

Ovarian Dermoid Cyst- Management by Laparoscopy Versus Laparotomy

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Abstract

Background: Benign cystic teratoma or dermoid cysts are germ cell tumour of the ovary which accounts for 20-25% of all ovarian tumour and are bilateral in 10-15% of cases. These tumour have a low incidence of malignancy, reported as 1-3%. The aim of the study is to determine the safety and efficacy of the laparoscopic management of ovarian dermoid cyst over laparotomy. **Methods:** This prospective study was conducted in the Department of Obstetrics and Gynaecology, BIRDEM-II General Hospital, from January 2013-December 2018. During the study period, a total of sixty subjects were included for comparison. Thirty patients were selected for laparoscopic ovarian cystectomy and another thirty patients were selected for laparotomy. They were randomly selected for the procedures. **Result:** Thirty patients with ovarian dermoid cyst undergoing laparoscopic surgery were compared with thirty patients with ovarian dermoid cyst undergoing laparotomy in respect to selection criteria, surgical procedures, operation time, blood loss, hospital stay and outcome of operation. Although the operation time for ovarian cystectomy performed by laparoscopic surgery was slightly longer (62.15 ± 16.3 min, mean \pm SD) than by laparotomy (50 ± 16.20 min, $p < 0.52$), blood loss is smaller and hospital stay is shorter in laparoscopic group than laparotomy. **Conclusion:** The laparoscopic approach is generally considered to be the gold standard for the management of dermoid cyst. We believe that laparoscopic management of dermoid cyst may be a safe and beneficial procedure when performed by experienced surgeon.

Key words: Ovary, Dermoid cyst, Laparoscopy, Laparotomy.

Introduction:

Adnexal masses are commonly encountered in gynaecologic practice and often present both diagnostic and management dilemmas¹. In premenopausal women, most adnexal masses are benign with an overall incidence of malignancy of only 1-3 per 1000 ovarian tumour².

Ovarian mature cystic teratomas, also called dermoid cyst, are the most common germ cell tumour³, accounting for up to 70% of benign ovarian masses in the reproductive years and 20% in postmenopausal women⁴⁻⁶. Immature cystic teratomas are rare (<3%) and usually occur in the postmenopausal age group⁷. In asymptomatic women, whether premenopausal or postmenopausal, with pelvic masses including ovarian mature cystic teratoma, transvaginal

ultrasound scan (TVS) is the imaging modality of choice¹.

The majority of dermoid cysts are asymptomatic and are often discovered incidentally upon pelvic examination or routine ultrasound. The potential for complications such as torsion, spontaneous rupture, risk of chemical peritonitis and malignancy usually makes surgical treatment necessary upon diagnosis⁸.

Traditional therapy for a dermoid cyst has been cystectomy or oophorectomy via laparotomy. The laparoscopic approach has become increasingly accepted since 1989. Because most patients with cystic teratomas are of reproductive age, a conservative approach is ideal; laparoscopy may minimize adhesion formation and thus decrease the chance of compromising fertility⁸.

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Ovarian mature cystic teratoma have a variety of appearances characterized by echogenic sebaceous material and calcification and typically contain a hypoechoic attenuating component with multiple small homogenous interfaces which were determined by USG with 98% accuracy in a series of 155 cases⁹.

Although ovarian mature cystic teratomas are the commonest adnexal masses occurring in reproductive age, there are many challenges faced by gynaecologists on deciding upon the best surgical management. In this study, we have evaluated the safety and efficacy of laparoscopic management of dermoid cyst over laparotomy.

Methods:

This randomized control trial was conducted in the Department of Obstetrics and Gynaecology, BIRDEM-II General Hospital, from January 2013-December 2018. A total of sixty subjects were included. Thirty patients were selected for laparoscopic ovarian cystectomy and another thirty patients were selected for laparotomy. They were selected for this procedure by generally random number taken from the computer.

