

## Study of Role of Endometrial Biopsy In Case of Primary Infertility in Pathology Department of Rims, Ranchi, Jharkhand

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### Abstract

Infertility is defined as inability of couple to achieve conception after one year of unprotected coitus. The purpose of investigation is to assess chance of achieving pregnancy and to identify treatable factors. In spite of many investigatory tools available, endometrial histology is a sensitive indicator of ovarian function. Aim of the study is to determine cause of infertility by morphological pattern of endometrium, to assess importance of luteal phase defect and to determine incidence of Tuberculousendometritis as an etiological factor. Study was carried out in the Pathology Dept. RIMS, Ranchi, Jharkhand. This study has been done on 130 endometrial samples of patients having primary infertility. In this study all the patients were ranging between the age group of 18 years to 38 years with a mean age of 24.76 year, while 23 patients (17.7%) were in the age group of 18-20 years, 62 patients (47.5%) in the age group of 21-25 year, 41 patients (31.5%) in the age group of 26-30 years, 3 patients (2.3%) in the age group of 31-35 years, and 1 patients (0.8%) were 38 years of age.

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### I. Introduction

Every married women nurtures a deep felt desire to become a mother, unfulfillment of which is not only a cause of distress, mentally but also socially to the women and their family especially in India. The barren marriage is a problem as old as the history of mankind. Failure of married couple of reproductive age group to conceive after twelve months or more of unprotected intercourse (or six months if the women is over age 35yrs) or the inability to carry a pregnancy to live birth is called Infertility. Infertility affects approximately 10 -12% of the population. Since infertility strikes diverse group affecting people from all socioeconomic levels and cutting across all racial ,ethnic and religious lines . Chances are great that a friend, relative, neighbor,or perhaps you are attempting to cope with medical and emotional aspect of infertility. Approximately one third of infertility is attributed to the female partner, another one third to the male partner and one third is caused by combination of problems in both partner or is unexplained. Infertility can be primary when it occurs in a women who has never established a pregnancy or it can be secondary when it occurs in a women who has a history of one or more previous pregnancies. Medically the cause of infertility may be divided as ovulatory dysfunction (40%), tubal and pelvic pathology (40%),unexplained infertility (10%), cervical factors (5-10%) and uterine factors(5%). Though there may be multiple reasons, disturbances in development of endometrium during the postovulatory phase could be an important factor,as the endometrium is the site of implantation .infertile patients often have out of phase endometrium under normal physiological conditions the uterine mucosa is a close gauge to the ovarian activity. The cyclic alterations occurring in the endometrium during reproductive life are a prerequisite for the ultimate function of uterus to house and support the conception, where the morphological and biochemical changes of uterine mucosa are likely to play an important role in the implantation of fertilized oocyte. Thus the alteration of the human endometrium during normal menstruation cycle is a prime concern. Evidence of ovulation and cause of ovulatory dysfunction can be obtained by study of serial vaginal cytology, endometrial biopsy,and hormonal assessment.As the endometrial biopsy and histology demonstrate secretory endometrial development which results from the action of progesterone thus gives evidence of ovulation or anovulation and luteal phase deficiency besides giving information regarding various endometrial pathology,

was long considered the gold standard among methods for evaluating the quality of luteal functions for diagnosis of luteal phase deficiency with certain limitations in accuracy and precision.

## **II. Aim Of The Study**

Thus in this study we have stressed on histopathological features of endometrium in primary infertility, to date the endometrium and to categorise them in various types based on microscopy of endometrial tissue being sent in pathology department of RIMS, Ranchi, Jharkhand.

## **III. Material And Method**

This study has been done on 130 endometrial samples of patients having primary infertility, during the period of one year from March 2018 to February 2019, at Rajendra Institute of Medical Sciences, Ranchi, Jharkhand. A detail relevant history recorded regarding duration of infertility, result of any previous evaluation and treatment, menstrual history (age at menarche, cycle length, onset/severity of dysmenorrhea, previous method of contraception, coital frequency and sexual dysfunction, any h/o thyroid disease, pelvic or abdominal pain and dyspareunia. Family h/o birth defect, mental retardation, early menopause, occupation and use of tobacco and alcohol.

