

**How to Cite:**

Maurya, G., Kanti, V., Singh, S. K., Pandey, P., Kannaujia, S., Rashmi, R., Kumar, G., & Varshney, A. (2022). Histopathological pattern of endometrium in infertility patient: One year prospective study in tertiary care center of rural India. *International Journal of Health Sciences*, 6(S2), 374–379. <https://doi.org/10.53730/ijhs.v6nS2.4997>

## **Histopathological Pattern of Endometrium in Infertility Patient: One Year Prospective Study in Tertiary Care Center of Rural India**

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**Abstract**---Infertility is defined as difficulty in conceiving children after regular and unprotected coitus for at least one year. Many investigative measures are available now a day to identify the cause of

infertility so clinician can assess the chance of achieving pregnancy in couples. Morphology of endometrium is very useful indicator of ovarian function. Our study aims to see the different pattern of endometrium histologically in female infertility patient. We tried to assess the significance anovulatory cycle and incidence of tuberculous endometritis. Study was done in pathology department of UPUMS, Saifai, Etawah. Eighty-four (84) cases of primary and secondary infertility were included in this study. Endometrial biopsy tissues were processed and stained with hematoxylin and eosin stain according to the standard procedure. Out of 84 cases 48(57%) were of primary infertility and 36 (42.85%) were of secondary infertility. Majority of the infertility patient fell in age group of 21 to 30 years. Out of 84 cases 42 (50%) cases showed proliferative endometrium and 33(39.2%) cases showed secretory endometrium. Tuberculous endometritis seen in 2 (2.3%) cases. In present study percentage of anovulatory endometrium was 52.5%, endometrial biopsy is cost-effective, safe and efficient diagnostic tool in cases of both primary and secondary infertility.

**Keywords**---endometrium, histopathology, infertility, patient, tuberculous endometritis.

## **Introduction**

Infertility is a big problem among reproductive age in millions of people worldwide. World Health Organization (WHO) defined infertility as difficulty in conceiving children inspite of regular and unprotected coitus for at least one year(1). It has a great impact on families and is seen as a social stigma and generally it is thought that women is responsible for it due to orthodox thinking(2).It is seen that one out of 10 marriage is barren (3).Female infertility may be because of diseases associated with uterus, ovaries, fallopian tubes or due to endocrinal pathology.

Infertility is of two types primary and secondary, where primary infertility means that the couple has not conceived earlier and secondary infertility means where pregnancy experienced before (a). most of the couple suffer primary infertility globally. Around 10.2 million couples are infertile in India (4) affected by infertility. According to WHO overall prevalence of primary infertility in India is 3.9 to 16.8%. Prevalence is varying among Indian states such as 3.7% in UP, Maharashtra and Himachal Pradesh to 55 in Andhra Pradesh and in Kashmir it is 15%(5)

Infertility leads emotional and psychological distress in couples inspite of many psychological, social, physical and economical inferences. Its prevention and care remain neglected or at very low in priority list, but now there is lot of work done to enhance awareness for infertility prevention care and treatment by basic health care services. Age factor is very important in infertility as the age increases chances of conception is decreases and it is well established fact. The main purpose of investigation in case of infertility is to find out the associated cause

and probability to achieve pregnancy in couples (6). Infertility may be diagnosed by many investigations among these endometrial biopsy stands at higher place. Ovarian function can easily detect by endometrial morphology. Endometrial biopsy can also show many pathological conditions which can lead to infertility.

### Material and Methods

Current study is done in department of pathology, UPUMS, Saifai, Etawah. It is prospective study of 84 cases of endometrial biopsy of women having primary and secondary infertility or with tubal blockage on histosalpingography was included. Patients have thoroughly investigated and completed their clinical examination in respect of complete blood count, chest X-ray, HIV-1 and 2, abdominal and pelvic USG.

