SURGICAL INSTRUMENT TRANSFER TRAY

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ABSTRACT

A transfer tray for safely holding and passing surgical instruments. The tray has ribs which provide grasping openings. Protrusions project inwardly, to hold the instrument away from the tray sidewalls. This allows the instrument to be easily picked up. Finger recesses are formed on the bottom of the tray to allow the tray to be easily grasped and held from below. The tray sidewalls surround the instrument held in the tray and shield the sharp edges or point of the instrument, helping to avoid blade/needle stick accidents during surgery. An adhesive or magnetic strip or element on the bottom of the tray may be used to hold the tray to a surgical drape or other surface. An extendable transfer tray has a first section telescopically engaged to a second section, allowing the tray to be extended to a desired length.
SURGICAL INSTRUMENT TRANSFER TRAY


BACKGROUND

[0002] Various surgical tools and medical instruments, such as scalpels, trocars, syringes, etc., are used in surgical procedures. These instruments have traditionally been handed back and forth between surgeons and nurses in the operating room. Transferring such instruments hand to hand creates the potential for accidental cutting or stabbing injuries, because many of these instruments have very sharp edges or points. If the accidental cutting or stabbing occurs, the potential for infection arises. After they are used, the instruments usually have the patient’s blood on them. Consequently, accidental cutting or stabbing creates a risk of infection of the surgeons or nurses with blood borne diseases, such as HIV and hepatitis. Accordingly, improved methods and devices are needed for handling and transferring surgical instruments between the nurse and the surgeon or other personnel, in the operating room, or in other sterile environments in a healthcare facility.

SUMMARY

[0003] The invention provides a novel tray for safely holding and handling of surgical instruments. In one embodiment, the present surgical instrument tray has sidewalls and a floor. One or more ribs may support the instrument and create grasping openings. Protrusions project laterally or horizontally inwardly to hold the instrument away from the sidewalls. The ribs and protrusions allow the instrument to be easily picked up. Finger recesses on the bottom of the tray allow the tray to be easily grasped and held from below. The essential features of the invention are described only in the claims. The other features, designs and advantages described in this patent application are not essential, and may be omitted.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] FIG. 1 is a top perspective view of a novel surgical instrument transfer tray.

[0005] FIG. 2 is a section view taken along line 2-2 of Fig. 1.

[0006] FIG. 3 is a section view taken along line 3-3 of Fig. 1.

[0007] FIG. 4 is a bottom perspective view of the surgical instrument transfer tray shown in FIG. 1.

[0008] FIG. 5 is a top perspective view of the surgical instrument transfer tray of FIG. 1 in use for holding a scalpel.

[0009] FIG. 6 is a top perspective view of an extendable surgical instrument transfer tray, in a closed position.

[0010] FIG. 7 is a top perspective view of the surgical instrument transfer tray of FIG. 6, in an extended or open position.

[0011] FIG. 8 is a bottom perspective view of the surgical instrument transfer tray shown in FIG. 6.

[0012] FIG. 9 is a bottom perspective view of the surgical instrument transfer tray shown in FIG. 7.

[0013] FIG. 10 is a top perspective view of another extendable surgical instrument transfer tray, in a closed position.

[0014] FIG. 11 is section view taken along line 11-11 of FIG. 10.

[0015] FIG. 12 is a top perspective view of the surgical instrument transfer tray shown in FIG. 10, in an open or extended position.

[0016] FIG. 13 is a section view taken along line 13-13 of FIG. 12.

[0017] FIG. 14 is an exploded perspective view of the surgical instrument transfer tray shown in FIGS. 10 and 12, with the tray disassembled, for purpose of illustration.

DETAILED DESCRIPTION OF THE DRAWINGS

[0018] As shown in FIGS. 1-3, a surgical instrument tray 10 has an outer sidewall 14 joined with a top surface 16. The top surface 16 generally forms a flat area or plateau, with substantially all areas of the top surface at the same height. An inner sidewall 18 extends down from the top surface 16 to a radiused section 20 leading into and joined with a floor 22. Cross ribs 24 extend laterally across the tray. As shown in FIG. 3, the ribs 24 are raised up above the floor 22 to 20, 30, 40 or 50% of the height of the top surface.

