

## Adnexial Mass in the Adolescents

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**OBJECTIVE:** is to investigate features of adnexial masses required emergency or elective operations in the adolescents. We analyzed the features, presentation of adnexial masses and their management in young adolescent women in a referral hospital.

**STUDY DESIGN:** We have retrospectively analyzed patients admitted to two different department of Obstetrics and Gynecology between 2005- 2006 and 2009-2010. Patients included to study were at or under the age of twenty and had gynecological operation for adnexial mass.

**RESULTS:** Thirty two of 879 (3.6%) gynecological procedures were in adolescents under the age of twenty. Adnexial masses were the leading cause of these gynecological procedures comprising 81.2% (n=26) of adolescents' gynecological procedures. Fifty percent of operations (n=13) were in the emergency setting. Laparotomy to laparoscopy ratio was 2.2. Operations for a benign pathology consisted of 84%. Sixteen percent of all cases and 19% of ovarian masses were malignant. Use of ultrasonography and laboratory examination correctly led to diagnosis of benign cases.

**CONCLUSION:** In adolescents laparoscopy and conservative surgery are choice of operation and every effort should be undertaken to perform them. Preoperative evaluation of adnexial mass in the adolescents could be made correctly.

**Key Words:** Adnexial mass, Adolescents, Laparoscopy, Laparotomy

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### Introduction

Adnexial masses are estimated to occur at an annual rate of 2.6 cases per 100.000 in the pediatric and adolescent females.<sup>1</sup> Characteristics, presentation and etiology of adnexial masses are different due to age and reproductive status. Adnexial masses may be of ovarian, tubal, paratubal origin or may be of other pelvic structures. These masses in adolescents are usually physiologic and functional masses. However, they may be due to neoplasm, inflammation or pregnancy. Risk of operation due to a benign adnexial mass is 10%. Generally benign lesions may resolve by follow-up. Adnexial masses in the adolescent population are a rare condition and number of reports considering management of adnexial masses in adolescents is limited. Aim of the present study was to investigate features of adnexial masses required emergency or elective operations in the adolescents. We analyzed the features, pres-

entation of adnexial masses and their management in young adolescent women in a referral hospital.

### Material and Method

We have retrospectively analyzed patients admitted to department of Obstetrics and Gynecology, Yuzuncu Yıl University Faculty of Medicine, Van, Turkey between 2005-2006 and department of Obstetrics and Gynecology, Suleyman Demirel University Faculty of Medicine, Isparta, Turkey between 2009-2010. Patients included to study were at or under the age of twenty and had gynecological operation for adnexial mass. Diagnosis of adnexial mass was confirmed and established by pathological examination. Premenarchal women were excluded from the study. Gynecological and obstetrical operations other than adnexial mass were not included to study.

### Results

Thirty two of 879 (3.6%) gynecological procedures were in adolescents under the age of twenty. Adnexial masses were the leading cause of these gynecological procedures comprising 81.2% (n=26) of adolescents' gynecological procedures. Mean of age of patients included to study was 17.9±1.42 years-old (range 11-20). Thirty one percent of patients were married and others were not sexually active. Mean of gravida and parity were 0.5±0.7 and 0.1±0.4, respectively.

All of the operations were undertaken by general anesthe-

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sia by laparotomy or laparoscopically. Fifty percent of operations were in the emergency setting. Laparotomy to laparoscopy ratio was 2.2. This ratio was significantly affected by the emergency status of the patient. Sixty six percent of operations at the ER were by laparotomy and 34% were by laparoscopy. However, 54% of elective operations were made by laparotomy and 46% by laparoscopy. Conversion from laparoscopy to laparotomy occurred in none of the cases.

Nineteen percent of adnexial masses were bilateral in adolescents. These bilateral cases were dysgerminoma, endometrioma, paraovarian cyst and simple hemorrhagic cysts. The most common ovarian mass was hemorrhagic cyst (25%) followed by mature cystic teratoma (19%), serous cystadenoma (5.6%), mucinous cystadenoma (5.6%), endometrioma (13%), dysger-

minoma (5.6%), serous cystadenocancer (3.1%), mix epithelial cancer composed of endometrioid and serous cell cancer(3.1%), mix germ cell tumor composed of endodermal sinus tumor and teratoma (5.6%) and tuba ovarian abscess (5.6%).

