

Oct. 30, 1962

L. PERENY ET AL

3,060,932

STERILE SURGICAL DRAPE AND METHOD

Original Filed Aug. 22, 1958

2 Sheets-Sheet 1

FIG-1

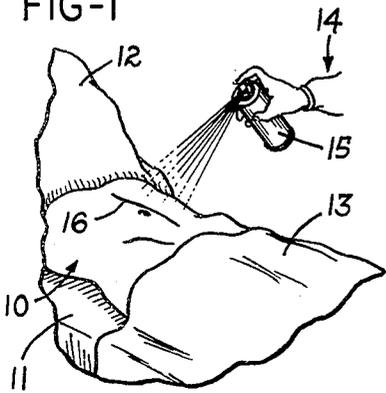


FIG-2

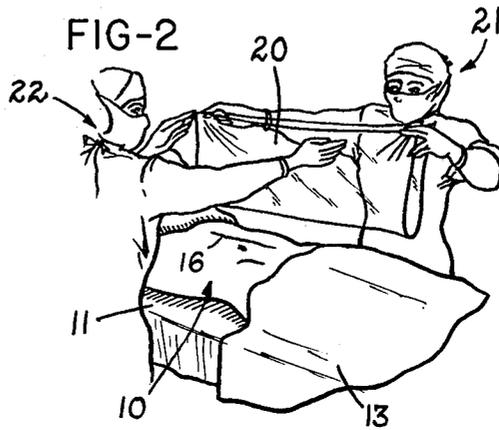


FIG-3

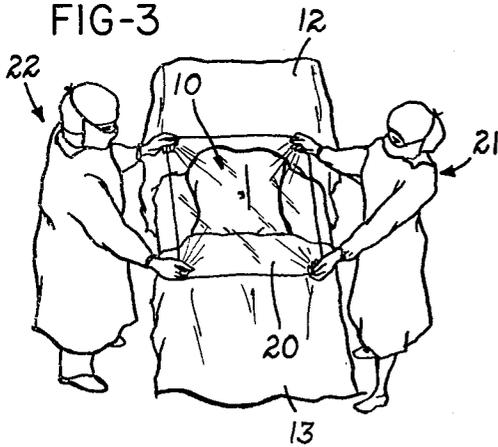


FIG-4

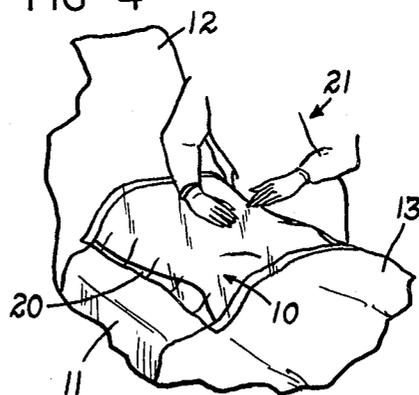
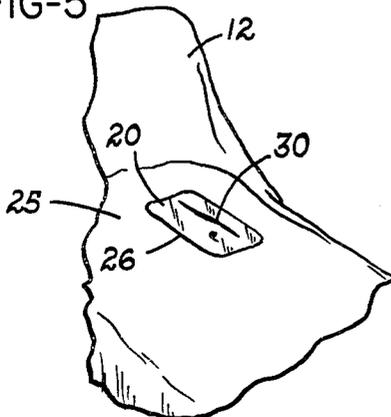


FIG-5



INVENTORS
LOUIS PERENY,
ERIC G. GIBBS &
PAUL CREAGER, JR.

