ADJUSTABLE WOUND EDGE PROTECTOR

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The present invention relates to improvements in surgical wound protection.

An object of the present invention is to provide an improved wound protector wherein an entire surgical wound surface is protectively covered.

Another object of the present invention is to provide an improved wound protector wherein it can be inserted easily into a surgical wound cavity so as to cover the entire peripheral surface as well as adjacent inner and outer surface portions thereof.

Still another object of the present invention is to provide an improved wound protector according to the previous object wherein the space occupied thereby is minimal and the protector is transparent so that the surgeon can see and work as though no protector were in use.

Yet another object of the present invention is to provide an improved wound protector in accordance with foregoing objects wherein the protector is self-retaining so as to obviate the need for any sutures or other holding devices.

A still further object of the present invention is to provide an improved wound protector which is:

(a) Impervious to moisture, body fluids, bacteria and cancer cells.
(b) Non-irritating to wound surfaces.
(c) Strong but pliable to conform to wound contour and to allow for purposeful distension of the wound by retractors.
(d) Readily sterilized or is disposable.
(e) Capable of being inserted upon itself so as to cover the organs within the wound to facilitate closure of the wound.

Still another object of the present invention is to provide an improved wound protector which is adjustable to various size incisions.

Various other objects and advantages will become apparent from the detailed description to follow:

In the drawings:

FIGURE 1 is a plan view showing a wound protector according to the present invention;
FIGURE 2 is a side elevational view thereof;
FIGURE 3 is a vertical sectional view taken substantially on the plane of line 3-3 in FIGURE 1;
FIGURE 4 is a perspective view thereof, partially broken away, and showing the adjusting means;
FIGURE 5 is an exploded perspective view showing a modified form of adjusting means;
FIGURE 6 is a perspective view showing the protector in use, part being cut away;
FIGURE 7 is an enlarged detail longitudinal sectional view through certain of the telescoping adjusting means of FIGURES 1-4.

For the purpose of packaging, the protector can be compressed with one ring 12 against the other ring 14 as described and shown in my copending application.

In use, the wound protector 10 is especially useful in abdominal incisions. FIGURE 6 shows a portion of a patient's abdomen with a incision having been made. The layers through which the incision is made include the skin 22, subcut tissue 24, anterior rectus muscle 28 and peritoneum 30. At the incision these layers and the adjacent interior and exterior surfaces 32, 34, respectively, constitute the wound edge. The wound edge is subject to contamination by the hands, retractors or other instruments which must be introduced through the wound opening. The wound edge can be "soiled" whenever the biliary, intestinal, or genitourinary tracts are opened or a cyst or abscess drained.

The present, a surgeon has customarily wrapped a laparotomy pad over each side of the wound but this has proved unsatisfactory because the pads become moist, slim
out of position and are bulky. Prior alternatives of rubber dam or plastic sheeting have proved unsatisfactory unless sewed to the peritoneum, which takes time. The protector of the present invention has been found ideally suited to the needs of wound such as here described.

The wound protector, after the incision is made, is adjusted to the size of the incision and is squeezed together so that one of the rings 14 has its longitudinal side portion 36, 38 pressed together. The ring 14 can thus be inserted through the wound opening and allowed to expand to its normal form within the wound. The ring 14 will thus be positioned on the inside of the peritoneum 30 over the surface portion 32 as seen best in FIGURE 6. The outer ring 12 will naturally similarly overlap the skin edge surface at 34 and the sheet 16 will contact the entire wound surface and protectively cover the same and seal it from contamination and infection. Obviously, the protector utilizes no space and aids in holding the wound open.

After the surgeon has completed his work in the wound, the wound protector serves an additional important function. The intestines at 40 must be held in when the surgeon closes the wound. To do this, the ring side portion 42 is folded over beneath the other ring side portion 44 to adjacent the ring side edge portion 38 and the portion 44 is folded back over to adjacent the ring side portion 36, as described and shown in my copending application. Thus the upper or outer ring is inverted and positioned within the wound and the plastic sheet is stretched across the center of the wound. The surgeon can then close the wound except for a small end opening through which the protector is extracted and then closing is completed.

By way of information, the thickness of the abdominal wall may vary from one to three inches. Thus the width of the sheet 16 between the rings must be related to this dimension and the ability to be folded over as here described. A width of about four (4) inches has proved satisfactory.

In view of the foregoing it is believed that I have provided a wound edge protector which fulfills the objects hereinbefore enumerated.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equivalents, are therefore intended to be embraced by these claims.

I claim:

1. A wound edge protector comprising a pair of flexible, resilient rod-like elements, each of said elements being bent to endless ring-like form with the free ends in juxtaposition, means for releasably joining the juxtaposed ends of each element, a thin sheet of transparent flexible plastic material of a preselected width and of a length generally equal to the length of said elements, said sheet having each of its side edges encircling one of said elements and secured to the sheet along portions of the lengths of said elements, said means including cooperative end formations on each of said elements, one of said end formations being telescopically receivable in the other of said formations of each rod-like element, said end formations of each element including a reduced diameter portion at one end and a tubular portion at the opposing end.

2. A wound edge protector comprising a pair of flexible, resilient rod-like elements adapted to be bent to ring-like form, means for releasably joining the ends of each element, a thin sheet of transparent flexible plastic material of a preselected width and of a length generally equal to the length of said elements, said sheet having each of its side edges encircling one of said elements and secured to the sheet along portions of the lengths of said elements, said means including cooperative end formations on each of said elements, one of said end formations being telescopically receivable in the other of said formations of each rod-like element, said end formations of each element including a reduced diameter portion at one end and a tubular portion at the opposing end.

3. A wound edge protector comprising a pair of flexible, resilient rod-like elements, each of said elements being bent to endless ring-like form with their free ends in juxtaposition, means for releasably joining the juxtaposed ends of each element, a thin sheet of transparent flexible plastic material of a preselected width and of a length generally equal to the length of said elements, said sheet having its side edges joined to said elements along portions of the lengths of said elements, said side edges of said sheet along the remaining portions of said rod-like elements being free to wrap around the opposing ends of the rod-like elements, said remaining portions being co-extensive with said reduced diameter portions of said rod-like elements.

4. A wound edge protector according to claim 3 wherein said means includes clips carried by said end portions of the elements attached to releasably grip the opposing end portions thereof.

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