In this study all the patients were ranging between the age group of 18 years to 38 years with a mean age of 24.76 years, while 23 patients (17.7%) were in the age group of 18-20 years, 62 patients (47.5%) in the age group of 21-25 years, 41 patients (31.5%) in the age group of 26-30 years, 3 patients (2.3%) in the age group of 31-35 years, and 1 patient (0.8%) was 38 years of age. It was observed that duration of infertility varied from 1-12 years, while 54 patients (41.5%) came to hospital within 2-3 years duration of marriage followed by 29 patients (22.3%) in 4-5 years, 21 patients (16.2%) in 6-7 years, 11 patients (8.5%) in 8-9 years and 6 patients (5.0%) had duration of 10-11 years and 1 patient had 12 years h/o infertility. The mean years of infertility was 4.43 years. The endometrial samples consisted of 126 endometrial biopsies and 4 curettage materials. Which was grossly grayish white to grayish brown in colour & the amount varied from scant (i.e.  $<0.5 \times 0.5$  cm) in 52 cases (40%), moderate ( $1.2 \text{ cm} \times 1.2 \text{ cm}$ ) in 60 (46.2%) cases and abundant ( $>2.0 \text{ cm} \times 2.0 \text{ cm}$ ) in 18 cases. Material was immediately placed in fixative followed by routinely processed and paraffin section of 5-6 microns, using haematoxyline and eosin were prepared and studied microscopically.

## **IV. Result**

In this study of 130 cases, endometrial sample sections in 43 cases (33.1%) showed proliferative phase suggestive of anovulatory cycle where sparse narrow and straight endometrial glands lined by low columnar cells embedded in loose stroma of spindle shaped cells in 26 sections, while in 3 parts section endometrial glands were more elongated and lined by tall columnar cells, with stromal edema. Remaining 14 sections showed tortuous endometrial glands lined by pseudostratified epithelium with compact stroma and slightly enlarged stromal cells. Irregular proliferative endometrium was seen in 12 sections (9.2%) where irregularly shaped enlarged glands interspersed among normal proliferative glands resulting in dysynchronous development of endometrium. The glands were lined by pseudostratified epithelium at places, ciliated epithelium was seen in all these cases. The stroma was mitotically active proliferative type. Simple hyperplasia was seen in 9 (6.9%) cases where section shows cystically dilated proliferating glands of varying size, lined by tall columnar cells with many clear cells, while stroma was dense and compact with stromal cells having scant cytoplasm. Adequate secretory phase seen in 46 cases (35.4%) showing subnuclear vacuolation in more than 50% gland (16 days), in 3 cases uniform subnuclear vacuolation pushing nuclei towards apex (17 days), in 1 case nuclei return to base with secretion at tip of epithelial cells give frayed appearance (18 days), in 6 cases secretion at free margin seen as a globular cap (19 days), in 1 case dilatation of glands filled with secretion (20 days), in 5 cases beginning of stromal edema, stromal cells appear as naked nuclei (21 days), in 3 cases maximal stromal edema (22 days), in 3 cases prominent spiral arterioles (23 days), in 16 cases predecidualization of periarterial stromal cells (24 days), in 5 cases predecidualization of upper compact layer with appearance of endometrial granulocytes (25 days), in 1 case predecidualization of entire compacta layer, predominant endometrial granulocytes (26 days), in 1 case saw toothed shaped glands, very dense predecidual stroma (27 days). Deficient secretory phase or luteal phase deficiency was seen in 15 (11.5%) cases. There were 9 cases (6.9%) of deficient secretory phase with apparent delay and 6 cases (4.6%) of deficient secretory phase with dissociated delay. Ultrasonography findings reveal fibroid in 1 case and polycystic ovarian disease in 1 case. Where section was showing cork screw shaped gland with subnuclear vacuolation (16 days) pushing nucleus to the apex (17 days), gland with frayed luminal margins due to secretion with nucleus at the base of glandular epithelium (18 days), prominent spiral arteriole (23 days). Deficient secretory phase with dissociated delay was seen in 6 cases showing widely spaced poorly convoluted glands with variation in development of glands and stroma, with glandular epithelial lining having dense hyperchromatic nucleus, decreased luminal secretion, subnuclear vacuolation, spindle shaped stromal cells with decreased stromal differentiation. Abortive secretion was seen in 1 case (0.8%) showing

