ORIGINAL ARTICLE

A Three Year Review on Surgical Treatment of Tubo-Ovarian Abscess

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Summary

The authors made a 3-year retrospective study of cases of tubo-ovarian abscess surgically treated in KK Women's and Children's Hospital. In the period studied (1998 through 2000), there were 36 such cases. A total of 11 patients underwent laparoscopic treatment while 25 patients underwent laparotomy. The study demonstrates the differences in the patient profile and the short term morbidity in each mode of surgical treatment and the changing trends in the surgical treatment of tubo-ovarian abscess.

Key Words: Tubo-ovarian abscess, Laparoscopic treatment, Laparotomy

Introduction

Pelvic inflammatory disease (PID) is a common gynaecologic disorder. One known complication of PID is the formation of tubo-ovarian abscess (TOA). The predominant theory on TOA formation postulates an ascending infection from the cervix through the uterus to the fallopian tubes and ovaries. The infection may be a result of sexually transmitted diseases or an instrumentation of the female genital tract. Other theories include seeding via a hematogenous infection, diverticular disease and appendicitis.

The management of TOA remains controversial. While the first line treatment is usually medical therapy, there are occasions when abscesses may not be adequately eradicated by antibiotics and require surgical drainage or extirpation. The debate revolves around the timing, the types and the approach of surgery. While some studies[1,2] had advocated prompt surgical intervention with complete removal of the uterus and adnexa, others[3,4,5] reserved surgery for patients who fail to respond or in whom there is suspicion of rupture. The traditional approach advocates laparotomy with procedures ranging from a simple drainage of the abscess, to adnexectomy, or even hysterectomy, depending on the clinical circumstances and the patient's condition. Currently, there is an emerging role of laparoscopy as a therapeutic modality for PID with TOA[6,7,8,9].

This is a small retrospective study of 36 cases over a 3 year period. Its aim is to document the changing trends in the management of TOA and study the clinical outcome of these patients.

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Materials and Methods

Between January 1998 to December 2000 (36 months), 36 female patients underwent operative treatment for tubo-ovarian abscess. All patients had a complete history taken, physical examination performed, routine laboratory tests (white blood cell count, high vaginal swabs and culture swabs from tubo-ovarian abscess) performed and selective radiographic imaging examination by ultrasonography (US) or computed tomography (CT).

All patients received pre-operative and post-operative antibiotherapy. While there was no standardized regime of intravenous antibiotic administration, all patients received broad spectrum coverage with either penicillin or cephalosporin for gram-positive bacteria, an aminoglycoside for gram-negative bacteria and metronidazole for anaerobes. The average duration of antibiotic therapy was 72 hours before surgery was performed (range from 30 hours to 148 hours) and the total duration of antibiotic therapy was 8 days (range from 7 to 14 days).

While the mainstay of treatment was conservative with antibiotics, surgery was considered if there is a failure to respond either clinically as evidenced by persistent fever and abdominal pain or tenderness, or haematologically by failure of reduction in leucocyte count. Failure of conservative therapy was considered if the patient did not respond after at least 72 hours of intravenous antibiotics. There were, however, two patients who required operation after 30 hours of antibiotics as they developed acute abdomen. These two patients underwent laparoscopic surgery.

Eleven (30.5%) patients underwent laparoscopic treatment while 25 (69.5%) patients underwent laparotomy. The procedures performed ranged from simple drainage with or without adnexectomy to total hysterectomy and adnexectomy.

Result

A) Patient Bio-Data and Risk Factors

The 36 patients had a mean age of 40.94 years (range 18 - 63 years old) with a mean parity of 1.58. No data was available regarding the sexual behavior and the number of sexual partners these patients had. There were 10 (40%) patients who had some form of instrumentation of the female genital tract while 1 (2.8%) patient reported an appendicectomy operation 2 weeks prior to the occurrence of the tubo-ovarian abscess. Of the 10 patients who had instrumentation of the female genital tract, 7 had intra-uterine contraceptive device usage, 2 had dilatation and curettage performed two weeks prior to the TOA and 1 had intra-uterine insemination performed 2 weeks prior to the TOA. Thirty-three patients (92%) had their operations done during the acute admissions, while 3 patients (8%) had the operations performed at a later elective date. The latter 3 patients all underwent total hysterectomy with bilateral adnexectomy.

B) Types of Procedures

The types of operative treatment are presented in Table I.

Table I : Types of operative treatment

	Laparoscopy (n = 11)	Laparotomy (n = 25)
Drainage	4	7
Drainage + adnexectomy	7	6
Hysterectomy + adnexectomy	-	12

Table II : Surgical Trends

Year	Laparoscopy	Laparotomy		Total
		Drainage/Adnexectomy	Hysterectomy with adnexectomy	
1998	1	4	4	9
1999	4	6	7	17
2000	6	3	1	10
Total	**11**	**13**	**12**	**36**

Table III : Comparison between Laparoscopy and Laparotomy

	Laparoscopy (n = 11)	Laparotomy (n = 13)
Mean age / year	34	41
Mean parity	0.82	1.62
Mean operative time / minutes	90	89
Mean hospitalisation stay after operation / days	5.3	8.5

C) Surgical Trends

There is a shifting trend towards laparoscopy in the management of TOA over the last 3 years in our series. A breakdown of the number of cases done in each year is shown in Table II.

D) Comparison between Laparoscopy and Laparotomy

An analysis of the 12 patients who had a total hysterectomy and bilateral adnexectomy revealed a mean age of 46.7 year and parity of 1.91. Of these 12 patients, 3 (25%) patients had bilateral TOA.

