

CYTO PATHOLOGICAL STUDY OF GESTATIONAL TROPHOBLASTIC DISEASEA. N. Hemalatha¹**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: AIM: The main aim of this study is to evaluate cytological features of trophoblastic disease and to correlate with histopathological findings. **BACKGROUND:** Gestational trophoblastic lesions include pregnancy related disorders ranging from benign hydatidiform mole, clinically malignant conditions like invasive mole and metastatic mole, to anaplastic conditions including choriocarcinoma, Placental site trophoblastic tumor and Epithelioid Trophoblastic mole with varying proportion for local invasion and metastasis. Gestational trophoblastic lesions mimic growth pattern encountered in early normal placental development, non-molar abortions and variety of non-trophoblastic lesions. Therefore an appreciation of different types of Gestational trophoblastic disease with its cytopathological manifestations and serum markers (serum β hCG) are important for the confirmation of diagnosis. Thus the study is under taken. **MATERIAL AND METHODS:** The material for the present study was obtained from patients presented with complaints of amenorrhea and bleeding per vagina. After obtaining detailed clinical history the patients under went thorough physical examination and relevant investigations were carried out. Then the patients were subjected uterine aspiration curettage, prior to aspiration hCG was performed in all cases. **RESULTS:** Aspiration smear was adequate for cytological interpretation. It well correlated with histopathological findings. Morphological features were well preserved, cytological features of individual cells could be appreciated. Correlation with histology found to be accurate. Specificity and sensitivity found to be 100%. **CONCLUSION:** Thus this study suggests that aspiration cytology can be utilized in follow up of patients particularly in trophoblastic disease under treatment.

KEYWORDS: Cytology, Trophoblastic Disease, Hcg.

INTRODUCTION Gestational trophoblastic lesions include a heterogenous family encompassing various neoplastic and non-neoplastic lesions arising from different type of villous and non-villous Trophoblast.¹

Trophoblast is an integral component of human placenta for mediating the implantation of the embryo, protecting the fetus from maternal immune system, delivering nutrient and removing waste products as well as producing vital pregnancy hormones.²

Hertig referred to gestational trophoblastic neoplasms Gods first cancer and man's first cure.²

Gestational trophoblastic disease constitutes a diverse group of lesions that includes abnormally formed placentas (Hydatidiform mole) benign non-neoplastic lesions and gestational trophoblastic neoplasms.³

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Gestational trophoblastic lesions arises from trophoblast, a tissue normally exhibiting features otherwise associated with malignant tumors like intense proliferation, anaplasia, infiltration of contiguous structures, invasion of blood vessels and hematogenous dissemination. Thus it may be difficult to discriminate benign, even normal proliferating trophoblastic tissue from its malignant counterpart on morphologic grounds alone.⁴ These lesions mimic growth pattern encountered in early normal placental development, non-molar abortions and a variety of non-trophoblastic lesions. Thus this study is under taken to evaluate cytological features, and to correlate with histopathological findings.

CYTOLOGY: Trophoblastic cells of syncytial type are very rarely found in normal pregnancy but occur in abortion. The cells are large irregular, with basophilic or acidophilic cytoplasm and contain few large often dark nuclei with finely granular nuclear texture.

