

## COMPARATIVE STUDY OF SHORT TERM VERSUS LONG TERM ANTIBIOTIC PROPHYLAXIS IN ELECTIVE & EMERGENCY OPERATIONS IN ALL CASES OF OBSTETRICS & GYNAECOLOGY

SINGH V. K. ● SHARMA M. K. ● DUBEY P. ● BHAGOLIWALA A. ● KUSHWAHA S.

### SUMMARY

Post-operative infection remains the most common complication of surgery. In the past, it was common for surgical patients to receive a long term course of at least 5-7 days antibiotic. It is now well accepted that there is no advantage in continuing antimicrobial prophylaxis beyond the day of operation. The aim of the present study was to compare the efficacy of long term and short term antibiotic prophylaxis with regard to post-operative morbidity. In the present study we did not observe any statistically significant difference between the two regimes ( $P < 0.05$ ) and both had equal efficacy.

### INTRODUCTION

Post-operative infection remains the most common complication of abdominal and vaginal surgery in the form of febrile morbidity, urinary tract infection, wound infection, thrombophlebitis, pelvic cellulitis, respiratory tract infection etc. As such it seems justifiable to utilize all possible measures to prevent these complications in the surgical patients, including the prophylactic use of antibiotic therapy. The use of antibiotic therapy prior to onset of

clinically evident infection has been termed as Antibiotic prophylaxis.

It is now well accepted that therapeutic levels of antibiotic should precede the incision, for its maximum efficacy. We conducted this study to compare the efficacy of short term and long term antibiotic prophylaxis in reducing post-operative infectious morbidity.

### MATERIAL AND METHODS

This study was conducted on 194 patients, who underwent abdominal or vaginal operations at U. I. S. E. Maternity Hospital, other nursing homes and hospitals of Kanpur, be-

tween April, 1991 to June, 1992. Patients having taken antibiotics in the recent past or at present receiving antibiotics, or those receiving steroids or other immunosuppressant drugs or patient with temperature  $\geq 38^{\circ}\text{C}$  during or 24 hours prior to surgery, or those having any sort of infection were not included in the study.

All the patients were subjected to a thorough history-taking and general and gynaecological examination. Necessary investigations prior to surgery were done. The patients studied included those undergoing -

(1) Abdominal hysterectomy - Total No. of patients-50 out of which Long term antibiotics were used in 20 patients and Short term antibiotics were used in 20 patients.

Control group - 10 patients.

(2) Caesarean section (74 patients, 32, Long term, 32 Short term, 10 Control).

(3) Vaginal hysterectomy (50 patients, 20 Long term, 20 Short term and 10 control cases), and

(4) Abdominal ligation (8 Long term, 8 short term & 4 Control cases).

**Control Group :** did not receive any form of chemoprophylaxis.

**Group I (Long term therapy group) :**

Patients received antibiotic prophylaxis for 5 days. Patients received ampicillin 500 mg. IV 6 hourly, which was started 4-6 hours after surgery for 48 hours, followed by oral ampicillin 500 mg. 6 hourly for 72 hours and Gentamycin 80 mg I/M 12 hourly which was also started 4-6 hours after surgery for 5 days.

**Group II (Short term therapy group) :**

Total 3 doses were administered, 1st dose was given 30 minutes before surgery. It included Ampicillin 1 gm. I. V. and Gentamycin 80 mg. I. M. 2nd dose of antibiotics included Ampicillin 1 gm. I. V. given 6 hours after the 1st dose and Gentamycin 80 mg. I. M. 12 hours

after the 1st dose. 3rd dose consisted of ampicillin 1 gm. I. V. which was administered 6 hours after the 2nd dose of ampicillin and gentamycin 80 mg. I. M. 12 hours after the 2nd dose of gentamycin.

The presence of temperature, vaginal infection, urinary tract infection, respiratory tract infection, and abdominal wound infection was carefully noted. High vaginal swab and abdominal wound swab were sent for culture and sensitivity and results in each group were meticulously compared.

