

Undiagnosed Adnexal Masses: Can be Managed by Laparoscopy Assisted Colpotomy?

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Abstract

Laparoscopic procedures were moved ahead in management of gynecological problems. Improving the skill makes rate of complications of this procedure is low. Recently, it is believed the chosen practice for delighting adnexal Lesions. As Posterior colpotomy is applied only in laparoscopic hysterectomy. So, this study aimed to evaluate the safety and potential advantages of laparoscopy when assisted by colpotomy for organization of undiagnosed masses in adnexa through estimation of intraoperative events such as estimated blood loss, operative time and complications also postoperative pain and complications.

Patients and methods: Retrospective study on 200 patients underwent laparoscopy assisted by colpotomy for managing an adnexal mass From December 2011 to November 2014. At laparoscopic unit of Zagazig University Hospitals 190 cases had completed procedure. Laparoscopy was renovate to open surgery because of practical complexities in inclusion in 6 case, in other 3 cases due to dense adhesions intra abdominally and one case as a result of bleeding which was so difficult to be managed securely by laparoscopy.

Results: Our study consisted of 200 women underwent laparoscopy due to adnexal mass which was diagnosed clinically benign and assisted by colpotomy for removal of adnexal mass. The average operative time was estimated statistically by the mean =75 minutes (SD \pm 19), and the blood loss was estimated by median 40 mL (range 10-200). Pain scores on a 10 cm visual analog scale showed estimated mean time of pain by hour is 1.4 hour (\pm 1.9), 1.6 hour (\pm 1.8) and 0.6 hour (\pm 1.3) for 1 hour, 3 hour assessment and 24 hours after incision closure. Histopathologically showed endometriosis was the most common as diagnosed in (35.7%), Dermoid in (27.3%), Cystoadenoma in (13.1%), Ovarian fibroma in (8.9%), Functional cysts in (6.8%), paraovarian in (3.1%), Malignant ovarian tumor in (2.6%) and Border cell tumor in (2.1%).

Conclusion: The advancement of laparoscopic procedure enhanced the management of most cases of the adnexal masses after careful evaluation assisted by colpotomy and so, offering the potential for safe, effective and minimally invasive initial surgical evaluation.

Keywords: Laparoscopy; Adnexal mass; Benign colpotomy; Minimally invasive

Introduction

In excess of the last years, laparoscopic skills proceeded in use of laparoscopy in gynaecologic field. Now, Laparoscopic route is coming close to treat adnexal lesions safely [1]. Masses of Adnexa are moderately common, cancer of ovary has unfocused warning signs and is generally soundless in its premature periods. Currently, there is no dependable test for screening of cancer ovary, and there is bounded capability to identify it using existing diagnostic strategies [2,3].

A variety of researches have deal with the possibility of malignancy in masses of ovary. This ranges from 0.38% to 18.67% and is dependent on residents [4].

In 1990, some authors suggested scoring systems which have relayed ultrasound features, CA 125, history of family, and other changeable in expecting the possibility of malignancy [5]. At 2002, the American College of Obstetricians and Gynaecologists assessed the different predictors of malignancy of ovary and put referral criteria [6]. Surgical staging of ovarian tumor, histological subtype and grade of differentiation are very important factors for predicting the prognosis of tumor [7]. Early ovarian cancer was diagnosed in about 25% of patients. Five year survival of those patients is impending 90%. Microscopic metastasis presents in 20% of EOC on staging. So, careful staging is critical irrespective of the novel surgical alertness [8]. Laparoscopy was widely accepted as a standard diagnostic and therapeutic method for low risk adnexal masses. But, still using it in malignant masses is under trial [9].

Laparoscopy proffers several advantages over the conventional laparotomy approach including smaller size of incisions, enhanced visualization, decreased blood loss, and sooner recovery. Years ago, progress in laparoscopic practices have led to augmented apply of it in surgery of gynecological origin [4,5]. In recent times, technical information has sustained the perception that the laparoscopic advance for managing adnexal masses is now believed the favoured management [10]. The concern of the advancement laparoscopic managing of adnexal masses has relation to complexity of surgery attributable to individual required proficiency, anxiety about involuntary detection of malignancy and consequent upstaging and the elevated hazard of spillage [11,12]. A lot of procedures have been urbanized in the last years to reduce risk of spillage or unintended break. These techniques are embracing draw on endobags [13], and elimination throughout a culdotomy.