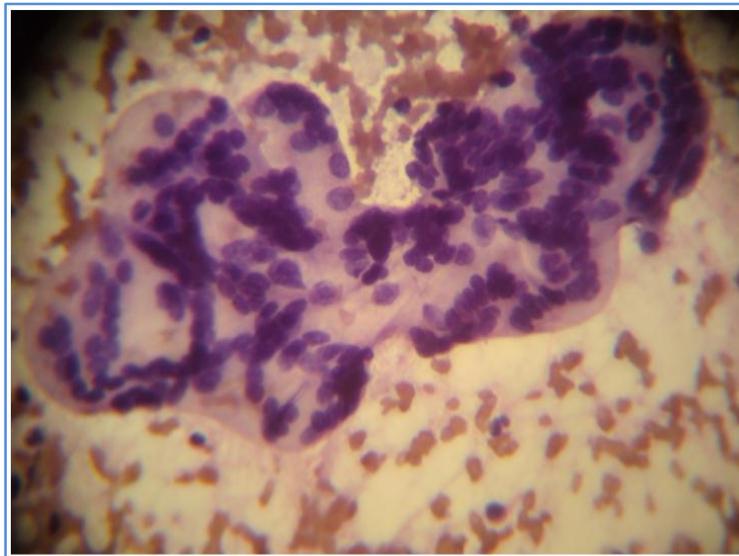


Fig. 1: Cytology of abortive smear (Pap 45X) showing syncytial aggregates

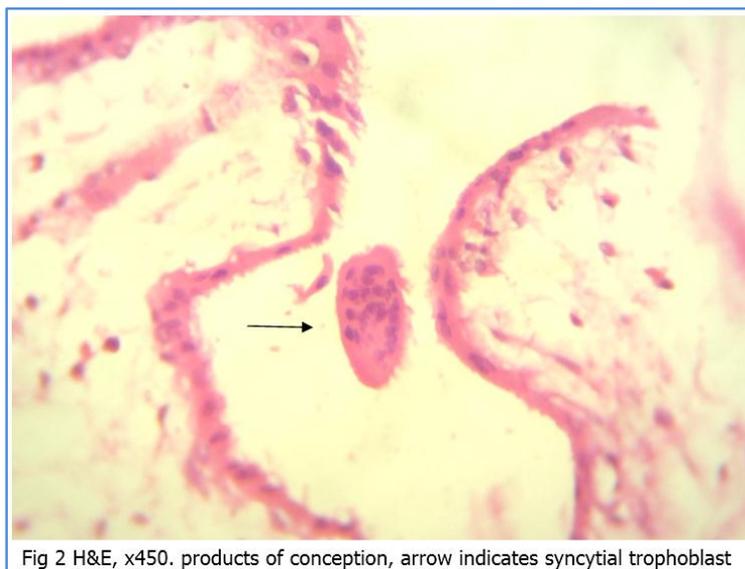


Fig 2 H&E, x450. products of conception, arrow indicates syncytial trophoblast

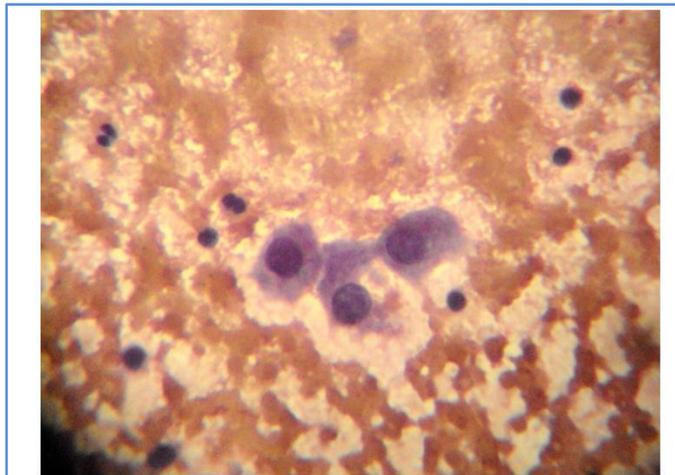


Fig. 3: Cytology (Pap, x450) showing decidual cells similar to atypical squamous cells

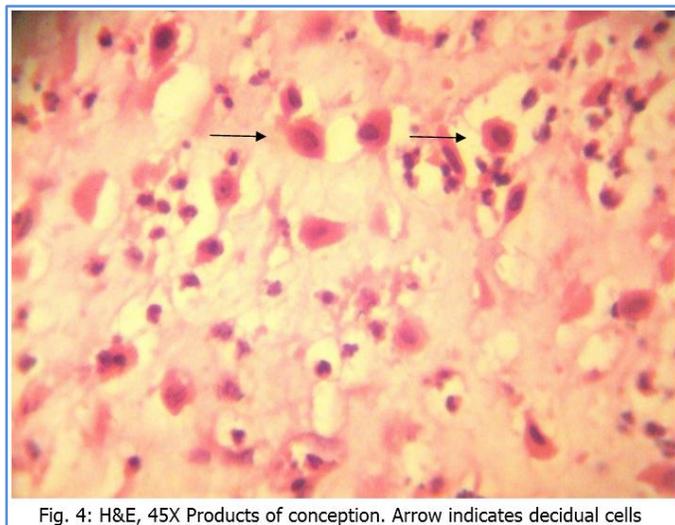


Fig. 4: H&E, 45X Products of conception. Arrow indicates decidual cells

MATERIAL AND METHODS: The material for the present study was obtained from patients presented with complaints of amenorrhea and bleeding per vagina. After obtaining detailed clinical history the patients under went thorough physical examination and relevant investigations were carried out. Then the patients were subjected uterine aspiration curettage, prior to aspiration hCG was performed in all cases.

