Laparoscopic Approach to Adnexal Masses

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Introduction

• 5-10% of women in USA are estimated to undergo surgical management for a suspected ovarian neoplasm in their lifetime

• Hospitalization for benign cysts of ovary
  – 7% of inpatient admissions ages 15 to 54
  – 50% undergo a surgical procedure

Whitemann AJOG 2010
Pelvic Mass

Gynecologic
- Malignant: Epithelial carcinoma, Germ cell tumor, Metastatic cancer, SCST

Nongynecologic
- Benign: Diverticular abscess, Appendiceal abscess, mucocele, Nerve sheath tumor, Ureteral diverticulum, Pelvic kidney, Bladder diverticulum
- Malignant: GIS cancer, Retroperitoneal sarcoma, Metastatic cancer from colon, breast or stomach
Differential Diagnosis

- Reproductive status
- Location of a pelvic mass
- Patient age
Risk factors for ovarian cancer

• Age is the most important risk factor in the general population
  – Median age 63 years
  – 69% of patients 55+

• The most important personal risk factor is a strong family history of breast or ovarian cancer

Howlader SEER 2016
Risk factors for ovarian cancer

• Family history of ovarian cancer
  – For a 35-year-old woman with one affected family member, lifetime risk of ovarian cancer increases from 1.65 to 5%

• Familial ovarian cancer syndrome

• Other risk factors: Nulliparity, early menarche, late menopause, white race, primary infertility, endometriosis

<table>
<thead>
<tr>
<th>Ovarian cancer risk by age 70</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRCA 1 mutation</td>
</tr>
<tr>
<td>41-46%</td>
</tr>
<tr>
<td>BRCA 2 mutation</td>
</tr>
<tr>
<td>10-27%</td>
</tr>
<tr>
<td>Lynch syndrome</td>
</tr>
<tr>
<td>10%</td>
</tr>
</tbody>
</table>
General Evaluation

- Medical and family history
- Physical examination
- Imaging
- Laboratory testing
Medical and Family History

- Personal medical history with a detailed gynecologic history and review of symptoms
- Family history and other risk factors
- The potential for pregnancy should be evaluated in all women of reproductive age (ectopic pregnancy)
- Symptoms of unilateral, intermittent and then acutely worsening pelvic pain → ovarian torsion
Medical and Family History

• Progressive pelvic pain with fevers, chills, vomiting and vaginal discharge → tubo-ovarian abscess

• Acute or chronic dysmenorrhea or pain with intercourse → endometrioma

• Persistent bloating, generalized abdominal pain and early satiety → malignancy

• Granulosa cell tumors should be suspected in women with a solid pelvic mass and irregular or postmenopausal bleeding
Physical Examination

• Vital signs and general physical appearance

• Palpation of lymph nodes, abdominal palpation, pelvic examination

• Abdominal mass palpation is low when BMI > 30

• A mass that is irregular, firm, fixed, nodular, bilateral, associated with ascites → malignancy
Imaging

- Transvaginal sonography is the most common technique
  - Size
  - Composition (cystic or solid)
  - Laterality
  - Septations, mural nodules, papillary excrescences
  - Free fluid in the pelvis

- MR is helpful in differentiating leiomyomas

- CT can detect ascites, omental and hepatic metastases, peritoneal implant, enlarged nodes, obstructive uropathy
Laboratory testing

• Pregnancy testing should be obtained in reproductive-aged women

• CBC, testing for gonorrhea and chlamydia in case of infection

• CA125

• AFP, HCG, LDH for germ cell tumors
CA125

**Low sensitivity**
- It is elevated in ½ of early stage epithelial ovarian cancer
- It is rarely elevated in germ cell, stromal or mucinous tumor

**Low specificity**
- It is elevated in many nonmalignant clinical conditions
  - Leiomyomas
  - Endometriosis
  - PID
  -Ascites
  - SLE
  - IBD

Most EOC in postmenopausal women

Increased sensitivity and specificity in a pelvic mass after menopause
## Panels of Biomarkers

