

## EFFECTS OF AGING ON MICROSCOPIC CHANGES IN FALLOPIAN TUBE

PINAKI BHADRA ● SUSHMA BAXI ● AMBRISH SHAH ● M.N. HAZRA

### SUMMARY

This is a prospective hospital based histopathological study of 84 fallopian tubes.

The patients belonged to age range of 19 to 55 years. The objective was to study age related changes in fallopian tube. Modified scoring system as per Hershlag and Seifar 1991 was applied for changes in fallopian tubes and changes were graded to mild, moderate & severe applying cumulative score.

It was observed that with increase in age fallopian tubes were also showing atrophic changes. In above 35 years of age group 35% of tubes were showing mucosal palor, flattening of folds, muscular fibrosis & loss of ciliation. However overall grading did not go beyond mild degree in all the tubes.

### INTRODUCTION

Microsurgical techniques in Infertility surgery and Assisted reproductive procedures on fallopian tube are no longer in its infancy. With best of the efforts intrauterine pregnancy rates do not equal the patency rate and the risk of tubal pregnancy is significantly high. This points at factors other than mear patency operating through

fallopian tube. Aging bring one such, studied by few workers like Dianisio etal (1963) needs further explanation as a cause.

### SUBJECTS AND METHOD

84 fallopian tubes were collected from patients undergoing tube ligation (n = 42) and those who underwent hysterectomy primarily for non tubal disease without history of prior tube ligation (n = 42). Those tubes which were damaged intraoperatively and were likely to be diseased

*Dept. of Obstetrics & Gynaecology and Pathology  
Medical College Baroda.*

*Accepted for Publication 11.1.96*

**TABLE I**  
**SCORING SYSTEM FOLLOWED FOR HISTOLOGICAL CHANGES IN**  
**FALLOPIAN TUBE.**

CHARACTERISTIC	SCORE
1. Vascularity	
: Normal -	1
Edema -	2
Congestion -	2
Dilated Capillary -	3
2. Cilia	
: Normal -	1
Reduced -	2
Absent -	3
3. Epithelium	
: Normal -	1
Flat -	2
Inflammatory cell	
Infiltration -	2
Atrophic epithelium -	3
Polyp formation -	3
4. Muscle	
: Normal -	1
Fibrosis -	3
5. Lumen	
: Normal -	1
Reduced -	2
Dilated -	3
Occulusion -	4
Others	
: Hydrosalpinx -	3
Haematosalpinx -	3
Salpingitis Isthmica Nodosa -	4
Endometriosis -	4
Cummulative score	
: Normal -	<5
Mild changes -	6-13
Moderate changes -	14-19
Severe changes -	>20

due to pelvic pathology like T.O.Mass, pelvic tuberculosis and endometriosis were excluded.

The resected segments were preserved in 10% formalin, labelled and carried to pathology Department. Serial section were taken. Care was taken to include a complete transverse section of the luminal surface of tube.

The specimens were then subjected to dehydration in increasing concentration of alcohol, embedded in paraffin blocks and transverse sections obtained at a thickness of 5 microns. All the slides were stained with haematoxylin-eosin. All the slides were studied by the same pathologist under low (10) and high (40) power magnification who was blinded to the gross findings as far as possible so as to eliminate interobserver variation.

Microphotographs were taken using Richters diapan binocular microscope with camera magnification ranging from 80 - 320. The changes were applied on a scoring system as modified from Hershlag and Seifer 1991. A numerical value was assigned to each criterion. The cumulative score was then graded as normal, mild, moderate & severe changes as shown in table I.

The results of analysis were listed for significance using simple Chisquare test. P value of less than 0.05 was taken as significant.

### **RESULTS & DISCUSSION**

The table shows the effect of age on the histopathological changes in the fallopian tubes. The grading of changes

never went beyond mild degree in any of the tubes. However, while comparing the individual histological change it was found that with increasing age degenerative changes were also increased.