straight and narrow glands lined by cuboidal epithelium. Some of the glands showed randomly distributed tiny subnuclear vacuoles with loose spindle shaped stromal cells. Arias stella reaction was seen in 1 case (0.8%) showing star shaped glands lined by epithelial cells having grotesquely shaped nucleus with dense chromatin and abundant clear cytoplasm, spindle shaped stromal cells with scant cytoplasm. Tuberculous endometritis was seen in 3 cases (2.3%) showing proliferating endometrial glands comprising granulomas with central caseation surrounded by radiating epithelioid cells and lymphocytes.

## V. Discussion

Primary infertility is one of the common condition for which married women seeks medical advice. In India there are an estimated 10.2 million infertile couple. Female infertility may occur due to disturbances of genital system or part of central nervous system that control the ovaries hormonally. In this study we have observed that the commonest age group belonging to 21-30 yrs with a peak at age 22 yrs. This study is in accordance with the findings of Ramesh Kumar & Thomas (1991), while the duration of infertility ranged from 1-12 yrs with a mean of 5.5 yrs which are in accordance with findings of USHA KS (1989) having a mean of 6.5 yr. Majority of cases 89 (68.5%) had regular menstrual pattern, irregular history was noted in 41 cases (31.5%) of which 36 cases (87.8%) were found to have uterine & /or ovarian pathology similar to studies done by Gupta & Anetal (1989), MP. Zavar (2003), Girish CJ (2006) and Kajal (2008).

In a developing country like India where complex expensive immunological & hormonal assay procedure are not easily available in small city and in rural areas, endometrial biopsy is a valuable investigation for primary infertility. Proper correlation, clinical data and dating of endometrium helps to diagnose functional abnormalities of the endometrium as well as intrinsic abnormalities, most of whom are otherwise asymptomatic in patients of infertility. In spite of certain limitation in dating of endometrium and its accuracy, endometrial biopsy still remains the most accepted and widely studied parameter providing sufficient information about the hormonal status of the endometrium. However in 35.4% of cases no cause can be found for infertility. The entire reproductive process is controlled by brain, so in today fast paced world factors like chronic stress, high pressure work, emotional distress and even life style take a toll on the reproductive process.

## References

- [1]. Gupta AN, Aggarwals, vaishtha K. Study of endometrium in infertile women. *J. obstet Gynaec. india* 1980;30:827-9.
- [2]. Girishcj. A histopathological study of endometrium in infertility with special reference to its glycogen content (unpublished doctoral dissertation rajiv Gandhi university of health sciences 2006).
- [3]. KAJAL Bp, histopathology of endometrium in infertility (unpublished doctoral dissertation Rajiv Gandhi university of health sciences 2008).
- [4]. Ruiz -velasco V, Alfani GG, Sanchez U, vera MA, endometrial pathology and infertility 1997;67:687-92.
- [5]. Balasch J, Vanrell J, The endometrial biopsy for the diagnosis of luteal phase deficiency. *Fertile steril* 1985, 44(5):699 -01.
- [6]. Afroz N, Singh M, Verma M, Bansal V, Female infertility. Role of vaginal hormonal cytology, endometrial biopsy and endocrinology evaluation. *J. Indian Med. Assoc.* 2006;104:124 -6.
- [7]. Honore LH -Pathology of infertility :In :fox H, Wells M, Haines and Taylor. *obstetrical and gynaecological pathology* 5<sup>th</sup> edition London churchil living stone 2003 :989 -1043.
- [8]. Usha K, Infertility a clinicopathological study of 90 infertile couple with special references to sperm agglutination test (unpublished doctoral dissertation university of Mysore (1989).
- [9]. Ramesh kumar, Thomas JA, Endometriaa biopsy in women with primary infertility. *Indian J. Med Res* 1991 :94:20-3.
- [10]. Zavar MP, Deshpande NM, Gadgil PA, Mahanta AA, Histopathological study of endometrium in infertility. *Indian J. pathol microbial* 2003;46:630-3.

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