SUMMARY OF THE INVENTION

My invention overcomes the aforementioned problems. It is an object of my invention to eliminate or reduce substantially the sponge count problem and to increase the ability of the sponge material to retain its absorbency. In addition, sponge materials, such as polyurethane, which are less absorbent than the normal gauze sponge and not practically usable, may now be utilized. The sponge material of my device may be rejuvenated by simply placing it in saline solution to free any possible clotting. It is a further object of my invention to reduce substantially the operative time and thus decrease the danger to the patient. In this connection, the very sponging action of my device is faster and far superior to anything presently available. It is an additional object to eliminate the folding and loading time of sponges. My invention eliminates the danger of hematoma or laceration of an organ when brought in contact therewith, and accordingly, my sponge stick may be used as a retractor for overlying organs to keep the operative field unobstructed by these organs. The sponge portion itself may serve to aid in the retraction as suction is diffused throughout this portion, thus eliminating the direct application of suction to an organ. A further advantage of my sponge stick is that it may be used for "prepping" a patient and in this connection, eliminates the need for a sterile container of prep solution by having the antiseptic solution accompanying the sponge stick, thus greatly simplifying this procedure.

Also, my improved sponge stick provides a means for bringing substantially all portions of a sponge into communication with its source of suction, thereby making effective use of the majority of the surface area of the sponge to provide a more efficient sponge. A large surface area is provided on which a sponge may be applied and still have substantially all portions in communication with the source of suction.

My invention further includes the feature that one hand can be used for sponging as well as suctioning thereby freeing the surgeon and his assistant for other duties. Furthermore, the operative field is kept cleaner at all times thereby increasing visibility. The operative field is kept clear of blood and other fluid, including saline, used to wet down and wash out certain areas.

My invention contemplates the provision of an improved surgical sponge stick comprising a hollow tubular handle made of a relatively rigid material and having a first end with an opening adjacent thereto, a second bifurcated open end and a porous absorbent surgical sponge material mounted on said end in surrounding relationship with said bifurcated end. The first end of the handle is formed so that it can be attached to a source of suction. In this regard, fluid, such as blood, may be aspirated through the surgical sponge and the tubular handle. The sponge is fixed to the tubular handle and the entire device may be for one time use.

BRIEF DESCRIPTION OF THE DRAWINGS

Several modifications of the sponge stick and the manner of using the same are described herein with references to the drawings in which:

FIG. 1 is a plan view of a sponge stick which embodies my invention;

FIG. 2 is a sectional elevation view taken along the line 2-2 in the direction of the arrows as indicated in FIG. 1;

FIG. 3 is a sectional view taken along the line 3-3 in the direction of the arrows as indicated in FIG. 2; and

FIG. 4 is a sectional view taken along the line 4-4 in the direction of the arrows as indicated in FIG. 3.
Description of the preferred embodiment

Referring to the form of the sponge stick as shown in FIGS. 1–4, the tubular handle is shown at 10, and it has a first open end portion 13 and a second bifurcated open end portion 14. End portion 14 takes the shape of a flatter head. The sponge stick may be made of any suitable material which is inert and unaffected by the body fluids, antiseptics, anesthetics and other material with which it is used and with which it comes in contact. The material should also be such that the handle is relatively rigid. It should be sufficiently rigid to support the sponge portion while in use and also to serve as a retractor for the retraction of organs during surgical procedures. For this purpose, I have found that plastic materials, such as polyethylene, propylene and polypropylene serve very satisfactorily. In particular, a material such as clear cellulose acetate butyrate has been found acceptable. These materials present the further advantage that they will not cause hemotoma, nor laceration of overlying organs in the operative field when in contact there with.

Bifurcated head 14 is separable from handle 10. A tubular extension 11 extends from one side of bifurcated head 14. Tubular extension 11 is of a slightly smaller outer diameter than the inner diameter of end 12 of handle 10. Therefore, by placing extension 11 into end 12 of handle 10 and fastening it there by any suitable fastening means, such as an acetone sealer, hollow tubular extension 11 provides a continuous passage between handle 10 and bifurcated head 14.

The two tube branches 15 and 16 of bifurcated head 14 are open on the side of the head opposed to the side which contains extension 11. This permits flow in a first direction. There are slots 17 in the top and bottom of bifurcated head 14 which permits flow in a second direction. Branch 15 and branch 16 are each interiorly supported by a split rib 18. Ribs 18 are centrally split to create openings 19. Split ribs 18 in this form add to the rigidity of bifurcated head 14, give head 14 flexibility and will form passageways 19 to allow fluid to flow in a third direction. Therefore, when suction is applied to end 13 of handle 10, fluid of fluid may enter bifurcated head 14 in each of three directions which may be thought of in an XYZ coordinate relationship. Thus, communication is provided between all portions of a surrounding sponge and the interior of tubular handle 10.

