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Ovarian masses under 35 years of age: Sociodemographic, clinical findings and fertility preservation surgery

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Abstract
Ovarian cancer is most crucial problem in women's healthcare today and a significant cause of morbidity and mortality. Fertility-sparing surgery (FSS) for women of childbearing age with early-stage malignant epithelial ovarian cancer (ES/ EOC) has been intensely debated in the last two decades. Preservation of the adnexa and uterus is currently recommended in patients with nonepithelial tumours and epithelial borderline ovarian cancer, but is still considered suboptimal for women with invasive EOC, and there is general concern about the greater risk of relapse for patients who preserve the uterus and ovaries. A descriptive, prospective, observational study was conducted in Onco – gynaecology department, tertiary care teaching hospital. All the patients under 35 years of age who had ovarian masses were included during the study period. Majority of patients (40%) belonged to age group of 30 to 35 years of age. Abdominal pain is the most common presenting complaint of young adolescent girls with adnexal masses. Ovarian cancer is surgically treated by hysterectomy and bilateral salpingo oophorectomy, but fertility preservation is possible in germ cell cancers, border line tumours, sex cord stromal tumours, and even early epithelial ovarian cancers.

Keywords: fertility preservation surgery, ovarian carcinoma, young women

Introduction
One in thirty-nine women is having cancer risk in women below the age of thirty-nine years. From estimated overall gynaecological cancer cases, young women are having 2% of cervix cancer cases, 56% of endometrial cancers and 12% of ovarian cancers [1]. Ovarian cancer is most crucial problem in women's healthcare today and a significant cause of morbidity and mortality. 10-15% of all epithelial ovarian malignancies are Borderline ovarian tumours (BOTs). BOTs occur in women at approximately 40 years of age, but the tumours occur at a younger age in 27-36% of Epithelial ovarian cancer is the most lethal of the gynaecologic cancers and 10% of all epithelial ovarian cancer occurs commonly in women under the age of 40 years. Germ cell tumours forms (20%) of all ovarian cancers and most germ cell tumours occur in children & young women in second and third decades of life [2, 3].

Perhaps more than any other gynaecologic malignancy, effective treatment of ovarian cancer requires an integrative model of multidisciplinary care that includes gynaecologic, medical, and surgical and radiation oncologists, pathologists, oncology nurses, psychologists and basic scientists among others. Preservation of fertility has become a very important issue in gynaecologic oncology as a result of not only the increasing incidence of gynaecological cancer in young patients but also due to current social trends, childbearing nowadays is delayed, hence an increasing number of women that present with cancer at a young age might have not yet fulfilled their family building plans and will be interested in undergoing treatments that would preserve their chances to have children in the future. [4]

Fertility-sparing surgery (FSS) for women of childbearing age with early-stage malignant epithelial ovarian cancer (ES/ EOC) has been intensely debated in the last two decades. Today, in a young patient with a gynaecologic cancer, preservation of fertility is possible and depends upon the extent and type of cancer (need for centralization). Preservation of the adnexa and uterus is currently recommended in patients with nonepithelial tumours and epithelial borderline ovarian cancer, but is still considered suboptimal for women with invasive EOC, and there is general concern about the greater risk of relapse for patients who preserve the uterus and

ovaries. The present study was planned to evaluate socio-demographic, clinical findings and treatment modalities (fertility sparing surgery) in ovarian masses in under 35 years of age [4].

Material and methods

A descriptive, prospective, observational study was conducted in Onco - gynaecology department, tertiary care teaching hospital. The study was conducted between July 2015 to May 2017. The study was conducted after approval from institutional ethics committee. All the patients under 35 years of age who had ovarian masses were included during the study period. Patient who refused to participate in the study, who lost to follow up and who received some treatment (surgery, chemotherapy) outside the institute were excluded from the study.

We included patients who fulfilled the inclusion criteria. Patients recruited in the study on pro rata basis and all the patients participating in the study were explained clearly about the purpose and nature of the study in the language they can understand and written informed consent was taken before including them in the study. Data was collected using case record form (CRF) by means of individual patient interview and hospital files. The CRF comprised of socio-demographic and clinical details (age, marital status.), diagnosis, tumour markers, frozen section, histopathology, type of surgery, complications of surgery.

The data was entered into Microsoft office excel and analysed by epiinfo software. Qualitative variables were described using the absolute (N) and relative (%) frequencies.

Result

Total 96 cases were enrolled in the study. Out of 96 cases, 26 cases were excluded from the study due to inadequate information and lost to follow up. 70 cases were included in final analysis.