When all cases of total hysterectomy with adnexectomy were excluded from the analysis, there were 11 patients in the laparoscopy group and 13 patients in the laparotomy group. Of the patients in both these groups, 4 (34%) had bilateral TOA; 2 had undergone laparoscopic drainage and adnexectomy while the other 2 had open drainage and adnexectomy. The size of the abscess was comparable in both groups. The differences in the 2 groups are demonstrated in Table III.

E)Complications and outcomes

There are 2 patients (5.6%) who had complications in our series. Both patients had undergone total hysterectomy and adnexectomy. One patient (2.8%) had an inadvertent bowel injury due to extensive bowel adhesion while another (2.8%) had wound breakdown due to infection. The bowel injury was discovered intra-operatively and repair was done immediately while the wound breakdown required a secondary suture. Both patients recovered well subsequently.

With the exception of 3 (8%) patients who had left the country and hence lost to follow-up, all patients were reviewed in the outpatient department. Their current status was assessed either in person in the outpatient department, or by a telephone interview.

None of the patients had required a second operation, and none had any recurrence of pelvic inflammatory disease as well. All the patients who had undergone total hysterectomy were well but 2 (1 laparotomy, 1 laparoscopy) who had

drainage complained of chronic pelvic pain and 1 patient who had laparoscopic drainage and unilateral adnexectomy complained of chronic pelvic pain and subfertility. These 3 patients were followed up in our outpatient department and ultrasonography of the pelvis did not reveal any abnormality. The cause of the pain may be secondary to adhesions.

Discussion

Patients with TOA usually present with pain and fever. Pelvic examination discloses adnexal mass or tenderness. Ultrasonography of the pelvis is commonly used in the diagnosis of TOA. A number of retrospective studies have examined the accuracy of ultrasound in the diagnosis of pelvic abscesses[10,11,12].

Initial therapy comprises appropriate antibiotherapy and careful evaluation to assess outcome of treatment. When antibiotherapy fails, surgical treatment is indicated. There remains some controversy concerning the extent and timing of operation that is appropriate for the patient requiring surgical intervention. A number of investigators[1,2] had advocated the complete removal of all reproductive organs by total hysterectomy and bilateral adnexectomy. The complications tend to be higher in view of the extent of the operation which is usually complicated by extensive adhesions and the contaminated nature of the procedure. The alternative approach[3,5,13] is a conservative one with adnexectomy for the affected adnexa (e) or simple drainage, especially in young patients. This offers the advantage of future fertility and avoidance of physiologic and psychologic effects of hysterectomy and gonadectomy.

With the advent of laparoscopy, there is an emerging role of its use in the management of TOA. From being a simple diagnostic procedure to current advances as a therapeutic modality, numerous studies[6,7,8,9] had reported successful outcome with laparoscopic treatment of TOA. These studies however are small series based on the experience of expert laparoscopic surgeons.

Though laparoscopy is the preferred management option for all suspected cases of acute PID, we did not subscribe to its use in the routine management of PID. Most of our cases are still treated conservatively and laparoscopy is mainly reserved for cases where there is an uncertainty in diagnosis. This is because laparoscopy, though advocated as the most accurate tool for diagnosis, carries its inherent surgical risk.

In our series, we had 12 patients who had total hysterectomy and bilateral adnexectomy and 24 patients who had conservative surgery. The former group was generally older with mean age of 46.7 and fertility was no longer an issue. This probably accounts for the surgeon's decision for the complete removal of all reproductive organs and in such instances, laparotomy is generally preferred.

In the conservative group, we have 11 patients who had undergone laparoscopy and 13 patients who had laparotomy. The group which had laparoscopy was younger (34 years old vs. 41 years old) and was of lower parity (0.82 vs. 1.62) compared to the group who had laparotomy. The decision for either mode of operation was dependant on the surgeons' preference and technical capability, and other factors such as patients' previous surgery. The size of the abscess did not appear to be a determining factor in this decision. None of the patients in the laparoscopy group had required conversion to laparotomy. We recognise that surgeons who are more proficient in laparoscopy had a higher tendency to offer laparoscopy as a surgical option.

When a comparison was made between the laparoscopy group and the laparotomy group with regards to operative time and post-operative

hospitalisation stay, the operative times for both groups were almost similar (90 minutes vs. 89 minutes) and the post-operative hospitalisation stay was shorter in the laparoscopy group (5.3 days vs. 8.5 days). Though one would expect a longer operative time for laparoscopy, the almost similar operative time that we observed in the 2 groups was indeed encouraging. The shorter post operative recovery period for the laparoscopy group also meant that the patients could be discharged earlier than the laparotomy group.

There were no significant complications observed in the laparoscopy group in this small series. We believe that this may be due to early surgical intervention when the pelvic adhesions from TOA is still relatively not dense. We would, however, like to emphasise that these were complicated laparoscopic procedures and an appropriate level of surgical expertise, and experience, is essential for good outcome.

Finally, in our series, we also found a shifting trend towards laparoscopy with increasing number of cases performed laparoscopically with each successive year. Indeed the role of laparoscopy has gained importance in the current management of tubo-ovarian abscess.

Conclusion

The incidence of tubo-ovarian is expected to increase as a result of the current epidemic of sexually transmitted diseases and their sequelae. Operative management favours a conservative approach with unilateral adnexectomy for one-sided tubo-ovarian abscess if future fertility or hormone production is desired. Laparoscopic treatment seems to be useful in the management of tubo-ovarian abscess with similar short term outcome as laparotomy. The long term success remains to be seen. Continuous follow-up of these cases will be useful to determine the ultimate success of laparoscopic treatment.

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