Original Article

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Histomorphological Spectrum of Ovarian Lesions at a Rural Care Hospital in Gurugram

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Abstract

Background: The ovaries are paired intrapelvic organs of female reproductive system. It is unique in the variety of lesions that can arise from ovary as it is complex in its embryology, histology and steroidogenesis. The ovary consists of totipotent sex cord cells and multipotent mesenchymal cells. They are common site of non-neoplastic and neoplastic lesions. Some non-neoplastic lesions of the ovary usually present as a pelvic mass and mimic an ovarian neoplasm and thus posses a great challenge to gynecological oncologist and pathologist. Therefore their proper recognition and classification is important for appropriate therapy.

Material and Methods: A prospective clinico-pathological study of 58 cases of non-neoplastic and neoplastic lesions of ovary was conducted in Department of Pathology, FMHS, SGT University, Gurugram over the period of one years from June 2018 to June 2019. The materials for this study were oopherectomy specimen, ovarian cystectomies as well as hysterectomy with unilateral/bilateral salphingoopherectomy received from department of Obstetrics and Gynecology. The non-neoplastic and neoplastic lesions from representative sections were studied and classified according to World Health Organisation (WHO) and correlation of histopathological patterns with age, bilaterality, morphology and grading of the tumour was done.

Results: A total of 58 cases were studied out of which 31 (53.45%) cases were non-neoplastic and 27 (46.55%) cases were neoplastic. Among the 31 non-neoplastic cases, the most common lesion found was simple cyst with 13 (41.94%) cases followed by corpus luteal cyst with 6 (19.35%) cases. Among the 27 neoplastic ovarian lesions, 17 (62.96%) cases were benign tumour, 2 (7.4%) cases were borderline tumour and 8 (29.64%) cases were malignant tumour. These tumours were classified according to WHO classification and categorised in three main groups. Surface epithelial tumours constituted the majority with 17 (62.98%) cases, followed by germ cell tumours which constituted 8 (29.62%) cases and sex cord stromal tumours constituted 2 (7.4%) cases.

Conclusion: Ovarian cancers are called as "silent killer" as in most of the primary ovarian tumour they remain asymptomatic until the advanced stage. However, histomorphological study of tumour is still the gold standard method, these observations and results proved to be valuable base line information regarding frequency and pattern of ovarian tumours.

Keywords: Histolomorphological; Ovarian; Non-Neoplastic, Neoplastic.

Introduction

The ovaries are paired intrapelvic organs of female reproductive system. It is unique in the variety of lesions that can arise from ovary as it is complex in its embryology, histology and steroidogenesis.[1] They are common site of non-neoplastic and neoplastic lesions. It is also concerned with progeny production. The ovary consists of totipotent sex cells and multipotent mesenchymal cells. So, when it becomes neoplastic, almost any types of tumour can thus result.

Some non-neoplastic lesions of the ovary usually present as a pelvic mass and mimic an ovarian neoplasm and thus posses a great challenge to gynecological oncologist and pathologist. Therefore their proper recognition and classification is important to allow appropriate therapy.[2]

Ovarian cysts are seen in all age groups, and are subdivided into physiological and pathological cysts. They can be solid, cystic or can have both solid and cystic components.[3] Physiological cysts are mainly follicular and luteal cysts. Pathological cysts can be benign, borderline or intermediate grade and malignant in nature.[3,4] Benign ovarian cysts are the fourth leading gynaecological cause of hospital admissions and, ovarian malignancies

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constitute the sixth leading cause of cancer in women and the fourth common cause of cancer related death in females.[5,6] Until these lesions attain a large size or cause signs and symptoms, they escape detection. Preoperative diagnosis of ovarian cysts largely depends on clinical examination, radiological imaging and tumour markers.[7] However, sometimes it may be difficult to differentiate between benign and malignant ovarian cysts. A thorough histopathological examination is therefore necessary to confirm the nature of the ovarian cysts.[5]

Management of the ovarian cysts depend on the age, menopausal status, pregnancy, and their nature. Physiological cysts require no treatment unless secondarily complicated. Prognosis of the neoplastic cysts largely depends on the histological type and grade.[4,5]

Ovarian cancer accounts for about 3% of all cancers in women. Ovarian tumours represent about 27% of all female genital cancers and are responsible for 52% of deaths caused by result of lack of symptoms in most patients with early stage of disease.[8]

There is no safe age group from these tumours, different tumours tend to involve different age groups preferentially. In clinical presentation of ovarian tumours menstrual disturbance, pain and other striking symptoms are rare. Consequently many of the malignant ovarian tumours have had variable periods of these two groups and often involve adjacent organs before any symptoms develop or recognition takes place.[9] Despite the new techniques in imaging and genetics, the diagnosis of ovarian tumours is primarily dependent upon histological examination.

