ABSTRACT: A sterile fenestrated surgical drape formed from a sheet of nonwoven cellulosic material, the sheet being fan folded to form a plurality of stacked panels. The fenestration extends from the bottom panel into the immediately overlying panel with the portion of the fenestration in the overlying panel being larger than, or at least as large as, the portion of the fenestration in the bottom panel.
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FENESTRATED SURGICAL DRAPE

BACKGROUND

The importance of surgical draping in providing an aseptic field about a central operative area is well known. It is also well recognized that considerable care must be exercised in unfolding and applying such a sterile surgical drape so that when fully opened the drape's top surface remains in sterile condition. Except possibly for a treated area of the patient's skin in the immediate zone where the incision is to be made, the skin surface is generally regarded as contaminated with bacteria. It is therefore essential that the fenestration or opening of the drape be precisely located with respect to the incision area prior to unfolding for if it should become necessary to shift and reorient the fully unfolded drape to align the fenestration with the incision or wound area, such adjustment might tend to sweep bacteria from the contaminated surfaces into the incision or wound area.

In an effort to avoid such contamination problems, standard draping procedure requires that a drape, prior to unfolding, be placed upon the patient immediately adjacent the prepared skin surface, usually below the incision area or wound, and then be unfolded in opposite directions from that point. To facilitate proper positioning of the drape at the outset, it is common practice to prefold the sterile drape so that a substantial portion of its fenestration is visible in an outer fold or layer. Thus, the fenestration may be easily seen by a nurse even when the drape is fully folded and may be accurately positioned over the patient adjacent the incision or wound area at the commencement of the draping procedure.

SUMMARY

One aspect of the present invention lies in the discovery that conventionally-folded fenestrated drapes, unfolded and applied in the manner described above, may become contaminated on their upper surfaces because of the passage of bacteria from a patient's skin through the fenestration during the draping procedure. It has been found that surgical drapes, such as the paper or nonwoven cellulotic drapes now in wide use, are commonly folded so that the surface of the folded drape visible through the fenestration becomes a top surface when the drape is fully unfolded. Thus, when such a folded drape is placed upon a patient with the fenestrated portion facing downwardly adjacent the incision or wound area, the contaminated skin surface of the patient may come into contact with a surface portion of the drape exposed through the fenestration and since such surface area ultimately becomes a top surface portion of the unfolded drape a real danger of bacterial contamination of the drape's upper surface exists.

Accordingly, a main objective of the invention is to provide a folded and fenestrated surgical drape designed to be applied to a patient without danger that bacterial migration through the fenestration at the outset of the draping procedure may result in contamination of the top surface of the drape. Another object is to provide a folded and fenestrated surgical drape in which a portion of the fenestration is readily visible while the drape is in its folded condition, thereby facilitating proper orientation of the drape over a patient at the commencement of a draping procedure, without at the same time creating a danger of direct contamination of a top surface portion of the drape.

DRAWINGS

FIG. 1 is a perspective view illustrating a drape embodying the present invention in fully folded condition; FIGS. 2—4 are perspective views showing the successive steps as the drape is unfolded to its full width; FIG. 5—8 illustrate subsequent steps of unfolding the drape to its full length; FIG. 9 is an enlarged sectional view taken along line 9—9 of FIG. 4; FIG. 10 is an enlarged sectional view taken along line 10—10 of FIG. 6; FIG. 11 is a sectional view showing the fenestrated portion of the drape in its fully unfolded condition.
finally folded upon the other to form a compact fully folded drape as shown in FIG. 1. It will be observed that the outermost panel 29 of the fully folded drape or sheet has a portion of fenestration 17 disposed centrally therein and that the exposed outer surface of such panel becomes an undersurface when the drape is unfolded. Since a portion of the fenestration is clearly visible even when the drape is fully folded, a nurse or doctor may readily orient the fenestration with respect to the incision or wound area of the patient. To assist in such orientation, the lowermost surface of panel 29 may be imprinted with suitable indicia 30, such as "B.O.W.", indicating that the exposed end of the fenestration is to be positioned at the base of the wound.

Referring now to FIG. 9, it will be seen that the lowermost panel 29 is to be placed upon a patient, represented generally by line 31, with the exposed portion of fenestration 17 at the base of the wound or incision area designated by numeral 32. As previously indicated, and as is readily apparent from FIG. 9, the opening 17a in panel 29 constitutes only a portion of the complete fenestration. The remainder of the fenestration is provided in the panel 33 immediately above the bottom panel 29 and is opened by opening 17b. Since the two openings 17a and 17b are merged to form the single fenestration, and since the sheet is folded along parallel transverse lines which extend at right angles to the fenestration, opening 17a and the forward portion of opening 17b are superimposed. Thus, the undersurface of a portion of panel 34 disposed directly above panel 33 is exposed through the aligned openings or portions 17a and 17b. However, as will be readily apparent from FIGS. 10 and 11, the downwardly facing surface of panel 34 which is exposed through the openings 17a and 17b of the panels directly therebelow will constitute a portion of the undersurface of the drape when fully extended; therefore, even though the undersurface of panel 34 should contact patient 31 through the openings and become contaminated by reason of such contact, the top surface of the fully unfolded drape will remain in sterile condition.