ANALYSIS: Uterine aspiration was carried out in twenty five cases. Cytology was however always done prior to histopathology and the findings were then correlated.

Decidual and trophoblastic cells were seen in five cases three of them were diagnosed cytologically as vesicular mole and confirmed, and histopathology as vesicular mole. Urine hCG was found to be positive 1 in 256 dilutions.

Two cases which were clinically thought to be choriocarcinoma gave a history of molar pregnancy in the past. The physical examination revealed a slightly enlarged and bulky uterus. A Chest X-ray showed an opaque shadow in the lung. Urine hCG was positive in high dilution. Hence the diagnosis of choriocarcinoma was made clinically.

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The aspiration smear showed numerous large cells which were polygonal with large nuclei and abundant acidophilic cytoplasm. A few inflammatory cells were seen in the back ground. These cells were reported as decidual cells. No tropho blastic cells were seen. Histopathology proved this to be correct and showed only decidual tissue.

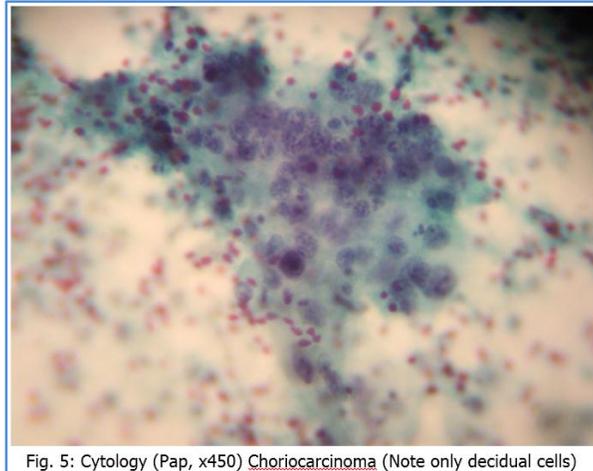


Fig. 5: Cytology (Pap, x450) Choriocarcinoma (Note only decidual cells)

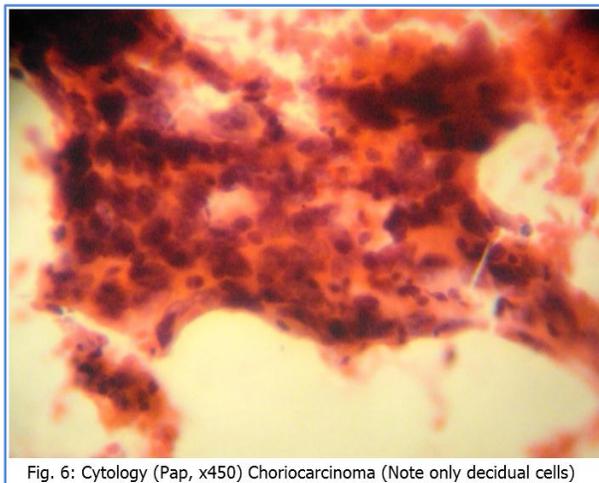


Fig. 6: Cytology (Pap, x450) Choriocarcinoma (Note only decidual cells)

Three smears which were diagnosed as vesicular mole showed moderate cellularity with large cells, irregular in size and shape and with moderate amount of basophilic cytoplasm. They contained few large nuclei with granular chromatin. A few decidual cells were also seen admixed with these cells. Histopathology proved it to be a case of vesicular mole with mild trophoblastic proliferation.

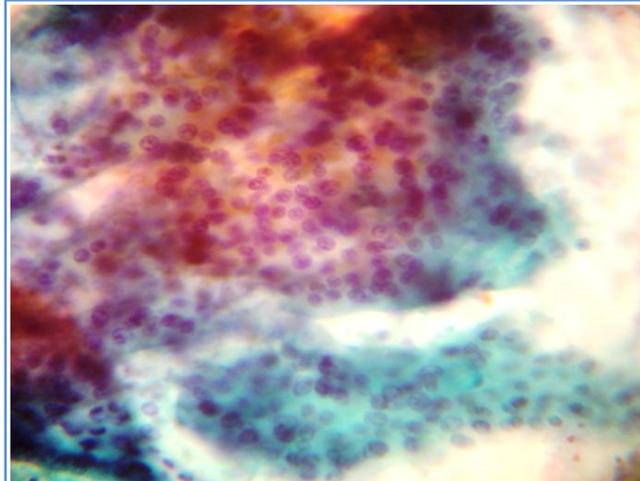


Fig. 7: Cytology of Vesicular Mole Pap x450

Cells are large, irregular in size and shape, cytoplasm basophilic, nuclei dark with granular chromatin.