<table>
<thead>
<tr>
<th>Test</th>
<th>Premenopausal</th>
<th>Postmenopausal</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA125</td>
<td>-</td>
<td>&gt;35 U/mL</td>
</tr>
<tr>
<td>Multivariate index assay (MIA)</td>
<td>&gt;5.0</td>
<td>&gt;4.4</td>
</tr>
<tr>
<td>Risk of ovarian malignancy algorithm (ROMA)</td>
<td>&gt;1.31</td>
<td>&gt;2.77</td>
</tr>
<tr>
<td>Risk of malignancy index (RMI)</td>
<td>&gt;200</td>
<td>&gt;200</td>
</tr>
</tbody>
</table>

- FDA approved MIA and ROMA for >18 year with an already identified adnexal mass that requires surgery
- MIA incorporates CA125 II, transferrin, transthyretin, apolipoprotein A-1, beta2-microglobulin
- ROMA includes CA125, HE4 and menopausal status
- UK NIH recommends RMI version I. It is calculated using the product of CA125, ultrasound scan result and the menopausal status
Ultrasonography

• Concern regarding malignancy
  – Cyst size > 10 cm
  – Papillary or solid components
  – Irregularity
  – Presence of ascites
  – High color Doppler flow

<table>
<thead>
<tr>
<th></th>
<th>IOTA LR Model 2</th>
<th>IOTA Simple Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>0.92</td>
<td>0.93</td>
</tr>
<tr>
<td>Specificity</td>
<td>0.83</td>
<td>0.81</td>
</tr>
</tbody>
</table>

• 2014 systematic review and meta-analysis compared various malignancy prediction models
  – Best performing models are The International Ovarian Tumor Analysis (IOTA) Logistic Regression Model 2 and the IOTA Simple Rules

Kaijser Hum Reprod Update 2014
IOTA Simple Rules

• Benign masses
  – Thin and smooth walls
  – Absence of solid components, septations or internal blood flow

• Simple cysts are almost always universally benign regardless of menopausal status or cyst size
  – Malignancy rate 0-1%

Glanz J Ultrasound Med 2017
Ultrasonography

- 2,763 postmenopausal women with unilocular cyst <10 cm
  - Serial TV-USG at 6-month interval
  - 2/3 spontaneous resolution
  - No cancer after a mean follow-up of 6.3 years

- 1.148 masses classified as unilocular cyst on USG
  - 11 malignant
  - 7/11 solid components macroscopically at surgery

Modesitt Obstet Gynecol 2003
Valentin Ultrasound Obstet gynecol 2013
Observation

• Asymptomatic patient, normal CA125, absence of sonographic findings for cancer

• Simple cysts up to 10 cm may be safely monitored using repeat imaging

• Suspected endometrioma, mature teratoma and hydrosalpinx may be managed expectantly

• Masses that are monitored and eventually diagnosed as cancer demonstrated growth by 7 months

Suh-Burgmann AJOG 2014
Surgical Intervention

• MIS is the preferred route for presumed benign adnexal masses

• Fertility preservation should be a priority in adolescents and premenopausal women who have not completed childbearing

• Even in cysts of 10 cm or greater, it is possible to save normal portions of the ovary and remove the cyst laparoscopically
Surgical Intervention

- Several retrospective studies that addressed the laparoscopic management of adnexal masses have confirmed low complication rates.

- Three published, randomized trials that comprised 394 patients compared the findings and outcome of laparoscopy versus laparotomy in women with clinically benign pelvic masses.

- Conversion to laparotomy was performed only for endoscopic suspicion of cancer (0%-1.5%).