Operations for a benign pathology consisted of 84%. Sixteen percent of all cases and 19% of ovarian masses were malignant. In all cases preoperative suspicion of malignancy was confirmed by pathologic examination. Besides, use of ultrasonography and laboratory examination correctly led to diagnosis of benign cases. Localization of disease was also correctly identified in all cases except one. This case was diagnosed as ectopic pregnancy however it was pregnancy in unicornuate uterus which ruptured. Adnexial masses in adolescents and their management method is shown in table 1.

Table 1: Features of operations for adnexial mass in adolescents.

Case	Laparotomy vs. Laparoscopy	Emergent vs. Elective	Procedure	Benign vs. Malign	Pathological Examination
1	Laparotomy	Emergent	Cystectomy	Benign	Hemorrhagic ovarian cyst
2	Laparotomy	Emergent	Cystectomy	Benign	Hemorrhagic ovarian cyst
3	Laparotomy	Elective	Conventional staging with conservative approach (uterine and contralateral ovary are spared)	Malign	Serous Cystadenocarcinoma
4	Laparoscopy	Elective	Cystectomy	Benign	Endometrioma
5	Laparotomy	Emergent	Appendectomy + Drainage of TOA	Benign	TOA
6	Laparotomy	Emergent	Conventional staging with conservative approach (uterine sparing), BSO performed.	Malign	Dysgerminoma
7	Laparoscopy	Emergent	Salpingostomy	Benign	Ectopic pregnancy
8	Laparotomy	Emergent	Salpingectomy	Benign	Ectopic pregnancy
9	Laparoscopy	Elective	Cystectomy	Benign	Serous Papillary Cystadenoma
10	Laparoscopy	Elective	Salpingostomy	Benign	Hydrosalpinx
11	Laparotomy	Elective	USO	Benign	Mucinous cystadenoma
12	Laparotomy	Emergent	USO	Benign	Mature cystic teratoma
13	Laparoscopy	Emergent	Cystectomy	Benign	Hemorrhagic ovarian cyst
14	Laparotomy	Emergent	Pregnancy in unicorn/ Cornual resection	Benign	
15	Laparotomy	Elective	Conventional staging with conservative approach (uterine and contralateral ovary are spared)	Malign	Mix Germ cell ovarian tumor
16	Laparotomy	Elective	Cystectomy	Benign	Mature cystic teratoma
17	Laparotomy	Elective	Cystectomy	Benign	Neuroganglioma
18	Laparoscopy	Elective	Cystectomy	Benign	Mature cystic teratoma
19	Laparoscopy	Emergent	Cystectomy	Benign	Hemorrhagic ovarian cyst
20	Laparoscopy	Elective	Cystectomy	Benign	Hemorrhagic ovarian cyst
21	Laparoscopy	Emergent	Paraovarian Cystectomy	Benign	Hemorrhagic ovarian cyst
22	Laparotomy	Elective	Cystectomy	Benign	Bilateral endometrioma
23	Laparoscopy	Elective	Cystectomy, adhezyolysis	Benign	Bilateral endometrioma
24	Laparotomy	Emergent	Oophorectomy (Torsion)	Benign	Ovarian torsion, adnexial mass
25	Laparoscopy	Emergent	Oophorectomy(Torsion)	Benign	Ovarian torsion, Mature cystic teratoma
26	Laparotomy	Elective	Oophorectomy	Malign	Mix epithelial cancer (Compound of Endometrioid cell and serous cell)

TOA; tuboovarian, BSO; bilateral salpingo-oophorectomy, USO; unilateral salpingo-oophorectomy

There were 7 cases of ovarian torsion (22%) which was managed by detorsion and conservation of ovary in 2 cases and oophorectomy in one case of prolonged torsion. Serous cystadenocancer was managed by conventional fertility sparing staging surgery consisting of omentectomy, apendectomy, pelvic and paraaortic lymphadenectomy and sparing uterus and contralateral ovary. The case were reported to be stage IA. Mix epithelial tumour (Endometrioid and serous cell cancer) was managed by conventional fertility sparing staging surgery consisting of omentectomy, appendectomy, pelvic and paraaortic lymphadenectomy and sparing uterus and contralateral ovary. The case were reported to be stage IA.

