

**MORPHOMETRY AND NUMBER OF FIMBRIAE OF FALLOPIAN TUBE IN REPRODUCTIVE AGE GROUP****Dr Vidya K***

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ABSTRACT

Fallopian tube is one of the vital organ for human fertility. This is where the sperm fertilizes the ovum and human life begins. Detailed morphological knowledge is essential for proper diagnosis and management of disease of fallopian tube. This study has compared the number of fimbriae of fallopian tube both right and left side and length of longest fimbria of right and left sides in reproductive age group. This is a Descriptive Cross sectional study. Fallopian tubes were obtained from 50 autopsied bodies in the reproductive age group of 15-45 years. The number of fimbria of each side were counted manually using magnifying glass. The length of largest fimbria was measured on both sides using measuring scale. The number of fimbriae in the right side ranged between 20-25 with a mean value of 22.12±1.55. In the left side the number of fimbriae ranged between 20-25 with a mean value of 22.76±1.66. The length of longest fimbria, Fimbria ovarica in the right side ranged between 1.1-3.5 cm with a mean of 2.25±0.56cm. In the left side length of fimbria ovarica ranged from 1.1-3.5 cm with a mean of 2.12±0.55cm. In this study, the number of fimbriae does not vary in between right and left fallopian tubes in reproductive age group. The length of fimbria ovarica does not vary between right and left sides.

KEYWORDS : Fimbriae, Fimbria ovarica, Fallopian tube**INTRODUCTION**

According to Gray's anatomy fallopian tubes otherwise known as oviducts are paired tubes attached medially to upper part of body of uterus called uterine os, and open laterally into abdominal cavity by abdominal ostia. The length of the fallopian tube ranges from 7 to 14cm. The uterine os is located at supero lateral angle of uterine cavity. The tube extends superolaterally from there and is divided into four parts as follows:

- Intramural
- Isthmus
- Ampulla
- Infundibulum

Intramural part lies within the myometrium, extending laterally from uterine cavity/uterine os. This segment is 1cm long and 0.7mm wide. It continues laterally into the isthmus which is 3cm long and 1-5mm wide. Isthmus is rounded, muscular and firm and extends into widest portion of the tube with maximum lumen diameter of 1cm, the ampulla. With a length of 5 cm, ampulla is folded tortuously and fertilization occurs here. It extends laterally into trumpet shaped segment called infundibulum. The infundibulum has numerous finger like folds of 1mm width called fimbriae attached at the periphery and an opening in the centre, the abdominal os. The fimbriae, project beyond muscular wall of the fallopian tube from its inner circumference and are oriented towards ovary. The longest among these (the fimbria ovarica) is deeply grooved than others and extend till tubal pole of ovary. During ovulation the fimbriae swell and elongate due to engorged vessels in the lamina propria which facilitate capture of released oocyte. Fimbriae are lined by mucosa with ciliated epithelium whose cilia beat towards the ampulla.^[1]

Subjects and Methods: A descriptive cross sectional study was conducted on number of fimbriae in 50 autopsy samples after obtaining permission from the Institutional Ethics Committee during study period of two years from 2020 to 2024. Fallopian tubes of female body in the reproductive age group 15-45 years after autopsy and met the inclusion and exclusion criteria were collected from Department of Forensic Medicine and fixed in 10% formalin. The number of fimbriae of right and left side were counted manually using magnifying glass and length of largest fimbriae (Fimbria ovarica) was measured using a measuring scale. Data was entered in Microsoft excel sheet and quantitative variables were described by Mean and Standard deviation.

RESULTS:

Of the fallopian tube studied 50 were from right side and 50 from left side. Among them 4% belonged to women of age group 21-25 years, 14% belonged to age group of 26-30 years, 18% belonged to age group 31-35 years, 28% belonged to age group 36-40 years, 36% belonged to age group of 41-45 years.