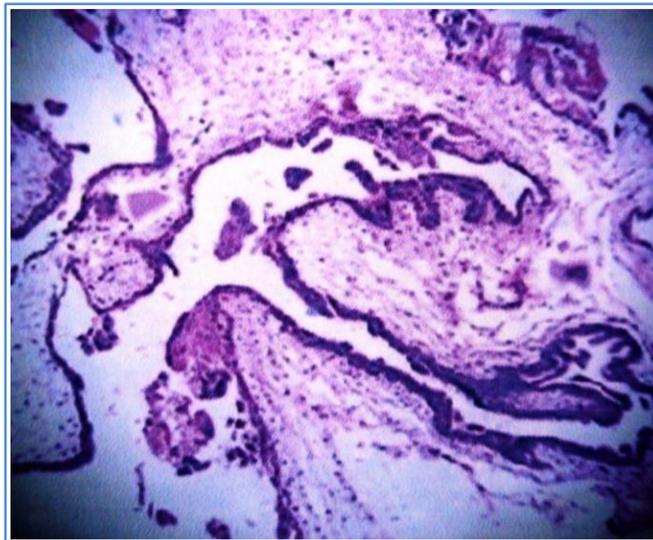


Fig. 8: Vesicular Mole-H&E x450

Showing chorionic villi with hydropic change and mild trophoblastic change.

Remaining twenty cases obtained from MTP^s to study cytomorphological findings of decidual, predecidual and trophoblastic cells were also included in this study. The cases included were septic abortion, missed abortion and induced abortions.

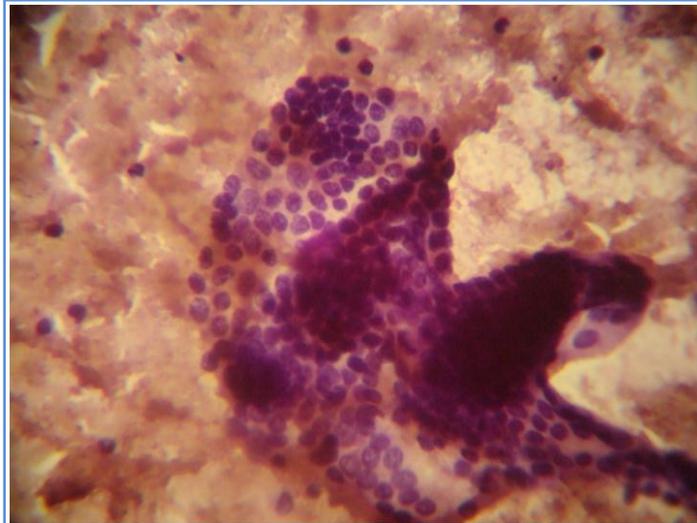


Fig. 9: Trophoblastic cells in Abortive Smear- Pap, x450

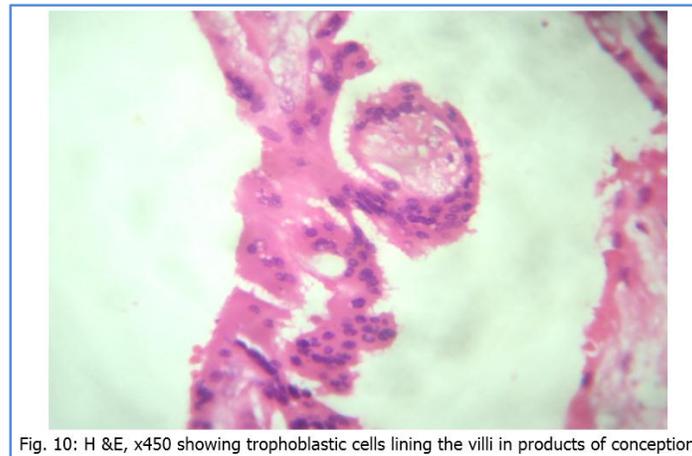


Fig. 10: H & E, x450 showing trophoblastic cells lining the villi in products of conception

DISCUSSION: NORMAL TROPHOBLAST: In the normal placenta, each type of trophoblast may be classified according to its location and morphologic features. Regarding the locations, villous trophoblast grows with chorionic villi while extravillous trophoblast usually infiltrates the decidua, chorion, myometrium and blood vessels of the placental site.