The selection criteria for the procedures included:

1. No personal or family history of gynaecologic, breast and colorectal cancer
2. Typical features of dermoid cyst with no sign of malignancy on pelvic examination, transvaginal

ultrasound computed tomography or magnetic resonance imaging

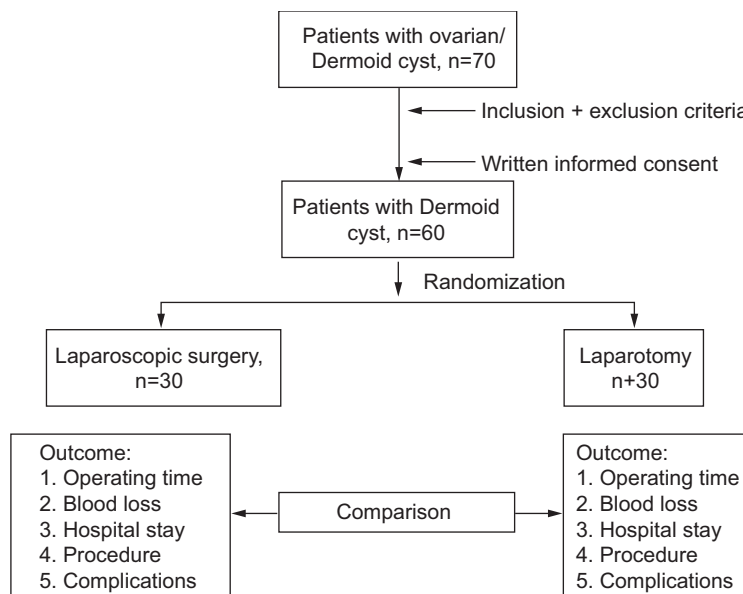
3. Level of tumour markers such as CA125 and CA19-9 within normal limits and
4. Preoperative counselling including information about the risk of complications as well as the possibility of conversation to laparotomy in cases of suspected malignancy.

The exclusion criteria were as follows:

1. Did not agree to take part in study
2. Ovarian cyst with complications
3. Any feature of malignant ovarian tumour.

Informed written consent was obtained from each patient or her family member after making sure that they had a full understanding of the laparoscopic procedure and randomization. Another thirty patients with dermoid cyst underwent laparotomy during the same period.

All of them were extensively investigated, and benign dermoid cyst was diagnosed preoperatively. The histopathologic diagnosis was benign ovarian dermoid cyst in all patients in the two groups. All of the patients were reviewed with respect to the indications, methods, operating time, intraoperative, postoperative complications, blood loss, hospital stays and procedure.



Results:

Thirty patients with ovarian dermoid cysts, diagnosed clinically and radiologically, undergoing laparoscopic surgery were compared with thirty patients with ovarian dermoid cysts undergoing laparotomy, in respect to the selection criteria, surgical procedures, operating time, blood loss and hospital stay. All cases were unilateral dermoids.

Parameters including age, parity and body mass index were comparable between the two groups shown in table I:

The operating time for ovarian cystectomy performed by laparoscopic surgery was slightly longer (62.15 ± 16.13 min, mean \pm SD) than laparotomy (50 ± 16.20 min, $p < 0.52$). Blood loss and haemoglobin change in the laparoscopy group was significantly lower in comparison to laparotomy group. Hospital stay was

also significantly shorter in laparoscopy group than laparotomy group. (Table II)

In case of laparotomy, the spillage happened in twenty-one cases that were managed by suction and toileting. In case of laparoscopy, spillage occurred in seventeen cases but managed by forceful jet-lavage aspiration.

Spillage of cyst contents occurred in 55.66% of cases of laparoscopy, whereas it occurred in 70.0% cases of laparotomy. Postoperative complications, including wound infections, cellulitis, pyelonephritis, and fever, requiring intravenous antibiotics were in 7 cases among Laparotomy group. Torsion was present in 2 and 9 cases of Laparoscopy and Laparotomy group respectively. Regarding procedures done in 2 groups, difference was statistically significant. (Table III)

Table-I
Anthropometric characteristics of the patients

Variables	Laparoscopy (N=30)	Laparotomy (N=30)	P value
Age	34.09 \pm 9.18	34.73 \pm 9.6	0.95
Para	0.79 \pm 1.1	0.95	0.42
BMI (Kg/m ²)	21.29 \pm 2.52	21.14 \pm 2.61	0.81