Havriilesky Obstet Gynecol 2003  
Mendilcioğlu J Reprod Med 2002  
Serur JSLSL 2001

Yuen Am j Obstet Gynecol 1997  
Fanfani Hum Reprod 2004  
Deckardt J Am Assoc Gynecol Laparosc 1994
Surgical Intervention

• Rates of intraoperative cyst rupture are equivalent between the two approaches

• Significant decrease in operative time, perioperative morbidity, length of hospital stay and postoperative pain in laparoscopy

• Most consistent findings regarding laparotomy versus laparoscopy:
  – Shortened length of hospital stay
  – Decreased pain
  – Decreased convalescence time

Serur JSLSL 2001  Deckardt J Am Assoc Gynecol Laparosc 1994
ACOG no:280 Criteria
Mass 8-13 cm (n=257)

Suspected malignant mass
Gyn Oncologist

Suspected benign mass

Laparoscopy or robotics

Disease extends past ovary
Photos & Biopsies

Disease confined to ovary
Oophorectomy & colpotomy

Benign pathology

<table>
<thead>
<tr>
<th>Pathology Results</th>
<th>Patients</th>
<th>% Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ovarian cystadenoma</td>
<td>64</td>
<td>26.67</td>
</tr>
<tr>
<td>Functional cyst</td>
<td>47</td>
<td>19.58</td>
</tr>
<tr>
<td>Endometrioma</td>
<td>34</td>
<td>14.17</td>
</tr>
<tr>
<td>Simple cyst</td>
<td>32</td>
<td>13.33</td>
</tr>
<tr>
<td>Mature teratoma</td>
<td>27</td>
<td>11.25</td>
</tr>
<tr>
<td>Ovarian fibroma</td>
<td>5</td>
<td>2.08</td>
</tr>
<tr>
<td>Other benign ovarian lesions</td>
<td>10</td>
<td>4.17</td>
</tr>
<tr>
<td>Borderline ovarian tumor</td>
<td>12</td>
<td>5.00</td>
</tr>
<tr>
<td>Invasive ovarian cancer</td>
<td>9</td>
<td>3.75</td>
</tr>
</tbody>
</table>

Demir JSLS 2012
Robotic-assisted surgery

- Low-risk approach to benign ovarian masses
- Conventional laparoscopy is preferred because of its shorter operative time

El Khouly J minim Invasive Gynecol 2014
Borderline Ovarian Tumors

- Low malignant tumors representing 10-15% of all EOC
  - Serous
  - Mucinous (intestinal and endoservical types)

- Incidence is low, new cases per year:
  - 4.8/100,000 in European series
  - 1.5-2.5/100,000 in American series

- Patients are younger at the time of diagnosis
  - 25-50% < 40 years

Ushijima Obstet Gynecol Sci 2015
Laparoscopic Surgery of Borderline Ovarian Tumors

• Cystectomy may elevate the risk of cyst rupture and intra-abdominal spillage
  – Increased relapse and contamination of abdominal wall

• Spillage should be avoided by endoscopic bag and abundant copious peritoneal washing

• The recurrence rate after laparoscopic surgery is similar after abdominal approach

• Most cases of recurrence with laparoscopy are conservatively treated

Morice Lancet Oncol 2012
Laparoscopy vs Laparatomy Multicenter Studies

- No difference in relapse rate
- Decreased morbidity and adhesion
- The incidence of relapse is not dependent on the type of surgery

Romagnolo Gynecol Oncol 2006
Trope Gynecol Oncol 1993
Deffieux Gynecol Oncol 2005
## Laparoscopy vs Laparatomy Studies

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Recurrence Rate (%)</th>
<th>Recurrence Interval (Mo)</th>
<th>Fertility Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unilateral adnexitomy</td>
<td>2.1</td>
<td>48</td>
<td>76.9</td>
</tr>
<tr>
<td>Unilateral cystectomy</td>
<td>6.8</td>
<td>25</td>
<td>77.3</td>
</tr>
<tr>
<td>Unilateral adnexectomy and contralateral cystectomy</td>
<td>14.8</td>
<td>26</td>
<td>66.7</td>
</tr>
<tr>
<td>Bilateral cystectomy</td>
<td>22.2</td>
<td>21</td>
<td>71.4</td>
</tr>
</tbody>
</table>

Laparoscopy group:
- Fertility rate is higher
- Operational blood loss, duration of hospitalization and days of antibiotic use are lower

Chen J Ov Res 2016
Tumor rupture rate is higher in laparoscopy but there is no negative impact on prognosis and pregnancy rate.