In present study, majority of patients (40%) belonged to age group of 30 to 35 years of age. Mean age of the patient was 28.9 years. In our study majority of patients, 90% were Hindu and 10 patients were Muslim. No patients were belonged to other religious group in our study. Our study, 68.57% patients were housewife. 30% were students and 1.43 % was labourer. In our study 78.6% patients were rural dweller and 21.4% were urban dweller. In our study sample, 72.9% patients were currently married, 27.1% were unmarried. In our study, 18 patients were below 19 years of age, legal age of marriage. Very few had irregular menses and majority had no complaints of irregular menstruation.

In our study the most common complaint was abdominal pain (83%) followed by abdominal distention in 38.5% of cases. Most of the patients (48.57%) presented with 5-24 days of complaints. Of all the masses, germ cell tumour and benign serous cystadenoma were the two most common masses (20%) and there was only one case of juvenile granulosa cell tumour and one case of steroid cell tumour. 10% were non neoplastic lesion.

In our study cases fertility sparing surgery was performed in 65.7% cases and 34.3% cases had to undergo non fertility sparing surgery. In those where Fertility Sparing Surgery was not performed (24 cases) had undergone Total abdominal hysterectomy and bilateral salpingo – oophorectomy (TAH + BSO). Out of 24 who had undergone TAH + BSO, 23 patients had completed their family and were between 30 – 35 years of age group, and were epithelial ovarian tumours. Out of 24 patients, one patient was aged 22 years and unmarried and was subjected to TAH + BSO following frozen report of serous cyst adenocarcinoma. She was on chemotherapy after surgery. Of all the cases, 91.4% qualified for primary surgery whereas 8.6% had to undergo chemotherapy followed by interval debulking surgery. In our study, out of 70 cases only 11 cases suffered post-operative complication in the form of fever in 11.4% cases and wound gape in 4.3% cases.

Table 1: Socio- demographic and clinical characteristics of patients (n=70)

Characteristics	Frequency (n)	Percentage (%)
Age		
10-14	6	8.57
15-19	12	17.14
20-24	13	18.57
25-29	11	15.72
30-35	28	40
Religion		
Hindu	63	90
Muslim	7	10
Occupation		
Housewife	48	68.57
Labourer	1	1.43
Student	21	30
Locality		
Rural	55	78.6
Urban	15	21.4
Marital status		
Married	51	72.9
Unmarried	19	27.1
Presenting complaints*		
Pain abdomen	58	83
Abdominal distention	27	38.5
Others	10	7
Duration of complaints		
5-24	34	48.57
25-44	19	27.14
45-60	17	24.29

*the sum of variable exceeds 100 due to more than one presenting complains

Table 2: Distribution of patients according to type of ovarian masses (n =70)

	Variety of tumours			Frequency (n)	Percentage (%)
I.	Epithelial ovarian tumours				
	1.	Benign			
		a.	Benign mucinous cystadenoma	8	11.5
		b.	Benign serous cystadenoma	14	20
		c.	Brenner	2	2.9
	2.	Borderline			
		a.	Borderline mucinous cystadenoma	2	2.9
		b.	Borderline serous	4	5.8

			cystadenoma		
	3.	Malignant			
		a.	Serous papillary	7	10
			cystadenocarcinoma		
		b.	Malignant mucinous	5	7.2
			cystadenocarcinoma		
II.	Germ cell Tumours				
	1.	Benign			
		a.	Mature teratoma	1	1.4
		b.	Immature teratoma	3	4.2
	2.	Malignant			
		a.	Dysgerminoma	3	4.2
		b.	Endodermal sinus tumour	2	2.9
		c.	Mixed germ cell tumour	3	4.2
III.	Sex cord stromal Tumours				
	1.	Adult granulosa cell tumour		7	10
	2.	Juvenile Granulosa cell tumour		1	1.4
IV.	Steroid (lipid) cell tumours			1	1.4
V.	Others (Non neoplastic)				
	1.	Simple hemorrhagic cyst		5	7.1
	2.	Follicular cysts		2	2.9

Table 3: Distribution of patients according to type of surgery (n=70)

Type of surgery	Frequency(n)	Percentage (%)
Fertility sparing	46	65.7
Not fertility sparing	24	34.3

Table 4: Distribution of patients according to post-operative complications (n=70)

Post-operative complications	Frequency(n)	Percentage (%)
Fever	8	11.4
Wound gape	3	4.3
No complications	59	84.3

Discussion

Current study was carried out at Gujarat Cancer Research Institute, Ahmedabad. Total 70 patients were included to evaluate socio- demographic, clinical Findings and type of surgery (Fertility Sparing Surgery) in ovarian masses in women less 35 years of age.

