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## **The Adnexal Mass Diagnosis and Treatment**

### **Possible causes for an adnexal mass in the pelvis:**

The adnexal mass in gynecology refers to the ovary and fallopian tube and includes cystic, solid and complex masses. Pelvic masses next to the uterus can also arise from the uterus, bowel, retroperitoneum or be metastatic from the breast, stomach or other areas. The most serious concern when an adnexal mass is discovered is to rule out the possibility of a malignancy. Fortunately, the majority of adnexal masses are benign. Characteristics that increase the chance of malignancy include: a prepubescent or postmenopausal female, complex or solid appearing mass on imaging, a known genetic predisposition, a past history of breast or gastric cancer or ascites.

The presence of ascites is more commonly associated with a malignant process. Benign pelvic masses that can be associated with ascites include: fibromas, endometriomas, struma ovarii and pelvic tuberculosis. Patients can also have ascites from hepatic renal or cardiac disease.

Women of reproductive age normally produce follicles every month; the cyst is physiologic or functional and occasionally becomes hemorrhagic, but usually disappear within a few months. Physiologic cysts can become large but are usually asymptomatic unless they bleed, rupture or undergo torsion. Patients with cystic adnexal masses should have a repeat ultrasound performed in 2 to 3 months soon after the menstrual period in the proliferative phase of her cycle to confirm that the physiologic cyst has resolved and no treatment is needed.

Polycystic ovarian syndrome is a term used to describe a group of symptoms; most commonly anovulation, acne, excessive hair and obesity. Many patients with PCOS will demonstrate multiple small ovarian cysts lining the subcapsular area of the ovary, creating a “ring of pearls” appearance on ultrasound.

Pregnant patients can also develop adnexal masses. The most important adnexal mass to rule out is an ectopic pregnancy. The corpus luteum which normally doubles the size of the ovary in the first 12 weeks of pregnancy to support the developing embryo can become hemorrhagic and painful. Pregnancy follicles can develop into theca lutein cysts from hyperstimulation or hypersensitivity to hCG. The cyst will usually self resolve. A solid adnexal mass in a pregnant patient with signs of excessive testosterone may indicate a benign ovarian luteoma which can be managed conservatively or surgically.

Inflammatory causes of adnexal masses include tubo-ovarian abscesses, diverticular abscess or an appendiceal abscess. These conditions are always associated with signs and symptoms of infection. Particularly in women who have had a prior history of hysterectomy; a cystic adnexal mass can be caused by a hydrosalpinx and presents with pelvic pain and an elongated cystic mass on ultrasound. Other causes of adnexal cystic masses that do not originate from the ovary include a paraovarian cyst and peritoneal inclusion cyst. Fallopian tube cancers are

rare but occur more commonly in postmenopausal women and present with an abnormal watery vaginal discharge.

The most common benign cystic ovarian masses include serous and mucinous cystadenoma. These are usually multilocular but can be unilocular and range from 5 to 20 centimeters in size. Mucinous cystadenomas are less common than serous types, more likely multiloculated, larger in size and less often bilateral ( 5 versus 25%). Endometriomas, known as chocolate cyst of the ovary arise from growth of ectopic endometrial tissue in the ovary. Endometriomas are associated with chronic dysmenorrhea and an elevated CA 125. A mature cystic teratoma or dermoid cyst are common benign germ cell tumors which contain derivatives from all 3 germ cell layers. These benign ovarian cysts commonly contain hair, sebum and teeth.

Solid adnexal masses are most commonly pedunculated fibroids from the uterus; rarely, the solid mass is a pelvic kidney. Please refer to the patient information handout on fibroids.

Ovarian germ cell tumors occur mostly in young women under 30 years of age. The most common type of germ cell tumor is the teratoma. Most teratomas are mature and cystic however some are immature or solid. Ovarian cystectomy is usually suggested for removal of all dermoids to make a definite diagnoses, preserve ovarian tissue and avoid potential problems including: torsion, rupture or development of malignant components. Most dermoid cyst under the age of 40 are not malignant and only approximately 1% of mature cystic teratomas have a malignant component.