### DISCUSSION

The patients in each group i.e. control, long term (Group I) and short term (Group II) therapy were almost similar in all aspects e.g. age, parity, socioeconomic status, weight, pre-operative Hb etc. As such these factors could not affect the post-operative morbidity. Thus the only difference was in the duration of antibiotics used. In control group no antibiotics were given.

The overall incidence of morbidity was found to be 70% (7 out of 10 cases) in control group. The same was 80% (8/10), among study group patients who underwent abdominal and vaginal hysterectomy respectively. In our study the rate of morbidity was higher in vaginal hysterectomy as compared to abdominal hysterectomy, which was observed by various authors as shown in Table No. III.

The difference between long term and short term antibiotic group was not significant ( $P > 0.05$ ) as shown in Table IV. Whereas the difference between short term and long term therapy groups was found to be significant when compared with control cases ( $P < 0.05$ ).

Similar observations were reported by Ledger & Child (1973), who observed a significant decline in febrile morbidity from 46% (23/50) to 24% (11/28), from control to short term group. They also found no difference in febrile morbidity of patients in short term and long



Table I

Showing comparative analysis of incidence of morbidity in various groups

Post op. complication	Abnormal Hysterectomy						Vaginal Hysterectomy					
	Control		Group I		Group II		Control		Group I		Group II	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Fever	3	30	4	20	4	20	5	50	4	20	4	20
* UTI	—	—	—	—	—	—	2	20	—	—	2	10
Vaginal cuff abscess	—	—	—	—	—	—	—	—	—	—	—	—
Vaginal bleeding	2	20	2	10	4	20	4	40	4	20	6	20
Vaginal discharge	4	40	4	20	4	20	1	10	4	20	4	20
** RTI	1	10	—	—	—	—	1	10	—	—	—	—
Wound induration / bleeding	6	60	4	20	2	10	—	—	—	—	—	—
Wound discharge	3	30	2	10	2	10	—	—	—	—	—	—
Wound dehiscence	—	—	—	—	—	—	—	—	—	—	—	—
Burst abdomen	—	—	—	—	—	—	—	—	—	—	—	—
Pelvic cellulitis	1	10	—	—	—	—	3	30	2	10	2	10

## Abdominal Hysterectomy

X<sup>2</sup> Control Vs. Group I = 5.62 (P < .05) SX<sup>2</sup> Control Vs. Group II = 4.30 (P > .05) SX<sup>2</sup> Group I Vs. Group II = .64 (P > 0.05) NS

## Vaginal Hysterectomy

X<sup>2</sup> Control Vs. Group I = 3.39 (P > .05) NSX<sup>2</sup> Control Vs. Group II = 4.25 (P < .05) SX<sup>2</sup> Group I Vs. Group II = .547 (P > .05) NS

Above table compares the three groups of patients with regard to the different parameters of post operative infectious morbidity.

\* Urinary tract infection.

\*\* Respiratory tract infection

Table II

Showing comparative analysis of incidence of morbidity in various groups

Post op. complication	Caesarean Section						Abdominal Ligation					
	Control		Group I		Group II		Control		Group I		Group II	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Fever	5	50	6	18.7	2	6.25	2	50	1	12.5	1	12.5
* UTI	1	10	—	—	—	—	—	—	—	—	—	—
* RTI	—	—	—	—	—	—	—	—	—	—	—	—
Wound induration	4	40	4	12.5	6	18.7	1	25	2	25	—	—
Wound dehiscence	1	10	4	12.5	2	6.25	—	—	—	—	—	—
Burst abdomen	—	—	—	—	—	—	—	—	—	—	—	—
Wound discharge	6	60	6	18.7	6	18.7	1	25	—	—	—	—
Endometritis	1	10	—	—	—	—	—	—	—	—	—	—
Thrombophlebitis	5	50	8	25	8	25	—	—	—	—	—	—
Unhealthy lochia	4	40	2	6.5	4	12.5	—	—	—	—	—	—

## Caesarean Section

Control Vs. Group I X<sup>2</sup> = 4.76 (P < .05) SControl Vs. Group II X<sup>2</sup> = 5.69 (P < .05) SGroup I Vs. Group II X<sup>2</sup> = 1.11 (P > .05) NS

This table compares the three subgroups of patients with regard to different parameters of postoperative infectious morbidity. No statistical analysis could be calculated due to small number of patients in cases of abdominal ligation.