It is significant that although the downwardly facing surface of panel 33 (when the drape is folded as in FIG. 9) becomes an upwardly facing surface when the drape is fully unfolded (FIG. 11), contamination of the final upper surface of the unfolded drape as defined by panel 33 is avoided because opening 17b is larger than, or is at least as large as, opening 17a in the bottom panel. Any contamination resulting from contact through the fenestration of the folded drape will pass through panel 33 and be applied to the downwardly facing surface of panel 34 which remains a downwardly facing surface even when the drape is fully unfolded. Fenestration may extend into panel 34 as long as any extension of the fenestration in that panel is not disposed directly above both opening portions 17a and 17b in the panels directly therebelow. However, it is preferred that the fenestration extend no further than the fold line 35 between panels 33 and 34 because that fold, when the drape is fully extended, tends to form an upstanding crease and it is undesirable for the fenestration to extend through an area which, because of the resiliency of the material from which the drape is formed, might tend to lift even slightly away from a patient.

For the foregoing, it is believed apparent that by folding the drape in the manner so described, a portion of the fenestration 17 is clearly visible even when the drape is fully folded. The drape is placed over a patient while it remains in the folded condition shown in FIG. 2 with the exposed portion 17a of the fenestration 17 facing towards the base of the wound or incision area. The drape is then laterally unfolded as shown in FIGS. 3 and 4 and the portion of the drape extending to end edge 13 is then unfolded in one longitudinal direction which, in the case of abdominal surgery, would be towards the feet of the patient. Finally, the remainder of the drape extending towards the patient's head is unfolded as indicated in FIGS. 7, 8, and 9-11. Since the top surface 15 of the unfolded drape is at no time in direct contact with the patient, it remains in sterile condition to preserve sterility around the operative area during surgery.

While in the foregoing we have disclosed an embodiment of the invention in considerable detail for purposes of illustration, it will be understood by those skilled in the art that many of these details may be varied without departing from the spirit and scope of the invention.

We claim:

1. A fenestrated surgical drape comprising a sterile sheet of nonwoven cellulose material having a top surface and a bottom surface, said sheet being fanfolded along parallel fold lines to form a plurality of elongated stacked panels, said stacked panels including a bottom panel having a first opening therethrough and an overlying panel immediately above said bottom panel having a second opening superimposed with respect to said first opening and merging with said first opening along the fold line joining the bottom panel to said overlying panel, said first and second opening defining a single fenestration when said sheet is unfolded, and said second opening being at least as large in every dimension as said first opening, whereby, the only panel surface exposed through the superimposed openings of said bottom sheet is the bottom surface of the panel immediately above said overlying panel.

2. The surgical drape of claim 1 wherein said elongated stack of panels is fanfolded inwardly from its opposite ends to form a pair of secondary stacks disposed above said bottom panel, said secondary stacks being disposed in the manner wherein said bottom panel faces outwardly and the other, wherein said bottom panel faces inwardly and the other opening thereof is exposed to facilitate orienting said drape with respect to an operative surface area.

3. The surgical drape of claim 1 wherein said elongated stacked panels are of progressively diminishing width in upwardly extending order.

4. The surgical drape of claim 1 wherein said fenestration elongates and extends in a direction transverse to said panels.

5. The surgical drape of claim 4 in which said second opening is longer in a transverse direction with respect to said panels than said first opening.

6. The surgical drape of claim 4 wherein said fenestration terminates at one end adjacent the fold line between said overlying panel and the panel immediately thereabove.

7. The surgical drape of claim 1 wherein indicia means is provided upon the undersurface of said bottom panel adjacent said first opening to facilitate orientation of said drape and said fenestration with respect to an operative site.

8. A fenestrated surgical drape comprising a sterile sheet of nonwoven cellulose material having a top surface and a bottom surface; said sheet being fanfolded along parallel fold lines to form a plurality of elongated stacked panels, said bottom panel, a second panel disposed immediately above said bottom panel, and a third panel disposed immediately above said second panel; the undersurfaces of said bottom and third panels and the top surface of said second panel forming at least a portion of said bottom surface of said sheet when the same is unfolded over an operative site; said second panel having a fenestration therein extending transversely between the fold lines joining said second panel to said bottom and third panels; the undersurface of said second panel about said fenestration being protected by said bottom panel against contamination by an unsterile surface upon which said stack is placed.

9. The surgical drape of claim 8 in which said bottom panel includes an extension of said fenestration of said second panel, said extension being disposed directly beneath the portion of said fenestration of said second panel and being shorter and of no greater width than said fenestration portion of said second panel.

10. The surgical drape of claim 9 in which the undersurface of said third panel of said stack is partially exposed through the extension of said fenestration of said bottom panel and through the portion of the fenestration of said second panel directly above said extension.