

Original Article

Age related change of total length of fallopian tubes in Bangladeshi female cadaver

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ABSTRACT

Context: Human life begins in the fallopian tube. It receives the oocyte from the ovary and fertilization take place here. It provides nourishment for the fertilized ovum and transports it to the uterus. So the Fallopian tube is one of the vital organs for human fertility. In treatment of infertility (in ART) and in the management of ectopic (tubal) pregnancies, the knowledge of the anatomy of the fallopian tube is necessary. **Study Design:** Descriptive type of study. **Place & period of study:** Department of Anatomy, Dhaka Medical College, Dhaka from July 2008 to June 2009. **Materials:** 120 postmortem human fallopian tubes were collected from 60 unclaimed dead bodies that were under examination in the morgue of Department of Forensic Medicine, Dhaka Medical College, Dhaka. **Methods:** The samples were divided into three age groups: Group-A (10-13 years), Group-B (14-45 years) and Group-C (46-50 years). **Results:** In the present study, the mean (\pm SD) total length of the right and left Fallopian tubes were 9.60 ± 0.55 cm & 9.28 ± 0.48 cm in group A, 11.54 ± 0.80 cm & 11.28 ± 0.71 cm in Group B and 9.25 ± 0.26 cm & 9.10 ± 0.31 cm in Group C respectively. There was no significant difference between the mean length of right and left Fallopian tubes. The highest mean length was found in group B and lowest mean length was in group C. The difference in mean length of the Fallopian tube between Group A & Group B and Group B & Group C were statically significant ($P < 0.001$). **Conclusion:** In this study, it was observed that there was significant change in length of fallopian tubes in relation to age.

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Introduction

The fallopian tubes are paired 10cm long and lies on each side of the uterus in the upper free margin of the broad ligaments¹. The tube consists of four main parts. They are from medial to lateral- intramural, isthmus, ampulla and infundibulum². Four distinct segments of the uterine tubes can be identified depending on the anatomical position, thickness of the smooth muscle, complexity of the mucosal folding and cellular composition of the mucosa³.

The uterine tubes are relatively short and wide until puberty¹. After the menopause or following oophorectomy, the uterine tubes gradually involute⁴, or atrophied due to lack of oestrogen produced by the ovaries^{5,6}. Before puberty and after menopause, the tube is functionally quiet⁷.

The fallopian tube is the site of two of the most frequent medical problems affecting female infertility and ectopic pregnancy. Tubal disease is usually defined as tubal damage is accountable for 30-40% of cases of female infertility^{2, 6}. In those areas where tubal infection is common, the incidence of ectopic pregnancy is high. The delay in ovum transport is the cause of tubal pregnancy which may result from decreased tubal motility or distorted tubal

Table-1 Age distribution in different groups

Group	Age limit in years	Number of samples(120)	
		Right	Left
A	10-13 years	5	5
B	14-45 years	45	45
C	46-50 years	10	10

Parameter studied

Total length of the fallopian tubes Procedure for measurement of the total length of the fallopian tube anatomy^{8,9}. A clear conception on the anatomy of the fallopian tubes is a prerequisite for diagnosis and the treatment of the disease of fallopian tube.

Materials and methods

The samples of human Fallopian tubes were collected from the unclaimed female dead bodies that were under examination in the morgue of Department of Forensic Medicine, Dhaka Medical College, Dhaka from November 2008 to June 2009. After legal formalities, the samples were collected within 24-36 hours of death without any sign of putrefaction. All the samples were collected from medicolegal cases. During collection, appropriate age and the cause of death were noted from the morgue's record book. The samples were brought to the Department of Anatomy, Dhaka Medical College, Dhaka. The samples were tagged immediately, which was bearing a code number for subsequent identification. Soon after collection, each sample was gently washed with tap water on a dissection tray. Blood and blood clots were removed as far as possible. Then the sample was fixed in 10% formal saline solution. The collected samples were divided into three groups⁷

(i) Measurement of the length of the infundibulum, ampulla and isthmus of the Fallopian tube:

The Fallopian tubes were cut at the point of their entry into the uterus and put into a tray. The length of the infundibulum, ampulla and isthmus of the Fallopian tube were measured by using a thread (Fig.1) and the thread was imposed on a metallic measuring scale.