Table-II
Surgical outcomes of the study subjects

Variables	Laparoscopy (N=30)	Laparotomy (N=30)	P value
Operation time (minute)	62.15 \pm 16.13	50 \pm 16.20	0.52
Blood loss (ml)	18.2 \pm 1.7 ml	105.9 \pm 84.3	< 0.001*
Hospital stay (hours)	16.9 \pm 4.0	30.8 \pm 5.7	< 0.001*
Hemoglobin change (g/dL)	0.9 \pm 0.7	1.5 \pm 1.0	0.006*

Table-III
Outcome of the operation

Variables	Laparoscopy (N=30) Frequency(%)	Laparotomy (N=30) Frequency(%)	P value
Spillage	17 (55.66)	21 (70.0)	0.004 *
Postoperative complications	3 (10.0)	7 (23.33)	0.003*
Torsion	2 (6.66)	9 (30.0)	0.0306*
Procedure done			
Cystectomy	21 (70.0)	35 (76.66)	.002*
Adnexectomy	1 (3.033)	0	-
Oophorectomy	1 (3.33)	3 (10.0)	.004*

1. P-values for the continuous variables correspond to two-tailed Mann-Whitney tests

2. P-values for the discrete variables correspond to chi-square tests except for the one for postoperative complications, which corresponds to a two-tailed Fisher's exact test

Discussion:

Dermoid cysts are the most common benign ovarian neoplasm occurring in the childbearing age. Conservative surgical approach with the least chance of adhesions is demanding to preserve future fertility. The outcome that differ when the laparoscopic approach to dermoid management was comparable with laparotomy includes length of surgery, blood loss, length of hospital stay, post operation adhesions and cosmetic result.

Blood loss and hospital stay in laparoscopy and laparotomy groups in our study are comparable to those reported by other investigators^{10,11}. In the last two decades, two randomized controlled trials (RCT) including 42 laparoscopic operations versus 42 laparotomy operations^{4,10} and nine retrospective comparative studies including 655 laparoscopic operations versus 409 laparotomy operations for ovarian mature cystic teratoma highlighted the superiority of the laparoscopic approach over laparotomy¹²⁻²⁰. A systematic review of six RCT compared the laparoscopic approach with laparotomy in a total of 324 women undergoing removal of ovarian cysts of various natures. Laparoscopy was associated with reduced febrile morbidity, postoperative pain, postoperative complications, overall cost, and earlier discharge from hospital²¹.

Nonetheless, the laparoscopic approach was significantly associated with longer operating time^{16,19} and higher contents spillage rate^{16,18}. It was reported that contents spillage occurred in one-third of the laparoscopic cases and it was particularly associated with larger cysts and also in those cases treated with cystectomy¹⁶. Laberge and Levesque found that laparoscopic approach was significantly associated with longer operating time, higher rate of contents spillage (18% versus 1%), and higher rate of recurrence rate after laparoscopic ovarian cystectomy (7.6% versus 0%) when compared with laparotomy¹⁹.

The guidelines of The Royal College of Obstetricians and Gynecologists (RCOG) in the UK recommend that when surgery is indicated, a laparoscopic approach be generally considered to be the gold standard for the management of all benign ovarian masses. Laparoscopic management is also cost-effective because of the associated earlier discharge from hospital and return to work. In the presence of

large masses with solid components such as large mature cystic teratoma laparotomy may be appropriate. The maximum cyst size above which laparotomy should be considered is controversial². Some investigators recommended laparotomy for mature cystic teratoma >10 cm¹⁴.

In summary, laparoscopic management of dermoid cyst is a safe and beneficial procedure when performed by an experienced surgeon in a patient with tumour size less than 10cm, and when preservation of fertility is concerned.

Conclusion:

The laparoscopic approach is generally considered to be the gold standard for management of dermoid cyst. A laparoscopic approach allows proper exposure of the cul-de-sac and forceful jet-lavage aspiration, ensuring pelvic clean out from any microscopic material of the dermoid cyst. This situation may not be available during open laparotomy. Thus, we conclude that laparoscopic management of dermoid cysts is a safe and valuable method in selected cases. The phobia of complications due to cyst rupture during laparoscopy has no scientific basis.

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