Recently, many researchers get no dissimilarity in death rates

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between patients undergoing a laparoscopy or laparotomy in females with obvious premature cancer ovary or borderline tumours [14]. Posterior colpotomy has been expressed as a way for sample rescue as early as 1896 when Howard Kelly accounted 10 cases of ectopic pregnancies controlled by the vaginal course. Colpotomy is achieved in favour to expanding an abdominal wound, as the vagina is recognized to be more distended than rectus fascia and permits in favour of a bigger opening with no contact on the possibility of postoperative complications such as ileus or abdominal wall hernia development [15]. Transvaginal elimination of samples through laparoscopic removal of adnexal masses is linked with less postoperative pain than transumbilical removal also; reduce the need for another incisions or amplification of the trocar incision [16]. Posterior colpotomy has been expansively certificated in the ancient times but has dropped out due to technical difficulties and its possible complications [17]. Recently this good-looking road has been re-established and successfully utilized to set free solid and semisolid masses next to operative laparoscopy and became a safe and easy to learn as long essential surgical standards for example the use of preoperative prophylactic antibiotics and high-quality haemostasis. To stay away from spillage, which may happen with this procedure, an assisted laparoscopic- adaptation using an endoscopic bag has been expressed, this lets big solid samples to be eliminated safely and with minimal spillage [18].

This study aimed to evaluate the safety and potential advantages of laparoscopy when assisted by colpotomy for management of adnexal masses through estimation of intraoperative and postoperative outcomes.

Materials and Methods

This is a retrospective review of 200 women who attending the obstetrics and gynecology department in Zagazig University hospital from December 2011 to November 2014 and underwent laparoscopic management of an adnexa l mass. The protocol of our study was approved by the local ethical and research Committee of Zagazig University Hospitals. Patients either cropped up through the practice or were referral patients due to pelvic mass, pain, or as an accompanying discovery on imaging investigations achieved for other suggestions. All patients had Routine preoperative evaluation; included : full history taking, physical examination, Transvaginal ultrasound with Doppler studies, may computed tomography (CT), may magnetic resonance imaging (MRI) and The levels of tumor markers particularly CA 125 (normal range 0-35 mU/L).

Criteria of preoperative evaluation must be suggesting benign ovarian mass. SO, inclusion criteria were: No malignant ultrasonic data such presence of septations, papillary protrusions, low vascular resistance (RI), and pulsativity index (PI). Criteria of Exclusion were known laparoscopic contraindications for example; medical reasons or high BMI). All participants were managed by operative laparoscopy, resection of adnexal mass, bagging and colpotomy. All of them were given prophylactic antibiotics intravenous before the incision of skin. The abdomen was cleaned with chlorhexidine and a grounding of vagina was carried out with betadine. The laparoscopy was done under general anaesthesia after counselling and taking informed consent. All the procedures were carried out with the patients in the supine position with Foley Catheter was inserted. A telescope of 10 mm diameter was inserted infraumbilically to reach the peritoneal cavity which was attached to camera and video monitor system. Secondary punctures using 5 mm trocars were done.

A satisfactory pneumoperitoneum was established with a continuous CO₂ insufflation and kept an intra-abdominal pressure

of 15 mm Hg, the patient was then placed in trendenberg position. Diagnostic inspection by laparoscopy was performed thoroughly to assess the pelvis and upper abdomen. For dissection, curved dissector and scissors were used. Haemostasis was performed by using bipolar coagulation. Sutures were placed if failure of coagulation happened at any time. If there were broad adhesions between the ovary and the sidewall of the pelvis, more awareness is applied to diminish the possibility of capsular break. A predictable retroperitoneal dissection establishment by separating the round ligament, recognizing the pelvic ureter, separating and transecting the infundibulopelvic ligament helps in freeing a fixed ovary if needed. Attention is used to decrease the chance of spillage, but if occurs accidentally, forceful jet rinse was instantaneously route for suction irrigation by means of warm ringer's solution through two wide bore irrigation canulae at the same time from both minor puncture places. Jet irrigation displace and clean any oppressive debris from peritoneal surface and press on them in the direction of cul de sac to keep away from any extend to upper abdomen or make contact with viscera. A profuse quantity of fluid was employed not less than 6 -10 litres (about 20 bottles of half litre solution).

