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Original Research Article

To study Histomorphological Patterns of Endometrium in Infertility

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Abstract

Background & Methods: The aim of the study is to study the Histomorphological Patterns of Endometrium in Infertility. The endometrial tissue was obtained by D/C and biopsy procedure for the study by the gynecologist and was send to department of pathology in 10% formalin. Samples were kept for 24 h in 10% formalin; then, tissue processing was done. The section were cut 5 micron in thickness, stained with H and E and examined under microscope.

Results: The Proliferative Type endometrium accounts for 37% of the cases, with a statistically significant p-value of approximately 0.047. The Secretary Type is the most common, comprising 52% of the cases. Simple hyperplasia without cytological atypia and Endometrial polyp are less frequent, at 4% and 7% respectively. The chi-square statistic is 3.1098. The p-value is .047338. The result is significant at $p < .05$.

Conclusion: The study of endometrium is one of the important, safe and cost-effective tools for diagnosing cases of primary and secondary infertility. It gives immense information regarding structure, function and any pathological lesions in endometrium. In the present study, even though ovulatory changes in endometrium were more frequent than anovulatory type, it correlated well with other studies and maybe attributed to other causes of infertility. Hence, endometrial biopsy remains an invaluable method in evaluation of female infertility.

Keywords: Histomorphological, Patterns, Endometrium & Infertility.

Study Design: Observational Study.

Introduction

One of the characteristics of living things is reproduction and perpetuation. Due to the social, cultural, and psychological ramifications, the inability to do so is referred to as "infertility crisis" rather than just infertility. Couples who are childless frequently have severe difficulties, particularly women who are typically held responsible for infertility [1]. It was described as "a disorder of the reproductive system defined by the failure to obtain a clinical pregnancy after 12 months or more of regular unprotected intercourse" by the World Health Organization (WHO) in 2010 [2]. inability to conceive after having an abortion or giving birth is known as secondary infertility, whereas inability to conceive at all is known as primary infertility. About 10% of marriages are infertile, which is a global issue [3]. Male factors account for 25% of infertility, female causes for 58%, and infertility is left

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unexplained in 17% of couples. Occasionally, there are concurrent male and female components [4].

Infertility is defined as the inability of a couple to conceive even after a year of unprotected coitus [5]. About 80 million people globally are impacted by this global health issue. According to India's national health web, the country's overall infertility prevalence ranges from 3.9% to 16.8%. Because women are typically held responsible for infertility, it frequently causes issues for couples and has social, cultural, and psychological ramifications [6]. Primary infertility occurs when a couple has never conceived before, while secondary infertility occurs when they have conceived, but possibly unsuccessfully. About 25% of cases of infertility are ascribed to male factors, 58% to female factors, and 17% to unexplained causes. Simultaneous presence of both male and female variables is also possible [7].

Examining an infertile couple helps determine the reasons that can be treated and their likelihood of becoming pregnant [8]. Female infertility is caused by disturbances in the female genital tract or areas of the central nervous system that regulate hormone release. The endometrial's histological appearance is a good metric for assessing infertility because cyclical morphological changes in the endometrium mirror the varying biorhythms of hormone levels [9].

Material and Methods

A total of 100 samples of endometrial tissue from confirmed cases attending an infertility clinic in Department of Gynaecology and Obstetrics were examined microscopically, patients details such as marital history, menstrual history, clinical complaints, period of infertility, obstetric history, and investigation were recorded. Clinical details of the menstrual cycle, date of last menstrual period (LMP) and date of dilatation and curettage (D &C) were collected. Evaluation of morphological features such as proliferative phase, early secretory phase, mid secretory phase, late secretory phase, endometrial polyp, endometrial hyperplasia without atypia, atypical endometrial hyperplasia, nonspecific endometritis and tuberculous endometritis. In the statistical analysis, percentages (frequencies) of various parameters were calculated.

Inclusion criteria: all ages, primary infertility and all duration.

Exclusion criteria: secondary infertility, malignancy and known metabolic disorder.

Result

Table No. 1: Age Group

S. No.	Age Group	No.	Percentage	P Value
1	18-30	04	04	.131729
2	31-40	24	24	
3	41-50	51	51	
4	51-60	15	15	
5	61-70	06	06	

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The 41–50 age group has the highest representation (51%), while 18–30 and 61–70 are the least represented (4% and 6% respectively). The chi-square statistic is 2.272. The p-value is .131729. The result is not significant at $p < .05$.