Total 84 fallopian tubes were studied. Patients below 35 years of age mainly belonged to group A1 (those who underwent sterilisation procedure), group A2 above 35 years (mainly was of patients who were undergoing hysterectomy without prior history of tubal ligation).

Plical congestion and edema was seen in the age group of patient upto 45 years. 12.5% in 19 to 25 years, 11.11% in 26 to 35 years and 30% in 36 to 45 years age group.

While considering mucosal folds, flattening of the folds were seen in 25% of tubes in 19 to 25 years of age group but reduction in no. of mucosal folds was observed in 35% and 20% of tubes of 36 to 45 & more than 45 years age group respectively.

Plical fibrosis was seen above the age of 35 years only.

When Ciliary pattern was considered reduction in the number was seen in 12(60%) at 36 to 45 years and 3(60%) in more than 45 years age group.

Muscle fibrosis and reduction in luminal diameter was observed in more than 36 years of age.

Novak and Everett 1962 noticed an increased plical fibrosis after menopause. Dianisio et al 1963 studied the aging process in fallopian tubes with special stains and planimetry.

**TABLE II**  
**EFFECT OF AGE ON THE HISTOPATHOLOGICAL CHANGES IN**  
**THE FALLOPIAN TUBES.**

Histopathological Changes Observed	19-23 Yrs. n = 32	26-35 Yrs. n = 27	36-45 Yrs. n = 20	>45 Yrs. n = 5
<b>VASCULATIVITY</b>				
Normal	20(62.5%)	23(77.8%)	14(70%)	03(60%)
Congested	04(12.5%)	03(11.11%)	06(30%)	—
Pallor	-	—	—	02(40%)
Oedema	08(25%)	03(11.11%)	—	—
<b>MUCOSAL FOLD</b>				
Normal	24(75%)	24(88.89%)	09(45%)	02(40%)
Flat	08(25%)	03(11.11%)	—	—
Reduced	-	—	07(35%)	01(20%)
Absent	-	—	—	—
Fibrous	-	—	04(20%)	02(40%)
<b>CILIA</b>				
Normal	32(100%)	27(100%)	05(25%)	01(20%)
Reduced	-	—	12(60%)	03(60%)
Absent	-	—	03(15%)	01(20%)
<b>MUSCLE</b>				
Normal	32(100%)	27(100%)	15(75%)	01(20%)
Congested	—	—	—	—
Fibrous	—	—	05(25%)	04(80%)
<b>LUMEN</b>				
Normal	32(100%)	27(100%)	12(60%)	01(20%)
Reduced	—	—	08(40%)	04(80%)
obliterated	—	—	—	—

They showed some evidence of increase in collagen fibres in the plicae with increase in age. changes in fallopian tube from puberty to menopause. There were gradual reduction in cell height, ciliation and secretory activity in fallopian tube from

Donnez etal 1985 showed cyclical

TABLE III  
GRADATION OF CHANGES IN FALLOPIAN TUBE

n = no. of segments = 84

Degree of Histopathological Changes	No. of Tubes	Percentage Distribution
Normal	73	86.90
Mild	11	13.09
Moderate	00	00
Severe	00	00

puberty to menopause.

### CONCLUSION

This study observes that over all cumulative score of fallopian tube do not go beyond mild degree as an effect of aging. However with increase in age the tubes starts showing, mucosal palor, reduction and loss of mucosal folds, fibrosis in muscle wall and reduction in Luminal

diameter. This can have an impact over intrauterine pregnancy rates at higher age.

### REFERENCES

1. Dionisio A. Pinero, Alvan C. Foraker, *Am. J. Obstet. & Gynec.* 86 : 397; 1963.
2. Donnez J. Casanas-Roux F. Caprasso J. Ferin J. Thomas K., *Fertil. and Steril.* 43; 554; 1985.
3. Novak E., Everett HS. *Am J. Obstet. Gynec* 16:499, 1962.
4. Hershlag A. Seifer B. *Obstet. & Gynec.* 77; 399; 1991.