A peritoneal fluid sample/ or peritoneal washing by warm ringer solution were aspirated from the Douglas pouch for cytological examination. Just the mass became free. It was salvaged into an endoscopic bag; the retrieval bag was closed and left in abdominal-pelvic cavity. The end of string was grasped with a laparoscopic grasper. Colpotomy was achieved, when the cul-de-sac was free and the uterus was in place. Lifting up the posterior lip of the cervix, transecting the posterior vaginal mucosa on the midline, with Mayo scissors. If the cul-de-sac blocked and there were adhesions, careful lysis is carried out laparoscopic ally to reach the space. Incision of Colpotomy was done by electro cautery in opposition to a sponge stick placed in the posterior vaginal fornix for added control. Extra care was taken. If the uterus was absent to make sure the bladder is not injured. The bladder was filled with 250 mL of sterile saline to reveal its position after that drawn off.

Posterior to the bladder reflection, Parietal peritoneum was incised by endoscopic scissor after it was dissected bluntly and sharply. Once adequate space is expanded, a semi-circular notch is made by means of scissors of the endoscopy and cutting current of 50 watts at the apex of the vagina. Following the colpotomy, the collecting bag thread is exceeded out the colpotomy fault and into the vagina via a laparoscopic grasper controlled by the assistant. The surgeon set to work within the vagina, utilized retractors to see the laparoscopic grasper and thread. To protect the string, a Kelly clamp was used and the laparoscopic instrument was reserved by the assistant. The lips of the bag were brought out the defect of colpotomy and out the vagina. Maintaining traction on the bag was kept to conserve the pneumoperitoneum and produces a shut that helps guarantee no fluid or tissue goes back into the peritoneal cavity. One time the capacity of the lesion had been satisfactorily decreased, permitted the bag to pass through the colpotomy defect.

A second sheet of defense from the positive pressure gradient produced by the pneumoperitoneum added more protection against fluid or tissue dropped back into the peritoneal cavity. If there was difficulty in withdrawn mass which was cystic; suction of wall could be done to aspirate its fluid and decrease its size.

In one layer, per formation of the colpotomy was done vaginally in all cases encircling mucosa of vagina and peritoneum. After thoroughly inspection and plentiful irrigation. The laparoscopy was finished. Incisions of skin were closed with absorbable 2-0 Vicryl. The specimens in all cases were evaluated after the operation by examination

pathologically for conclusive confirmation. The mean time of postoperative pain was estimated by 10 cm visual analog scale (VAS) at 1,3, and 24 h, with 0 score meant; no pain and 10 meant; the worst pain conceivable. All patients under went laparoscopy were monitored in hospital for the night and released on day 1 postoperative. Instructions were given to all patients like; stay away from sexual contact for 2 weeks next the process. Schedule for all patients was put appointment for follow-up at one, then 2 months following the operation to recognize any complication that may had happened later than discharge. Patient charts were done for demographic and clinical data. Information concerning to the surgery were as well collected including procedure of surgery, expected blood loss, time of operation incidence of spillage, intraoperative complications, postoperative pain, postoperative complications, and final pathologic reports. The data were investigated by Descriptive statistics. The t-test and the Mann-Whitney U test were performed to compare continuous parametric and nonparametric variables, respectively. Continuo variables outcomes were accounted as mean \pm SD and range [11]. Fisher's exact test was used to analyse proportions. Unqualified data were accounted as percentages of the total. Results were computed using statistical package for social sciences (SPSS) version 12.

Results

200 women were included in our study; underwent laparoscopy due to adnexal mass which was diagnosed clinically benign. Removal of mass was done with specimen retrieval through a posterior colpotomy incision. Laparoscopy was converted to laparotomy due to technical difficulties in inclusion of laparoscopy in 6 cases, in other 3 cases due to dense adhesions intra abdominally and one case due to bleeding that could not be managed securely by laparoscopy. The mean age of women was 39 years with SD 8.7 and range (20-69). Body mass index was represented by the mean 28.1 (SD 6.0 range 18.6-39.8). The range of gravidity was 0-6 and parity was 0-5 pre-operative. The size of adnexal specimen ranged from 5-13 cm (mean 10.2, SD 3.9) (Table 1). The mean operative time was 75 minutes (SD \pm 19.3), and the median estimated blood loss was 40 mL (range 10-200) (Table 2). Two patients had Uneventful rupture of mass and managed thoroughly immediate suction irrigation by means of warm ringer's solution. Pain scores on a 10 cm visual analog scale showed estimated mean time of pain by hour is 1.4 hour (\pm 1.9), 1.6 hour (\pm 1.8) and 0.6 hour (\pm 1.3) for 1 hour, 3 hour assessment and 24 hours after incision closure (Table 2). No patients had bowel, urinary bladder or ureteric injuries. Incision of colpotomy showed no complications except one patient had vaginal infection postoperatively. Two months postoperative check-up, 5 women were decided to reopen due to malignancy in histopathology (Table 3). The diagnosis in all cases was confirmed histopathologically. As regard these results the most common in incidence were endometriosis as diagnosed in (35.7%), dermoid in (27.3%), cystoadenoma in (13.1%), ovarian fibroma in (8.9%), functional cysts in (6.8%), paraovarian in (3.1%), malignant ovarian tumor in (2.6%) and border cell tumor in (2.1%) (Table 4).