Fig.1 Photograph of measurement of the isthmus, ampulla and infundibulum of the Fallopian tube (1.Isthmus, 2.Ampulla, 3. Infundibulum, 4.fimbriae).

(ii) Measurement of the length of the intramural part of the Fallopian tube:

The uterus was cut longitudinally to open the uterine cavity. A pin was introduced through the uterine opening of the Fallopian tube such in a way that the other end came out traversing the whole wall thickness of the uterus. A marking was given on the pin and then imposed on a metallic measuring scale to get the length of the intramural part of the tube (Fig. 2, 3). Then the values of the length of the different parts of the tube were summated to get the total length of the tube.



Fig.2 Photograph of measurement of the length of the intramural part of Fallopian tube (a pin is inserted through the uterine ostium).



Fig.3 Photograph of measurement of the length of the intramural part of Fallopian tube (the red marked area of the pin indicates the length).

Results

In the present study the mean \pm SD total length of the right and left Fallopian tubes were 9.60 ± 0.55 cm and 9.28 ± 0.48 cm in group-A, 11.54 ± 0.80 cm and 11.28 ± 0.71 cm in Group-B, and 9.25 ± 0.26 cm and 9.10 ± 0.31 cm in Group-C, respectively. There was no significant difference between the mean length of right and left Fallopian tubes.

The highest mean length was found in group B and lowest mean length was in group C.

The difference in mean length of the Fallopian tube between Group-A & Group-B and Group-B & Group-C were statically significant ($P < 0.001$) (Table:2 Fig: 4).

Table 2 Total length of right and left Fallopian tubes in different age group

Age group	Total length (cm)		P value
	Right Mean \pm SD	Left Mean \pm SD	
A	9.60 ± 0.55	9.28 ± 0.48	$>0.10^{ns}$
(n=5)	(9.00-10.00)	(8.60-9.80)	
B	11.54 ± 0.80	11.28 ± 0.71	$>0.10^{ns}$
(n=45)	(9.00-13.00)	(9.00-12.80)	
C	9.25 ± 0.26	9.10 ± 0.31	$>0.10^{ns}$
(n=10)	(9.00-9.50)	(8.65-9.50)	
	<i>P value</i>	<i>P value</i>	
A vs B	$<0.001^{***}$	$<0.001^{***}$	
A vs C	$>0.10^{ns}$	$>0.50^{ns}$	
B vs C	$<0.001^{***}$	$<0.001^{***}$	

Figures in parentheses indicate range. Comparison between right and left side done by unpaired Student's 't' test and comparison between age group done by One-way ANOVA (PostHoc), ns = not significant, *** = significant.

Group A : Age 10-13 years

Group B : Age 14-45 years

Group C : Age 46-50 years

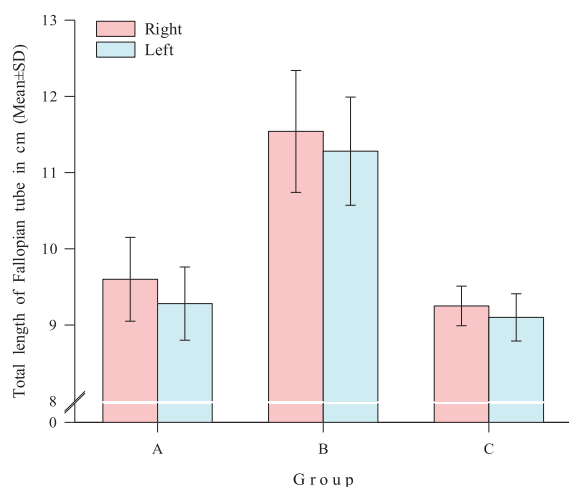


Fig. 4 Total length of right and left Fallopian tubes in different age groups

Discussion

In the present study, the highest mean \pm SD total length of the Fallopian tube was 11.54 ± 0.80 cm in reproductive age group. According to Rosai¹⁰, Datta¹¹, Thomas¹, Bhatla⁷, Sinnatamby¹² total length of the Fallopian tube of adult is 11-12 cm which is similar to the findings of Group B of the present study.