In present study, majority of patients (40%) belonged to age group of 30 to 35 years of age. Mean age of the patient was 28.9 years. In the study conducted by Jun Hu *et al.* Majority cases were from 20 - 30 years of age group with the mean age being 28 years [5]. In our study majority of patients, 90% were Hindu and 10 % were Muslim. No patients were belonged to other religious group in our study. Since ours is a tertiary referral centre and so it is difficult to comment on majority of subject being Hindu. In the study by Ruchi *et al.* 75% were Hindus and 22% were Muslims and rest were others [6]. In our study, 68.57% patients were housewife. 30% were students and 1.43 % was labourer. In our study 78.6% patients were rural dweller and 21.4% were urban dweller. In the study by Hongqian *et al.* 64% were rural dwellers and 36% were urban dwellers [7]. In our study sample, 72.9% patients were currently married, 27.1% were unmarried. In our study, 18 patients were below 19 years of age, legal age of marriage. In the study conducted by Hassan *et al.*, 67.4% were married and 32.6% were unmarried [8].

Ovarian masses under 35 years of age may have varied presentations. Abdominal pain is the most common presenting complaint of young adolescent girls with adnexal masses. So, the index of suspicion should be kept high and prompt investigations like ultrasound must be performed to rule out such adnexal masses.

In our study the most common complaint was abdominal pain (83%) followed by abdominal distention in 38.5% of cases. In the study by Hongqiao *et al.* 57.7% patient presented with abdominal 3pain as their chief complaints [9]. In the study by Deligeoroglou, *et al.*, 59% patient presented with abdominal pain, followed by abdominal mass [10]. In the Study by Ruchi *et al.* abdominal pain as chief complaint was seen in 46.4% cases [6]. Most of the patients (48.57%) presented with 5-24 days of complaints. From all the masses, germ cell tumour and benign serous cystadenoma were the two most common masses (20%) and there was only one case of juvenile granulosa cell tumour and one case of steroid cell tumour. 10% were non neoplastic lesion. In the study by Deligeoroglou *et al.*, 25% were functional cyst, 10.6% were benign cystadenomas of which 8.5% were serous and 2.1% were mucinous variety. 39% were germ cell tumours [10].

Ovarian cancer is surgically treated by hysterectomy and bilateral salpingo oophorectomy, but fertility preservation is possible in germ cell cancers, border line tumours, sex cord stromal tumours, and even early epithelial ovarian cancers. Germ cell ovarian tumours affect girls in their first or second decade of life. They present usually with early stage disease and are always candidates for fertility preservation. The surgical staging includes unilateral salpingo oophorectomy with comprehensive surgical staging. Borderline cancers also called low malignant potential tumours affect patients in reproductive age group and are effectively treated by fertility preservation surgery. Unilateral tumours need only unilateral salpingo oophorectomy. Rarely can they be bilateral and, in such situations, ovarian cystectomy preserving normal ovarian tissue is done. Sex cord stromal tumours also present in early stages and are treated by conservative surgery. They usually have good prognosis but late recurrences sometimes occur and hence they need prolonged follow up. In our study cases fertility sparing surgery was performed in 65.7% cases and 34.3% cases had to undergo non fertility sparing surgery. In those where Fertility Sparing Surgery was not performed (24 cases) had undergone TAH + BSO. Out of 24 who had undergone TAH + BSO, 23 patients had completed their family and were between 30 – 35 years of age group, and were epithelial ovarian tumours. Out of 24 patients, 1 patient was aged 22 years and unmarried and was subjected to TAH + BSO following frozen report of serous cyst adenocarcinoma. She was on chemotherapy after surgery. In our

study, out of 70 cases only 11 cases suffered post op complication in the form of fever in 11.4% cases and wound gape in 4.2% cases. Wound gapes were superficial and 2 out 3 were obese patient and 1 had received NACT. So that may be the reason for gapping. In the study conducted by Ridhi Narang *et al.*, 2.2% cases had wound gap [11].

This surgical management depends on the preoperative workup which should always include careful history taking and physical examination, pelvic imaging and tumour markers. With proper preoperative diagnostic work up, adequate and required treatment can be chosen for this age group and subsequent problem related to development, fertility and quality of life can be avoided.

Conclusion

Ovarian masses under 35 years of age, majority of patients belong to 30-35 years of age. Ovarian masses under 35 years of age may have varied presentations. Abdominal pain is the most common presenting complaint of young adolescent girls with adnexal masses. Ovarian cancer is surgically treated by hysterectomy and bilateral salpingo oophorectomy, but fertility preservation is possible in germ cell cancers, border line tumours, sex cord stromal tumours, and even early epithelial ovarian cancers. The field of fertility preservation is constantly evolving, as new experience is acquired and new lessons are learned.

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