[0019] Referring to FIGS. 2 and 4, finger recesses 26 are formed between the ribs 24 and allow the tray 10 to be easily grabbed and held between the fingers and thumb of one hand. One or more inner grip ridges 70 may be provided at the finger recesses 26. Flat bottom areas 28 are also located between the ribs 24. An adhesive strip 30, such as double sided tape, or a non-residue adhesive layer or film applied directly to the tray, or a magnetic strip or element, may optionally be provided on the bottom of the tray. Referring back to FIG. 1, on the top side of the tray, protrusions 25 (formed by the finger recesses 26 on the bottom of the tray) between the ribs 24 project inwardly from the inner sidewalls 18. In general, the tray will have up to six ribs 24 and six protrusions 25.

[0020] An instrument holding space or recess 23 is formed by the tray 10 for holding an instrument. The inner sidewalls 18 form or enclose the instrument holding space 23 having first and second end sections 27 at opposite ends of a central space section 29. The end sections are narrower than the central space section. The transfer tray 10 may have generally straight outer side walls 62 and straight outer end walls 64 joined via generally S-curved shoulder sections 66 (i.e., the shoulder sections curve in and then reverse and curve out). Consequently, in the preferred design, the tray 80 is not rectangular. Rather the tray has an external shape having a narrower head or end, formed in part by an end wall 64 connected to a wider main body, formed in part by the outer sidewall 62, via a shoulder section 66. The relatively narrower ends of the tray 80 make the tray easier to grasp, while still leaving an instrument holding space 23 sufficient for holding instruments.

[0021] Outer grip ridges 68 on or near the curved sections 66 may be provided to allow for more secure gripping and holding of the tray 60. A lip 12 may optionally extend
The outer section 84 advantageously may include cross ribs 24, protrusions 25, or any of the other tray features described above with reference to FIGS. 1-5. The inner section 86 preferably includes a holding element 88 for holding the sections 84 and 86 in place relative to each other. The holding element 88 may be a pressure sensitive adhesive strip, tape or surface, which adheres the sections together. The holding element may also be a mechanical element, such as ratchet teeth, pins, detents, dimples, grooves, etc., which can hold the sections together, at any extended position. The inner tray 86 may include a channel 94 having a groove, with an edge or rail 96 on the outer tray section 84 slidable within the groove.

In use, the tray 80 is typically provided or stored in the closed or contracted position shown in FIG. 6. Tray 80 is removed from its package, if any. The nurse or other user grasps the handles 82 and pulls them apart, until the desired tray length is reached, for example as shown in FIG. 7. The holding element 88 is then used to hold the tray sections in place. If the holding element is a pressure sensitive adhesive, the holding element is pressed or squeezed, to activate the adhesive. If the holding element is a mechanical element, the tray 80 may be extended by squeezing or bending the tray 80, to disengage the holding elements. The tray 80 is then extended to the length desired. The tray is then released, allowing the holding elements to re-engage each other and hold the tray sections in place. The holding element may have a one-way operation feature that allows for extension, but prevents retraction. A ratcheting element may be used for this purpose.

The holding element 88 may also be a friction element or strip, with the surfaces of the two sections that contact each other having sufficient friction to hold the sections in place, during ordinary use. The contacting surfaces of the tray sections 84 and 86 may themselves also act as frictional holding elements, without the need for a specific holding element strip, location or element. In this design, frictional forces hold the tray sections in place. With these designs, a larger pulling force (greater than the force ordinarily exerted on the tray during normal handling) is used to extend the tray to the desired length. A mechanical stop 90 may be provided on one section, and a stopping surface 92 provided on the other section, to prevent the sections from inadvertently coming apart. Lengthwise expansion may be achieved by sliding on a track and locating a detent at the end of the slide.

Depending on the specific design requirements, the tray 80 may be made to extend length-wise, as shown in FIGS. 6 and 7, and also depth-wise or width-wise.

