	<i>Peptostreptococcus</i> species	None

TOA = tuboovarian abscess; RSO = right salpingo-oophorectomy; TAH = total abdominal hysterectomy; LSO = left salpingo-oophorectomy; TD = transabdominal drainage; BSO = bilateral salpingo-oophorectomy; SCC = squamous cell carcinoma; CIN III = cervical intraepithelial neoplasia III.

**Table 3.** Associated surgical pathology stratified by menopausal status

Characteristic	Premenopausal	Postmenopausal	<i>p</i>
Associated benign pathology	11	1	1.00
Associated malignant pathology	1	2	0.037

significant (Table 1). The rarity and muted presentation of TOAs in postmenopausal women may account for the apparent difficulty in determining correct preoperative diagnosis, with malignancy-like adnexal/pelvic tumor ( $n = 3$ ) and acute appendicitis ( $n = 2$ ) the most prevalent of these misdiagnoses.

Several risk factors that predispose to TOA, such as history of pelvic inflammatory disease and presence of IUD, have been identified in reproductive women [8]. The frequency of IUD usage in our patients (27%) is similar to analogous rates determined in other studies (range, 20–54%) [7]. As might be expected, there was a trend of a higher prevalence of IUD usage in our premenopausal TOA patients ( $p = 0.10$ ), with none of the postmenopausal patients having the device. On the other hand, contributing medical factors (e.g. diabetes) were more common in the latter group ( $p < 0.001$ ). In contrast to the risk factors for pelvic inflammatory disease in women of childbearing age, medical disorders resulting in impaired immune function play an important role in the development of TOA in postmenopausal women.

The predominant organisms isolated from TOA aspirates were *E. coli*, *B. fragilis*, other *Bacteroides* species, aerobic *Streptococci*, *Peptococcus* and *Peptostreptococcus* [7]. The above microorganism spectrum is similar to that of our premenopausal group. However, *Proteus* species were another dominant organism in our postmenopausal patients.

From a review of the English literature, we found that 25 of 68 reported postmenopausal TOA patients (37%) had concomitant malignancies [1,2,4–6,9]. The predominant concomitant malignant tumors found in this group were cervical cancer ( $n = 5$ ), endometrial cancer ( $n = 5$ ), ovarian cancer ( $n = 4$ ) and colon cancer ( $n = 4$ ). To our knowledge, there are only two studies comparing the clinical characteristics of these two TOA groups [1,2], with both demonstrating a significant association between pelvic malignancy and postmenopausal TOA. Coexisting pelvic malignancy was also more frequently identified in our postmenopausal patients compared to premenopausal patients (22% vs. 1.5%;  $p = 0.037$ ).

Despite complete pre- and intraoperative investigations, however, concomitant pelvic malignancy may be missed. Ben-Baruch et al found diagnostic delays ranging from 2.5 to 13 months in all three postmenopausal

TOA patients with concomitant pelvic malignancy [4]. Heaton and Ledger also noted that one rectal carcinoma was diagnosed several months after the initial surgery for postmenopausal TOA [6]. Advanced pelvic adenocarcinoma was identified in one of our patients (case 3) 12 months postoperatively. Although pre- and intraoperative examinations failed to reveal the lesion, growth estimates suggest that it was probably present at the time of surgery. Another subject (case 8) had SCC or CIN III of the cervix on her Pap smear 9 months after the initial surgical intervention. Although operative interventions for TOA are usually urgent and preclude detailed preoperative examination, thorough postoperative investigations should be performed to exclude concomitant malignancy in postmenopausal women with TOA [1,2,4].

Gynecologic or enteric malignancy increases the risk of TOA because of the following mechanisms. First, an advanced cervical or endometrial cancer may impair the endocervical barrier, rendering it more prone to infection or causing obstruction and subsequent entrapment of blood and upper genital tract secretions, which may serve as a culture medium and subsequently lead to development of pyometra and/or TOA [2,5]. Second, local impairment of vascular supply and tissue necrosis by the malignancy also predispose to infection [1,2,5]. Third, it seems reasonable to suggest that direct seeding from an infected tumor or perforation of enteric tumors is a cause of abscess development [4,6]. Finally, the malignancy may alter the host in such a manner as to predispose to infection through generalized immunosuppression [1].

Generally accepted indications for TOA surgery in reproductive age women are signs of ruptured abscess, failure to respond to medical therapy and questionable diagnosis [1]. However, the presence of TOA has been proposed as an additional indication for surgery in postmenopausal women [1–3,6], based on the fact that these patients are usually at higher risk of serious consequences secondary to rupture with resultant septicemia. Further, conservative treatment may lead to unnecessary delays in the diagnosis of occult cancer [2,7].

Conservative surgical procedures, in which the uterus is left in place and any normal ovarian tissue is preserved, may be an acceptable procedure in cases where preservation of fertility and hormone function is desired [7].

Nonetheless, more radical surgery without preservation of ovarian tissue may be a treatment strategy for postmenopausal women to prevent abscess recurrence. Both of our patients who underwent transabdominal drainage as the initial surgical intervention (cases 3 and 8) experienced abscess recurrence and sepsis, with one eventually dying from concomitant pelvic cancer not found during initial abscess drainage. While conservative surgical intervention (i.e. drainage of abscess or unilateral adnexectomy) may be adopted by the gynecologist as the preferred treatment strategy for TOA in postmenopausal women, detailed preoperative and even postoperative investigations for occult gynecologic and enteric cancer should be performed to ensure the long-term efficacy of treatment.

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