The trophoblastic populations are further differentiated into three types; cytotrophoblast, syncytiotrophoblast, and intermediate trophoblast each based on different morphologic, biologic and immunohistochemical features, secretion of hCG and hPL varies with each type of trophoblast.

Syncytiotrophoblast are highly differentiated cells that interphase with maternal circulation and produce most of placental hormones. No mitotic activity is evident.^{1,4} Syncytiotrophoblasts demonstrate hCG production at 12 days of gestation, secretion rapidly increases and reaches peak by 8-10 weeks gestation and decline thereafter. These cells are seen as syncytial aggregates on both CYTO and histological sections.

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Cytotrophoblastic cells are oval or polygonal in shape with single nucleus and well defined border. Mitotic activity is evident but do not produce either hCG or hPL They are present in loose cohesive groups in cytological smears and well correlated on histopathological sections.

Intermediate trophoblast shows overlapping features of both cytotrophoblast and syncytiotrophoblast and hCG is present focally at 12 days of conception, and production disappears at 6 weeks. hPL production begins 12 days after conception, secretion peaks at 11- 15 weeks of gestation.^{5,6}

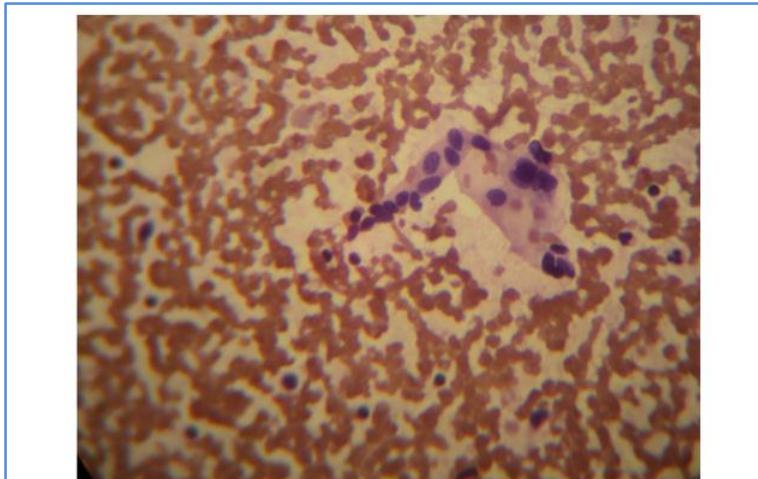


Fig. 11: Pap, x450. Trophoblastic cells which are oval and arranged in loose cohesive clusters

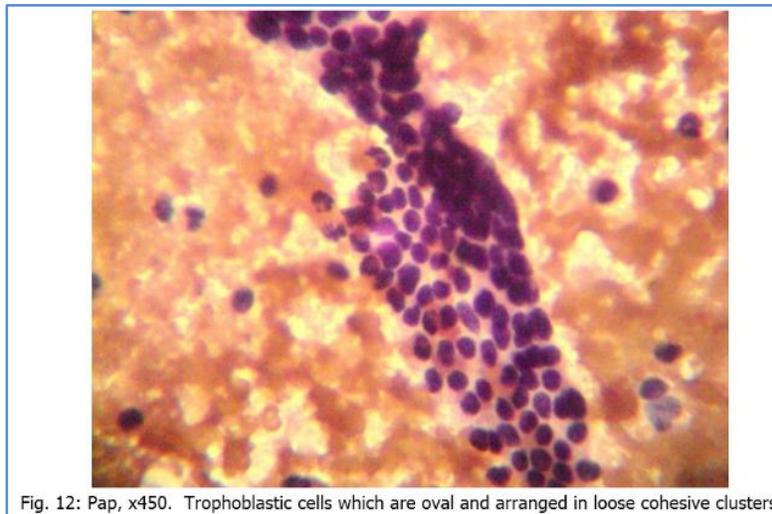


Fig. 12: Pap, x450. Trophoblastic cells which are oval and arranged in loose cohesive clusters