The main aim of the pathologist lies in distinguishing ovarian neoplasms from the wide spectrum of non-neoplastic lesions which frequently form a pelvic mass and are often associated with abnormal hormonal manifestation, thus potentially mimicking ovarian neoplasm. Their proper recognition in time is therefore important in guiding therapy.[10]

Surgical management, in order to early diagnosis and aggressive treatment may improve survival of ovarian cancer especially in younger patients (below 45 yr old)[11]. In contrast, surgical management of functional cysts (luteal mass or simple cyst) may not be beneficial in comparison with either medical treatment in the case of a luteal mass or expectant management in cases of a simple cyst.[12,13] Many functional ovarian cysts can be managed conservatively with observation and sometimes pain control.[14] A thorough knowledge of the spectrum of ovarian disorders is essential to assist care providers in targeted evaluation and appropriate management and referrals.

Material and Methods

A prospective clinico-pathological study of 58 cases of non-neoplastic and neoplastic lesions of ovary was conducted in Department of Pathology, FMHS, SGT University, Gurugram over the period of one years from June 2018 to June 2019. The materials for this study were oopherectomy specimen, ovarian cystectomies as well as hysterectomy with unilateral/bilateral salphingoopherectomy received from department of Obstetrics and Gynecology. Relevant clinical information regarding the age, clinical features, radiological findings and provisional diagnosis were obtained. The specimens were analyzed in detail macroscopically for various parameters like size, external surface, and consistency and cut sections with contents of cyst. The tissues were processed by routine paraffin techniques and sections stained with Haematoxylin and Eosin were taken for microscopic examination. A protocol for SEE-FIM (Sectioning and Extensively examining the Fimbriated end) of fallopian tube was followed to detect "early carcinoma". It entails amputation and longitudinal sectioning of the infundibulum and fimbrial segment (distal 2 cms). The isthmus and ampulla are cut transversely at 2 and 3 mm intervals. The non-neoplastic and neoplastic lesions from representative sections were studied and classified according to World Health Organisation (WHO) and we studied the correlation of histopathological patterns with age, bilaterality, morphology and grading of the tumour.

Results

A prospective study of ovarian lesions was carried out in the Department of Pathology, FMHS, SGT University, Gurugram from June 2018 to June 2019. A total of 58 cases were studied out of which 31 (53.45%) cases were non-neoplastic and 27 (46.55%) cases were neoplastic (Table 1).

Table 1: Distribution of Ovarian Lesions

Type of Ovarian Lesion	Number of Cases	Percentage
Non-neoplastic	31	53.45%
Neoplastic	27	46.55%
Total	58	100%

Among the 31 non-neoplastic cases, the most common lesion found was simple cyst with 13 (41.94%) cases followed by corpus luteal cyst with 6 (19.35%) cases (Table 2).

Among the 27 neoplastic ovarian lesions, 17 (62.96%) cases were benign tumour, 2 (7.4%) cases were borderline tumour and 8 (29.64%) cases were malignant tumour (Table 3). These tumours were classified according to WHO classification and categorised in three main groups. Surface epithelial tumours constituted the majority of the ovarian neoplasms with 17 (62.98%) cases, followed by germ cell tumours which constituted 8 (29.62%) cases and sex cord stromal tumours constituted 2 (7.4%) cases.

Out of 17 cases of surface epithelial tumours comprised about 11 (64.70%), mucinous tumours about 4 (23.52%) and endometroid tumours were 2 (11.78%) cases. Out of these, serous cystadenoma was the most common benign tumour comprising about 6 (22.23%) cases then mucinous cystadenoma 3 (11.12%) cases. One (3.7%) of borderline mucinous cystadenoma was reported. Malignant surface epithelial tumours comprised serous cystadenocarcinoma about 5 (18.53%) cases and endometroid tumours about 2 (7.4%) cases of the neoplastic ovarian lesions.

