

Analysing laparoscopic management of adnexal masses in the adolescent females- A retrospective clinical trial in central indian population

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Received: 03-03-2021 / Revised: 22-04-2021 / Accepted: 10-05-2021

Abstract

Background: Adnexal masses affect approximately 5-10 percent of females and carry a risk of undergoing surgery at least once in a lifetime for ovarian masses. They are seen in females of all ages and can affect females in their older age from their adolescence to early fetus life. **Aims:** The present trial was carried out to assess histopathological findings, surgical procedure, and pre-operative diagnosis in adolescent females who were managed for adnexal masses by laparoscopic surgical procedure. **Materials and Methods:** The demographic data of 84 adolescent females were recorded and additional data obtained from the medical records were chief complaint, menstrual history and normalcy, radiographic size of the cyst detected on the ultrasound, pre-operative assessment, time of the surgery, surgical procedure, histopathological findings, and serum tumor markers. The collected data were subjected to the analysis and the results were formulated. **Results:** The adnexal mass diameter in present study ranged from 2.5cm to 36cm. The mass of <10cm were recorded in 67.85% (n=57) of study subjects, and 5 subjects among these 57 had increased values of assessed tumor markers in serum. 6 (7.14%) masses among 84 subjects were greater than 15 cm diameter. HPE showed hemorrhagic cyst (9.52%, n=8), simple cyst (28.57%, n=24), or paratubal cyst (13.09%, n=11), polycystic ovary (2.38%, n=2), dermoid cyst (14.28%, n=12), cystadenoma, corpus luteal cyst (13.09%, n=11), hydrosalpinx (2.38%, n=2), and endometriotic cyst (1.19%, n=1). **Conclusion:** Laparoscopic management is an effective and safe technique for managing adnexal masses in adolescent females including large size cysts as most masses encountered during adolescence are benign.

Keywords: Adnexal mass, Adnexal mass management, adolescent, laparoscopy.

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Introduction

Any masses in the fallopian tube, surrounding tissue (connective), and/or ovary are termed adnexal mass. There is a high prevalence of ovarian carcinoma affecting approximately 5 to 10 percent of females in their lifetime. Also, these females carry a risk of undergoing surgery at least once in a lifetime for ovarian masses. Adnexal masses are seen in females of all ages. These masses can affect females in their older age from their adolescence to early fetus life. These masses can be divided into various forms and varieties[1]. Adolescent age usually marks the onset of puberty in females. This puberty onset should be normal physiologically to mark the start of the adolescent age group in females and falls between 10 years to 19 years as per WHO (World Health Organisation). The approximate incidence of adnexal masses occurrence in adolescent age group

is 2.6 out of 1 lakh females. The commonly seen adnexal masses in adolescents are benign neoplasms or functional ovarian cysts. Histopathological examination is needed to reach a definitive conclusion of adnexal mass to malignant or benign[2]. The treatment of these adnexal masses is largely determined by malignancy suspicion, mass location, patient characteristics, mass type, mass etiology, and need for urgent treatment like torsion of the ovary and ectopic pregnancy. Generally, these adnexal masses are treated by following three methods including surgery performed conventionally / laparoscopic in malignant and asymptomatic adnexal mass cases. Concerning masses in the ovary, cystectomy/ oophorectomy is done, whereas, for other masses resection or biopsies can be performed[3]. When masses are not highly suspected of malignancy, they are kept under continued surveillance which involves measuring tumor markers in serum and frequent pelvic ultrasounds. No further evaluation and follow-up visits are needed in case of benign adnexal masses without any surgical intervention indicated[4]. Recently, the most commonly employed interventional measure for the management of the adnexal masses is laparoscopic interventions. For adequacy and success of the laparoscopic management of adnexal masses, careful and comprehensive preoperative assessment is a

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prerequisite. Malignancy exclusion constitutes the primary aim of adnexal mass evaluation. Laparoscopic puncture of the adnexal masses that are malignant needs to be best avoided at any time. However, such an occurrence is uncommon. Laparoscopic management has various clinical advantages; however, these advantages should not compromise the outcomes seen with the management of malignant adnexal masses.⁵Hence, the present trial was carried out to assess histopathological findings, surgical procedure, and pre-operative diagnosis in adolescent females who were managed for adnexal masses by laparoscopic surgical procedure.

