

## STUDY OF VAGINAL FLORA IN CASES OF HYSTERECTOMY

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### SUMMARY

Microorganisms are a heterogenous group of several distinct classes of living beings. Many of them have been considered a part of women's normal life and found normally in oral cavity, vagina, skin, nose and anal canal etc. The common organisms found in vagina are lactobacillus, *E. coli* and klebsiella etc.

Following surgery, there was an increase in the anaerobic bacterial population of vaginal flora as studied by Ohm and Galask (1975). The study of vaginal flora has been done both pre and postoperatively in 100 cases who underwent either abdominal or vaginal hysterectomy. We found that most common organisms isolated preoperatively in vaginal flora were *E. coli* and Klebsiella. Few gram positive organisms were also detected preoperatively such as proteus, staphylococcus aureus, staphylococcus albus and haemolytic streptococcus etc. Postoperatively there was a marked alteration in vaginal flora. Gram negative organisms specially *E. coli* and klebsiella were detected from majority of patients but the Gram positive organisms if present preoperatively declined or disappeared postoperatively. This change was observed in all patients whether they received prophylactic antibiotics or not. Moreover, there was no difference in short term and long term antibiotic prophylactic groups. This suggests that, hysterectomy itself, rather than selective pressure exerted by antibiotics, alters the vaginal flora.

### INTRODUCTION

Microorganisms are a heterogenous group of several distinct classes of living beings. Many of them have always been

pathogenic, others have been considered part of women's normal and beneficial environment. Many bacteria are found normally, in oral cavity, vagina, skin, nose and anal canal etc. The common organisms present in oral cavity are staphylococcus aureus, streptococcus viridans, whereas com-

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Long term antibiotics were used in 20 patients  
 Short term antibiotics were used in 20 patients  
 Control group included 10 patients.

minutes before commencement of operation.

- Control group received no antibiotic whatsoever.

Similarly 50 patients who underwent vaginal hysterectomy were also divided into 3 group :

- Long term antibiotic therapy group - received prophylactic antibiotic for 5 days which was started 4-6 hours after surgery.
- Short term antibiotic therapy - received only 3 doses of antibiotic for one day only, which was started 30

#### DISCUSSION

Preoperatively 60% (6 out of 10) cases had positive bacteriological growth in control group, in cases of abdominal hysterectomy (Table No. I) Positive bacterial growth was detected in 60% (12 out of 20) in long term therapy group and 70% (14 out of 20) in short term therapy group. Preoperatively the common organisms detected in vagina were *E. coli*, *Klebsiella*, *proteus* and *staphylococcus aureus* in all three groups i.e. long term, short

Table II

Showing Bacterial Growth in High Vaginal Swab

Name of bacteria	Vaginal Hysterectomy								
	Pre operative			Perioperative			Postoperative		
	Cont.	Gr I	Gr II	Cont.	Gr I	Gr II	Cont.	Gr I	Gr II
<i>E. coli</i>	3	4	6	3	6	6	5	10	8
<i>Klebsiella</i>	2	4	2	2	2	2	5	6	6
<i>Proteus</i>	1	—	—	1	4	2	—	2	—
<i>Staph. aureus</i>	2	2	2	2	2	—	1	—	—
<i>Staph albus</i>	—	2	2	—	—	—	1	—	—
<i>Hemo. strepto</i>	—	—	—	—	—	—	—	—	—
<i>Streptofaecalis</i>	—	—	—	—	—	—	—	—	—
<i>Pseudomonas</i>	—	—	—	—	—	—	—	—	—
Sterile	4	10	8	4	8	10	2	6	8

#### Abdominal Hysterectomy

Control Vs. Group I $X^2$	=	.35 (P > .05) NS
Control Vs. Group II $X^2$	=	1.23 (P > .05) NS
Group I Vs. Group II $X^2$	=	.28 (P > .05) NS

Table I & II show that most common organisms isolated were *E. coli* and *Klebsiella* which predominated especially in the postoperative cultures.



mon inhabitant of vagina are lactobacillus, E. coli and Klebsiella etc.

Ohm and Galask (1975) showed that changes in cervico vaginal bacterial flora occurred in cases undergoing hysterectomy whether antibiotics were administered or not. Following surgery, there was an increase in the anaerobic microorganism population. The present study has been undertaken to observe the vaginal flora in 100 cases both before and after abdominal as well as vaginal hysterectomies.

#### MATERIAL AND METHODS

This study was conducted in 100 patients, who underwent abdominal or vaginal hyster-

ectomy in U. I. S. E. Maternity Hospital, G. S. V. M. Medical College, Kanpur, other nursing homes and hospitals of Kanpur between April 1991 to to June 1992. Preoperatively a high vaginal swab was taken from the vault of vagina. perioperative swab from vaginal vault was also taken after hysterectomy but before its closure. Postoperatively a high vaginal swab was taken on 3rd and 7th day in all the patients. All these swabs were sent for culture and sensitivity and the results were meticulously analysed.

