SURGICAL PAD AND TRAY

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ABSTRACT

A surgical pad and tray for securing surgical implements and sharp items employed during surgery. The surgical pad and tray is for placement on a drape covering the patient, or directly on the patient. It includes a retention layer into which sharp items may be partially embedded, and a puncture resistant layer underlying the retention layer. It also includes an elongate tray for holding a cautery tool.
SURGICAL PAD AND TRAY

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present invention is closely related to co-pending U.S. Patent application Ser. No. 10/936,993 entitled “Surgical Transfer Pad with Puncture Resistant Sharps Zone” filed on Sep. 8, 2004, which has the same inventors as the present invention and is assigned to the assignee of the present invention. The teachings of this co-pending application are incorporated herein by reference thereto.

FIELD OF THE INVENTION

[0002] The present invention relates, in general, to surgical trays and, more particularly, this invention relates to containers and protective covers for hypodermic needles and other devices for handling sharps employed during surgery and to an apparatus for holding a cautery tool as well as a tip cleaner for such cautery tool.

BACKGROUND OF THE INVENTION

[0003] Numerous inventions have been devised to assist operating room personnel in the handling of instruments, needles, scalpels, sutures, etc. employed during a surgical procedure. Particular concern is shown for suture needles, hypodermic needles, scalpels, blades, etc. which are referred to in the art as “sharps”. Concern is also shown for placing these close to a surgical site in a manner which is convenient for the surgeon. One purpose of the application referenced above is to provide a transfer pad which eliminates hand to hand transfers. A surgeon can call for sharps or instruments, and an attendant places them on the transfer pad. The surgeon then picks them up from the transfer pad. Thus, the danger of fumbling a hand-to-hand transfer is substantially minimized.

[0004] Numerous prior art patents address safety issues related to sharps. For example, U.S. Patent No. 5,538,132: “Guard Structure for Sharps” includes a magnet on which magnetic sharps can be safely placed. The sharps can be disposed of by folding, over the magnet, a layer having an adhesive, which seals against the magnet and the sharps on the magnet.

[0005] U.S. Patent No. 5,665,810: “Puncture Resistant Material” teaches a flexible puncture resistant material which may be used for gloves or garments. Platelets of a hard material oriented to lie in the plane of the material, are included in the material to improve puncture resistance.


[0007] U.S. Patent No. 5,729,879: “Surgical Blade Removal and Disposal Device” teaches a disposal device for surgical blades. It includes a surgical blade removal device, magnetic means for retaining blades, with counting indicia. The device comprises two parts which may be closed against each other and latched.

[0008] U.S. Patent No. 5,791,472: “Surgical Tray for Sharp Surgical Instruments” teaches a surgical tray for transport of a sharp surgical instrument. It includes a tray portion with an integral handle extending therefrom. The underside may be formed with ribs to prevent slippage.

[0009] U.S. Patent No. 5,799,788: “Suture Needle Park and Collector” teaches a suture needle holder which may be placed on a surgical drape. It provides a portion around which suture material may be wound, and it provides a transparent disposal place for used needles.


[0012] U.S. Patent No. 6,605,100: “Scalpel Blade Exchange Apparatus and Method” teaches a mechanism for removing scalpel blades from a scalpel, and replacing the blades with new blades. The device may accommodate a plurality of cartridges for selection of differing blades.

[0013] U.S. Patent No. 6,783,003: “Hypodermic Needle Holder” teaches a needle holder including at least one hypodermic needle retainer for engaging and keeping a hypodermic needle. The device includes a receptacle that may contain needles or other sharps.

[0014] From the foregoing, it can be inferred that there is a need for improved devices for securely displaying and retaining sharps and instruments employed in surgery. Such a device should be placeable on a surgical drape covering a patient, or directly on the patient.

[0015] The teachings of the issued patents discussed above are incorporated herein by reference thereto.

INTRODUCTION TO THE INVENTION

[0016] The present invention is an apparatus for displaying, in a secure manner, instruments and sharps employed during surgery. It includes a retention layer which functions in the manner of a pin cushion. Suture needles, hypodermic needles, scalpel blades and other sharps may be partially embedded in the retention layer to secure them during surgery. Preferably, the invention has a mounting system which enables it to be attached to a surgical drape, or directly to the patient. The retention layer overlies a puncture resistant component which protects the patient from sharps embedded in the retention layer. The invention further includes an elongate tray portion which may be employed to secure a cautery tool, and it may have a cautery tip cleaner. One purpose of the elongate tray portion is to substantially minimize the potential for fires by enabling placement of the cautery tool so its tip does not touch anything. Preferably, the invention also includes a non skid component on which scalpels and other implements may be placed.

