Hospital Practice

Exposure of the wound – a safe economy in the NHS

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Introduction

Although studies in the past have demonstrated the safety of exposure of surgical wounds, it is still common practice to dress them post-operatively, a procedure which involves expense in both materials and nursing time. In experimental studies, the healing wound rapidly develops a coagulum of blood and fibrin within two hours of closure, which is impenetrable to bacteria.^{1,2} Thus, if the wound can be kept free of bacteria until this coagulum has formed, infection is unlikely.^{3,4}

In order to investigate the need for surgical dressings, a prospective randomized trial was performed, comparing a dry dressing of gauze, a polyurethane film dressing (Opsite), and immediate exposure, in non-contaminated elective surgical wounds.

Materials and methods

One hundred and seventy consecutive patients, admitted for either an inguinal hernia repair or high saphenous ligation, were randomly allocated to one of three surgical dressing options. Four patients could not be traced for follow-up, and were therefore excluded from the study.

At wound closure, swabs were taken for bacteriological culture, and the wound was sutured in layers, with a subcuticular polyglycolic acid (Dexon) suture to the skin. The appropriate dressing was applied or the theatre gown was pulled down over the exposed wound.

Dressings were left intact for 5 days, then the wounds were assessed for dressing or superficial wound discomfort, using a linear analogue scale. If the wound discharged blood or serum, the exposed wound was covered with an absorbent gauze dressing for as long as necessary, the gauze dressing was replaced with fresh gauze, and the polyurethane dressing was

aspirated through the material; if this failed, a new polyurethane dressing was applied.

Wound infection was defined as the discharge of purulent material from the wound, but all fluid discharging from wounds underwent bacteriological culture.

Results

Table I documents the number of dressing changes and the number of wound infections within each dressing group. The infection rate of wounds when covered by polyurethane, was five times greater than those that were exposed. Although these figures did not reach statistical significance (Fisher exact test), the numbers involved were small. Microbiological culture confirmed *Staphylococcus aureus* in all the infected wounds except one, in which *Proteus* was isolated. Of the nine infected wounds, four (44%) grew scanty skin flora from wound swabs taken at the time of wound closure. The incidence of positive cultures from swabs taken at the time of wound closure in the non-infected group was only 10.2%. The number of positive cultures from the wound swabs taken at wound closure was similar in each of the three dressing groups.

There was no difference in dressing comfort or dressing preference between the different groups and the quality of the final scar was also no different.

Table I Dressing changes and number of wound infections

Dressing	No.	Infection	Dressing change	Total cost
Exposed	53	1	8	80p
Gauze	59	3	8	£6.60p
Polyurethane	54	5	6*	£42.00p

* – plus three successfully aspirated

However, the cost of the dressings in each group does vary. The total cost of dressings applied to the exposed group was 80p in the eight patients who did require gauze dressings for infection (one case) or for the discharge of serum. The total cost of dressings in the gauze group was £6.60 and the cost of the polyurethane dressings was £42.

Discussion

These results indicate that healing is not impaired by exposure of 'clean' post-operative wounds and that patient comfort is similar in both covered and exposed wounds. The incidence of wound infection is not increased by exposure to potential pathogens when dressings are omitted. The high infection rate in the polyurethane dressed group, although not significant, is probably due to the moist environment beneath the dressing. This delays the maturation of the coagulum

barrier and allows organisms on the skin to penetrate the wound.

Nursing and medical care is easier with exposed wounds. The surgeon is able to observe the wound at leisure, without the nursing staff using valuable time to apply fresh dressings.

The cost of expensive dressing materials is also saved. The difference in our group amounted to over £40 in materials alone. Approximately 150,000 operations are performed for inguinal hernia repairs and varicose vein ligations in this country each year. To expose these wounds routinely rather than cover them with expensive dressings could save approximately £115,000 per annum in materials. In addition, there is the incalculable saving in nursing time and labour.

We suggest that, in these stringent times, exposure of surgically 'clean' wounds does not impair healing, but will allow significant savings in materials and nursing time.

References

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