Discussion

Currently, the progress in recent laparoscopy made physicians choose it as the proper surgical procedure for management of the most gynecological problems [19].

Managing the adnexal masses by laparoscopy instead of laparotomy was thought to be the typical opinion but the question mark was about a mass at moderate or high risk of malignancy either refusing or supporting its use [20,21].

Medeiros et al. proved that even though time of laparoscopic procedure was slightly longer by average 11 minutes than open surgery but it was related to considerably less postoperative pain, fewer unfavourable side effects and a shorter staying in hospital [22,23].

Surgical removal of the sample remains a central dilemma in laparoscopy, mainly when they are in general bigger than the entrance

Criteria	Mean	S D	range
Age (years)	39	8.7	20-69
Body mass index (BMI)	28.1	6.0	18.6-39.8
Gravidity	4.1	1.9	0- 6
Parity	3.2	0.8	0-5
Preoperative mass size (cm) by ultrasound	10.2	3.9	5-13

Values are reported as mean \pm SD outcome and median (range)

Table 1: Demographic criteria.

Variable	Mean/ median	SD /range
Estimated blood loss, mL	40 ml	(10 -200)
Operative time, min	75 min	\pm 19.3
Specimen retrieval time, min	7.2 min	\pm 5 -19
Pain scores on a 10-cm visual analog scale Postoperative time, hour		
1 hour	1.4	\pm 1.9
3 hour	1.6	\pm 1.8
24 hour	0.6	\pm 1.3

Values are reported as median (range), mean \pm SD,

Table 2: Intra and postoperative outcomes.

Intraoperative complications	Number of all cases (N):190 N of cases had complications: 8	Percentage
Uneventful rupture of mass	2	1
Injury to bladder	0	0
Injury to ureter	0	0
Injury to bowel	0	0
Injury to major vessels	0	0
Postoperative complications		
Deep vein thrombosis	0	0
Pulmonary embolism	0	0
Port site hernia	0	0
Vaginal infection	1	0.5
Re-operated later by Gyn Oncology	5	2.5

Data are stated as N and (%).

Table 3: Intraoperative and postoperative complications.

Histopathological findings	Number (N 190)	%
Endometrioma	68	35.7
Dermoid	52	27.3
Cystoadenoma	25	13.1
Ovarian fibroma	17	8.9
Functional cysts	13	6.8
Paraovarian	6	3.1
Malignant ovarian tumor	5	2.6
Border cell tumor	4	2.1

Data are stated as n (%)

Table 4: Histopathological findings of adnexal mass.

sites for sample extraction. The 5 mm ports are in general extended to 10 mm or more [24].

Broad handling of the trocar entrance site during the passage of tissue can cause extra extending and splitting of the fascia [25]. It has been ascertained that the magnification incisions of lower abdominal is related to increased post-operative pain, an increased rate of hernia and epigastric vessel injury and a reduced amount of satisfying cosmetic results [26]. Laparoscopic adnexectomy assisted by bagging, and colpotomy for mass extraction is an advantageous target for patients with adnexal masses meeting Triage Criteria for suspected benign lesions outlined in ACOG Committee Opinion 280 giving a little invasive approach with employee benefits including outpatient management [27].

A lots of authors advocated preoperative evaluation for ovarian tumor transvaginal ultrasonography for morphologic scoring (internal borders, septations, papillary projections, echogenicity, and volume) and existence of ascites; color doppler transvaginal: vascular quality is evaluated by vascular resistance index and pulsativity index, cut off pulsativity index less than 1 or/and resistance index less than 0.4 define criterion for discriminating from malignant tumor and serum levels of CA125 with cut off value of 35 U/mL [28-31].

This study tried to assess the status of the laparoscopic approach by assistance of colpotomy in management apparently benign adnexal masses. Careful preoperative evaluation to mass allowed us to avoid exposure to possible malignancy. A variety of studies have discussed the probability of malignancy within an ovarian mass. This probability ranges from 0.38% to 18.67% Transvaginal ultrasonography, doppler assessment and tumour markers helped us to decide the feasibility of laparoscopic management. Our evaluation was comparable to those of other authors as Valentin et al. found possibility of Malignancy in Adnexal Masses 199 in 1066 patients by incidence 18.67% [4].