SUMMARY OF THE INVENTION

[0017] In one aspect, the present invention is an apparatus for displaying and retaining surgical instruments and sharps employed during surgery. The apparatus includes a retention layer for retaining sharps, wherein the sharps may be partially embedded within the retention layer. The apparatus
also includes a puncture resistant component, the puncture resistant component including at least a portion thereof underlying the retention layer. The puncture resistant component resists penetration by the sharps. The apparatus further includes an elongate tray portion for holding a cautery tool.

[0018] In another aspect, the present invention is a method of making an apparatus for displaying and retaining surgical instruments and sharps employed during surgery. The method includes forming an integral unit including a puncture resistant component having a shallow recess and an elongate tray portion, the elongate tray portion for holding a cautery tool. The method further includes forming a retention layer configured to fit within the shallow recess, and adhering the retention layer into the shallow recess of the puncture resistant component.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. 1 is an illustration of a surgical pad and tray, according to the present invention;
[0020] FIG. 2 is an illustration of an integral component that includes the puncture resistant component and the elongate tray portion for the embodiment shown in FIG. 1;
[0021] FIG. 3 is an illustration of the embodiment of FIG. 1 being employed to display and retain surgical instruments and sharps employed during surgery;
[0022] FIG. 4 is an illustration of an alternative embodiment of the invention;
[0023] FIG. 5 is an illustration of an integral component that includes the puncture resistant component and the elongate tray portion for the embodiment of the invention shown in FIG. 4; and
[0024] FIG. 6 is a view of the back side of the invention showing a universal mounting system comprising a sticky substance covered by removable tape.

IDENTIFYING NUMERALS EMPLOYED IN THE DRAWINGS

[0025] 10 Surgical pad and tray
[0026] 12 Back side of Surgical pad and tray 10
[0027] 14 Universal Mounting System
[0028] 20 Integral unit including puncture resistant component and elongate tray portion
[0029] 22 Puncture resistant component
[0030] 24 Side wall of puncture resistant component
[0031] 26 Puncture resistant layer
[0032] 28 Retention layer
[0033] 30 Tray for cautery tool
[0034] 32 Bottom of tray
[0035] 34 Long side of tray
[0036] 35 Low central portion of long side 34
[0037] 36 Short side of tray
[0038] 37 Notch in short side 36
[0039] 40 Cautery tip cleaner
[0040] 42 Raised platform for cautery tip cleaner
[0041] 50 Non-skid layer
[0042] 52 High friction surface of non-skid layer
[0043] 54 Portion of non-skid layer underlying puncture resistant component
[0044] 60 Non-skid layer for configuration with tray on side
[0045] 62 High friction surface of non-skid layer for configuration with tray on side
[0046] 64 Portion of non-skid layer 60 underlying puncture resistant component
[0047] 70 Embodiment having tray on side
[0048] 72 Puncture resistant component with tray on side
[0049] 74 Side wall of puncture resistant component for tray on side
[0050] 76 Puncture resistant layer for embodiment with tray on side
[0051] 78 Retention layer, tray on side
[0052] 80 Integral unit including puncture resistant component and elongate tray portion on side
[0053] 82 Scalpel
[0054] 84 Suture needle
[0055] 86 Scalpel blade
[0056] 88 Hypodermic needle
[0057] 90 Cautery tool

BRIEF DESCRIPTION OF THE PRESENTLY PREFERRED AND VARIOUS ALTERNATIVE EMBODIMENTS OF THE INVENTION

[0058] The following description of the invention sets forth specific embodiments which are described in sufficient detail to enable those skilled in the art to practice the present invention. It should be apparent to those skilled in the art that other embodiments may be utilized while remaining within the scope of the present invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the invention is defined only by the appended claims.

[0059] FIGS. 1 and 2 illustrate a surgical pad and tray 10, which is a surgical aid that enables surgeons and other operating room personnel to place operating instruments and sharp items such as suture needles, scalpel blades and hypodermic needles close to a surgical site. Such items are referred to in the art as “sharps”.

[0060] The sharps are secured by a retention layer 28 overlying a puncture resistant layer 26. The retention layer 28 functions in the manner of a pincushion. Suture needles, hypodermic needles, scalpel blades and other sharps may be partially embedded in retention layer 28.

[0061] The surgical pad and tray 10 may be placed directly on the patient or on a drape covering the patient. To protect
the patient from the sharps, the device includes puncture resistant layer 26 that underlies the retention layer 28.

[0062] The retention layer, preferably, has a low density and is fairly thick. For example only, its thickness may be in a range from about 9 mm to 12 mm. It is presently preferred that it be comprised of a cross linked polyethylene closed cell foam. Its density may be approximately 2 lbs/ft$^3$ (32.03 kg/m$^3$).

