

## Evaluation of Laparoscopic Approach in the Management and Outcome of Benign Adnexal Masses

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### Abstract:

**Background:** Adnexal masses are one of the most common diseases affecting women of all ages. Adnexal masses are frequently accompanied by symptoms such as dyspareunia, bloating, increased abdominal girth, pelvic pain, irregular vaginal bleeding, and abdominal pain. This study assessed the feasibility of laparoscopic management of adnexal masses predicted to be benign.

**Methods:** A cross-sectional study was conducted on 50 women presenting with adnexal masses which were benign at the Department of Obstetrics and Gynaecology, SCB Medical College, Cuttack, Odisha, India. The duration of the study was 12 months. All the women fulfilling the inclusion and exclusion criteria were then taken up for laparoscopic management.

**Results:** Laparoscopy was completed in 49/50 patients (98%) and converted to laparotomy in one case. Most common indication of procedure was ovarian cyst; others were dermoid cyst, endometriotic cyst, hydrosalpinx, and adnexal mass. There were mild adhesions (16%) and dense adhesion (2%). Three patients had intraoperative blood transfusion as they were anaemic preoperatively. Mean duration of surgery ranged from 50 minutes to 100 minutes. Most patients were discharged after 2 days and advised to abstain for 2 months, avoiding heavy work. Histopathological reports correlated with laparoscopic findings. Patients were called for follow-up visit after 6 weeks of surgery or earlier if any problem occurred. None of the patients had any major complaints.

**Conclusion:** Laparoscopy is effective in the management of benign adnexal masses. It helps in reducing hospital stay as well as reducing hospital-acquired infections. It is cost-effective, thus reducing hospital stays and reducing early discharges. It is also cosmetically better than laparotomy. However, selecting cases for laparoscopic management of adnexal mass is important.

**Keywords:** Adnexal Masses, Cyst, Endometriosis, Laparoscopy, Laparotomy, Management.

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### Introduction

Adnexal masses are one of the most prevalent diseases and the fourth most frequent gynaecological reason for hospitalisation among women of all ages is . It represents a spectrum of conditions from gynaecological and non-gynaecological sources. They may be benign or malignant, with 90% having benign characteristics [1]. Adnexal masses are frequently accompanied by symptoms such as dyspareunia, bloating, increased abdominal girth, pelvic pain, irregular vaginal bleeding, and abdominal pain. Common pathologies presenting as adnexal masses are endometriosis [2], ovarian cyst [3], tubo-ovarian abscess (TOA) [4], ovarian torsion [5], hydrosalpinx, and parovarian cyst [6].

Management of adnexal masses poses a two-sided problem. The challenge lies in the need to stage a laparotomy and undertake significant surgery for a benign condition. Still, there is also a risk that the procedure may not reveal a malignant diagnosis [7]. Therefore, it would appear that it is critical to determine the risk profiles of all patients who have adnexal masses to maximise the benefits of minimally invasive surgery when it is appropriate and appropriately do staging laparotomies when necessary.

The technological revolution has given new insights in every field of science in general and the medical science in particular. The treatment modalities are changing day by day according to the technologically modified procedures which is

possible due to the advent of very new and sophisticated instruments. This has facilitated the changing trends in diagnostic and therapeutic aspects of gynaecology, which is evolving to include minimally invasive treatment and daycare surgery.

A narrow telescope-like equipment is inserted through a small abdominal incision during a laparoscopy—a common surgical procedure used for diagnostic and therapeutic purposes, particularly in gynaecological conditions. Early recovery, a shorter hospital stay, and high patient satisfaction have all been linked to laparoscopic surgery [8]. Semm, a gynaecologist at Kiel School in Germany, has been called the father of modern laparoscopic surgery. Swedish surgeon Hans Christian Jacobaeus is credited with coining the term laparoscopy.

The benefits of laparoscopic management have been demonstrated in many cases, ectopic pregnancies, tubal infertility, endometriosis, pelvic infections, and adnexal torsion. Laparoscopy is progressively replacing laparotomy for managing benign gynaecological pathology. Compared with laparotomy, laparoscopy has more benefits for the patient and reduces health care costs [9].

Many of the laparoscopic operations are carried out as day case procedures and costs can be further reduced by using a dedicated day surgery unit in the hospital<sup>[10]</sup>. However, this approach is used over conventional studies for procedures where the medical and therapeutic benefits are not as well established and prospective studies are still needed.

## Materials & Methods

**Research Design:** A cross-sectional study was conducted on 50 women presenting with benign adnexal masses at the Department of Obstetrics and Gynaecology, SCB Medical College, Cuttack, Odisha, India. The study duration was 12 months, from October 2019 to September 2020. The study commenced after taking ethical clearance from hospital ethical committee.