Thomas¹ also stated that until puberty the uterine tubes are relatively short which corresponds with the finding of pre pubertal Group in present study. Hamilton⁴ stated that after menopause the uterine tubes gradually involute which corresponds with the findings of the post menopausal Group in present study.

DeCherney¹³ stated the length of the adult Fallopian tube ranges from 7-14 cm which is dissimilar with the present study. It may be due to different races and geographic conditions from where the data came.

Rahman¹⁴ stated that the mean \pm SD the total length of Fallopian tube in Group A (08-12 year) was 9.65 ± 1.11 cm, in group B (13-25year) 10.58 ± 1.30 cm, in group C (26-45year) 10.21 ± 1.05 cm and group D (46-65year) 10.15 ± 1.71 cm. In present study the mean \pm SD total length of fallopain tube in group A (10-13year)

was 9.60 ± 0.55 cm, in group B (14-45year) 11.54 ± 0.80 cm, and in group C (46-50year) 9.10 ± 0.31 cm. So the present study findings corresponds with Rahman¹⁴.

References

1. Thomas, editor. Female reproductive system-uterine tube. In: Williams PL, Bannister LH, Berry MM, Collins P, Dyson M, Dussek J, et al, editors, Gray's anatomy The Anatomical Basis of Clinical Practice. 39th ed. Great Britain: Churchill Livingstone; 2005. P.1327-84.
2. Ross MH, Reith EJ, Romrell JL. Histology : a text and atlas with correlated cell and molecular biology. 5th ed. USA: Lippincott Williams & wilkins; 1995. p.727-71.
3. Saridogan E, Djahanbakhch O, editors. Tubal disease. In: Shaw RW, Soutter WP, Stanton SL editors. Gynaecology. 3rd ed. London: Elsevier Churchill Livingstone; 2003. p.361-69.
4. Hamilton. W.J. Urogenital system. Text book of Human Anatomy. 2nd ed. Great Britain: C.V. MOSBY company; 1976. p.441-44.
5. Guyton AC, Hall JE. Text book of Medical physiology. 11th ed. New Delhi: Elsevier; 2008. p.1000-25.
6. McGee JOD, Isaacson PG, Wright NA. Oxford Text book of Pathology (2a). 4th ed. Great Britain: Oxford University press; 1992. p. 1609-14.
7. Bhatla N. Jeffcoate's Principales of Gynacecology. 6th ed. London: Edward Arnold; 2001. p.30-36
8. Shaw RW, Soutter WP, Stanton SL, Gynaecology. 3rd ed. Edinburgh: Churchill livingstone; 2003. p.23,361-80.
9. Porth CM. Pathophysiology: Concepts of altered health states. 5th ed. Philadelphia: Lippincott; 1998. p.1199-202.
10. Rosai J. Rosai and Ackerman's: Surgical Pathology (2). 9thed. New Delhi: Thomson Press; 2005. p.1636-43.
11. Dutta. D.C. Text book of Gyhoecology. 4th ed. Calcutta; Central: 2006. p. 7-8.
12. Sinnatamby CS. Last's Anatomy: Regional and applied. 11th ed. Edinburgh: Churchill livingstone ; 2006. p.333-35.
13. DeCherney AH, Pernoll ML. Current: Obstetric Gynecologic diagnosis & treatment. 8th ed. London: Prentice Hall International; Inc; 1994. p.44-78.
14. Rahman ASM, Anatomy of coronary circulation and dimensions of adult post mortem human hearts in Bangladesh (M.phil thesis) Dhaka: University of Dhaka; 1989.