NUMBER OF FIMBRIAE

The number of fimbriae of each fallopian tube was counted. In the right side 46% belonged to the range of 20.00-21.99 fimbriae, 36% belonged to the range of 22.00-23.99 fimbriae, 18% belonged to the range of 24.00-25.99. The number of fimbriae ranged between 20-25 with a mean value of 22.12 and standard deviation of 1.55. In the left side 28% belonged to range of 20.00-21.99 fimbriae, 34% belonged to the range of 22.00-23.99 fimbriae and 38% belonged to the range of 24.00-25.99 fimbriae. The number of fimbriae ranged between 20-25 with a mean value of 22.76 and standard deviation of 1.66. (Table No 1) (Figure 1)



Figure 1 – Photograph showing counting number of fimbriae using magnifying glass

Table No 1 : Frequency distribution of number of fimbriae

Number	Frequency		Percentage	
	Right	Left	Right	Left
20.00-21.99	23	14	46	28
22.00-23.99	18	17	36	34
24.00-25.99	9	19	18	38
Total	50	50	100	100

LENGTH OF FIMBRIA OVARICA

The length of longest fimbria, Fimbria ovarica of each side was measured. In the right side length of fimbria ovarica ranged between 1.1-3.5 cm with a mean of 2.25cm and standard deviation of 0.56. 42% of length of fimbria ovarica belonged to range of 1.51-2.00cm. In the left side length of fimbria ovarica ranged from 1.1-3.5 cm with a mean of 2.12cm and standard deviation of 0.55. 50% of length of fimbria ovarica ranged between 1.51-2.00cm. (Table No 2)(Figure 2)

Table No 2: Frequency distribution of length of fimbria ovarica

Length	Frequency		Percentage	
	Right	Left	Right	Left
1.01-1.50	2	4	4	8
1.51-2.00	21	25	42	50
2.01-2.50	11	9	22	18
2.51-3.00	9	9	18	18
3.01-3.50	7	3	14	6
Total	50	50	100	100



Figure 2 – Photograph of taking measurement of fimbria ovarica left side of 45 year old using measuring scale

DISCUSSION

The age group of the study population ranged between 24-45 years. 36% belonged to age group 41-45 years. Due to Medico Legal Issues the autopsy specimens of fallopian tube from female aged below 24 were not obtained and hence the sample from this age group was not represented in this study.

In this study number of fimbriae in the fallopian tube of right and left side was counted. In the right side number of fimbriae ranged between 20-25 with a mean value of 22.12 ± 1.55 fimbriae. In the left side the number of fimbriae ranged between 20-25 with a mean value of 22.76 ± 1.66 fimbriae. Ballantyne in his study mentions fimbriae as major and minor (primary and secondary) where the major are musculo-mucous and the minor fimbriae are mucous in character. The major fimbriae are three to five in number and the minor fimbriae are implanted in the fissures of major fimbriae.^[2] James E. Wheeler and Luigi Mastroianni describes about 25 irregular fingerlike extensions from the ovarian end of fallopian tube which opens into pelvic portion of peritoneal cavity.^[3] Hasna Hena studied number of fimbriae in postmortem human fallopian tubes of different age group in right and left side and reported maximum number of fimbriae in reproductive age group. The mean number of fimbriae of right and left fallopian tubes were 21.71 and 21.53. There was no significant difference between number of fimbriae of right and left fallopian tubes.^[4] As cited by Jaclyn D. Nunziato and Fidel A. Valea the number of fimbriae ranges approximately between 20-25.^[5] In the present study number of fimbriae is in accordance with the aforesaid studies.

LENGTH OF FIMBRIA OVARICA

In this study length of fimbria ovarica of right and left side has been measured. The length of fimbria ovarica of right and left side was measured from fallopian tubes even before fixing in 10% formalin. In the right side length of fimbria ovarica ranged between 1.1-3.5 cm with a mean of 2.25 ± 0.56 cm. In the left side length of fimbria ovarica ranged from 1.1-3.5 cm with a mean of 2.12 ± 0.55 cm. Ballantyne in his study describes ovarian fimbria resembling a steel pen with dentate margins. It has a central furrow on its mucous aspect, and passing obliquely towards the margins are ridges of the mucosa continuous with the tubal plicae.^[2] Roy et al mentions the mean length of the fimbria-ovarica in patients with unexplained infertility (2.5 ± 0.6 vs. 3.55 ± 0.8 cm).^[6] In the present study length of fimbria ovarica is in affirmation with the aforesaid study.

The morphological parameters of the fallopian tube changes with advancing age. The smaller size of fimbria ovarica is most likely due to shrinkage due to fixation.

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