Out of 8 cases of germ cell tumours, 7 (25.92%) cases were of benign mature teratoma and 1 (3.7%) case of immature teratoma. Sex cord stromal tumours comprised only 2 (7.4%) cases with 1 case of fibroma and 1 case of adult granulosa cell tumour.

Age range from 21 years to 75 years with majority of the cases in non-neoplastic (n = 13) included among 31 to 40 years age group followed by 9 cases in the 21 to 30 years age group. The majority of neoplastic cases (n = 7) were seen in both 31 to 40 years and 41 to 50 years age groups followed by 5 cases in each 21 to 30 years and >60 years age groups.

Based on site of involvement in non-neoplastic lesions, majority were unilateral (93.55%) cases. Involvement of left ovary (16 cases 51.61%) was more common than right (13 cases; 41.94%). Bilaterality was seen in 2 (6.45%) cases (Table 5). Based on site of involvement in neoplastic lesions, majority were unilateral (88.89%) cases. Involvement of left ovary (13 cases; 48.15%) was more common than right (11 cases; 40.74%). Bilaterality was seen in 3 (11.11%) neoplastic cases (Table 6).

Table 2: Age Distribution of Non-Neoplastic Lesions

Histological Type	21 – 30	31 – 40	41 – 50	51 – 60	>60	Total	%age
Simple cyst	3	5	2	2	1	13	41.94%
Follicular cyst	2	–	2	–	–	4	12.90%
Corpus luteal cyst	2	4	–	–	–	6	19.35%
Haemorrhagic cyst	–	2	1	–	–	3	9.68%
Endometroid cyst	2	2	–	1	–	5	16.13%
Total	9	13	5	3	1	31	100%

Table 3: Age Distribution of Neoplastic Lesions

Histological Type			21 – 30	31 – 40	41 – 50	50 – 60	>60	Total	%age	Overall %age
Surface Epithelial tumours	Benign	Serous tumour	2	1	–	2	1	6	22.23%	62.98%
		Mucinous tumour	2	–	–	1	–	3	11.12%	–
	Boderline	Mucinous tumour	–	1	–	–	–	1	3.7%	–
	Malignant	Serous tumour	1	–	2	–	2	5	18.53%	–
		Endometroid tumour	–	–	–	–	2	2	7.4%	–
Sex Cord Stromal tumours	Pure Stromal tumour	Fibroma	–	–	1	–	–	1	3.7%	7.4%
	Pure Sex Cord tumour	Adult Granulosa cell tumour	–	–	1	–	–	1	3.7%	–
Germ cell tumours	Benign	Mature teratoma	–	5	2	–	–	7	25.92%	29.62%
	Malignant	Immature teratoma	–	–	1	–	–	1	3.7%	–
Total			5	7	7	3	5	27	100%	100%

Table 4: Incidence of various Ovarian tumours

Nature of Tumour	Total Number	Percentage
Benign	17	62.96%
Boderline	2	7.40%
Malignant	8	29.64%
Total	27	100%

Table 5: Laterality of Non-Neoplastic Lesions

Side		Number of Cases	Percentage
Unilateral	Right	13	41.94%
	Left	16	51.61%
Bilateral		2	6.45%
Total		31	100%

Table 6: Laterality of Neoplastic Lesions

Side		Number of Cases	Percentage
Unilateral	Right	11	40.74%
	Left	13	48.15%
Bilateral		3	11.11%
Total		27	100%

Discussion

Due to similar clinical presentations there is confusion in the diagnosis of non neoplastic and neoplastic lesions of ovary. Non-neoplastic lesions are more common than the neoplastic ones. Both neoplastic as well as non neoplastic lesions occurred more commonly in later age group of 30–45 years. The non-neoplastic lesion like simple cyst, follicular cyst and corpus luteal cyst are commonly encountered conditions.