Patients having history of antitubercular treatment were excluded. Clinical history was taken included their last menstrual date, age at marriage and necessary obstetric history in case of secondary infertility. Endometrial biopsy tissues were fixed in formalin. Tissue processing was done and paraffin blocks were made by standard procedure. Sections were cut of 5–6-micron thickness and stained with H&E (7). These stained sections were studied for dating of endometrium and its morphology. Zeihl-Neelsen stain used when there is granulomatous endometritis.

### Results

After examining endometrial biopsies various patters were found in infertility patients like proliferative phase, secretory phase, endometrial hyperplasia, nonspecific endometritis and tubercular endometritis. In total 84 cases maximum cases enrolled were of primary infertility 48(57%) and 36(42.85%) cases were of secondary infertility.

Table 1  
Percentage of primary and secondary infertility patient

| Infertility type | Number of patients                         | Percentage |
|------------------|--------------------------------------------|------------|
| Primary          | 48                                         | 57%        |
| Secondary        | 36                                         | 42.85%     |
| Total            | 84                                         |            |
| Speculation      | Primary infertility cases were in majority |            |

Majority of patients were of 21 to 30 years. Mean age was 26.75 years. In primary infertility youngest age was 21 years and eldest age was 35 years. In secondary infertility youngest age was 25 years and eldest age was 36 years.

Table 2  
Case distributions- according to age

| Age group(years) | Primary infertility |                | Secondary infertility |                |
|------------------|---------------------|----------------|-----------------------|----------------|
|                  | Number              | Percentage (%) | Number                | Percentage (%) |
| 21-25            | 25                  | 52             | 4                     | 11.1           |

|       |    |      |    |      |
|-------|----|------|----|------|
| 26-30 | 17 | 35.4 | 11 | 30.5 |
| 31-35 | 4  | 8.3  | 18 | 50   |
| 36-40 | 2  | 4.1  | 3  | 8.3  |
| Total | 48 |      | 36 |      |

Histopathological study of endometrial biopsy showed various patters in infertility patient as follows:

Table: 3  
Histopathological diagnosis in infertility patients

| Histological diagnosis    | Number of cases | Percentage (%) |
|---------------------------|-----------------|----------------|
| Proliferative endometrium | 42              | 50             |
| Secretory endometrium     | 33              | 39.2           |
| Endometrial hyperplasia   | 4               | 4.7            |
| Nonspecific endometritis  | 3               | 3.6            |
| Tubercular endometritis   | 2               | 2.3            |
| Total                     | 84              |                |

## Discussion

In present study there were 84 cases of infertility. Out of 84 cases 48 were of primary infertility and 36 were of secondary infertility. In current study primary infertility incidence was 57% and secondary infertility incidence was 42.85%. In MP Zavar(2002)(8) and Jhaveri(9) studies primary infertility incidence reported as 77.7% and 80.25% respectively and secondary infertility incidence was 22.5% and 19.75% respectively. In our study results were not similar to their studies. It may be because this study was done in Indian rural area where couple don't follow small family norm. Majority of cases of infertility were seen in age group of 21 to 30 years which is similar to the findings of Nandedkar SS et al study (10)

### A histopathological study of endometrium in infertility

For successful implantation of ovum endometrium should be well developed and it depends on ovarian function, perfectly mature follicle and functionally efficient corpus luteum. In present study we evaluated endometrial development on the basis of morphology of glands and stroma and also correlating it with menstrual history. In our study we found anovulatory cycle was the most common cause of infertility.

Table 4  
Anovulatory and ovulatory endometrium -comparison with other studies

| Author and year    | Anovulatory endometrium percentage | Ovulatory endometrium percentage |
|--------------------|------------------------------------|----------------------------------|
| Gupta et al        | 22.8                               | 68.5                             |
| Sareen             | 19                                 | 79                               |
| Jadhav & Raichur   | 25                                 | 75                               |
| Sabharwal BD       | 12                                 | 84                               |
| Krishnamohan et al | 10                                 | 87.5                             |

|                   |      |       |
|-------------------|------|-------|
| Neil Shastrabudhe | 34.2 | 62.36 |
| Zawar MP          | 28.2 | 67.4  |
| Present study     | 52.5 | 43.8  |