The sponge portion 20 is attached to tubular handle 10 in a surrounding relationship to bifurcated head 14. The sponge portion may be made of any suitable porous, absorbent material which is inert and unaffected by the body fluids, antiseptics, anesthetics and other fluids with which it is used and with which it comes in contact. Thus it may be made of gauze of the type used in conventional surgical sponges or it may be made of a suitable elastomer. Synthetic sponge material, such as polyurethane, polyethylene or polypropylene foam. Where gauze is used for the sponge portion, the successive wrappings or layers of gauze may be stitched together or, as in the case of the surgical sponges presently used, may simply be held together by the fibers or lint of the gauze. A sponge portion made of gauze may be suitably secured to bifurcated head 14 of tubular handle 10 as shown by stitching or a suitable adhesive, which is inert to and unaffected by the fluids which come in contact therewith. A suitable adhesive for the purpose is silicone adhesive. Thus, the outer surface of head 14 of handle 10 may be coated with the liquid silicone adhesive and the gauze sponge portion applied thereto.

Where the sponge portion is made of an open cell plastic foam material, the sponge portion may be held in place by friction or by a suitable adhesive of the type indicated above.

The specific shape or configuration of the sponge portion may be varied. At the present time, surgical sponges are generally of rectangular configuration and the sponge portions of my sponge sticks may be of similar configuration. However, it should be understood that the sponge portions may be made of circular or any other geometric configuration.

In addition, the specific shape or configuration of the handle 10 may also be varied. It should be long enough to be conveniently gripped by the hand and sufficiently long to eliminate or substantially reduce the chance of the sponge stick being left in the operative area when closing.

In using the sponge stick as a surgical sponge, open end 13 of handle 10 is connected to a suitable source of suction, such as a vacuum pump, vacuum chamber or the like. In this connection, the suction line between the handle and the source of suction should be made of a material inert to and unaffected by the fluids which come in contact therewith.

During surgical procedures such as surgical operations, end 13 of handle 10 is connected, as indicated above, to a source of suction. The surgeon or assistant can then grasp the handle portion of the sponge stick in one hand, leaving his other hand free. The sponge portion is applied to appropriate areas to remove blood or other fluid and thereby maintain the operative area clean and visible at all times.

The blood or other fluid is removed both by the aspirating action and by the absorption characteristics of the sponge portion. Most of the fluids will be aspirated through the sponge and bifurcated head and thence, through the handle portion to a receptacle adjacent to the source of vacuum. In this connection, it will be appreciated that the sponge performs a filtering action so as to prevent solid particles from clogging the perforation in the handle portion, in addition, the absorbency of the sponge material is increased measurably with the employment of suction. Thus, the sponge may, if it has solid material adhering to it to obstruct the flow of fluids therethrough (which does not easily occur), be rejuvenated simply by dipping it in saline solution.

During the surgical procedure, the sponge stick may also be used as a retractor for retracting overlying organs in the operative field. By engaging the sponge portion with the overlying organ, at no time do sharp metal edges come in contact with tissue to cause hemotoma or laceration.

It is desirable to have openings in all portions of head 14 so as to provide communication between all portions of the sponge and the source of suction. Therefore, a bifurcated head, which permits flow in three different directions, is extremely desirable and adds to the efficiency and effectiveness of the sponge stick. The size and shape of head 14 is helpful in providing the largest surface area for gauze to be applied and yet enables suction to be applied to the majority of the surface area of the gauze. In addition, the presence of the split ribs does not detract from these advantages and, in addition, adds rigidity to the head so that it may retain its shape and may be used for the several other purposes mentioned above.

It should be evident to those skilled in the art that there are many other possible embodiments within the scope of the invention. Thus, the above mentioned objects of this invention, among others, are achieved. The range and scope of the invention are defined in the following claims.

We claim:

1. A device to be used as a surgical sponge for removing excess fluids during surgical procedures comprising: a hollow tubular handle having a first end with an opening adjacent thereto and having a second open end which is shaped like a partially flattened bifurcated head having two branches, porous absorbent surgical sponge material mounted on said sponge handle in surrounding relationship to said partially flattened bifurcated head end, said head end having openings in its top, its bottom and its sides through which fluid is received from said sponge material, means on the interior of the head to provide a
portion of stability and yet to retain a portion of flexibility, said first end of said handle having means for connecting the opening of the first end of the tubular handle to a source of suction so that fluid may be aspirated through the sponge material and handle.

2. An improved surgical sponge stick as set forth in claim 1 in which said means on the interior of said head comprises a split rib having an opening therein on the interior of each branch of said head to provide a portion of stability and to retain a portion of flexibility, the opening in each rib being the opening in one of two sides of said head to receive fluid from said sponge material.

3. An improved surgical sponge stick as set forth in claim 1 in which said bifurcated head end has a hollow tubular extension from one side thereof which is of a smaller outer diameter than the inner diameter of said handle so that said head end may be formed separately and when said extension is placed within said handle and affixed thereto it will provide a continuous passage between the head end and the handle.

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