Ovarian neoplasm has become increasingly important not only because of its large variety of histomorphological patterns but more because they have gradually increased the mortality rate in female genital cancers because of its vague symptoms and diagnosed in advanced stage. The incidence, clinical appearance and the behavior of the different types of ovarian tumors is extremely variable. It is generally impossible to diagnose the nature of the ovarian tumor just by clinical or gross examination, although it provides important diagnostic clues in formulating a differential diagnosis. Hence, one has to depend on the microscopic appearance of the tumor for accurate typing of the ovarian tumors.

In our study out of 58 cases, 31(53.45%) cases were non-neoplastic and 27(46.55%) cases were found to be neoplastic. Study done by Panchonia A et al.[15] showed 63% were non-neoplastic and 37% were neoplastic, Sawant A et al.[16] showed 70% were non-neoplastic and 30% were neoplastic and Desai J et al.[17] showed 65.7% were non-neoplastic and 34.3% were neoplastic.

A total of 27 cases of ovarian tumors were documented in this study period, out of which benign tumors comprised of 17 (62.96%) cases, borderline tumor 2 (7.4%) cases and malignant tumors 8 (29.64%) cases. Almost similar results were seen in many different studies where benign tumors were more common than malignant tumors (Table 7).

Table 7: Comparing the Percentage of Incidence of Ovarian Tumours in Different Studies

Authors	Benign Tumors	Borderline Tumors	Malignant Tumors
Badge A et al.[20]	74%	5%	21%
Couto F et al.[21]	80.7%	2.3%	16.9%
Gupta N et al.[22]	72.9%	22.9%	4.2%
Maheshwari V et al.[23]	71.7%	4.4%	23.7%
Mankar D et al.[24]	63.0%	5.8%	31.1%
Patel A et al.[25]	93.2%	0.6%	6.2%
Pilli et al.[19]	76%	2.8%	21.2%
Puttaveerachary A et al.[40]	84%	4%	12%
Sawant A et al.[16]	75.7%	6.06%	18.2%
Singh S el al.[18]	80.8%	1.6%	20%
Thakkar N et al.[26]	84.5%	2.3%	13.2%
Wills V et al.[27]	91.1%	1.8%	7.1%
Present study	62.96%	7.40%	29.64%

Ovarian tumors were classified according to WHO classification. Among the different histopathological patterns, surface epithelial tumors constituted majority of the ovarian neoplasm with 17 (62.98%) cases, followed by germ cell tumors of 8 (29.62%) cases and sex cord stromal tumors were in 2(7.4%) cases. This agrees with Sawant A et al.[16], Singh S et al.[18], Pilli, et al.[19] and others (Table 8).

Table 8: Comparing the different Histopathologcal types of Ovarian tumours in various studies

Authors	Surface Epithelial Tumor	Germ Cell Tumor	Sex Cord-Stromal Tumor
Ahmed Z et al.[28]	63.5%	27.1%	5.8%
Bhagyalakshmi A et al.[29]	80.2%	14.2%	4.1%
Gupta N et al.[22]	65.6%	23.9%	8.3%
Kancherla J et al.[30]	80%	16%	4%
Patel A et al.[25]	77.7%	18.5%	3.8%
Pilli et al.[19]	71%	21%	7%
Sawant A et al.[16]	84.8%	9.1%	6.1%
Singh S el al.[18]	69.1%	25.8%	4.1%
Tejeswini V et al.[31]	85.2%	9.7%	3.9%
Present study	62.98%	29.62%	7.4%

The most common benign tumour were serous cystadenoma (22.23%) followed by mature cystic teratoma (25.92%), similar results reported by Yasmin et al.[35] and Pachori et al.[36] Mucinous tumors were seen in 14.92% cases of all ovarian tumors,

Table 9: Comparison of Laterality of Neoplastic Ovarian Lesions in Different Studies

Authors	Laterality	
	Unilateral	Bilateral
Couto F et al.[31]	91.2%	8.8%
Miska R et al.[32]	95.5%	4.5%
Patel A et al.[25]	89.5%	10.5%
Prabakar B, et al.[33]	90.9%	9.1%
Prakash A, et al.[34]	90.8%	9.2%
Thakkar N et al.[26]	88.4%	11.6%
Present study	88.89%	11.11%

which is similar to the studies conducted by Pachori et al.[36] where mucinous tumors constituted 14.87%. The commonest malignant tumor was serous cystadenocarcinoma (18.53%). Similiarly, Sheikh S[37] also observed that most of the malignant tumours, about 90% were also of the epithelial origin.