The detection of a small focus in a macroscopically normal-appearing ovary with biopsy is very low.

No evidence for the routine biopsy of contralateral ovary to exclude recurrent disease.

Trillsch J Ovarian Res 2013
Alvarez ecancer medical science 2015
Port Site Metastasis

- 50 year-old patient
- Laparoscopic removal of left ovarian tumor (1,540 g).
  - Tumor removed through the umbilical incision
  - Stage IA intestinal-type mBOT, no adjuvant therapy.
- 26 months after surgery, a 3 x 5-cm palpable mass on the umbilicus.
  - Biopsy of the mass mucinous adenocarcinoma
- A laparotomy was performed and no other metastasis in the peritoneal cavity.
- Large ovarian tumors should be carefully extracted without spillage of the tumor contents to prevent port-site metastasis, despite the low incidence.

Furukawa Case Rep Oncol 2014

![Image](image_url)

a The mucinous tumor of the abdominal wall is infiltrating the stroma.
b Tumor cells are positive for cytokeratin 7.
c Tumor cells are positive for PAS.
d Tumor cells are negative for cytokeratin 20.
Surgical management of non-epithelial ovarian malignancies: advantages and limitations of laparoscopy

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a CHU Clermont-Ferrand, CHU Estaing, Department of Obstetrics, Gynecology and Reproductive Medicine, 1 place Lucie Aubrac, 63003 Clermont-Ferrand cedex 1, France
b CICE (International Center for Endoscopic Surgery), Faculty of Medicine, Bat 3C, 28 place Henri Dunand, 63000 Clermont-Ferrand, France

13 laparotomy, 7 laparoscopy
Table 1
Tumor distribution.

Malignant non epithelial ovarian tumors
N=22

Exclusions
- 1 gonadoblastoma
- 1 lost note

Malignant ovarian germ cell tumors
(MOGCTs) n=16

Dysgerminoma
n=3

Non Dysgerminoma Tumors n=13

Immature Teratoma
n=5

Secretive Tumors
n=8

Yolk sac tumor
n=2

Choriocarcinoma
n=2

Embryonal Carcinoma
n=1

Mixed Germ Cell Tumors
n=3
- Embryonic carcinoma and Yolk sac tumor
- Choriocarcinoma and dysgerminoma
- Choriocarcinoma and yolk sac tumor

Ovarian sex cord stromal tumors
(OSCTs) n=4

Granulosa Tumors
n=2

Sertoli-Leydig tumors
n=2
Table 2
Comparison laparoscopy vs. laparotomy in the management of rare ovarian tumors.

