

# Histomorphological changes in fallopian tube in poststerilization women

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## Summary

One hundred women who underwent abdominal hysterectomy with unilateral or bilateral salpingoopherectomy with a prior history of tubal sterilization constituted the study group and similar number of nonsterilized cases undergoing the above surgery were taken as control. Proximal luminal dilatation was the commonest finding in 84% of cases in sterilized group as compared to 24% cases non-sterilized group which was statistically significant ( $p < 0.05$ ). The next common finding was flattening of the mucosal folds which was found in 83% of sterilized as compared to 18% of non-sterilized cases ( $p < 0.05$ ). This was followed by hydrosalpinx in 44% in sterilized as compared to 17% cases in non-sterilized group ( $p < 0.02$ ).

Tubal sterilization could have contributed to the increased subsequent risk of hysterectomy.

## Introduction

Tubal sterilization procedures lead to a sequence of morphological alterations which lead to histomorphological changes in fallopian tube (Rubin & Czernobilsky 1970). Hydrosalpinx and pelvic adhesions lead to scarring and give rise to chronic pelvic pain which pain might be related to partial torsion of fimbrial ends (Ringrose 1974). Tubal lesions subsequent to sterilization and their relation to fertility after reversal was studied by Vasquez et al (1980). Donnez et al in 1984 studied ligated fallopian tubes which were removed during hysterectomy.

An attempt was undertaken to study various histomorphological changes found in the fallopian tube following sterilization and to correlate the menstrual disturbances and chronic pelvic pain with these changes found in fallopian tube following sterilization.

## Material and Methods

The present study was carried out in

Department of Obstetrics and Gynaecology and Pathology of Mahatma Gandhi Institute of Medical Sciences, Sevagram Wardha. One hundred women who underwent abdominal hysterectomy with unilateral or bilateral salpingoopherectomy with a prior history of tubal sterilization constituted the study group and similar number of nonsterilized cases undergoing the above surgery were taken as control. Exclusion criteria were cases with gynaecological malignancies, endometriosis, recent use of hormone and menstrual disorder prior to tubal sterilization. Following hysterectomy the specimen was transferred to the Pathology Department in 10% formalin solution. One section from the site of sterilization and another from the tube, proximal to the site of sterilization was taken and subjected for processing.

## Observations

Distribution of cases according to age at hysterectomy is shown in Table I. Maximum of 71% cases had sterilization at the age of 30 years or less. Technique of sterilization was by minilap technique in 77% and in

remaining by laparoscopy. Various lesions in the fallopian tube were found in 88% in sterilized as compared to 58% in non-sterilized which was statistically significant ( $p < 0.05$ ).

**Table I. Distribution of Cases According to Age at Hysterectomy**

Age at	Sterilized Group hysterectomy	Non-sterilized Group
36 - 40	51	26
41 - 45	18	40
46 - 50	21	23
> 50	10	11
Total	100	100

**Table II: Histomorphological Changes in Fallopian Tube**

Histomorphological Changes	Sterilized n-100	Non-sterilized n-100
Proximal luminal dilatation	84	24
Flattening of folds	83	18
Chronic inflammation	43	22
Hydrosalpinx	44	17
Plical thickening	20	6
Deciliation	9	2
Plical thickening	—	1
Paratubal cyst	25	18
Pseudo polyp	4	—
Epithelial inclusions	9	1
Endosalpingiosis	1	—
Endometriosis	2	1
Reduplication	2	—
Mitotic figures	2	—
Amorphous crystal	5	1
Normal	12	42

Various histomorphological changes which were found in the tube of sterilized and non-sterilized cases is shown in Table II. Proximal luminal dilatation was the commonest finding in 84% of cases in sterilized group as compared to 24% cases of non-sterilized group. This high incidence of proximal luminal dilatation in sterilized group was statistically significant ( $p < 0.05$ ). The next common finding was flattening of the mucosal

folds which was found in 83% of sterilized as compared to 18% of non-sterilized cases ( $p < 0.05$ ). This was followed by hydrosalpinx in 44% in sterilized as compared to 17% cases in non-sterilized group ( $p < 0.02$ ).

Analysis of tubal lesions revealed that tubal changes were present in a statistically significant number (88%) of cases in sterilized group as compared to nonsterilized (58%) group. Out of 19 cases of dysfunctional uterine bleeding (DUB), 15 (79%) cases had tubal lesions as compared to 3 (30%) in nonsterilized patients, which was significant ( $p < 0.01$ ); similarly 18 (66.7%) women had chronic pelvic pain (CPP) as compared to 5 (45.4%) in nonsterilized group which was significant ( $p < 0.04$ ) (Table III).

## Discussion

In the present study, analysis of age at hysterectomy revealed that maximum (51%) subjects were in sterilized group as compared to 26% of subjects in non-sterilized which were between 36 - 40 years. On analysing the age at sterilization it was revealed that subjects who were less than 30 years of age at sterilization were 3 times more prone for hysterectomy than subjects between age group of 31-35 years. Similar observations were found by various workers (Fortney 1988, Stergachis et al 1990, Hillis et al 1996).

Proximal luminal dilatation and flattening of mucosal folds was commonest finding in sterilized group which is comparable to Donnez et al (1984) who reported this finding in 87% and 90% respectively in poststerilized women. Proximal luminal dilatation is thought to be due to increased intraluminal pressure in chronically occluded isthmus and we agree with explanation given by Donnez et al (1984). Hydrosalpinx was found in 44% sterilized cases as compared to 17% in nonsterilized which was statistically significant ( $p < 0.02$ ). Incidence of hydrosalpinx was reported to be 5% to 41.6% by various workers (Gun 1971, Shinde et al 1976, Gupta et al 1981). Collection of tubal epithelial secretion in the trapped segment results in hydrosalpinx. In 2% cases tubal endometriosis was present as compared to 1% in nonsterilized group. Similar observations were reported by Gun et al (1971).

**Table III. Correlation of Tubal Lesions with DuB and CPP**

Tubal Pathology	Cases of DUB		Cases of CPP	
	Sterilized N - 19	Non-sterilized N - 10	Sterilized N - 27	Non-sterilized N - 11
Present	15 (79)	3 (30)	18 (66.7)	5 (45.5)
Absent	4 (21)	7 (70)	9 (33.3)	6 (54.5)

Number in parenthesis shows percentage

Implantation of expelled menstrual products through open tubal lumen into the healed ligation areas results in endometriosis.

Tubal lesions were found in 79% of sterilized and 30% of nonsterilized group who were diagnosed as DUB. Menstrual disturbances could be attributed to decreased tubo-ovarian blood supply (Neil et al 1975), to which we agree. Chronic pelvic pain (CPP) was present in 66.7% in sterilized cases as compared to in 45.4% nonsterilized which was significant. CPP could be due to inflammatory reaction of the fallopian tubes following sterilization leading to pelvic adhesions and scarring. Russin (1986) offered similar explanation.

It can thus be concluded that post-sterilized women undergoing hysterectomy have different clinical and pathological characteristics than nonsterilized women and that tubal sterilization could have contributed to the increased subsequent risk of hysterectomy.

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