### Inclusion criteria

- Ultrasonographically diagnosed cases.
- Ovarian pathologies including ovarian neoplasms, ovarian cyst, endometrioma, tubo-ovarian abscess, tubal pathology including hydrosalpinx and tubal neoplasms, broad ligament fibroid, fimbrial cysts, and paraovarian cyst.
- Those with failed medical or conservative treatment.

### Exclusion criteria

- Ultrasonographical evidence of genital malignancy such as the presence of septated cysts,

papillary projections, pulsatility index (PI), and low vascular resistance (RI).

- Hemodynamically unstable patient.
- Morbidly obese.
- Underlying cardiac, pulmonary disease patients.
- Pelvic peritonitis.
- Inflammatory bowel disease.

The patients were examined, investigated, and reviewed. The informations were recorded in the proforma of the study. Routine investigations along with ultrasonography of abdomen and pelvis with Doppler, Transvaginal sonography were performed. Other investigations were done, such as PAP smear of cervix, chest X-ray, and Electrocardiogram (ECG). Those who fit into the inclusion criteria were explained the disease for which operation was being planned, the treatment procedure, risk factors and surgical outcomes. They were included only after taking their written consent.

During the laparoscopy, a 10 mm umbilical port was used to insert a 0° telescope. Two additional 5 mm ports were made, one on the left iliac fossa, 1.5 cm medial and anterior to the anterior superior iliac spine, and the other on the left lumbar region in the umbilicus plane. The pelvis and abdomen were thoroughly visualised, and any fluid that might have been present was aspirated and submitted for cytology. The dimensions, form, position, and characteristics of the adnexal mass, the opposing ovary, their surface, adhesions and ascites, and their size were noted. Biopsy was taken from any suspicious area. After that, bipolar coagulation of the infundibulopelvic ligament was done, followed by coagulation of ovarian ligament and fallopian tube to ensure the complete resection of the pedicle. The capsule was removed from the ovarian surface using two graspers for traction and counter traction if a cystectomy was to be performed. The bleeding vessels near the capsule's base were coagulated using bipolar forceps. The margins of the capsule were let to heal naturally without suturing after establishing haemostasis. All the operative details were noted.

**Statistical Analysis:** Statistical analysis was conducted using SPSS version 25.0.

## Result

The mean age of the study participants was  $31.80 \pm 4.37$  years and ranged from 20 years to a maximum of 40 years (Figure 1). Age group-wise distribution revealed that 48% belonged to less than 30 years and 52% belonged to more than 30 years of age (Table 1). Almost two-thirds of the patients had parity less than 2 (66%), while the rest had parity more than or equal to 2. Equal proportion of the participants had live birth less than 2 (66%) and live births more than equal to 2 (34%). About 26%

were nullipara and participants had parity up to 3. Similarly, 26% had no live births while some of the

participants had live births up to 3 (6%).

**Table 1: Age group-wise distribution and obstetric history of the study participants (N =50).**

Age group (in years)	Frequency	Percentage (%)
< 30	24	48
≥ 30	26	52
<b>Obstetrics history</b>		
Parity		
< 2	33	66
≥ 2	17	34
Live birth		
< 2	33	66
≥ 2	17	34

The chief complaints among the majority of study participants were pain abdomen (64%), followed by dysmenorrhea (14%) and irregular cycles (12%). Only 2% of study subjects reported infertility (2%) and no specific symptoms (8%).

Table 2 shows that few participants had a history of previous surgery. Surgical procedures undergone by the participants were appendectomy (6%), cholecystectomy (2%), and lower segment

caesarean section (LSCS) (14%). The majority of the subjects underwent unilateral laparoscopic cystectomy (84%), followed by bilateral laparoscopic cystectomy (6%), oophorectomy (6%), and salpingectomy (4%). Adhesion of the tumor was seen in 9 patients (18%) and out of them one (2%) patient had dense adhesion while 8 (16%) had mild adhesion.

**Table 2: History of surgery and current surgical procedure on study participants (N=50).**

Obstetrics history	Frequency	Percentages (%)
<b>Previous surgery</b>		
Appendectomy	3	6
Cholecystectomy	1	2
LSCS	72	14
None	39	78
<b>Surgical procedure</b>		
Bilateral lap cystectomy	3	6
Lap unilateral cystectomy	42	84
Oophorectomy	3	6
Salpingectomy	2	4

A description of the size of the tumor is given in Table 3. Mean length of the tumor was  $8.11 \pm 1.66$ , while mean breadth and height of the tumor as  $7.35 \pm 1.72$  and  $6.16 \pm 1.19$ , respectively.

**Table 3: Description of the tumor size among the study participants.**

Size	Minimum	Maximum	Mean	SD
Length	5.0	10.6	8.11	1.66
Breadth	4.20	10.5	7.35	1.72
Height	4.0	8.0	6.16	1.19

Blood transfusion during the surgery was required in three patients (6%), while conversion to laparotomy was done in one patient (2%). Major postoperative complications seen were nausea (26%), followed by head reeling (22%), vomiting (18%), and pain (8%). Details of the post-operative complication are seen in Table 4.