Tumor markers are often drawn to detect the hormonal or enzymatic activity of germ cell tumors. Blood test for hCG, AFP, LDH, CEA and CA-125 can be drawn. 75% of dysgerminomas occur in women under 30 years of age but has been reported in women 7 months to 70 years of age. Dysgerminomas can grow quite fast and cause pain or torsion and have been associated with elevations in alkaline phosphatase, lactate dehydrogenase, hCG and estrogen. The endodermal sinus tumor also called yolk sac tumor typically occur in women under 18 years of age and cause elevations in AFP and LDH. Choriocarcinoma more commonly originates from placenta and the ovary and produces hCG. CA 125 levels are elevated with gynecological malignancies, benign gynecological conditions as well as non-gynecological conditions and cancers. Gynecological malignancies include: Epithelial ovarian and endometrial cancers, fallopian tube cancers and germ cell tumors, adenocarcinoma of the cervix and Sertoli-Leydig cell tumors of the ovary. Benign gynecological conditions include: Adenomyosis, benign ovarian neoplasm, endometriosis, functional ovarian cyst, leiomyomata, Meig's syndrome, menstruation, pregnancy, ovarian hyperstimulation and pelvic inflammation. Non-gynecological conditions include: Liver disease and cirrhosis, colitis, congestive heart failure, diabetes, diverticulitis, lupus, pericarditis, postoperative period, history of radiation, renal disease, sarcoidosis, tuberculosis, pleural effusion, ascites. Nongynecological cancers include: Breast, colon, lung, pancreas.

Sex cord stromal tumors of the ovary comprise 5 to 8% of all primary ovarian neoplasms. Granulosa cell tumors, thecomas, and fibromas occur in women of reproductive age and postmenopausal age in equal frequency. Except for fibromas, these tumors tend to be hormonally active and can excrete estrogen and Inhiin. Granulosa cell tumors are characterized by excessive estrogen production, abnormal bleeding, endometrial hyperplasia and cancer. An endometrial evaluation is needed and once childrearing has been completed patients are suggested to undergo a TAHBSO. Thecomas are benign solid fibrous tumors

arising from the ovarian stroma that also produce estrogen. They tend to be yellowish in color due to accumulated lipids and are usually confined to one ovary and occur mostly in menopausal women. Patients normally have abnormal uterine bleeding as a result of estrogen production and need endometrial sampling. Postmenopausal and perimenopausal women with thecomas are usually recommended to undergo a TAHBSO due to the possibility of a concurrent endometrial cancer and 20% of patients. Fibromas are the most common sex cord stromal tumor. They are solid and usually unilateral occurring primarily in postmenopausal women. They are not hormonally active and are associated with ascites in 10 to 15%. The most common treatment for an ovarian fibroma is unilateral removal of the adnexa or ovarian cystectomy in premenopausal women. The cure rate for either type of surgery is high and recurrence is rare.

**Making a decision to observe or undergo surgery:**

Depending upon the persons age, fertility goals, symptoms, findings on exam, laboratory testing, ultrasonography and possible MRI, an individual decision will be made regarding the most likely diagnoses, management options and therapeutic options. Benign ovarian disease can be treated by ovarian cystectomy or complete ovarian removal usually including tube on the same side. For postmenopausal women with benign ovarian neoplasms, a bilateral tube and ovary removal will be recommended. For premenopausal women with benign ovarian disease, ovarian cystectomy is recommended unless the ovary cannot be salvaged or there is insufficient viable tissue. Other indications for oophorectomy include: Prophylaxis secondary to genetic predisposition, torsion with necrosis, malignancy, abscess unresponsive to antibiotics or definitive treatment for endometriosis.

Women who are undergoing a hysterectomy for uterine reasons have the option of removing the tubes and ovaries at the same procedure. The removal of normal ovaries is considered prophylactic. An individual decision must be made regarding the loss of ovarian function, risk of future ovarian surgery, reduction in risk of developing ovarian cancer, reduction in risk of breast cancer and reduction in risk of tubal surgery.

Most ovarian surgeries for benign disease can be performed laparoscopically. The major advantage includes: a smaller incision size, faster recovery, shorter hospital stay, less adhesion formation, less febrile morbidity and urine infection and less postoperative pain. The disadvantage for a laparoscopic procedure is the potential for spill of cancer cells if the mass is malignant. Preoperative tests cannot absolutely predict which mass is malignant. Statistically, an unexpected ovarian cancer is found in only 0.04% of laparoscopic ovarian cyst surgery. Presently, even complex cysts are being evaluated with the laparoscope if the risk for malignancy is felt to be low. As with all surgical procedures, an evaluation will be made at the time of surgery to decide on the best approach and procedure in the best interest of the patient's priorities, health, safety and desired outcome. The preliminary evaluation at the time of surgery would need to be confirmed by the final pathology report.

Complications from surgery include the risk of bleeding, infection, bowel or ureteral injury and spillage of malignant cells. Rarely, a small bowel obstruction or anesthetic complication can occur after a laparoscopic procedure. Occasionally, a laparoscopic procedure would need to be converted to a open laparotomy. Please refer to the laparoscopy patient information and consent forms.