[0063] The puncture resistant layer 26 is relatively hard and dense to resist penetration by any of the sharps. It is presently preferred that the puncture resistant layer 26 be comprised of a high impact polystyrene. A rigid, high density polyethylene may alternatively be employed. For example only, the puncture resistant layer 26 may have an Izod impact strength rating of about 2 ft-lb (0.1068 J/mm).

[0064] It is preferred that the puncture resistant layer 26 be a portion of a puncture resistant component 22 that includes the puncture resistant layer 26 and also a plurality of side walls 24 that surround retention layer 28 to provide greater strength near the edges of retention layer 28.

[0065] For additional convenience and ergonomic efficiency, the surgical pad and tray 10 further includes a tray 30 that is for a cautery tool. Tray 30 has a bottom 32, a long side 35 and short sides 36. The long side 35, preferably has a low central portion 36 to facilitate grasping the cautery tool 90.

[0066] FIG. 3 illustrates the invention employed to hold a cautery tool 90 as well as other sharps and implements. These include scalpel 82, scalpel blade 86, hypodermic needle 88 and suture needle 84.

[0067] Preferably, each short side 36 of tray 30 includes a notch 37. Notch 37 receives the handle of cautery tool 90, which is shown in FIG. 3. Preferably, notch 37 is not in the center of short side 36, but is displaced away from retention layer 28 to position the cautery tool away from retention layer 28, again, to facilitate grasping of the cautery tool 90. Preferably, each short side 36 of tray 30 includes a notch 37, so the cautery tool 90 can be placed in either direction. Tray 30, preferably, is sized so that when the handle of cautery tool 90 is placed in notch 37, the tip of the cautery tool (which may be hot) does not touch any portion of tray 30. This is to prevent fire, and to avoid contaminating the tip of cautery tool 90.

[0068] FIG. 2 shows the puncture resistant component 22 and the tray 30 comprised in an integral unit 20, which could be produced as a single unit. The entire integral unit 20 may be comprised of a high impact polystyrene or, alternatively, as a rigid, high-density polyethylene.

[0069] FIG. 1 further illustrates another presently preferred feature of the present invention. A non-skid layer 50 having a high friction surface 52, preferably, is included in the surgical pad and tray 10. Preferably, non-skid layer 50 includes an underlying portion 54 that underlies the puncture resistant component 22. Preferably, the underlying portion 54 of the non-skid layer 50 would be adhesively bonded to the underside of puncture resistant component 22. The non-skid layer 50 is for placement of implements such as scalpel 82 shown in FIG. 3. It is presently preferred that non-skid layer 50 be flexible. A low density polyurethane is presently preferred.

[0070] Referring again to FIG. 1, another feature is preferably included with the invention. Preferably, the surgical pad and tray 10 includes a cautery tip cleaner 40, which the surgeon may employ to clean the tip of cautery tool 90. The cautery tip cleaner 40 preferably has a hard, abrasive surface. Cautery tip cleaner 40 may resemble a kitchen scouring pad. Preferably, it is bonded to the raised platform 42 that is comprised in integral unit 20 (shown in FIG. 2). The raised platform 42 is to provide a firm support for cautery tip cleaner 40.

[0071] FIGS. 4 and 5 illustrate an alternative embodiment of the present invention. The surgical pad and tray 70 includes a tray 30 disposed along one side of puncture resistant component 72, which holds retention layer 78. FIG. 5 illustrates integral unit 80, which is a component of the surgical pad and tray 70. Integral unit 80 includes a tray 30 integral with puncture resistant component 72. Preferably, puncture resistant component 72 includes a puncture resistant layer 76, which underlies retention layer 78. Preferably, puncture resistant component 72 also includes side walls 74, which serve to strengthen retention layer 78 near its edges. It is presently preferred that retention layer 78 be adhesively bonded onto puncture resistant layer 76. Preferably, integral unit 80 includes a raised platform 42 which is for cautery tip cleaner 40. The raised platform 42 provides firm support for cautery tip cleaner 40.

[0072] Integral unit 80 is preferably formed of high impact polystyrene. A rigid, high-density polyethylene may also be employed.

[0073] FIG. 4 also illustrates a non-skid layer 60, which has a non-skid surface 62. For the presently preferred construction, a portion 64 of non-skid layer 60 underlies integral unit 80 and is bonded to it.

[0074] FIG. 6 illustrates the back side of surgical pad and tray 10, and shows a universal mounting system 14, which comprises a sticky material covered by tape. By employing the universal mounting system 14, the surgical pad and tray 10 can be attached to a drape adjacent the surgical site, or may be adhered to the patient’s skin. Prior to placement on the drape or the patient, the tape is removed to expose the sticky material.