Havrilesky et al. accounted on 396 patients managed in excess of years by laparoscopy for adnexal masses thought to be benign preoperatively at a training centre. No obvious report of criteria used to distinguish benign from malignant masses preoperatively is enclosed in the article pre-operatively, mass size by (Median) was 5.2 cm (range, 0.5 to 17) Ninety-seven percent of masses were benign on pathology [31].

Smorgick et al. reported on 263 women undergoing Laparoscopic adnexectomy between 2002 and 2006. No apparent speech of criteria used preoperatively to distinguish benign from malignant masses is presented. Mean cyst size was 6.6 cm. If a cyst was supposed to contain irritating fluid or possible malignant cells, a collecting bag was employed. 93.5% of these 263 cases were benign [32].

In current study, mean preoperative mass size was range 10.5 cm (5-13 cm) 5 cases only were malignant (2.6%) and another 4 cases (2.1%) were border line malignant among 200 cases after histopathology. About colpotomy, we used this technique in our study as we suspected it is perfect route to extract the adnexal mass after removal by laparoscopy after retrieving it and have numerous advantages over extending incision of trocar.

Richard et al. preferred it and believe that is a perfect road to retrieve considerable volumes of tissue from the pelvic cavity and has many advantages over mini-laparotomy not noticeable; abdominal incision, less postoperative ileus, decreased postoperative pain, and more quick go back to normal activities [27].

Ghezzi et al. compared Transumbilical versus transvaginal (through a posterior colpotomy) route for removal of surgical samples, after laparoscopic surgery patients. Postoperative pain patients with colpotomy for extraction of adnexal mass had less pain at 1,3, and 24 hours after surgery 1.2 ± 2.0 , 1.4 ± 2.0 , 0.5 ± 1.4 respectively. Our results in this issue were analogous to these results as postoperative pain assessment by the same scores (VAS) were 1.4 ± 1.9 , 1.6 ± 1.8 , 0.6 ± 1.3 at 1, 3, and 24 hours postoperative respectively [16]. Wyman et al. 2012 who retrieve large specimens after robotic laparoscopy and removed it through a colpotomy incision recommended that it is safe, highly efficient, and cost effective Technique and can be routinely utilized [33].

Feuer et al. studied removal of pelvic masses even large specimens transvaginal thorough colpotomy after bagging the specimens through robot-assisted laparoscopic surgery in fifty women [28]. They found this technique was doing well in all cases, there was no spillage in any one, with an average time of operation 94.22 ± 4.48 and no intraoperative complications [34].

Although malignant ovarian mass still causes a brave for the laparoscopic approach and there are numerous fears regarding applying of laparoscopy for pelvic masses where diagnosis is unsure. In 1991, Harry Reich accounted the first case of ovarian cancer treated laparoscopically. A woman with stage I ovarian cancer rejected conventional treatment and was managed laparoscopically. Both ovaries were eradicated intact via a culdotomy incision [35].

Tozzi et al. have accounted the longest follow up to date of laparoscopically managed early ovarian cancer. In their prospective study of 24 women with a median follow-up time of 46 months, overall and disease free survival were 100% and 92%, respectively [36,37].

A lot of current studies have found no statistical difference in survival rates between patients undergoing a laparoscopy versus laparotomy in women with obvious early ovarian cancer or borderline tumours [15].

More freshly some have still used operative laparoscopy in advanced ovarian cancer cases [37]. As, it is not practical to consider each lady with an adnexal mass should be referred to gynaecologic oncologists for principal management and Laparoscopy ground has evolved remarkable advance in the recent years. The majority of ovarian masses can be managed by laparoscopy whereas benign ovarian pathology stays the most universal suggestion for laparoscopy management. Using an endobags before rupturing and extracting adnexal mass thorough colpotomy makes the procedure safer if malignancy undiagnosed preoperatively.

Our study appends to us more skill and practice in good turn of laparoscopy in dealing of more patients with adnexal masses. So, this study gave advantages to us and to patients equally. They got benefits from this procedure in the form of improved quality of management and decrease open surgery rate and its sequels.

There are some limitations of this study; one of them is the number of patients as we need to manage more cases. Also, postoperative follow up for long period of time.

Conclusion

Laparoscopic management of adnexal masses assisted with colpotomy for extraction of retrieved specimen after careful preoperative evaluation enhanced outcomes and seems realistic safe, and proffers better cosmetic results.

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