A QUANTITATIVE BACTERIAL MEASUREMENT IN PATIENTS UNDERGOING MINOR CUTANEOUS SURGERY

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SUMMARY : There is no general agreement on the degree of sterility required for minor cutaneous surgery. In this study we made a quantitative bacterial measurement by taking stepwise cultures in 30 patients who underwent minor cutaneous surgery. Our results show that minor cutaneous surgery can be carried out on and out - patient basis applying a standard skin antiseptic.

Key Words : *Cutaneus Surgery, Sterility, Bacterial Measurement.*

INTRODUCTION

Nowadays it generally accepted that minor cutaneous surgical operations need not be performed in fully equipped surgical rooms where all sterility measures are taken. However an agreement on the degree of sterility required in these operations has not yet been established.

In order to clarify the optimal sterility prerequisites for minor cutanous surgery, we made a quantitative bacterial measurement in 30 patients who underwent such operations in our clinic.

MATERIALS AND METHOD

30 patients who were admitted to Gazi University, Department of Dermatology, with lesions requiring minor surgery were included in our study. They neither had any systemic disease nor used any kind of medication. Surgical field was cleansed with alcohol prior to the local anesthetic application. Povione-Iodine was then applied to an area 6 cm in diameter, surrounding the lesion. Sterile dressing, sterile glooves and sterile tools were used during the operation. Sterile gown, mask or bonnet were not used.

We obtained stepwise cultures from the field in the following order,

1) Before alcohol and Povidone-Iodine application

2) 30 seconds after Povidone-Iodine application

3) Before closure of the surgical wound

4) After the stitches were placed.

Cultures were obtained with, sterile swab which had previously been moistened in sterile phosphate buffer. The swab was rubbed 10-12 times over an 1 cm^2 area on the middle of the field and they were replaced in the same buffer tube. These tubes were then vortexed for 30 minutes before the solutions were diluted to an 1/10 ratio with physiological saline. Finally the solutions were inoculated into 5 % sheep blood agar and incubated for 48 hours in 37°C. After incubation the number of colonies per

cm^2 were counted and multiplied by the dilution coefficient. The results were statistically evaluated using Student's paired-t test.

RESULTS

The study is carried out on 30 patients, 15 male and 15 female, whose ages ranged between 20 and 60 (mean age=39.2). The results of the cultures taken stepwise (before antiseptic application, after antiseptic application, before closure of the wound and after the stitches were placed) are shown in Table 1.

We observed a statistically significant decrease in the number of colonies obtained after antiseptic application when compared to the number obtained before the antiseptic application ($P < 0.05$). Also the number of colonies obtained before closure of the wound showed a statistically significant decrease when compared with the values obtained before the antiseptic application. The relation ship between the number of colonies obtained after antiseptic application and those obtained before wound closure was not statistically significant.

DISCUSSION

Minor dermatological operations are usually performed on an out-patient clinical basis and strict sterility measures are not taken into consideration. This coincides with a relatively low (0.7-1 %) risk of wound infection (7, 5). These minor operations are primarily clean operations, however the risk of contamination exists, even in best conditions. This contamination can be endogenous or exogenous while the number of microorganism also plays an important role (3).

Patients' number	Sex-Age	Before Antiseptic	After Antiseptic	Before Stitches	After Stitches
1	F 20	2000	Ø	500	100
2	F 35	3000	Ø	30	Ø
3	F 42	300	130	Ø	Ø
4	F 50	800	Ø	Ø	Ø
5	M 25	180	30	Ø	Ø
6	M 40	200	38	Ø	Ø
7	F 55	500	Ø	Ø	Ø
8	F 60	120	Ø	130	140
9	F 45	300	20	Ø	Ø
10	M 32	200	80	10	Ø
11	M 24	500	Ø	Ø	Ø
12	M 22	400	Ø	Ø	4
13	M 53	700	55	3	Ø
14	K 46	600	66	Ø	Ø
15	M 38	1000	85	Ø	Ø
16	F 28	660	78	10	Ø
17	F 46	440	10	Ø	Ø
18	F 50	800	Ø	2	Ø
19	M 40	450	28	Ø	Ø
20	M 41	1000	600	1000	1000
21	F 35	1000	80	27	17
22	M 34	2000	20	1000	1000
23	M 58	550	36	53	15
24	F 22	450	26	15	15
25	F 20	1100	96	Ø	Ø
26	M 35	700	14	Ø	Ø
27	M 45	560	26	13	3
28	F 42	180	Ø	Ø	Ø
29	F 53	260	Ø	Ø	Ø
30	M 40	780	32	10	Ø

Table 1 : The results of the cultures taken (The numbers are for colonies/cm^2).

The endogenous flora is mostly composed of aerobic microorganisms which are, if not totally, to a great extent destroyed with effective antiseptics. We measured the effectiveness of 30 seconds Povidone-Iodine application by comparing the number of colonies prior to and after this application. Povidone-Iodine is a useful antiseptic which effects both gram positive and gram negative microorganisms and maintains it effectiveness for approximately 60 minutes (1, 2). We proved the effectiveness in our study by comparing the number of colonies prior to antiseptic application with the values obtained after it, revealing a statistically significant decrease. This result, is compatible with the results of a similar study (6).

In order to measure the amount of contamination we also compared the number of colonies before antiseptic application with the values obtained before wound closure and found a statistically significant decrease in the number obtained before wound closure. This shows that during the operations there has neither been an increase in endogenous flora nor an exogenous contamination.

However, as it has been shown that the risk of contamination increases with the duration of operation, thus it is wise to keep this time as short as possible (6). In our study this time was varying between 1-3 minutes.

Finally by comparing the number of colonies after antiseptic application with those obtained before wound closure, and finding an insignificant statistical difference; we concluded that our antiseptic maintained its effectiveness throughout the procedure. Moreover the number of colonies obtained in all circumstances were below the risk limit for bacterie (100.000 Cfu (cm)) (3).

We believe that as far as minor cutaneous operations are concerned, applying a standard skin antiseptic in our out-patient clinic is quite safe, and there is no need for the noneconomical and time consuming measures such as wearing sterile mask, gown, bonnet and administering prophylactic antibiotics.

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