<table>
<thead>
<tr>
<th></th>
<th>Laparoscopy (n=7)</th>
<th>Laparotomy (n=13)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage FIGO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>71.4% (5)</td>
<td>46.2% (6)</td>
<td>NS</td>
</tr>
<tr>
<td>II</td>
<td>14.3% (1)</td>
<td>30.8% (4)</td>
<td>NS</td>
</tr>
<tr>
<td>III</td>
<td>0%</td>
<td>15.4% (2)</td>
<td>NS</td>
</tr>
<tr>
<td>IV</td>
<td>14.3% (1)</td>
<td>7.7% (1)</td>
<td>NS</td>
</tr>
<tr>
<td>Tumor size (cm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>6.7 ± 3.2</td>
<td>14 ± 5.7</td>
<td>0.007</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>32.3 ± 17.1</td>
<td>27.4 ± 20.6</td>
<td>NS</td>
</tr>
<tr>
<td>Median [min–max]</td>
<td>31 [6–60]</td>
<td>16 [8–70]</td>
<td></td>
</tr>
<tr>
<td>Tumor type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MGOT</td>
<td>71.4% (5)</td>
<td>84.6% (11)</td>
<td>NS</td>
</tr>
<tr>
<td>MTSC</td>
<td>28.6% (2)</td>
<td>15.4% (2)</td>
<td>NS</td>
</tr>
<tr>
<td>Surgery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conservative</td>
<td>85.7% (6)</td>
<td>61.5% (8)</td>
<td>NS</td>
</tr>
<tr>
<td>Radical</td>
<td>14.3% (1)</td>
<td>38.5% (5)</td>
<td>NS</td>
</tr>
<tr>
<td>Procedures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salpingo-oophorectomy (SO)</td>
<td>6</td>
<td>7</td>
<td>NS</td>
</tr>
<tr>
<td>Cystectomy</td>
<td>0</td>
<td>1</td>
<td>NS</td>
</tr>
<tr>
<td>Bilateral salpingo-oophorectomy (BSO)</td>
<td>1</td>
<td>1</td>
<td>NS</td>
</tr>
<tr>
<td>Hysterectomy and BSO</td>
<td>1</td>
<td>4</td>
<td>NS</td>
</tr>
<tr>
<td>Omentectomy</td>
<td>2</td>
<td>6</td>
<td>NS</td>
</tr>
<tr>
<td>Lymphadenectomy</td>
<td>1</td>
<td>4</td>
<td>NS</td>
</tr>
<tr>
<td>Peritoneal biopsies</td>
<td>2</td>
<td>4</td>
<td>NS</td>
</tr>
<tr>
<td>Digestive resection</td>
<td>1</td>
<td>1</td>
<td>NS</td>
</tr>
<tr>
<td>Endometrial biopsies</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Appendectomy</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Hospital stay (days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>3.1 ± 1.5</td>
<td>6.9 ± 4.9</td>
<td>0.03</td>
</tr>
<tr>
<td>Complications</td>
<td>14.3% (1)</td>
<td>23.1% (3)</td>
<td>NS</td>
</tr>
<tr>
<td>Follow up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lost to follow-up</td>
<td>0%</td>
<td>30.8% (4)</td>
<td>NS</td>
</tr>
<tr>
<td>Recurrences</td>
<td>0%</td>
<td>15.4% (2)</td>
<td>NS</td>
</tr>
<tr>
<td>Death</td>
<td>14.3% (1)</td>
<td>0%</td>
<td>NS</td>
</tr>
<tr>
<td>Adjuvant treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>71.4% (5)</td>
<td>69.2% (9)</td>
<td>NS</td>
</tr>
<tr>
<td>Second look surgery</td>
<td>42.9% (3)</td>
<td>46.2% (6)</td>
<td>NS</td>
</tr>
<tr>
<td>Follow-up duration (years)</td>
<td>3.4 ± 2.3</td>
<td>6.7 ± 5.6</td>
<td>NS</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median [min–max]</td>
<td>4 [0.7–7]</td>
<td>5 [2–20]</td>
<td></td>
</tr>
</tbody>
</table>

Note: Values are means ± SD. NS = non-significant.

* 2 transfusions, one umbilical hernia.
* One trocar site metastasis.

No difference in complication, surgical procedure, number of lymph nodes, adjuvant treatment
Adolescents

• Priority is the ovarian conservation to preserve fertility

• AFP, HCG and LDH are indicated for evaluation of suspected germ cell tumors

• Surgical indications are malignancy, torsion, persistent mass and acute abdominal pain
  – Non-communicating uterine horn, ovarian fibroma, torsed adnex
  – 7-25% are malignant

• Unilateral oophorectomy does not impair menstrual regularity or spontaneous pregnancy rates

Hermans Obstet Gynecol 2015
Adnexal torsion

- Priority is adnexal conservation, the residual ovary will regain perfusion and remain viable in most cases.
- Despite evidence of necrosis or ischemia, ovarian function is preserved in 90% 3 months after conservation.
- Ovarian fixation is considered in recurrent cases.