BY
Marchal, Biebel, French & Bugg
ATTORNEYS

Oct. 30, 1962

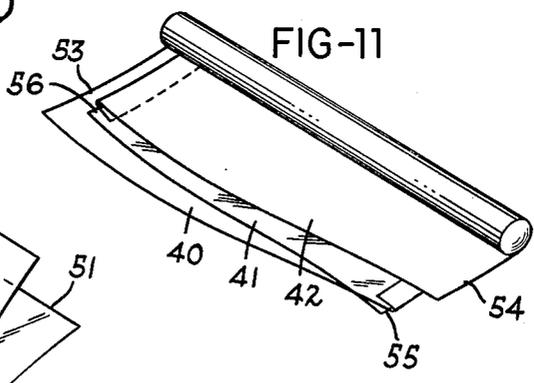
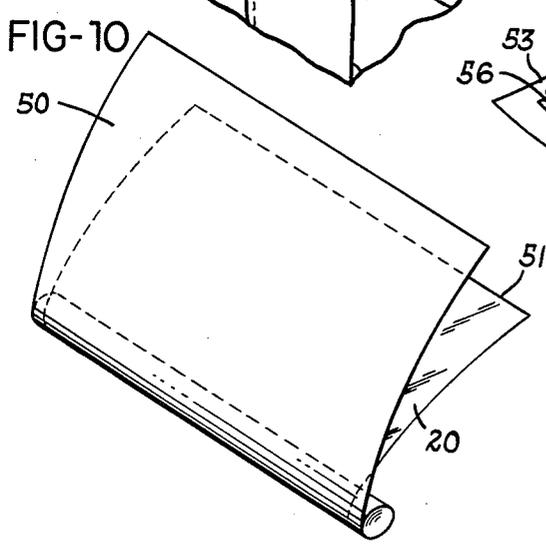
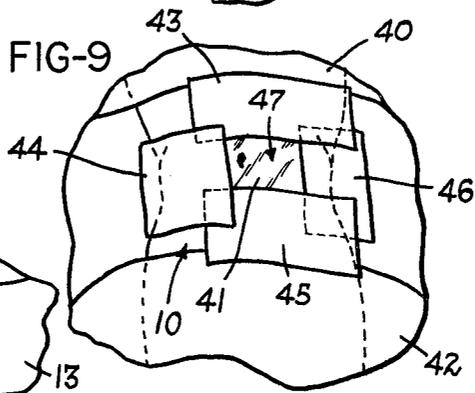
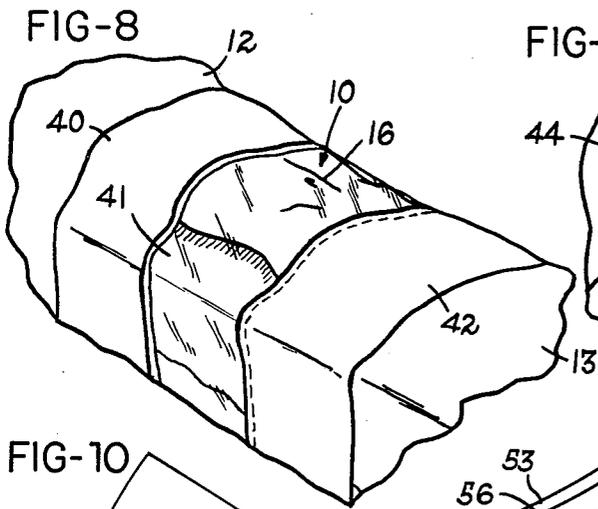
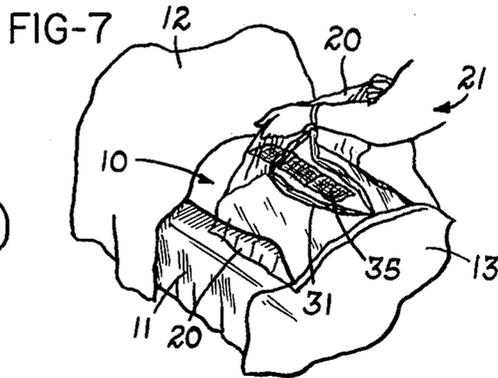
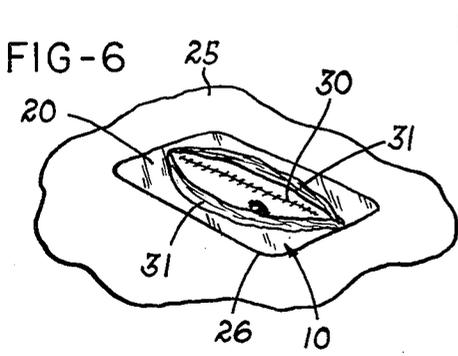
L. PERENY ETAL

3,060,932

STERILE SURGICAL DRAPE AND METHOD

Original Filed Aug. 22, 1958

2 Sheets-Sheet 2



INVENTORS
LOUIS PERENY,
ERIC G. GIBBS &
BY PAUL CREAGER, JR.
Marchal, Biebel, French & Bugg
ATTORNEYS

1

3,060,932

STERILE SURGICAL DRAPE AND METHOD

Louis Pereny, Eric G. Gibbs, and Paul Creager, Jr., Dayton, Ohio, assignors to Protective Treatments, Inc., Dayton, Ohio, a corporation of Ohio
 Continuation of application Ser. No. 756,670, Aug. 22, 1958. This application July 21, 1960, Ser. No. 45,262
 5 Claims. (Cl. 128—132)

This invention relates to an improved surgical technique and, more particularly, to systems for accomplishing this new surgical technique with a sterile (or sterilizable) disposable, and, if desired, transparent drape or sheet material for covering a surgical patient in the operating room and to be adhesively held in place on the patient under sterile conditions to provide a sterile field in which the surgeon can operate.