Materials and Methods

The present study was retrospective in nature with analytical approach adaptation. The study was carried out at Department of Obstetrics and Gynaecology, Sri Shankaracharya Medical College, Bhilai, Durg, Chhattisgarh, India, after obtaining clearance from the concerned Ethical committee. The study included the subjects who were diagnosed with benign neoplasms of the ovary, tubouterine, and/or adnexal masses. The corresponding medical data and records of 84 subjects matched the defined criteria and hence, were analyzed. To be included in the study, the subjects had to fulfill the following criteria: subjects of less than 20 years of age, with no associated medical history or chronic illness, no prolonged history of any medication that can affect the concerned disease or study outcome, availability of sample for histopathological examination, and the subjects with a confirmed diagnosis of with benign neoplasms of the ovary, tubouterine, and/or adnexal masses. The subjects with malignant adnexal masses, any missing detail concerning study, and subjects with masses that could be managed medically without surgical intervention need were excluded from the study. After the final recruitment of 84 study subjects based on inclusion and exclusion criteria, the study was preceded. The demographic data of all the 84 study subjects were recorded in detail. The additional data obtained from the medical records were a chief complaint, menstrual history and normalcy, radiographic size of the cyst detected on the ultrasound, pre-operative assessment, time of the surgery, surgical procedure, histopathological findings, and serum tumor markers including AFP (alpha-fetoprotein), carcinoembryonic antigen, cancer antigen(CA 125 and CA 19-9),and β -human chorionic gonadotrophin.Concerning the pre-operative assessments of the adnexal masses, radiography was done. These radiographic pre-operative assessments of the adnexal masses were carried out using either MRI(magnetic resonance imaging),CT(computed tomography), or ultrasound. The collected data were subjected to the analysis and the results were formulated.

Results

The study was completed with 84 adolescent females with adnexal masses who were treated with a laparoscopic approach. The demographic characteristics of the study subjects are summarized in Table 1. The mean age of the study subjects was 16.2 years with the age range of 9 years to 20 years. The majority of subjects were between the age of 15 years to 20 years (60.71%, n=51), one (1.19%) female was 9 years old constituting the study population of younger than 10 years, and the remaining 38% (n=32) females were from the age group of 10-15 years. Menarche was attained by 86.90% (n=73) of study females. However, the remaining 13.09% (n=11) females were in the premenarchal stage. Emergency care was needed by 67.85% (n=57) subjects and remaining 32.14% (n=27) reported to the outpatient department.

On assessing the presenting chief complaint in the study females, 2.38% (n=2) subjects were asymptomatic and presented with no complaint with the incidental and radiographic diagnosis of an adnexal mass, 9.52% (n=8) females had chronic abdominal pain on the first presentation, vomiting accompanied with acute pain was shown by 67.85% (n=57) females which were the majority in the study subjects. Abdominal distension with gastrointestinal symptoms was shown by 8.33% (n=7) subjects. Dysmenorrhoea and menstrual

irregularities were the complaints in 5 (5.95%) subjects each (Table 2). The adnexal mass diameter in the present study ranged from 2.5cm to 36cm. The mass of <10cm was recorded in 67.85% (n=57) of study subjects, and 5 subjects among these 57 had increased values of assessed tumor markers in serum. 6 (7.14%) masses among 84 subjects were greater than 15 cm diameter. Concerning tumor markers, 11.90% (n=10) of subjects had abnormal levels of tumor markers and 74 had normal values. Pelvis and abdomen were radiographically assessed for all subjects and those requiring further evaluation were suggested MRI/CT. The radiographic diagnosis coincided with histopathological examination in 84.52% (n=71) subjects and was different in 13 subjects with high reliability of radiographic diagnosis (Table 3).

All 84 subjects were managed with laparoscopic intervention with one of the following procedures: cystectomy (paraovarian, paratubal, or ovarian), ovariopexy and detorsion, salpingo-oophorectomy, rudimentary horn excision, and/or salpingectomy. Ovary preservation was done in 71.24% (n=60) subjects. On histopathological examination (HPE), all adnexal masses were either benign neoplasms (27.38%, n=23) or non-neoplastic masses (69.04%, n=58), whereas, in 2.38% (n=2) subjects HPE was not needed and performed. Torsion was noticed in 40.47% (n=34) subjects who reported as an emergency intervention case and all females of torsion had reached menarche and had normal tumor markers except 2 females. These 2 females had benign neoplasm on HPE with raised tumor markers. Torsion was managed with detorsion using oophorectomy, salpingectomy, or oophoropexy. HPE showed hemorrhagic cyst (9.52%, n=8), simple cyst (28.57%, n=24), or paratubal cyst (13.09%, n=11), polycystic ovary (2.38%, n=2), dermoid cyst (14.28%, n=12), cystadenoma, corpus luteal cyst (13.09%, n=11), hydrosalpinx (2.38%, n=2), and endometriotic cyst (1.19%, n=1) (Table 4).