FIGS. 10-14 show another extendable tray 100, similar to the tray 80 shown in FIGS. 6-9, but without any lip, channel 94, or edge 96. Rather, the tray 100 has a holding element 88 made of teeth or ridges on each section 84 and 86. The tray 100 also has handles 82 that are closed on the bottom.

Thus, a novel instrument transfer tray has been shown and described. Various changes and substitutions can of course be made without departing from the spirit and scope of the invention. The invention, therefore, should not be restricted or limited, except by the following claims, and their equivalents.
1. A surgical instrument transfer tray, comprising:
   an outer sidewall joined to a top surface;
   an inner sidewall joined to the top surface;
   a floor joined to the inner sidewall;
   a plurality of ribs creating grasping openings; and
   at least one pair of protrusions projecting inwardly from
   the inner sidewalls, between the ribs.
2. The transfer tray of claim 1 with finger recesses formed
   between the inner and outer sidewalls, at the protrusions.
3. The transfer tray of claim 1 further comprising an
   adhesive or magnetic element on the bottom of the tray.
4. The transfer tray of claim 1 wherein the floor is flat
   between protrusions.
5. The transfer tray of claim 1 wherein the ribs have a
   height less than 50% of the height of the top surface.
6. The transfer tray of claim 1 wherein the top surface
   comprises a substantially flat and continuous extending
   around the tray.
7. The transfer tray of claim 1 further comprising a lip
   attached to a lower edge of the outer sidewall at a right or
   obtuse angle to the side wall.
8. The transfer tray of claim 1 with the inner sidewalls
   defining an instrument holding space having first and second
   end sections at opposite ends of a central space section, and
   with the end sections narrower than the central space section.
9. The transfer tray of claim 1 with the outer sidewall
   forming tray ends and a tray center section, with the tray
   ends narrower than the tray center section.
10. The transfer tray of claim 1 with the ribs extending
    across the floor an connecting into opposite sides of the inner
    sidewall, and with ribs having a uniform height between the
    sidewalls.
11. The transfer tray of claim 1 with the ribs having a
    generally uniform height above the floor, and with the inner
    sidewalls forming an instrument holding space above the
    floor, and with the tray having no features extending up from
    the floor into the instrument holding space, except for the
    ribs.
12. The transfer tray of claim 11 wherein the ribs extend
    up from the floor to less than 50% of the height of the
    instrument holding space.
13. A surgical instrument tray, comprising:
   an outer sidewall joined to a top surface;
   an inner sidewall joined to the top surface;
   a floor joined to the inner sidewall;
   a plurality of ribs extending up from the floor;
   at least one pair of protrusions projecting inwardly from
   the inner sidewalls; and
   with the outer sidewall having a straight section joined to
   a first side of a narrowing shoulder section and an outer
   end wall joined to a second side of the narrowing
   shoulder section, with the tray having a central section
   and opposite ends narrower than the central section.
14. An extendable surgical instrument tray, comprising:
   a first tray section;
   a second tray section slidably attached to the first tray
   section, with the first and second tray sections forming
   an instrument holding space; and
   a holding element on at least one of the first and second
   tray sections, for holding them into an extended position.
15. The extendable surgical instrument tray of claim 14
    further including a mechanical stop on at least one of the first
    and second tray sections, to prevent the tray sections from
    separating from each other.
16. The extendable surgical instrument tray of claim 14
    with the first tray section having:
   an outer sidewall joined to a top surface;
   an inner sidewall joined to the top surface;
   a floor joined to the inner sidewall;
   a plurality of ribs extending up from the floor; and
   at least one pair of protrusions projecting inwardly from
   the inner sidewalls.
17. The extendable surgical instrument tray of claim 14
    further comprising a handle on the first tray section.
18. The extendable surgical instrument tray of claim 14
    further comprising a groove in a channel section on the first
    tray section, and a lip on the second tray section in the
    groove.
19. The extendable surgical instrument tray of claim 14
    with the holding element comprising one or more of a
    pressure sensitive adhesive, a ratchet, a detent or a dimple.
20. The extendable surgical instrument tray of claim 14
    with the first tray section formed as an integral molded
    single piece unit.

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