It is considered by surgeons to be desirable, during a surgical operation, to have an operating field which is as completely as may be sterile, in the surgical sense, in which to function during the operation. Conventionally such surgically sterile field is prepared by "sterilizing" with antiseptic solutions and otherwise an area on the surgical patient's body adjacent the place at which the surgeon expects to make an incision and by surrounding this area with sterile towels or sheets, held in place by metal skin clips, or occasionally by actually suturing the towel or sheet to the patient's body. Certain difficulties or disadvantages may arise with this conventional method of surgical preparation. For example, there may be a residuum of obnoxious bacteria left in or on the patient's skin even after the standard "sterilization" thereof. Similarly, the surgeon may desire or find it expedient to make a second incision in an area more or less remote or spaced from the originally designated area. Also, particularly with abdominal surgery, if a substantial amount of blood or other body fluids are released from the incision or if certain organs are temporarily removed from the body cavity for later replacement, the tendency for cloth towels or sheets to absorb and retain blood or body fluids or the moist covering of body organs present conditions to the surgeon which, if not actually disadvantageous or dangerous, are at least undesirable. A further objection is the need to use skin clips with which to hold the towels or sheets in place. These not only interfere with the freedom of movement of the surgeon and his operating team, but often cause trauma at the points of attachment to the patient's body.

According to this invention, however, a drape or sheeting is provided from inexpensive and disposable plastic materials, paper, and the like, which may be readily and repeatedly heat sterilized, and can be applied by sterile personnel in the operating room directly to the skin of the surgical patient and adhered thereto with a sterile adhesive composition previously applied to the patient's skin so that, particularly in the area adjacent the intended incision, the drape or sheet material is continuously adhered to the patient's skin to form a surgically sterile field upon the patient with encapsulation or immobilization of any residual bacteria on the patient's skin adjacent the area of incision. This has the important advantage that the sterilized area of operation is maintained in complete surgical isolation from the surgeon and the surrounding operating theatre. As a further feature of this invention, the drape or sheet material is selected to be transparent in whole or in part and to include the quality or characteristic of being resistant to absorption and retaining of aqueous body fluids, and is provided in a packaged form which promotes sterilization of the drape material, minimizes harmful effects of high temperature heat sterilization of the drape

2

material, and yet presents the drape material in a package which facilitates application of large sheets thereof readily to the patient by sterile personnel in the operating room without contamination of either side of the applied drape material.

One object of this invention is to provide a system and method for forming in surgical operations an extended sterile area of disposable, substantially non-absorbing drape material releasably adhered to the skin of the surgical patient, through which drape the surgeon can make one or more incisions without raising the drape and with the drape adhered to the patient releasably in a manner to encapsulate and/or immobilize residual bacteria on the patient's skin and prevent infection of an incision through the drape or the skin, and to completely isolate the patient surgically from the surgeon except at the line of incision.

Another object of this invention is to provide a packaging method for the protective packaging of a disposable surgical drape sheet material of the character described in a particular configuration facilitating heat sterilization of the material in its package and aseptic unpackaging thereof by sterile personnel in the operating room for application to a surgical patient and without contaminating the sterilized drape material.

A further object of this invention is to provide, in a system and method of the character described, a disposable and repeatedly sterilizable surgical drape for releasable adherence to the skin of a surgical patient and having the combined characteristics of clothlike draping and silence, lack of absorption for aqueous body fluids, and receptivity to a previously applied adhesive for adhering the drape to the skin of the patient.

Still another object of this invention is to provide, in a system and method of the character described, a prepackaged non-woven synthetic surgical drape, a portion of which is transparent, and including a packaging technique to facilitate the heat sterilization of the material and the application of large sheets thereof by sterile personnel in a surgical operating room for releasably adhering the material to the skin of a surgical patient.