Table No. 2: Menstrual complaints and type of infertility

S. No.	Menstrual Complaints	No.	Percentage	P Value
1	Normal (Regular)	46	46	.00307
2	Irregular	33	33	
3	Menorrhagia	00	00	
4	Oligomenorrhea	16	16	
5	Polymenorrhea	05	05	

Normal menstrual cycles were reported by the highest proportion of participants (46%).

Irregular menstruation was the second most common complaint (33%).

Oligomenorrhea (infrequent periods) was present in 16% of individuals.

Polymenorrhea (frequent periods) accounted for 5% of cases.

Menorrhagia (heavy menstrual bleeding) was not reported in any case (0%).

The chi-square statistic is 8.7651. The *p*-value is .00307. The result is significant at $p < .05$.

Table No. 3: Ovulatory & Etiology

S. No.	Ovulatory	No.	Percentage	P Value
1	Adequate secretory phase	63	63	.05331
2	Inadequate secretory phase (LPD)	31	31	
3	Glandulo stroma disparity	06	06	
S. No.	Etiology	No.	Percentage	P Value
1	Hormonal	94	94	.000021
2	Infective	06	06	

Adequate secretory phase: 63 cases, which make up 63% of the total. Inadequate secretory phase (LPD): 31 cases, representing 31%. Glandulo stroma disparity: 6 cases, accounting for 6%. The chi-square statistic is 3.7342. The *p*-value is .05331. The result is *not* significant at $p < .05$.

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Hormonal causes: 94 cases, constituting 94% of the cases. Infective causes: 6 cases, making up 6%. The chi-square statistic is 18.1292. The p-value is .000021. The result is significant at $p < .05$.

Table No. 4: Distribution of cases according to endometrial histopathology

S. No.	Type of endometrium	No.	Percentage	P Value
1	**Proliferative Type**	**37**	**37**	.047338
2	**Secretary Type**	**52**	**52**	
3	**Simple hyperplasia without cytological atypia**	**04**	**04**	
4	**Endometrial polyp**	**07**	**07**	

The Proliferative Type endometrium accounts for 37% of the cases, with a statistically significant p-value of approximately 0.047. The Secretary Type is the most common, comprising 52% of the cases. Simple hyperplasia without cytological atypia and Endometrial polyp are less frequent, at 4% and 7% respectively. The chi-square statistic is 3.1098. The p-value is .047338. The result is significant at $p < .05$.

Discussion

In infertility research, endometrial biopsy is not only the most straightforward, efficient, affordable, and practical way to ascertain when ovulation occurs, but it also provides important additional details regarding the specific woman's utero-ovarian endocrine relationship. It is significantly more valuable than hormone assays that are more complex, challenging, insufficient, and expensive [10].

Among the 2,080 endometrial included in this study, the incidence of main and secondary infertility endometrium was 88.5% and 11.5%, respectively. These figures were almost identical to those of the study by Abbasi et al. [11], which revealed 89.4% primary and 10.6% secondary infertility instances. Abbasi et al. reported a primary: secondary infertility ratio of 8.4:1, which is marginally higher than our study's 7.69:1 ratio.

Similar to our study, Girish et al. [12] found that 20% of the individuals had irregular menses, whereas 80% of the cases had normal menses. Menstrual issues were observed in 35 (22.62%) patients of primary infertility and 33 (20.08%) cases of secondary infertility, per the research conducted by Achalkar GV. 54 (37.84%) of the original infertility cases and 21 (38.46%) of the secondary infertility cases had irregular menstruation.

48 (65.75%) of primary infertility cases and 2 (33.33%) of secondary infertility cases had secretory endometrium, according to Silbina Murmu et al. [13]. Two (33.33%) cases of secondary infertility and sixteen (21.92%) cases of initial infertility were found to have proliferative endometrium. Two (2.74%) cases of simple cystic hyperplasia fell into the major infertility category. Our findings are consistent with these values.

The severity of the infertility issue differs from nation to nation and from one location to another, as does the infertile couple's anxiety [14]. Due to a variety of misconceptions and

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superstitions, many couples choose not to seek medical assistance. Due to the widespread perception that women are always at fault, more women than men visit infertility clinics. Young fertilized ovum nidation depends on the human endometrium. One crucial stage in the treatment of infertile women is the endometrial biopsy. Numerous writers believe that endometrial biopsies are a safe and reliable way to provide histological proof of healthy endometrial growth [15].

Conclusion

The study of endometrium is one of the important, safe and cost-effective tools for diagnosing cases of primary and secondary infertility. It gives immense information regarding structure, function and any pathological lesions in endometrium. In the present study, even though ovulatory changes in endometrium were more frequent than anovulatory type, it correlated well with other studies and maybe attributed to other causes of infertility. Hence, endometrial biopsy remains an invaluable method in evaluation of female infertility.

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