

## ORIGINAL ARTICLE

## Effects of Oral Contraceptives on Histopathology of Fallopian Tubes in Bangladeshi Women

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A study on histopathological changes in the fallopian tubes of 21 young and healthy nonpregnant women was done. Among these subjects 11 were taken as control (Group A) who did not use any of the contraceptive methods and compared with remaining 10 subjects (Group B) who used oral contraceptives. About 1.5 cm of each fallopian tube was collected during the process of tubectomy by Pomeroy's method. These tissue samples were processed for H/E staining and microscopic observations were done. On the basis of microscopical findings the fallopian tubes were categorised into normal, acute endosalphingitis, sub-acute endosalphingitis and chronic endosalphingitis<sup>1</sup>. Microscopical findings taken into consideration were oedema, polymorphonuclear leucocytes, lymphocytes, plasma cells and fibrosis. All findings were recorded and statistical analysis was done by student 'Z' test. Incidence of chronic endosalphingitis was significantly increased ( $p < 0.01$ ) in case of pill user group in comparison to control group.

**Introduction:**

Fallopian tube is a part of female reproductive system having anatomical as well as functional communication between uterus and ovary. Its primary function is to transport ovum and also zygote. It provides a suitable environment for fertilization and early development of the zygote. For its transport function are important the ciliary action of the lining cells, diameter of the lumen and peristalsis of muscles of its wall.

Its development and functional integrity very much depend on the female sex hormones. In dogs<sup>2</sup>, cats<sup>3</sup> and humans<sup>4</sup>, the oviductal epithelium undergoes a sequence of distinct morphological changes that is correlated with the ovarian cycle.

It is reported that in rats the oviduct is more susceptible to hormonal changes on exogenous administration than the uterus. Many studies had been carried out to disclose the side effects of different types of contraceptives on different organs including the fallopian tubes. Results of these experimental works suggested that percentage of ciliated cells<sup>5,6,7</sup> and peristaltic movement of tubal muscle are affected by exogenously administered steroid female sex hormones. Clinical researches had been concentrated to investigate the relationship between the tubal inflammatory changes and

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the use of contraceptives. Stromal and epithelial changes in fallopian tube was observed and the workers demonstrated a positive association between the incidence of tubal inflammation and use of oral pills on histological examination<sup>8,9,10</sup>. It was reported that occurrence of salpingitis in pill users as compared to control group was statistically significant<sup>11</sup>. They observed that 94% oviduct was normal histologically. Among the rest, 4.8% oviduct had chronic endosalpingitis and 95% oviduct had sub-acute endosalpingitis in oral pill user groups. Amongst 73 women using various contraceptive methods it was observed mild chronic inflammatory changes were seen in 13/25 oral pill users. It was observed that 63% salpingitis patients had two or more sexual partners and 37% claimed none or one.<sup>12,13</sup>

Variability in the results of histopathological changes caused in the fallopian tube after using contraceptives could result from a number of factors including race, sexual partner and socio-economic status<sup>12,13</sup>. The sexual behavior and partner, socio-economic status and standard of living, race and even parity of the subjects mentioned by the previous researchers was completely different from those in women of this country. In this paper, some of the findings that may help to understand the histopathological changes in the fallopian tube in subjects taking oral contraceptives are reported. If the effects of oral pill on histopathology of the human oviduct can be clarified, it would help to search for a better and side-effect free contraceptive which would be more popular and thus would contribute more extensively in population control programme.

## Materials and method:

### *Subjects:*

Fallopian tubes collected from a total of 21 subjects after tubectomy in different family planning clinics (Azimpur Maternity Hospital, Mohammadpur Fertility Centre and Dhaka Metropolitan Family Planning Clinic) were studied. The selection criteria were women under contraceptive control for at least three months before appearing for sterilization. Among those subjects, 11 were taken as control who did not use any of the contraceptive method and compared with remaining 10 subjects who used oral contraceptives.

### *Collection of sample:*

About 1.5 cm of each fallopian tube was collected during the process of tubectomy by Pomeroy's method. These tissue samples were immediately cleaned by washing with normal saline and were preserved in appropriately labeled containers filled with 10% normal saline. The specimens were brought to the Department of Anatomy of Bangabandhu Sheikh Mujib Medical University. Here these were kept at room temperature and processed for haematoxylin and eosin (H & E) staining method. The slides were stained with H & E stain and microscopic observations were done. All findings were recorded and statistical analysis was done by student 'Z' test.

### *Grouping of the samples :*

According to the contraceptive use by the subjects prior to undergoing sterilization, the samples were grouped into two:

Group A (Control): Samples collected from subjects who did not use any of the contraceptive methods.

Group B (Pill users): Samples collected from subjects who used oral pills.

*Parameters studied:*

The following histopathological findings were taken into consideration.

- i) Odema
- ii) Polymorphonuclear leucocytes
- iii) Lymphocytes
- iv) Plasma cells
- v) Fibrosis

On the basis of these histopathological findings the fallopian tubes were clinically classified into the following groups<sup>1</sup>:

1. Normal endosalpinx;
2. Acute endosalpingitis : Presence of mucosal oedema and polymorphonuclear leucocyte infiltration;
3. Sub-acute endosalpingitis : Presence of mucosal oedema and infiltration with polymorphonuclear leucocytes or plasma cells or lymphocytes and no fibrosis; and
4. Chronic endosalpingitis: All the criteria of sub-acute endosalpingitis plus interplical adhesion.