A still further object of this invention is to provide, for a system and method of the character described, a prepackaged and repeatedly sterilizable disposable surgical drape including a portion of paper sheeting and an additional portion of transparent synthetic plastic sheeting to be releasably adhered to the skin of a surgical patient for forming a sterile field thereover with transparent portions of the sheeting applied in a predetermined area adjacent a surgical incision to be made there-through.

Other objects and advantages of this invention will be apparent from the following description, the accompanying drawing, and the appended claims.

In the drawings:

FIGS. 1-7 inclusive, illustrate a satisfactory technique for practicing a method embodying this invention including a transparent drape material and an overlaid apertured paper or cloth operative drape;

FIG. 8 illustrates a modified form of drape embodying and for practicing this invention in which a central portion only of the drape is transparent;

FIG. 9 illustrates a further step of restricting or defining the transparent area of the drape of FIG. 8 or 5 with overlaid non-transparent pieces of drape material;

FIG. 10 illustrates means for packaging the transparent plastic drape of FIG. 2 with a rolled and interleaved protective paper wrapping for the sterilization thereof; and

FIG. 11 illustrates a means of packaging the drape of FIG. 8 for the sterilization thereof.

Considering as particularly illustrative of a surgical

technique to which this invention is applicable the area of abdominal surgery, it should be noted, as is well understood, that a sterile surface area should be, most desirably, presented to the surgeon. With conventional surgical techniques, an area of the skin is "sterilized" with various antiseptic compositions adjacent to the point at which the incision is intended to be made, and yet, as is well recognized among surgeons, such sterilization may, indeed, fail to remove completely from the skin all the bacteria or living organisms thereon, if only because of the non-planar configuration of the skin and the many interstices, pores, and follicles in which bacteria may proliferate or live regardless of the customary pre-operative scrubbing and swabbing or other treatment with antiseptic compositions.

Nevertheless, conventional practice indicates that a particular small area of incision is sterilized with antiseptic substances and then isolated by surrounding it with a plurality of sterile towels or sheets to provide a generally sterile or aseptic field for the surgeon while he is working. Whether or not the edges of such towels or sheets be adhered to the patient's skin to minimize the possibility of contamination of the incision with bacteria which might gain access thereto from other areas of the patient's skin beneath the edges of the surrounding towels, such techniques, however conventional, have a tendency to concentrate the surgeon's activity to the particular small skin area originally suggested, although there may be occasion for an unanticipated second incision to be made in an area remote from that originally selected. Similarly, the utilization of cloth towels or sheets, as is conventional, in many types of surgery, forms a messy residuum for the absorption of blood and other body fluids so that, as the operation progresses, the originally sterile area becomes less and less aseptic, and, in cases where various body organs are removed from the body cavity temporarily later to be replaced and where it is desired to keep these removed organs moist, the utilization of absorptive cloth towels and sheets to provide the desirable surgical field exhibits further undesired qualities.

Obviously, also, there is the well understood factor that all of the sterile field towels and sheets conventionally used must be laundered, and this factor alone produces, particularly in hospitals with busy surgeries, a substantial extra expense. For example, in one metropolitan hospital the operating room laundry amounted to an average of approximately 22 tons per month—an important economic factor, to say nothing of the concomitant factor in, for example, armed services field hospitals, where adequate laundry facilities for sterile towels and drapes may simply be nonexistent.

By contrast, a disposable sheet or drape according to this invention can, with one piece unity, be releasably adhered over all the possible desired sterile area of the patient's body in a manner to assure not only complete isolation of the patient from the surgeon but also to provide an area free of blood or other surgical offal, which can be readily washed from the drape and not absorbed thereby, as well as encapsulating and immobilizing surface bacteria on the skin of the patient which may escape the pre-operative antiseptic treatment. Generally, especially where all or part of the drape is of a transparent material, an incision may be made at any point on the sterile field and through the transparent drape, almost completely without regard to whether such incision is in an area pre-operatively designated or in a widely varying area as may be required in, for example, such instances as where a patient, under abdominal surgery, collapses on the operating table and requires an emergency thoracic incision for access to the heart for manipulation by the surgeon.