**Table 4: Postoperative complications suffered by study participants.**

Complication	Number	Percentages (%)
Head reeling	11	22
Nausea	13	26
Pain	4	8
Vomiting	9	18
None	13	26

Histopathological feature of the tumor suggest that majority of the tumors/growth/cyst were serous cysts (28%), followed by dermoid cyst (18%), mucinous cyst (16%), chocolate cyst (12%). Other histopathological features seen in the study participants were functional cyst (2%), haemorrhagic cyst (10%), hydrosalpinx (4%), and simple cyst (8%).

Mean duration of the surgery ranged from 50 minutes to 100 minute with an average time of  $67.04 \pm 12.22$  minutes. Mean blood loss among the study participants during the surgery was  $256 \pm 96.7$  ml. Duration of hospital stay ranged from 1 day to 3 days with average hospital stay of 1.84 days (Table 5).

**Table 5: Description of intra-operative factors among the study participants.**

Size	Minimum	Maximum	Mean	SD
Duration of surgery (in min)	50	100	67.04	12.22
Blood loss (in ml)	100	500	256.00	96.70
Duration of stay (in days)	1	3	1.84	0.46

## Discussion

Advancements in optics, illumination, video technology, and instrumentation have expanded the scope of laparoscopy beyond its diagnostic applications to include operative laparoscopy [11]. Many conventional surgical procedures for the abdomen or pelvis can now be completed with a minimally invasive technique employing a laparoscope as the number of laparoscopic procedures rises [12]. Gynaecologists are currently using laparoscopic surgery more frequently to treat a variety of conditions, including endometriosis, adhesiolysis, adnexal surgery, laparoscopic pelvic floor repair, laparoscopic-assisted vaginal hysterectomy, and total laparoscopic hysterectomy [13].

The sample size of the present study was comparable to that of a study by Suguna *et al.* [1], both included 50 cases. The mean age of participants was  $31.80 \pm 4.37$  years and ranged from 20 years to a maximum of 40 years in the present study, similar to a study by Mohan *et al.* (mean age 35.85 years) [7]. About two-thirds of the patients in the present study have a parity of less than 2 (66%), while the rest had a parity more than or equal to 2. An equal proportion of participants had live birth (66%) and 26% were nulliparous. Suguna *et al.* [1] reported similar results, as 56% were parous ladies while 20% were nulliparous. Pain abdomen (64%) was the chief complaint in the present study, whereas infertility was on lower side (2%). Such findings were concordant with studies by Badkur *et al.* [14], Edmonds *et al.* [15], and Salem *et al.* [16].

The most commonly performed procedure in the present study was laparoscopic cystectomy with tissue-sparing surgery, similar to studies done by Duggal *et al.* [17] and Deligeoroglou *et al.* [18]. Our study's size of adnexal masses varied from 5 to 10 cm. The standard deviation and mean was very similar to a study by Mais *et al.* [19], the mean diameter of cyst being  $6.7 \pm 1.6$  cm. Vomiting, pain, head reeling were on the higher side, but the complications were not major, and it was well

managed postoperatively. These results coincides with the study by Yuen *et al.* [20] that reported 3.8% urinary tract infection and 5.8% febrile morbidity during the postoperative period.

Mean blood loss among study participants during surgery was  $256 \pm 96.7$  ml. These values differed from those of Duggal *et al.*, who found an average blood loss of 155 ml [17]. Duration of hospital stay ranged from 1 to 3 days, with average hospital stay of 1.84 days. Laparotomy case was discharged after 3 days. Study done by Sidhmalswamy *et al.* [21] had hospital stay of range of 2 days. Histopathological feature of tumor suggested that majority of tumor/cyst/growth were serous cysts (28%), followed by dermoid cysts (18%), mucinous cysts (16%), and endometriotic cyst (12%); none resulted in malignant histology. Histopathological reports correlated with laparoscopic findings. In another study, Sidhmalswamy *et al.* found that serous cystadenomas were the most common type of cysts [21].

## Conclusion

The current investigation evaluated the current state of the laparoscopic technique for mostly benign adnexal tumours. It was possible to treat adnexal masses using normal surgical guidelines because of a meticulous preoperative diagnostic. Laparoscopy has proven to be the gold standard for assessing the surgical treatment of these tumours. Ultrasonography is an adjunct tool which may aid in diagnosis along with tumour markers.

The treatment of adnexal masses using laparoscopy constantly evolves due to technological advancements and surgical skills. As the technology improved low complication rate for operative laparoscopy have been reported. It is now considered the preferred treatment for managing benign adnexal masses. Gynecologic oncologists are using this strategy to treat ovarian, cervical, and endometrial cancer.

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