\* Urinary tract infection.

\*\* Respiratory tract infection.

Table III

Showing Post-operative morbidity in various groups

Post operative complication	Abd. Hyst.			Vag. Hyst.			Caesar Section			Abd. Ligation		
	Gr. I	Gr. II	Con.	Gr. I	Gr. II	Con.	Gr. I	Gr. II	Con.	Gr. I	Gr. II	Con.
	%	%	%	%	%	%	%	%	%	%	%	%
Overall morbidity	25	30	75	45	40	80	31.25	28.12	70	12.5	12.5	50
Fever	20	20	30	20	20	50	18.7	6.25	90	12.5	12.5	50
* UTI	—	—	—	—	10	20	—	—	10	—	—	—
Pelvic infection	10	20	30	30	30	70	—	—	—	—	—	—
** RTI	—	—	10	—	—	—	—	—	—	—	—	—
Abd. wound infec.	30	20	60	—	—	—	31	26	70	25	—	50
Endometritis / Unhealthy lochia	—	—	—	—	—	—	6.25	12.5	50	—	—	—
Thrombophlebitis	—	—	—	—	—	—	25	25	50	—	—	—
Positive bacteriological growth in HVS	70	90	90	70	60	80	56	56	80	0	50	75
Additional pantibiotics needed	10	10	40	20	15	60	15.6	12.5	50	—	—	60

\* Urinary tract infection.

\*\* Respiratory tract infection.



Table IV

Authors	Year	Incidence of morbidity (%)	
		Vaginal	Abdominal Hyst.
Allen et al	1972	50(25/50)	41
Ohm & Galask	1975	48(11/23)	39
Grossman and Adams	1979	67(16/24)	29.8(25/84)
Queck et al	1991	45.1(41/91)	—

term regimen. Similar observations were reported by Ohm & Galask (1975), Robert & Homesley (1978) & Polk et al (1980).

Postoperative morbidity was 70% (7/10) in control group, 31.25% (10/32) in long term and 28.12% (9/12) in short term therapy group. Similarly in cases of caesarean section Larry et al (1980), found the incidence of endometritis to be 65% (20/31) in their control group, 29% (7/24) in short course group and 20% (5/25) in long course group. Similar reports were observed by Queck et al (1991), but their morbidity was less as compared to our study. This may be due to low socioeconomic status, higher prevalence of anaemia and infection in our patients and poor sterilization technique in our setting. In high vaginal swab, most common organisms isolated, were *E. coli* and *Klebsiella*.

#### CONCLUSION

The incidence of post-operative morbidity was quite high in control group. Significant decline in postoperative complications occurred in all cases when long or short term antibiotic

prophylaxis was used, as compared to controls ( $P < 0.05$ ). In our study we did not observe any statistically significant difference between the efficacy of the two regimens. As such, short term therapy is to be preferred because it has many additional advantages for e.g. major reduction of drug intake and lesser risk of emergence of bacterial resistance, more convenient to the patients because of lesser dose and reduced cost of treatment.

#### BIBLIOGRAPHY

1. Allen J. L., Rampone J. R., Wheelless C. R. : *Obstet. Gynec.* : 39, 218, 1972.
2. Grossman J. H., III, Adams L. L. : *Obstet. Gynec.* : 53, 23, 1979.
3. Larry J. Angelo, Robert J. Sokol : *Obstet. and Gynec.* : 55 (5), 583, 1980.
3. Ledger W. J., Child M. A. : *Am. J. Obstet. Gynec.* : 117, 423, 1973.
4. Ohm & Galask : *Am. J. Obstet. Gynec.* : 123, 590, 1975.
5. Polk B. F., Tager I. B., Shapiro M., Goven White B., Goldstein B., Schoenbaum SC : *Lancet* : 1, 437, 1980.
6. Queck M., Hirschold T., Berle P. : *Zentralbl Gynabal* : 113 (6), 303, 1991.
7. Roberts J., Homesley H. D. : *Obstet. Gynec.* : 58, 83, 1978.