As noted more particularly below, a drape or sheet embodying and for practicing this invention may be entirely made up of a lightweight transparent plastic sheet-

ing, may comprise in part transparent sheeting and in part opaque plastic sheeting or paper sheet material, or may be composed initially entirely of opaque plastic or paper sheet material through which the surgeon or pre-operative personnel cut windows or holes to be covered or closed by small pieces of transparent sheeting adhered to the patient's skin in the manner described. In any case, the paper or plastic sheet material is selected to be soft and flexible to have good draping effect, preferably stretchable so as to be readily molded for adherence over the contours of the patient's body and to include the property of shedding aqueous liquids. Considering paper sheet materials, this last mentioned characteristic suggests the desirability that a so-called wet strength paper of little absorptivity be used, not only for its ability to shed blood and body fluids from above but also to retard the tendency of the drape to absorb perspiration from the patient. That is, many surgical patients under anaesthesia have a tendency to perspire freely, and absorption of this perspiration by any drape material in contact with the patient's skin is accomplished by a chilling effect which may not be desirable.

One important consideration in the selection and correlation of one or more sheet materials to be utilized in a drape embodying and for practicing this invention is the susceptibility of the material to withstand repeated heat sterilizing treatments. Thus, the various materials and towels, etc., utilized in operating rooms are sterilized in steam autoclaves at temperature ranges of approximately 250° to 270° F. Normally, extra drapes are sterilized at each operation in case they should be needed, and any extra ones not used in one operation would, normally, be sterilized again for a subsequent operation. As will be understood, there are many plastic or paper sheet materials which become brittle or otherwise deteriorate when repeatedly subjected in the package to such sterilizing treatments.

As noted more particularly below, lightweight heat-stabilized transparent polyvinyl chloride sheet material is satisfactorily useful in accordance with this invention and will withstand repeated such heat sterilizing treatments. It is noted, however, that such plastic sheet materials may have a softening range beginning in the vicinity of 300° F., so it is preferred in using such materials either for the entire drape or a part thereof, to arrange the package therefore as noted below in a manner so that there is interleaved between layers of plastic sheet material a layer of suitable paper or other suitable sheet material to prevent plastic-to-plastic contact during heat sterilization. The interleaved sheet should preferably be selected to avoid adhesion of the plastic sheet material thereto resulting from heat sterilization exposure. It is also contemplated that laminated sheet materials such as polyethylene-paper laminates, vinyl-paper laminates, etc., give satisfactory results and particularly in view of the paper side of the laminates being readily adhered to the patient while the plastic side of the laminate gives increased resistance to the penetration and absorption of aqueous body fluids.

Satisfactory results according to this invention are achieved using sterile sprayable synthetic plastic adhesive compositions particularly adapted to the surgical uses here involved for adhering the drape to the patient. Illustrative such compositions are disclosed in the copending application of Louis Pereny et al., Serial No. 756,670, filed August 22, 1958, and assigned to the same assignee. As noted in said application, such a sprayable liquid dressing is applied to the skin of the patient to provide a continuous sterile adhesive film thereover, which film, even after solvent elimination, maintains a prolonged but limited tackiness, in which the tack value of the exposed tacky surface is less than each of the cohesive film strength and the adhesive strength of said adhesive film, so that drape or sheet material according

5

to this invention may be positioned on the patient and will adhere to the adhesive film, although it may be readily removed and repositioned, in order to eliminate all air bubbles, etc., without disturbing the adhesive film or interfering with the final adherence of the drape material.

Satisfactorily, the drape material, whether all transparent plastic or all paper sheeting or combinations of both, is supplied in a variety of sizes. For some types of surgery, the availability of a sterile and readily adherent sheet or drape of, approximately 48" x 68" gives satisfactory results enabling the surgeon to cover virtually all of the patient to form a sterile field, although the drape may be directly adhered to the patient's skin by continuous adhesive film in only the area adjacent the incision. For other types of surgery, smaller sizes may be packaged for specific applications. Thus, the use of a smaller size drape carefully applied may, in facial surgery, eliminate or minimize the inevitable possibility of contamination of the surgeon's gloves resulting from the patient's continued breathing. Similarly certain obstetrical manipulations during childbirth present a situation where contamination of the physician's gloves may occur from contact of his thumb with the anal region of the patient. Also, as noted below, it may be desired to have available smaller sterilized pieces of both transparent and paper sheet or drape material, either for forming transparent "windows" in an overall paper drape or for forming an opaque outline of the area of surgical onslaught when using a transparent drape.