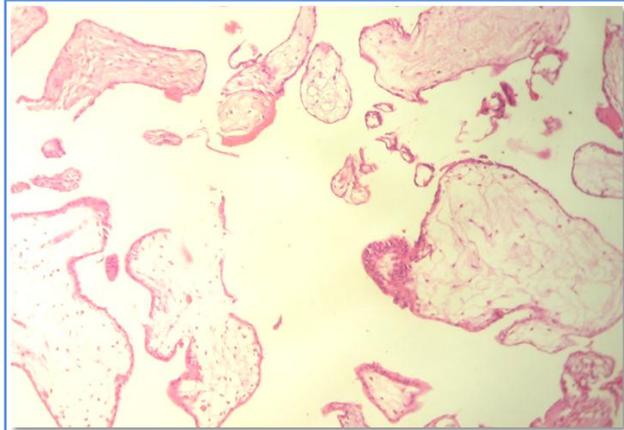


Fig. 13: H&E x450 of products of conception. Arrow indicates trophoblastic cells

Decidual cells are polygonal cells present in sheets and clusters and they resemble squamous cells, cytoplasm is acidophilic, or basophilic. Nuclei are dark and contain granular chromatin. Cell arrangements progress to isolates, autolysis and degeneration ensues.⁷

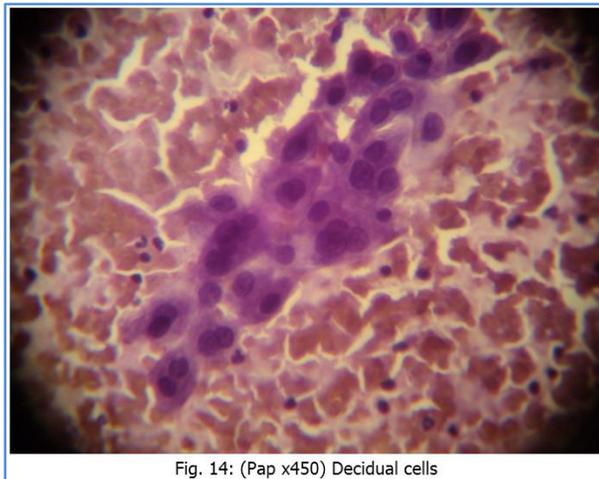


Fig. 14: (Pap x450) Decidual cells

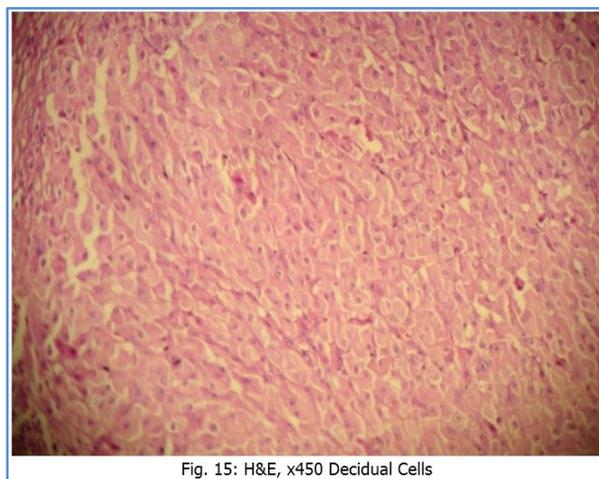


Fig. 15: H&E, x450 Decidual Cells

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The predecidual cells are seen in compact layer. Due to the influence of progesterone, after ovulation, the stromal cells are enlarged.

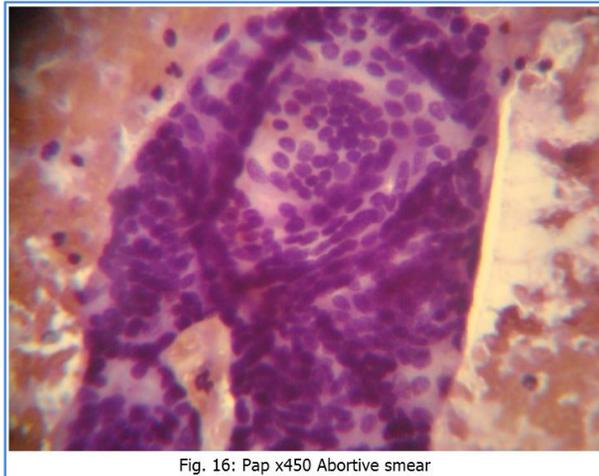


Fig. 16: Pap x450 Abortive smear

Decidual cells are seen in hyper secreting endometrium or supervening in pregnancy, tubal pregnancy or persistent corpus luteum and functional ovarian neoplasms, as a developmental of predecidualized cell.⁷

Aspiration smear in our study showed adequate material for cytological interpretation. However biopsy was followed by aspiration for histopathological examination. It was well correlated with cytological and histopathological findings. Sensitivity and specificity found to be 100% thus aspiration cytology found to be best in trophoblastic disease.^{8,9,10}

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