#### Study Group Included

1. Fifty cases who underwent abdominal hysterectomy out of which -

#### OBSERVATIONS

Table I

Showing Bacterial Growth in High Vaginal SWAB

Name of bacteria	Abdominal Hysterectomy								
	Pre operative			Perioperative			Postoperative		
	*Cont.	Gr I	Gr II	Cont.	Gr I	Gr II	Cont.	Gr I	Gr II
E. coli	3	6	10	3	6	10	5	12	9
Klebsiella	3	6	10	3	6	10	3	10	8
Proteus	2	4	—	2	4	—	1	2	—
Staph. aureus	1	2	—	1	2	—	1	—	—
Staph albus	—	—	4	—	—	2	—	—	2
Hemo. strepto	—	—	—	—	—	—	1	—	—
Streptofacalis	—	—	—	—	—	—	—	—	—
Pseudomonas	—	—	—	—	—	—	—	—	—
Sterile	4	8	6	4	8	6	1	6	2

#### Abdominal Hysterectomy

Control Vs. Gr. I  $X^2$  = 1.52 (P > .05) NS

Control Vs. Gr. II  $X^2$  = ONS

Group I Vs. Group II  $X^2$  = 1.25 (P > 0.05) NS

\*Cont. Controls

term therapy and control groups. postoperatively 90% patients developed positive bacteriological growth in control group, it was 70% (14/20) and 90% (18/20) in long and short term therapy group respectively. The main spurt in bacterial population was noted in the gram negative organism namely *E. coli* and *klebsiella*, whereas gram positive organism specially *proteus* and *staphylococcus aureus* decreased postoperatively in vaginal flora. In all three groups i.e. long term therapy, short term therapy and control group similar changes in bacterial flora occurred. Postoperatively there was increase in gram negative organisms in all three groups but the difference in preoperative and postoperative growth in all the three groups was not found to be statistically significant ( $P > 0.05$ ).

Similarly in cases of vaginal hysterectomy preoperatively the incidence of bacteriological growth was 60% (6/10), 50% (10/20), 60% (12/20) in control group, long term and short term antibiotic prophylactic group respectively (Table II). Preoperatively the organisms isolated were gram negative (*E. coli* and *Klebsiella*) as well as gram positive (*proteus*, *staphylococcus aureus*, *staphylococcus albus* and *haemolytic streptococci*). Postoperatively the cultures showed positive bacteriological growth in 80% (8/10), 70% (14/20), 60% (12/20), cases of control, long term and short term antibiotic prophylactic group respectively. Postoperatively the increase in bacterial growth was noted mainly in the gram negative organism like *E. coli* and *klebsiella*. Postoperatively, most of the gram positive organisms eg. *haemolytic streptococci* disappeared from the culture or else declined as was seen with *proteus*, *staphylococcus aureus* and *staphylococcus albus* etc. The difference between the findings of the three groups was again not found to be statistically significant. Postoperatively the bacterial flora, as seen in the culture of vaginal swab, showed mainly the

predominance of gram negative bacteria such as *E. coli* and *klebsiella*, which had increased when compared with the preoperative cultures. If gram positive organisms were present preoperatively, their number declined postoperatively. It was apparent that there was no statistically significant difference in vaginal flora both preoperatively and postoperatively between the control or long term and short term antibiotic prophylaxis group. It was not even influenced by the duration of prophylaxis ( $P > .05$ ).

Similar results were reported by Karen Kreutner (1978) in his study. When pre and postoperatively vaginal cultures were analysed it was apparent that enterobacteriae increased in postoperative cultures. These findings of our study are in consonance with those of Ohm and Galask (1975) and Grossman and Adams (1979), who also observed a similar alteration in vaginal flora in their hysterectomy patients. Gorbach et al (1973) found that following surgery there was an increase in the population of anaerobic organisms in the vagina. However, Ledger et al (1975), in their analysis of vaginal flora found it difficult to determine whether significant changes in vaginal flora occurred in hysterectomy patients postoperatively both in vaginal as well as abdominal hysterectomy.

#### CONCLUSIONS

1. The most common organisms in high vaginal swab of hysterectomy patients were *E. coli* and *Klebsiella*, in all preoperative and postoperative cultures in vaginal as well as abdominal hysterectomy, irrespective of the fact whether they were given antibiotic prophylaxis or not.
2. Postoperatively there was a marked alternation in vaginal flora. Gram negative organisms specially *E. coli* and *Klebsiella* were detected from the majority of patients.



3. Gram positive organism if present preoperatively either declined or disappeared post operatively.

This suggest that hysterectomy itself, rather than selective pressure exerted by antibiotics alters the vaginal flora.

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