Referring to the drawing, in which like reference characters refer to like parts throughout the several views thereof, FIGS. 1-7 indicate various steps in the utilization of a system and method embodying and for practicing this invention. Thus, FIG. 1 indicates a surgical patient 10 lying on a conventional operating table 11, preparatory to the performance of, as illustrated, an abdominal surgical operation. The patient has previously received standard preoperative and sterilizing treatment and is indicated as being positioned with substantially the entire abdominal area exposed with conventional drape coverings 12 and 13 for nonoperative areas. A nurse or other operating room personnel, indicated at 14, is shown applying an appropriate adhesive to the operative region as by an aerosol bomb or spray container 15. According to conventional technique, a line of proposed incision 16 has been indicated on the patient's body as by a marking of iodine, or the like.

As indicated in FIG. 2, a sterilized drape sheet material 20, in this case transparent, has been removed by sterile operating room nurses 21 and 22, from a sterilized package thereof and in a manner described below, and for applying over the exposed portion of the patient's body 10 to which, as in FIG. 1, an appropriate adhesive composition has previously been applied. As indicated in FIG. 3, the transparent drape 20 is spread across and lowered onto the patient 10, and then, as indicated in FIG. 4, smoothed and molded to conform to the exposed body portion of the patient 10 to adhere continuously and uniformly thereto, with the removal of air bubbles, etc., under the drape 20 and, if necessary, repeatedly raising and lowering and smoothing the drape 20 to form the desired operating surface or area.

Thereafter, if desired, a further opaque surgical drape 25 of paper or the like may be applied over drape 20 to isolate but a portion thereof as, for example, through an aperture 26 of any desired size cut therein, and the surgical incision 30 is made directly through the transparent drape 20 continuously adhered to the skin of the patient for encapsulation or otherwise immobilizing any residual bacteria or organisms on the skin of the patient and maintaining the area in sterile surgical isolation from the surgeon.

Thereafter the surgical operation is accomplished according to any desired technique, the transparent drape 20 being continuously adhered to the skin of the patient 10

6

not interfering in any manner with conventional surgery since, while it remains adhered to the skin of the patient right up to the lips of the incision, it is retracted, stretched, folded, etc., as may be necessary or desired, in the same manner as the epidermal layers or tissues are conventionally treated. Upon completion of the surgical operation, and approximately at the time when final suturing of the epidermal layers is to be accomplished, the edge portions 31 of transparent drape 20 are peeled back an inch or so from the lips of the incision 30, and suturing of the latter proceeds in the conventional manner, as indicated in FIG. 6. Thereafter, as indicated in FIG. 7, the upper or opaque drape 25 is removed, conventional gauze pads 35 are applied for temporary absorption over the sutured incision 30, and the transparent drape 20 is peeled away completely from patient 10 preparatory to final dressing of the operative wound according to conventional techniques. Any residual tackiness of the adhesive layer remaining on the exposed body portion of the patient 10 may be ignored as having no particular adhesiveness for bed-clothes and the like not pressed firmly thereagainst as in FIG. 4, or may be neutralized effectively by dusting with cornstarch or talc (conventionally readily available in an operating room) or by spraying, along with the final dressing of the surgical wound, by a sprayable surgical dressing, such as is disclosed in Patent No. 2,804,073 to Gallienne et al. for later peelable removal, if desired.

As indicated in FIG. 8, a drape material embodying and for practicing this invention may desirably and satisfactorily be fabricated from a combined series of sheet materials including a paper or other opaque sheet material 40 having therein a transparent portion 41 to which is further adhered on opaque portion 42. Such an arrangement is particularly adapted for abdominal operations wherein the entire drape, consisting of the two opaque paper or other sheet material portions 40 and 42 adhere to an intermediate portion 41, may be applied and, if desired, only the transparent intermediate portion 41 adhered to the patient 10 with the disposable or other sheet material portions 40 and 42 arranged in conventional manner over nonoperative areas of the patient.

With such an arrangement, it may be convenient, as indicated in FIG. 9, for the surgeon to apply, with the aforementioned adhesive, or otherwise, extra pieces of opaque sheet material 43-46 to isolate, for a particular use an operative area 47 upon the transparent portion 41 of the drape. Such a convenience, perhaps conforming to conventional practice of isolating a small operative area, has, according to the present invention, the advantage that, should the surgeon feel a second incision were necessary, he would merely have to remove or peel off any one of the overlying pieces 43-46 to reveal a perfectly sterile area, still beneath the transparent section 41, for such secondary incision and without the necessity of removing the conventional towels or cloth drape or without the necessity of worrying about preoperative sterilizing procedures since the entire area of the patient 10 to which either transparent portion 41 or opaque portions 40 and 42 is adhered may be considered as surgically sterile and, even more so, available for a completely sterile incision in view of the encapsulating function of the drape according to this invention and as adhered to the patient's skin by the releasable adhesive as disclosed.