The patient presenting with dysgerminoma had bilateral ovarian tumor and was managed by bilateral oophorectomy along with conventional staging and sparing uterus. She was stage IB. Mix germ cell tumor of ovary was stage IV and was managed by fertility sparing cytoreductive surgery.

## Discussion

An adnexial mass requiring surgical intervention is uncommon among pediatric and adolescent females.<sup>2</sup> Adolescents compromise about 7 percent of all gynecological operations and the foremost cause of these cases are adnexial masses in the present study. Although an important percentage of adnexial masses were malignant and minimal invasive techniques such as laparoscopy could be chosen as a method of treatment. Ovarian surgery in adolescents can compromise future fertility, either from removal of normal ovarian tissue or from adhesion formation. Therefore, preservation of ovarian tissue as well as minimization of adhesion formation should be surgical goals. It is reported that a malignant ovarian neoplasm accounts for 9% to 11% of adnexial masses in this age group.<sup>3,4</sup> Every effort should be taken pre-operatively to differentiate benign and malign masses. Stankovic et al. reported that ultrasonographic assessment with morphological analysis is a very useful procedure for differentiating benign from malignant ovarian tumors in children.<sup>5</sup> Tumor markers and endocrinological investigation are also useful for preoperative evaluation. Benign ovarian pathology should be adequately managed as conservatively as possible, so as to preserve the maximum amount of normal tissue in the affected ovary.

In adolescents laparoscopy and conservative surgery are choice of operation and every effort should be undertaken to perform them. However, preoperative evaluation of adnexial

mass in the adolescents could be made correctly which will help in the management decision.

## Adolesanlarda Adneksiyel Kitleler

**AMAÇ:** Adolesanlarda acil veya elektif ameliyat gereken adneksiyel kitlelerin özelliklerini arařtırmaktır. Biz bu çalışmada referans hastanesi olarak genç adolesanlarda ortaya çıkan adneksiyel kitlelerin özelliklerini ve yönetimini deęerlendirdik.

**GEREÇ VE YÖNTEM:** Biz bu çalışmada 2005-2006 yılları arasında Van Yüzüncü Yıl Üniversitesi jinekoloji ve obstetrik bölümüne ve 2009-2010 yılları arasında Isparta Süleyman Demirel Üniversitesi jinekoloji ve obstetrik bölümüne başvuran hastaları retrospektif olarak deęerlendirdik. Adneksiyel kitle nedeniyle opera edilen ve 20 yař altındaki adolesanlar çalışmaya dahil edildi.

**BULGULAR:** Sekizyüzyetmişdokuz jinekolojik prosedürün 32'si (%3,6) yirmi yař altı adolesanlardı. Adolesanlarda uygulanan jinekolojik prosedürlerin başlıca sebebi %81,2 (n=26) vakede adneksiyel kitlelerdi. Operasyonların %50'sini acil durumlar oluşturmaktaydı. Laparotomi/Laparoskopi oranı 2,2 idi. Operasyonların %84'ü benign patolojilerden oluşmaktaydı. Tüm vakaların %16'u ve ovarian kitlelerin %19'u malign olarak tespit edildi. Ultrasonografi kullanımı ve laboratuvar deęerlendirmeleri benign vakaların doęru tanısında başrolü oynamaktadır.

**SONUÇ:** Adolesanlarda laparoskopi ve konservatif cerrahi ve operasyonun seçimi için her türlü gayret onları hazırlarken sarfedilmelidir. Adolesanlarda adneksiyel kitlelerin preoperative deęerlendirilmesi doęru şekilde yapılmalıdır.

**Anahtar Kelimeler:** Adneksiyel kitleler, Adolesanlar, Laparotomi, Laparoskopi

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