

ROUTINE IRRIGATION WITH DILUTED (POLYVINYL PYRROLIDONE BETADINE) SOLUTION FOR PROPHYLAXIS OF INFECTIONS FOLLOWING VAGINAL OPERATIONS

by

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Introduction

Betadine is polyvinyl pyrrolidone (P.V.P.) iodine available at a concentration of 10% solution. Povidone iodine is a yellowish brown amorphous powder with a faint characteristic odour. It is soluble in water and in ethanol, almost insoluble in acetone, carbon-tetrachloride-ether and light petroleum.

The present study was carried out to see the effect of routine irrigation with diluted Betadine solution for prophylaxis of infections following vaginal operations.

Wound infection continues to be a threatening complication in gynaecological surgery. Healthy women without prediction develop a serious post-operative infection, because surgeon work through a contaminated vagina into a clean peritoneal cavity. For prevention of infection, two methods are available. The first is intravaginal degerming with a microbicide and the second is preoperative systemic antibiotic. Direct degerming of the operative site has always seemed more surgically sound than the indirect use of systemic antibiotic. Betadine, the multi-

purpose microbicidal achieves to kill both gram positive and gram negative bacteria, particularly those encountered in skin infection such as staphylococcus, streptococci, E. coli, proteus and pseudomonas aeruginosa including those resistant to antibiotics. It retains its microbicidal activity in presence of blood, pus and serum.

Material and Methods

Two hundred eleven patients who had elective vaginal operations at Nalanda Medical College Hospital, Patna between January, 1981 to December, 1981 were taken for study. Patients were divided into two groups.

112 patients had routine pre-operative vaginal soak with Betadine followed by post-operative vaginal irrigation with diluted betadine solution, and ninety-nine served as control. Patients who were receiving antibiotics or other chemotherapy were not included in the present study. None of the subjects had any infection before the operation.

All operations were done in one unit. Pre-operative Catheterization was not done as a routine. First the Betadine solution is poured into the vagina for a five minute soak while the patient is being draped. From third post-operative day

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TABLE I
Showing Age of the Patients in Two groups

Age in Year	Control Number	Group %	Betadine Number	Group %
20-30	45	45.4%	50	44.8%
30-40	30	30.3%	35	31.2%
40-50	14	14.2%	15	13.3%
50-60	10	10.1%	12	10.7%

TABLE II
Surgical Diagnosis in the Two Series

Diagnosis	Control Number	Group (99) %	Betadine Number	Group (112) %
1. 2nd degree ultero-vaginal prolapse with cystocele and Rectocele	40	40.5%	45	40.2%
2. Cystocele and Rectocele	15	15.1%	20	17.9%
3. Rectocele + R.V.O.	10	10.1%	10	18.9%
4. Unhealthy Cx.	14	14.1%	14	12.5%
5. Bilateral Tear of the Cx.	10	10.1%	10	8.9%
6. Complete Perineal tear.	10	10.1%	13	11.6%

TABLE III
Operative Procedures

Surgery	Control Number	Group %	Betadine Number	Group %
Manchester repair	30	30.4%	35	31.3%
Vaginal Hysterectomy with A.C.R. & P.F.R.	10	10.1%	10	8.9%
A.C.R. & P.F.R.	15	15.1%	20	17.9%
Perineorrhaphy	10	10.1%	10	8.9%
Amputation of Cx.	14	14.1%	14	12.5%
Trachelorrhaphy	10	10.1%	10	8.9%
Repair of Complete perineal Tear	10	10.1%	13	11.6%

TABLE IV
Post Operative Morbidity in the Two Groups

	Control Number	Group %	Betadine Number	Group %
Fever Ranging from 101 °F to 104 °F	12	12.1%	3	2.6%
Urinary tract infection	7	7.7%	5	4.4%
Purulent vaginal discharge	10	10.1%	3	2.6%
Pelvic Peritonitis	3	3.3%	Nil	Nil

daily irrigation of the vaginal wound was done with diluted betadine solution. Patients were observed for purulent vaginal discharge, urinary tract infections

were noted, Febrile morbidity was defined as a temperature of 38°C on two post-operative days excepting the first post-operative day (Mattingly, 1977).

TABLE V
Hospital Stay in the Two Groups

No. of days	Control Group		Betadine Group	
	Number	%	Number	%
8-10 days	25	25.3%	80	71.5%
10-15 days	30	30.3%	25	22.3%
15-20 days	24	24.2%	7	6.2%
More than 20 days	20	20.2%	Nil	Nil

Result and Observations

Majority of the patients were in the age group between 30 and 50 years in both the series.

About 50% of the Cases were of Utero-vaginal prolapse in both the series.

The above table shows Surgical procedures adopted in two groups.

The morbidity rate in betadine group was low in comparison to control group. Ten patients of the Control group had purulent vaginal discharge, whereas only three patients in betadine group developed purulent discharge. No, patient in the group has pelvic peritonitis.

93.8% patients were discharged within 15 days, in the betadine group. Only 6.2% of the patients had to stay for more than 15 days.

Comments

Routine irrigation with Betadine solution substantially reduced infections following vaginal operations.

In addition to the well known aerobic pathogens there are many anaerobic pathogens in the vagina, Capable of causing serious post-operative infections. New laboratory techniques have been developed during the past decades to identify those important anaerobic pathogene. *In vitro* antimicrobial spectrum of Betadine products appears appropriate in view of the Complex flora normally present in the vagina. These agents are

microbicidal against bacteria (aerobes and anaerobes) fungi, Yeast, protozoa and viruses. Betadine rapidly kills these pathogens within five seconds even after dilution.

Intravaginal asepsis as a method for preventing infections may replace the routine administrations of prophylactic antibiotics to patients scheduled for vaginal operations. The original work of Iedger and Co-workers (1973) with cephaloridine prophylaxis heralded a new era. This was short lived, since it was later found that *Bacteriodes fragilis*, resistant to commonly used prophylactic antibiotics, produced serious post-operative infections. Moreover development of cephalosporine resistant *Escheriachia Coli*, *Pseudomonas aeruginosa*, and group D streptococci became evident in the study of Ohm and Golask (1975).

Pre-operative vaginal degerming procedure and post-operative vaginal irrigations with Betadine solutions directly eliminates aerobes and anaerobes from the vagina, to reduce serious post-operative infections associated with transvaginal surgery.

In our series there was only 2.6% patients with febrile morbidity in the Betadine groups and 12.1% patients in the control group. 2.6% patient in the Betadine group and 10.1% in the control group had purulent vaginal discharge. Pus culture was done in the control group and the predominating growth was mixture of anaerobic organisms. All infections were

treated with a combination of ampicilline, amoxycillin, and Gentosporine. Urinary tract infections were found in 7.7% patients in the control group and 4.4% in the treated group. Betadine group had no pelvic peritonitis.

Remarkable improvement in post-operative morbidity has been seen in our present series (9.6%).

Conclusions

Intravaginal degerming by a vaginal soak with betadine solution followed by post-operative vaginal instillation of Betadine solution is more effective in reducing infections following vaginal operations.

Betadine eliminated aerobic and anaerobic pathogens by microbicidal activity. It is well tolerated and does not produce systemic effects and does not induce resistant strains of pathogens. It may be easily applied to the operative site, require less antibiotic, shortens hospital stay.

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