Two cases (7.4%) of endometrioid carcinoma in this study, which was similar to the percentage of Ahmad Z et al.[28], Zaman et al.[38] and Pachori et al.[36] studies 12.03%, 3.87% and 0.41% respectively. In this study, 3.7% of granulosa cell tumors were seen, which was comparable to the study conducted by Zaman et al.[38] and Pachori et al.[36] Fibroma were encountered in 3.7% of cases in this study as observed in the study which were slightly higher to the results found by Pachori et al.[36]

Sex cord-stromal tumors comprises of only 7.4% of total ovarian tumors, of which 3.7% of fibroma and 3.7% of granulosa cell tumor which was very close to the finding of Thakkar N et al.[26]

Ovarian tumor were unilateral in 88.89% of cases and bilateral in 11.11% of cases which is correlated with studies by Thakkar N et al.[26], Couto F et al.[21], Prabakar B et al.[33], Miska R et al.[32] and Patel A et al.[25] Involvement of left ovary (48.15%) was more common than the right (41.94%) this coinciding with the findings of other study done by Couto F et al.[21]

In present study, maximum numbers of patient were from age group of 31 to 40 years of age (25.92%) in neoplastic lesions. Kancherla et al.[30] and Jha et al.[39] showed majority of ovarian tumors, among 31–40 years of age.

Conclusion

Ovarian cancers are called as "silent killer" as in most of the primary ovarian tumour they remain asymptomatic until the advanced stage. However, histomorphological study of tumour is still the gold standard method, these observations and results proved to be valuable base line information regarding frequency and pattern of ovarian tumours. To conclude, number of various clinical parameters such as age of the patient, presenting complaints, location of lump, dimensions of lump, on one hand and histological type of ovarian neoplasm on the other hand are all interrelated. All these clinical and histomorphological parameters and advanced newer diagnostic modalities can help to early diagnosis and to plan the line of treatment and also have prognostic significance. Because of the geographic location, poverty and illiteracy, patients seek medical advice late in rural health facility. So, awareness among public and doctors, educating people, passive surveillance and community screening facility will be helpful in early detection of ovarian lesions both non-neoplastic and neoplastic, thus improving the patient survival. This is a hospital based study and therefore doesnot reflect upon the entire population.

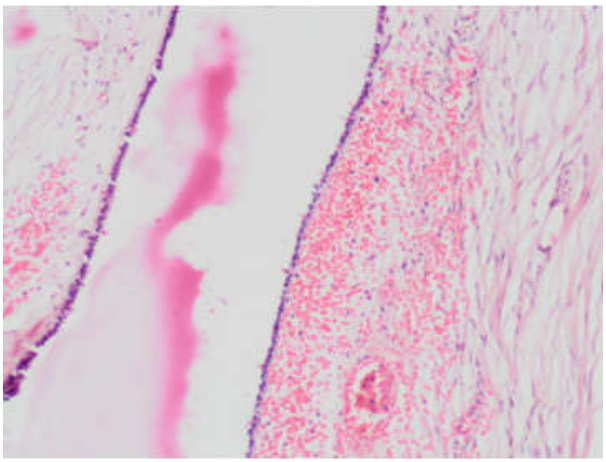

Fig. 1: Benign Serous Cystadenoma (H & E, 40x)

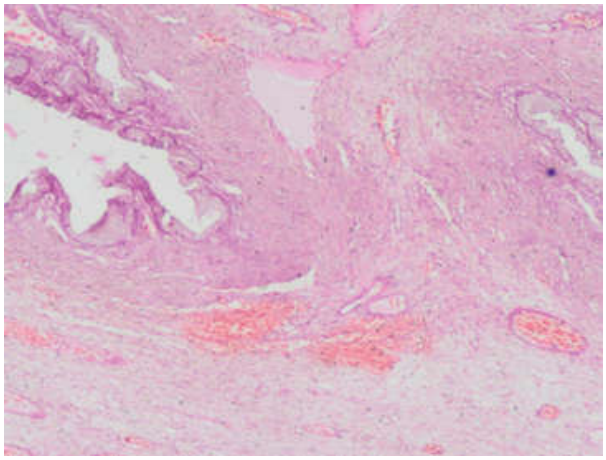

Fig. 2: Boderline Mucinous Cystadenoma (H & E, 40x)