Endometrial hyperplasia was 4.7 % in our study. Gupta et al(11), Sabharwal (14), Krishnamohan(15), Shastrabudhe(16) found endometrial hyperplasia in 2.5%, 2.66%, 5.9%, and 4.4% respectively. long standing anovulatory cycle, follicular persistence and unopposed increases level of estrogen are the most common cause of endometrial hyperplasia. Least common cause of infertility in our study is tuberculous endometritis (2.3%). In previous studies results are similar to our study. It may be due to more awareness and better treatment availability for tuberculosis

Table 5  
Tuberculous endometritis – comparison with other studies

| Author and year   | Tuberculous endometritis percentage |
|-------------------|-------------------------------------|
| Gupta et al       | 1.5                                 |
| Sareen            | 2                                   |
| Neil Shastrabudhe | 2.6                                 |
| Zawar MP          | 2.6                                 |
| Haider P          | 3.5                                 |
| Present study     | 2.3                                 |

## Conclusion

In present study we studied 84 cases of infertility including primary and secondary infertility. In which primary infertility (57%) was slightly more common than secondary infertility. We examined endometrium histologically and found most common age group for infertility was 21 to 30 years. Anovulatory was most common (52.5%) and tuberculous endometritis was least common (2.3%) cause of infertility. Improper function of ovarian hormone leads to disturbance in endometrial development. Immature endometrium is not suitable for implantation. Thus endometrial biopsy is low cost, efficient and safe investigative tool in infertility cases.

## References

1. Zegers-Hochschild F, Adamson GD, de Mouzon J, et al. The International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) revised glossary of ART terminology 2009. *Human Reprod.* 2009;24:2683–2687.
2. Okonofua FE. The social meaning of infertility in south-west Nigeria. *Health Transit Rev.* 1997;7:205–220.
3. Kleegman SJ, Kaufmann SA. Infertility in women. 1st ed. Philadelphia: FA Davis Company Publishers; 1966.
4. Dawn CS. Textbook of Gynaecology. 5th Ed.
5. WHO- Infertility (2016)

6. Girish CJ, Manjunath ML. Morphological patterns of endometrium in infertile woman—a prospective study. *Int J Appl Biol Pharm Technol.* 2011;2:512–520.
7. John D. Bancroft, Marilyn Gamble. *Theory and Practical of Histological Techniques*, 5th Ed. 8:125-130
8. Zawar MP. Histopathological study of endometrium in infertility. *Indian J Pathol Microbiol* 2003;46(4):630-633.
9. Jhaveri CL, Shah RM, Bhatt HK. Endometrial glycogen – important in infertility. *Proc All India Obstet Gynaecol Cong* 1972:255- 60
10. Nandedkar SS. Patidar E. Gada DB. Malukani K. Varma A. Histomorphological pattern of endometrium in infertility. *J Obstet Gynaecol India* 2015;65(5):328-334.
11. Gupta AN, Agrawal S Vashishtak. Study endometrium in infertile women. *J Obstet Gynaecol India* 1980;8:27-32.
12. Sareen Pm, Kalra R, Lodha SK, Kalra VB. Significance of endometrial glycogen in primary sterility. *Indian J Obstet Gynaecol* 1984;34:877-81.
13. 13 . Jadhav MV, Raichur BS. Endometrium in infertility. *Indian J Pathol Microbiol* 1987;30:307-11.
14. Sabharwal BD, Sofat R, Cvhander K, Kumar R. Endometrial pattern & its glycogen content in case of sterility. *Indian J Obstet Gynaecol* 1987;37:718-21.
15. Krishnamohan VE, Nair B, Shenoy S. Histopathological study of endometrium in primary sterility. *Indian J Obstet Gynaecol* 1993;43:580-4.
16. Shastrabudhe NS, Shinde S, Jadhav MV. Endometrium in infertility. *Indian J Obstet Gynaecol* 2001;51:100-2.
17. Haider P. Jafarey SN. A histopathological study of endometrial tuberculosis in infertility. *J Pakistan medical association* 1992; 42(11):269-71.