As noted, the sheet material drape according to this invention preferably is packaged in a manner which is both suitable for heat or steam sterilization thereof and convenient for non-contaminating handling by sterile operating room personnel in use. If the drape is entirely of transparent plastic sheeting which might become slightly softened or tacky upon repeated sterilization thereof as conventional autoclave sterilizing temperatures, the plastic material is preferably interleaved with a paper or other sheet material liner to avoid the possibility of one layer of plastic sticking to another upon repeated sterilizations thereof.

Also, such interleaving paper liner materials are, preferably, of a highly permeable nature to allow substantially uninhibited penetration of steam, etc., in the autoclave for sterilizing purposes. Similarly, the drape material is preferably loosely rolled, rather than folded, to eliminate corners or folds or creases which might escape the sterilizing effect and harbor undesired organisms and to promote axial penetration of the sterilizing steam between the layers of the roll.

As indicated in FIG. 10, one suitable packaging system for a transparent plastic drape embodying and for practicing this invention comprises a relatively loosely rolled combination of transparent plastic drape or sheet material 20 interleaved or rolled with a disposable paper sheet material liner 50. As will be noted from FIG. 10, the width of paper liner 50 is somewhat greater than that of plastic sheet 20 so that there are no exposed edge portions of plastic sheet 20 in any part of the roll being sterilized. Similarly, the length of liner 50 is sufficiently greater than plastic sheet 20 so that, upon sterilization of the composite roll, there are no edge or other portions of plastic sheet 20 exposed to bacterial contamination. Since it is preferred to have the composite roll of liner 50 and transparent drape 20 rather loosely rolled for the axial penetration of sterilizing heat and steam between the various layers thereof, a loose paper or fabric outer wrapper (which may, indeed, be the conventional sterilizing towel) is preferably provided, and, as further protection, such wrapper may satisfactorily be of moisture-permeable cellophane, or the like, with the ends closed by pressure-sealing, heat-sealing, twisting, or other suitable manner to prevent entrance of contaminating dust or bacteria. In the absence of an outer wrapper such as cellophane, any paper outer wrapper is preferably of fairly pervious construction with the ends thereof tucked into the open ends of the roll. It may also be convenient to place on the outer wrapper a label or other indicator printed with an ink which changes color during heat or steam sterilization as, for example, that shown in the patent to Ber-
man et al. No. 2,118,144.

After sterilization of the drape, one or more rolls thereof are made available in the operating room. The outer wrapper may be sterilely removed without contamination of the roll by cutting off the sealed ends, untwisting or removing the towel in known manner, and the drape 20 itself is removed, by a sterile nurse, as by grasping one edge 51 thereof and shaking vigorously to unroll the drape 20, allowing the liner 50 to drop on the floor, or by exposing one edge 51 of drape 20 on a sterile table and stripping the liner 50 therefrom. Thereafter, the transparent drape is handled as in FIG. 2, etc., for application to the patient.

As indicated in FIG. 11, referring to a type of drape (noted in FIG. 8) as having a central transparent portion 41 and additional opaque paper or other sheet material and portions 40 and 42, satisfactory packaging thereof includes folding the composite drape so that, before rolling into a roll, paper portions 40 and 42 completely overlie the transparent portion 41 of the drape to prevent plastic-to-plastic contact in the roll to be sterilized. Additionally, it is preferred that the extreme edges 53 and 54 of portions 40 and 42 extend beyond edges 55 and 56 of transparent portion 41. One ready means of accomplishing this is to cement, at least temporarily, the edges of the various portions 40, 41 and 42, and then to fold the finished drape longitudinally with such cemented seams inside. It should be noted that even a temporary adhesive (actually, the same temporary adhesive as is used for adhering the drape to the patient) may be used and will form a permanent adhesive bond between plastic portion 41 and paper portions 40 and 42 under the effect of heat during the heat sterilization of the rolled drape as was intended with FIG. 10. The composite drape of FIG. 11 is loosely rolled, for ready penetration of sterilizing steam axially of the roll between the layers

thereof, and is enclosed within an outer paper or cellophane or other wrapper for handling after sterilization to present the rolled drape in sterile and uncontaminated state to the sterile operating room personnel as above disclosed.