[0075] When the surgical pad and tray 10 or 70 is produced, an integral unit 20 comprising puncture resistant component 22 and tray 30 at the top is produced, or the integral unit 80 comprising puncture resistant component 72 with tray 30 on the side is produced. The non-skid layer 50 or the non-skid layer 60 is then cut to size. Then, integral unit 20 is bonded to non-skid layer 50, or the integral unit 80 is bonded to the non-skid layer 60.

[0076] Retention layer 28 is then bonded to the puncture resistant layer 26 of puncture resistant component 22, or retention layer 78 is bonded to the puncture resistant layer 76 of puncture resistant component 72. The cautery tip cleaner 40 is then bonded to the retention layer 28. The bonding steps may be done in any sequence or simultaneously. Adhesive bonding is presently preferred. An alternative method of bonding is thermal bonding.

[0077] It should be recognized that the above-mentioned embodiments of the invention and the methods of making it are intended to be illustrative only. Numerous alternative
embodiments may be devised by those skilled in the art without departing from the scope of the following claims.

We claim:
1. An apparatus for displaying and retaining surgical instruments and sharps employed during surgery, said apparatus comprising:
   a retention layer for retaining sharps, wherein said sharps may be partially embedded within said retention layer;
   a puncture resistant component, said puncture resistant component including a puncture resistant layer underlying said retention layer for resisting penetration by said sharps; and
   an elongate tray portion for holding a cautery tool.
2. An apparatus according to claim 1 further including a non-skid component for placement of implements employed during surgery.
3. An apparatus according to claim 1 wherein said puncture resistant component is high impact polystyrene.
4. An apparatus according to claim 1 wherein said puncture resistant component is a rigid high density polyethylene.
5. An apparatus according to claim 1 wherein said puncture resistant component further includes a plurality of side walls, said side walls cooperating with said puncture resistant layer to define a shallow recess, said retention layer disposed within said shallow recess.
6. An apparatus according to claim 1 wherein said retention layer is a cross linked polyethylene closed cell foam.
7. An apparatus according to claim 2 wherein a portion of said non-skid component underlies at least a portion of said puncture resistant component.
8. An apparatus according to claim 7 wherein said puncture resistant component is adhered to said portion of said non-skid component underlying said at least a portion of said puncture resistant component.
9. An apparatus according to claim 2 wherein said non-skid component is flexible.
10. An apparatus according to claim 9 wherein said non-skid component is a low density polyurethane.
11. An apparatus according to claim 1 wherein said retention layer is rectangular and comprises two long sides and two short sides, said elongate tray portion lying adjacent one of said long sides of said retention layer.
12. An apparatus according to claim 1 wherein said retention layer is square, said elongate tray portion lying adjacent one of said sides of said retention layer.
13. An apparatus according to claim 5 wherein said elongate tray portion is integral with said puncture resistant component.
14. An apparatus according to claim 1 wherein said elongate tray portion includes at least one long side, said at least one long side including a low central portion to facilitate grasping said cautery tool.
15. An apparatus according to claim 1 wherein said elongate tray portion includes at least one short side, at least one of said at least one short side including a notch to accommodate a handle of said cautery tool.
16. An apparatus according to claim 15 wherein said notch is displaced from a center of said short side in a direction away from said retention layer.
17. An apparatus according to claim 1 further including a cautery tip cleaner, said cautery tip cleaner for cleaning a tip of said cautery tool.
18. An apparatus according to claim 17 wherein said cautery tip cleaner is adhered to a portion of said puncture resistant component.
19. An apparatus according to claim 18 wherein said cautery tip cleaner is adhered to a raised platform formed on said puncture resistant component.
20. An apparatus according to claim 2 including, on a back side thereof, a universal mounting system.
21. An apparatus according to claim 19 wherein said universal mounting system includes a sticky substance covered by removable tape.
22. A method of making an apparatus for displaying and retaining surgical instruments and sharps employed during surgery, said method comprising:
   forming an integral unit including a puncture resistant component including a shallow recess and an elongate tray portion, said elongate tray portion for holding a cautery tool;
   forming a retention layer configured to fit within said shallow recess; and
   adhering said retention layer into said shallow recess of said puncture resistant component.
23. A method according to claim 22 further including the step of forming a non-skid component for placement of implements employed during surgery;
   adhering said integral unit to a portion of said non-skid component; and
   said step of adhering said integral unit to said portion of said non-skid component is performed one of preceding, simultaneous with and following said step of adhering said retention layer into said shallow recess of said puncture resistant component.

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