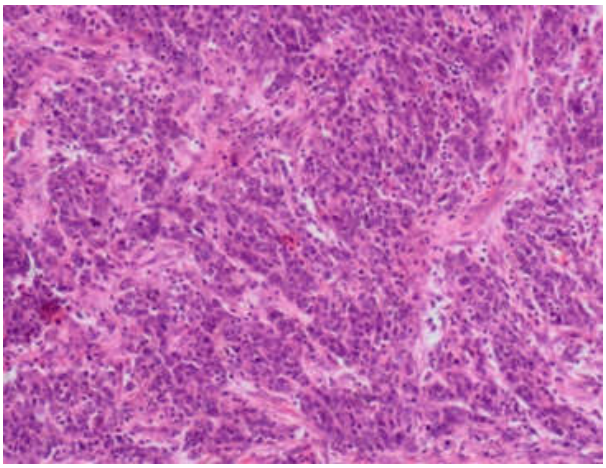

Fig. 3: High Grade Serous Cystadenocarcinoma (H & E, 100x)

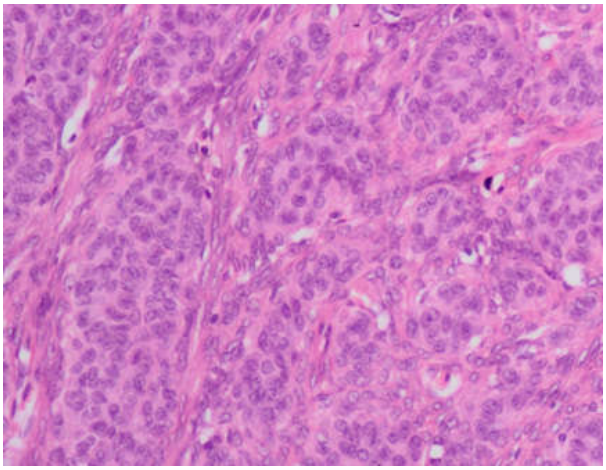

Fig. 5: Granulosa Cell Tumour (H & E, 400x)

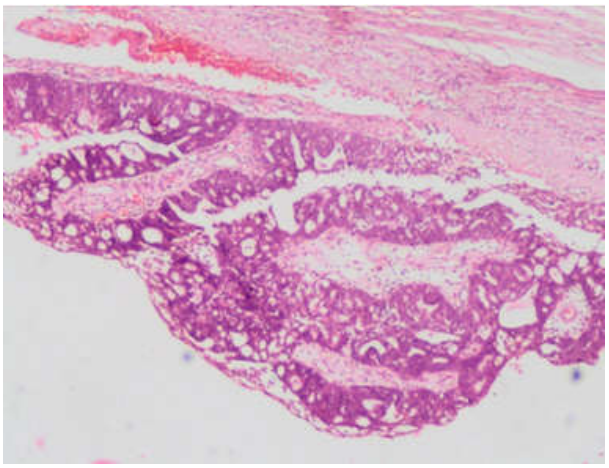

Fig. 4: Papillary serous cystadenocarcinoma (H & E, 40x)

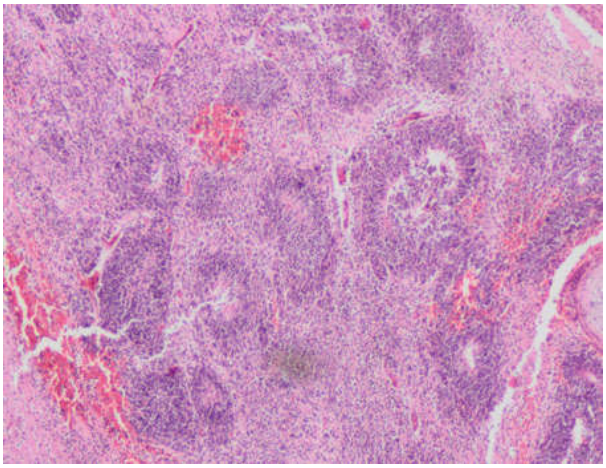

Fig. 6: Immature Teratoma showing Immature Neuroepithelial Element (H & E, 40x)

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