This application is a continuation of our copending application Serial No. 756,670, filed August 22, 1958, and now abandoned.

While the methods and products herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to these precise methods and products, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. In a method for the preoperative preparation and surgical draping of a patient to provide a sterile draped covering over and for isolating on said patient a sterile operative field extending substantially beyond the site of a proposed incision, the steps which comprise disinfecting the skin of said patient throughout at least said operative field eliminating therefrom a substantial portion of bacteria, applying to said skin throughout at least said operative field a liquid adhesive composition in a liquid vehicle forming a continuous film over said area entrapping and immobilizing thereon residual bacteria remaining after said disinfecting step, evaporating said vehicle of said liquid composition forming an adhesive film having a continuous exposed tacky surface over said area with a tackiness less than each of the cohesive film strength and the adhesive strength of said adhesive film, draping over said tacky surface of said adhesive film a sterilized disposable sheet material drape at least a portion of which overlying the proposed site of said surgical incision is substantially completely transparent when adhered to said tacky surface, positioning and molding said sheet material to the contours of said skin against said tacky surface for obtaining substantially continuous adherence of said sheet material to said adhesive film throughout said area free from air bubbles and wrinkles, whereby said drape forms an outer sterile barrier over said patient at least throughout the entire area of said operative field and beyond the proposed site of said surgical incision with said film immobilizing and isolating residual bacteria on the skin of said patient both from the outside surface of said surgical drape and from a surgical incision made through said drape, said adhesive film and the skin of said patient during said operation.

2. A method as recited in claim 1 in which said patient is positioned on an operating table during said operation and in which said sterilized sheet material drape is substantially larger than the area of said operative field to which said drape is adhered, with that portion of said sheet material drape beyond said adhered area thereof being draped over and beyond said operating table and said patient for continuing said sterile surface provided by said drape over and beyond said operative field.

3. A method as recited in claim 1 in which said transparent portion of said sterilized sheet material drape is non-elastically stretchable for said molding to the contours of said patient's body with plastic deformation of said transparent portion, whereby said transparent portion of said drape is stretched over the skin of said patient and adhered thereto continuously thereover but without tending to gather or wrinkle the skin of said patient by elastically returning to unstretched form.

4. A method as recited in claim 1 which includes the steps of repositioning said drape during said positioning and molding step while maintaining said film in a continuous unbroken state substantially completely adhered to said skin in said area, and removing said sterile sheet material from the patient's skin subsequent to the operation while maintaining said bacteria encapsulating film continuous for providing continued immobilization of residual bacteria.

5. In a method for the preoperative preparation and surgical draping of a patient to provide a sterile draped covering over and for isolating on said patient a sterile operative field extending substantially beyond the site of a proposed incision, the steps which comprise disinfecting the skin of said patient throughout at least said operative field eliminating therefrom a substantial portion of bacteria, applying to said skin throughout at least said operative field a liquid adhesive composition in a liquid vehicle forming a continuous film over said area entrapping and immobilizing thereon residual bacteria remaining after said disinfecting step, evaporating said vehicle of said liquid composition forming an adhesive film having a continuous exposed tacky surface over said area with a tackiness less than each of the cohesive film strength and the adhesive strength of said adhesive film, draping over said tacky surface of said adhesive film and substantially therebeyond a sterilized disposable sheet material drape the portion of which overlying said area is substantially completely transparent when adhered to said tacky surface, positioning and molding said sheet material to the

contours of said skin against said tacky surface for obtaining substantially continuous adherence of said sheet material to said adhesive film throughout said area free from air bubbles and wrinkles, said sterile sheet material cooperating with the adhesive film to provide a bacteria encapsulating barrier in that portion adhered to the patient's skin and forming a continuous sterile barrier extending substantially beyond said operating field allowing observation and manipulation of said patient beneath said sterile barrier from the exterior thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

| | | |
|-----------|----------------|---------------|
| 1,899,625 | Metts | Feb. 28, 1933 |
| 2,084,264 | Dickson | June 15, 1937 |
| 2,715,902 | Shaffer et al. | Aug. 23, 1955 |

OTHER REFERENCES

Modern Plastics, page 61, May 1951.
 Soresi: "Surgery, Gynecology and Obstetrics," volume 30, 1920, pages 306-307. (Copy in Division 55.)