Bozdag JMIG 2014
Endometrioma and mature ovarian teratoma

- Surgery is warranted if the masses are large, symptomatic or growing in size on serial imaging

- Surgical excision of endometrioma may adversely affect ovarian reserve

- Endometrioma >5 cm is associated with lower ovarian follicle density

- Asymptomatic endometrioma do not require intervention for infertility

- In surgery as much ovarian tissue as possible should be conserved.
Pregnancy

• Low risk of malignancy (1.2-6.8%) or acute complications (<2%)
  – Expectant management is preferred

• 51-92% resolve during pregnancy

• Predictors of persistence
  – Mass > 5 cm
  – Complex morphology

• Data support the relative safety and efficacy of laparoscopic management of persistent adnexal masses in the second trimester

Balthazar J Minim invasive Gynecol 2011
6.4  *Is the laparoscopic approach better for the elective surgical management of ovarian masses?*

The laparoscopic approach for elective surgical management of ovarian masses presumed to be benign is associated with lower postoperative morbidity and shorter recovery time and is preferred to laparotomy in suitable patients.2-10

Laparoscopic management is cost-effective because of the associated earlier discharge and return to work.21

In the presence of large masses with solid components (for example large dermoid cysts) laparotomy may be appropriate.

6.9  *How should an ovarian mass be removed?*

Where possible removal of benign ovarian masses should be via the umbilical port. This results in less postoperative pain and a quicker retrieval time than when using lateral ports of the same size.
6.1.2.2 Could postmenopausal ovarian cysts be managed by laparoscopy?

Women with a RMI I of less than 200 (i.e. at low risk of malignancy) are suitable for laparoscopic management.

Laparoscopic management of ovarian cysts in postmenopausal women should be undertaken by a surgeon with suitable experience.

Laparoscopic management of ovarian cysts in postmenopausal women should comprise bilateral salpingo-oophorectomy rather than cystectomy.

Women undergoing laparoscopic salpingo-oophorectomy should be counselled preoperatively that a full staging laparotomy will be required if evidence of malignancy is revealed.

Where possible, the surgical specimen should be removed without intraperitoneal spillage in a laparoscopic retrieval bag via the umbilical port. This results in less postoperative pain and a quicker retrieval time than when using lateral ports of the same size. Transvaginal extraction of the specimen is also acceptable, if the surgeon has the available expertise.
Decison-making for route of removal

- Body habitus
- Intra-abdominal anatomy
- Planned concomitant procedures
- Size and location of ports
- Characteristics of mass
- Concern for malignancy

- An occult malignancy must always be considered.
- Inadvertent rupture of an early-stage malignant adnexal mass
  - Stage IC1 (surgical spill)
  - Adjuvant chemotherapy
Techniques for adnexal mass removal

- removal via the abdominal route
- laparoscopic drainage
- removal via the vaginal route
- laparoscopic removal
Laparoscopic drainage

- Ideal for masses that have a low suspicion for malignancy
  - Simple
  - A few loculations
  - Mostly fluid

- Serous cystadenoma, paratubal cyst, endometrioma

- Chemical peritonitis is a rare (<0.2%) but documented complication of laparoscopic teratoma rupture

- Spillage of teratoma or endometrioma requires complete removal of cyst content and copious lavage of peritoneal cavity
Laparoscopic drainage

- Adnexal mass may be placed in an endoscopic specimen retrieval bag.

- Bags are designed to be inserted and deployed via a port

- The bag is retracted, closed and exteriorized through the skin incision

- Using an endoscopic camera through an accessory port allows visualization of the tissue extraction process
Removal via the vaginal route

- Posterior colpotomy is used to remove adnexal masses
- Vaginal tissue provides stretch to accommodate a large mass
- Decreased pain compared with removal via the umbilicus and no increased rate of dyspareunia
Removal via the abdominal route

• 2-4 cm suprapubic or umbilical incision

• The concomitant bag is brought up into the incision for decompression or morcellation
Conclusion

• Preoperative work-up of adnexal mass is an essential part of management

• Conservative laparoscopic surgery of early stage BOT is feasible

• Tumor spillage should be avoided by endoscopic bag and abundant copious peritoneal washing

• Laparoscopy respecting the usual oncologic principles may be an alternative to laparatomy in the management of adnexal masses