

HISTOPATHOLOGY OF OVARIES DURING PREGNANCY

by

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Introduction

The ovary undergoes profound functional and structural changes during reproductive period of life. However, perusal of the literature provides no data on the structural changes in an ovary during pregnancy, since there was no opportunity for such a study. In the present era of intensive family planning programmes, tubal sterilisation during pregnancy affords scope to obtain a sample of ovarian tissue under direct vision.

Material and Methods

Present study comprises of 76 ovarian biopsies from 76 patients, 18 in 1st trimester, 18 in second trimester, 20 in third trimester and 20 in postpartum group from the Department of Obstetric and Gynaecology, K.E.M. Hospital and Seth G.S. Medical College, Bombay. In first trimester, histopathological confirmation of pregnancy was obtained. In this group, patients had dilatation and evacuation for termination of pregnancy with tubal sterilisation through posterior

colpotomy. Latter gave automatic access to ovaries for biopsy. Likewise, second trimester pregnancy was terminated by intra-amniotic saline or hysterotomy with simultaneous abdominal tubal sterilisation providing easy access to ovaries. Approach to the ovaries was made easy at caesarean section in 3rd trimester and sterilisation in postpartum period. Puerperal sterilisations were performed within one week of delivery. In other words, in all cases ovaries were approached for biopsy, only when peritoneal cavity was opened primarily for other indications like tubal sterilisation, hysterotomy or caesarean section.

The biopsy tissue measured 1.5 to 2 cms. in the long axis and 0.5 to 1 cm. in thickness. The tissue was promptly fixed in buffered 10% formaldehyde and further processed to paraffin block. Block was serially cut into a minimum of 35 sections, all stained by haematoxylyn and eosin. Ovary was carefully sutured.

Results

Capsule

Capsule showed thickening (with more than half high power) in 24 out of 76 biopsies as shown in Table I. Picture I Shows clearly.

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TABLE I
Gestational Period and Number of Cases

| Trimester | Period at which the biopsy was obtained | No. of biopsies |
|-------------|---|-----------------|
| First | 6 to 12 weeks | 18 |
| Second | 14 to 20 weeks | 18 |
| Third | At or near term | 20 |
| Post partum | Within one week of Delivery | 20 |

This phenomena is encountered in polycystic ovaries, in menopausal women and in women under prolonged oral contraception. Absence of ovulation is a common denominator in these conditions. It is therefore, tempting to postulate that thickening could represent nature's natural mechanism for prevention of ovulation during gestational period.

The role of increased stromal cellularity

TABLE II
Histopathological Findings

| Observations | Trimester | | | Postpartum period |
|------------------------------|-----------|--------|-------|-------------------|
| | First | Second | Third | |
| Specimen reviewed | 18 | 18 | 20 | 20 |
| Capsule thickening | 8 | 4 | 4 | 8 |
| Increase stromal Cellularity | 10 | 14 | 18 | 20 |
| Luteinisation | 6 | 8 | 8 | 10 |
| Various stages of ova | 6 | 8 | 8 | 10 |
| Decidual reaction | — | — | 1 | — |

Stroma

Increased cellularity was found in 24 out of 36 (66%) in 1st and 2nd trimesters biopsies. This further increased during 3rd trimester and immediate postpartum period. Thirty-eight out of 40 (95%) showed similar change.

Luteinisation

Luteinisation of theca and granulosa cells was observed in 32 out of 76 cases (42.1).

Primordial Follicles

Pregnancy had no effect on maturing ova, as they were seen at various stages of maturation.

Decidual Reaction

This was seen in only one biopsy from third trimester group.

Discussion

Capsular thickening is the most consistent finding of apparent significance.

is not understood. Luteinisation of theca and granulosa cells is a physiological response to circulating gonadotrophins. It was surprising to find only one example of decidual reaction.

Incidental observation emerging from this study concerns the value of ovarian biopsy as investigatory tool in infertility. Palmer *et al* (1974) showed that in 80 women with Stein Leventhal syndrome, coelioscopic biopsy resulted in biphasic cycles in 60% and pregnancies in 44%.

Our ovarian biopsies have been of adequate size and yet some slides did not show even a single ovum. Picture II depicts it. This shows the erratic and inconsistent distribution of ova and their derivatives within the ovarian cortex. This would mean that ovarian biopsy is of little or no value in investigating infertile woman with normal size ovaries.

Summary and Conclusion

(1) Ovarian biopsies, obtained during

all the trimesters of pregnancy and first postpartum week were studied histopathologically. Object was to study and probe this new aspect.

(2) Capsular thickening, maturation of ovum at various stages and inconsistent distribution of ova and its derivatives were the notable findings.

(3) Consistent findings of capsular thickening may be a natural mechanism for keeping ovulation in abeyance.

(4) Ovarian biopsy has a limited value in assessing ovarian function.

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References

1. Palmer, Thoyer—Rozat, Mintz; Gynaecological Laparoscopy by Jordan Phillips, 332, 1974, Stretton Intercontinental

See Figs. on Art Paper II