Discussion

The study was completed with 84 adolescent females with adnexal masses who were treated with the laparoscopic approach. The mean age of the study subjects was 16.2 years with the age range of 9 years to 20 years. The majority of subjects were between the age of 15 years to 20 years (60.71%, n=51), one (1.19%) female was 9 years old constituting the study population of younger than 10 years, and the remaining 38% (n=32) females were from the age group of 10-15 years. Menarche was attained by 86.90% (n=73) of study females. However, the remaining 13.09% (n=11) females were in the premenarchal stage. Emergency care was needed by 67.85% (n=57) subjects and remaining 32.14% (n=27) reported to the outpatient department. These findings were consistent with the studies by Kim HB et al[6]in 2015 and Liu H et al[7] in 2015 where authors took mean age as 17.1 years and similar menarche population and emergency care.The adnexal mass diameter in the present study ranged from 2.5cm to 36cm. The mass of <10cm was recorded in 67.85% (n=57) of study subjects, and 5 subjects among these 57 had increased values of assessed tumor markers in serum. 6 (7.14%) masses among 84 subjects were greater than 15 cm diameter. Concerning tumor markers, 11.90% (n=10) of subjects had abnormal levels of tumor markers and 74 had normal values. Pelvis and abdomen were radiographically assessed for all subjects and those requiring further evaluation were suggested MRI/CT. The radiographic diagnosis coincided with histopathological examination in 84.52% (n=71) subjects and was different in 13 subjects with high reliability of radiographic diagnosis. These findings were consistent with the study of Calster B et al[8] in 2007 and Merret H et al[9] in 2001 where similar findings were reported concerning tumor markers and ultrasound.All 84 subjects were managed with laparoscopic intervention with one of the following procedures: cystectomy (paraovarian, paratubal, or ovarian), ovariopexy and detorsion, salpingo-oophorectomy, rudimentary horn excision, and/or salpingectomy. Ovary preservation was done in 71.24% (n=60) subjects. On histopathological examination (HPE), all adnexal

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dermoid cyst (14.28%, n=12), cystadenoma, corpus luteal cyst (13.09%, n=11), hydrosalpinx (2.38%, n=2), and endometriotic cyst (1.19%, n=1). Laparoscopy had several added advantages of less pain, better recovery and visualization, and less hospitalization. These findings were similar to other studies of Broach AN et al[10] in 2009 and Meyer JP et al[11] in 2009 where advantages of the laparoscopic approach in adolescents are focused. Also, the incidence of various cyst types was following Kim et al[6].

Results

Table 1: Demographic characteristics of the study subjects

Characteristic	N	%
Total subjects	9-20	
Mean Age	16.2	
Age range		
Adnexal mass as per age group		
<10 years	1	1.19
10-15 years	32	38
15-20 years	51	60.71
Menstrual status		
Premenarchal stage	11	13.09
Menarche	73	86.90
Treatment Approach		
Emergency Care	57	67.85
Routine approach	27	32.14

Table 2: Chief Presenting complaints of the study subjects

Presenting Complaint	N	%
No complaint (Asymptomatic)	2	2.38
Chronic abdominal pain	8	9.52
Acute abdominal pain	57	67.85
Gastrointestinal symptoms with Abdominal distension	7	8.33
Dysmenorrhoea	5	5.95
Menstrual irregularity	5	5.95

Table 3: Adnexal mass of <15cm in study subjects

Cyst size (cm)	Treatment strategy	Ovary status	Histopathological finding	Tumor markers
20x15	Cystectomy	Preserved	Serous Cystadenoma	Normal
20x18	Salpingo-oophorectomy	Not-preserved	Simple cyst	CA-125
25x15	Salpingo-oophorectomy	Not-preserved	Mucinous cystadenoma	Normal
30x20	Salpingo-oophorectomy	Not-preserved	Dermoid cyst	AFP-38.2
35x20	Cystectomy	Preserved	Serous Cystadenoma	Normal
35x25	Cystectomy	Preserved	Serous Cystadenoma	Normal

Table 4: HPE of adnexal mass in the study

Presenting Complaint	N	%
Benign Neoplastic masses	23	27.38
Mucinous cystadenoma	1	1.19
Dermoid cyst	12	14.28
Polycystic Ovaries	2	2.38
Serous Cystadenoma	7	8.33
Endometriotic Cyst	1	1.19
Non-neoplastic masses	58	69.04
Hemorrhagic Cyst	8	9.52
Simple cyst	24	28.57
Rudimentary Horn	1	1.19
Paratubal Cyst	11	13.09
Corpus Luteal Cyst	6	7.14
Hydrosalpinx	2	2.38
Granuloma	4	4.76
Ectopic	2	2.38

Conclusion

Within its limitations, the present study concludes that laparoscopy offers added advantages over conventional methods in treating adnexal masses especially in adolescents where ovarian preservation is needed to ensure future fertility. The study had few limitations

including a single-institution study, retrospective approach, small sample size, and short monitoring period.

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Conflict of Interest: Nil

Source of support: Nil