*Microscopic measurements:*

Measurements of microscopic structures were done by means of an ocular micrometer which was previously adjusted with the help of a stage micrometer with

respect to different magnifications required for different structures.

**Results:**

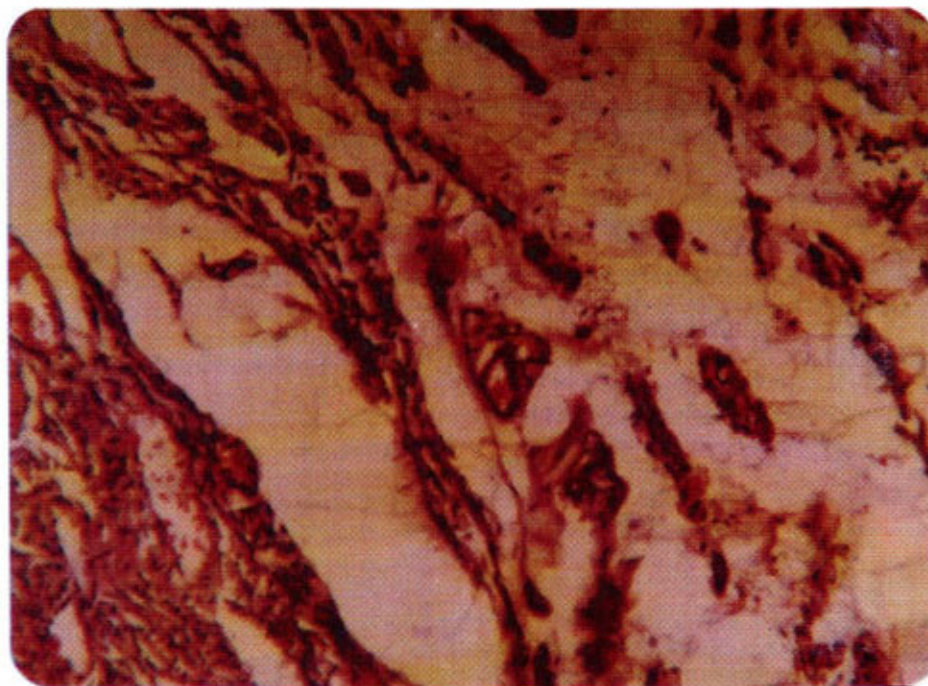
Out of 10 pill users (group-B), fallopian tubes of six subjects showed mild oedema histologically (Fig.-1) and only one case showed mild oedema out of 11 case in non users( group A). On the basis of the microscopical findings the inference was made that 10 (90.91%) subjects were normal in group A and four (40%) subjects were normal in group B. One (0.09%) subject showed sub-acute endosalpingitis in group A and two (20%) subject showed sub-acute endosalpingitis in group B. Neither acute nor chronic endosalpingitis were present in group A whereas four (40%) subjects had chronic endosalpingitis in group B but none had acute endosalpingitis in this group. On statistical analysis, the incidence of acute and subacute endosalpingitis were not significantly different in non-users and pill users (Table-I). Incidence of chronic endosalpingitis was significantly higher ( $p<0.01$ ) in pill user group when compared with non-users (Table-I). Normal endosalpinx was found significantly more ( $p<0.001$ ) in non-users than pill users (Table-I).

**Table-I:** Showing the comparison of different histopathological parameters of fallopian tubes (representation in percentage) between non-users and pill users.

Parameters studied	Non-users (n=11)	Pill users (n=10)	Value of 'Z'
Normal endosalpinx (in number and %)	10 (90.91%)	04 (40%)	*** 2.85
Acute endosalpingitis (in number and %)	nil	nil	nil
Sub-acute endosalpingitis (in number and %)	01 (9.09%)	02 (20%)	N.S 0.71
Chronic endosalpingitis (in number and %)	nil	04 (40%)	** 2.58

\*\*\*  $p<0.001$  significant difference from control  
N.S. = Not significant

\*\*  $p<0.01$  significant difference from control  
n= number of subjects



**Figure-1:** Photomicrograph showing oedema of fallopian tube in pill user group X10.

#### **Discussion:**

In pill user group the incidence of normal oviduct, oviduct with subacute and chronic endosalpingitis were 40%, 20% and 40% respectively. No fallopian tube with acute endosalpingitis could be detected in this group. The incidence of normal oviduct and oviduct with subacute endosalpingitis in the corresponding control group were 90.91% and 9.09% respectively. The occurrence of salpingitis in pill users as compared to control was high and statistically significant. The incidence of salpingitis in this study was somewhat higher in pill user group than that reported by Beerthuizen et al<sup>13</sup>. They observed that 94% oviducts was normal histologically and 4.8% oviducts were having chronic endosalpingitis and 95% oviduct having sub acute endosalpingitis in pill users group. However, similar to the result of this study the incidence of acute endosalpingitis was

reported to be zero<sup>13</sup>. On the other hand, Poma<sup>9</sup> observed no histological sign of inflammation in the control group. Poma<sup>9</sup> also reported that the incidence of salpingitis in pill user group did not vary significantly from the control group. This higher incidence of salpingitis in pill users might be attributable to factors like race, socio-economic status, environment and sex partners.

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