

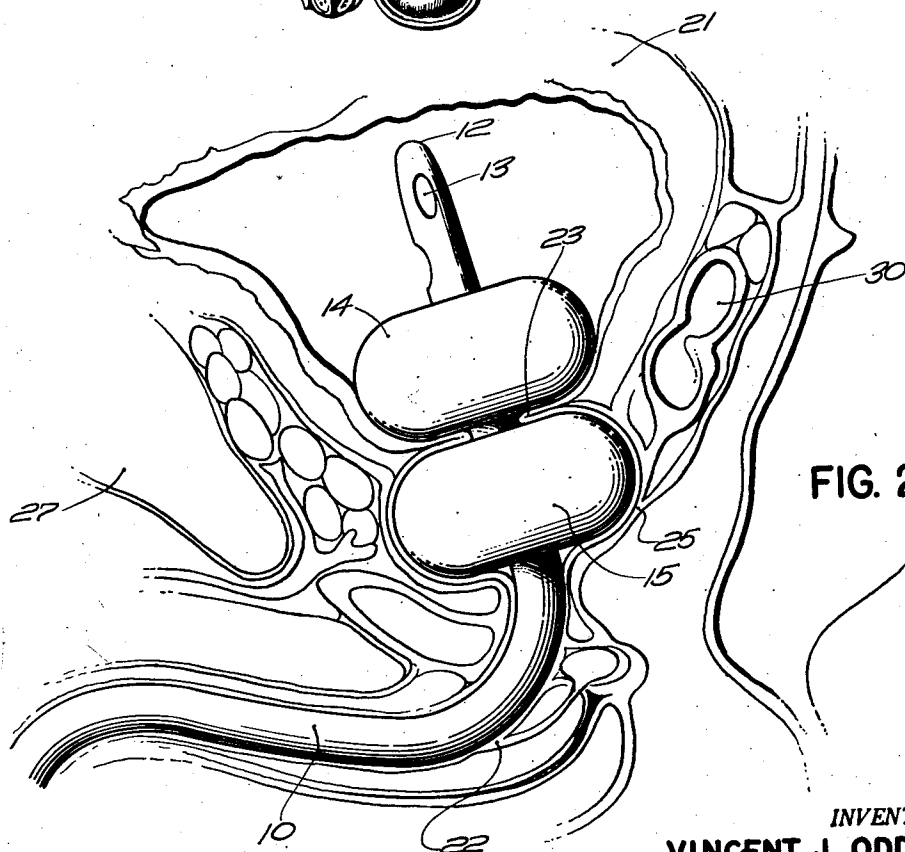
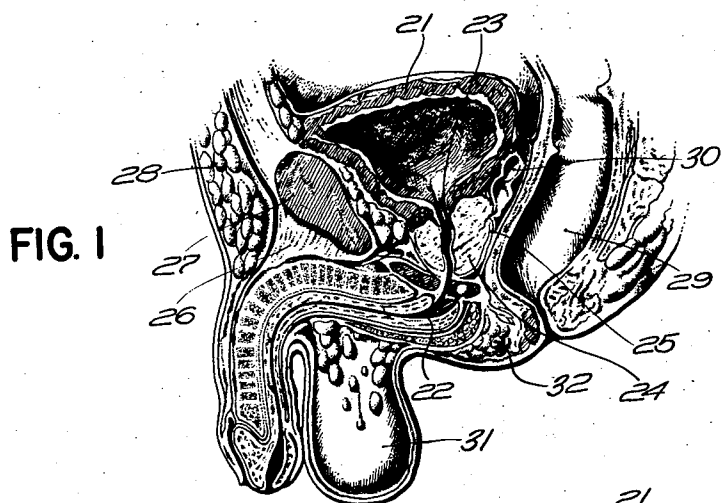
July 16, 1957

V. J. ODDO
HAEMOSTATIC CATHETER

2,799,273

Filed March 22, 1955

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

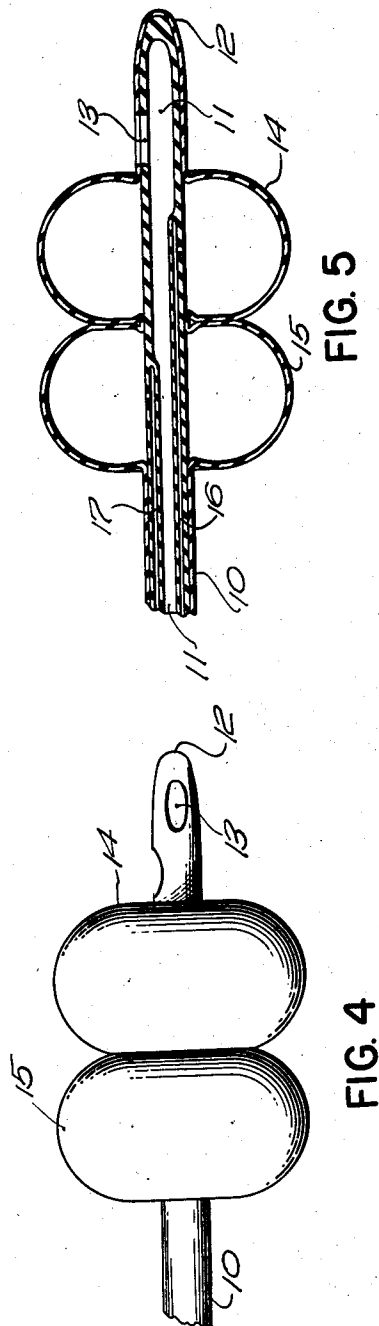
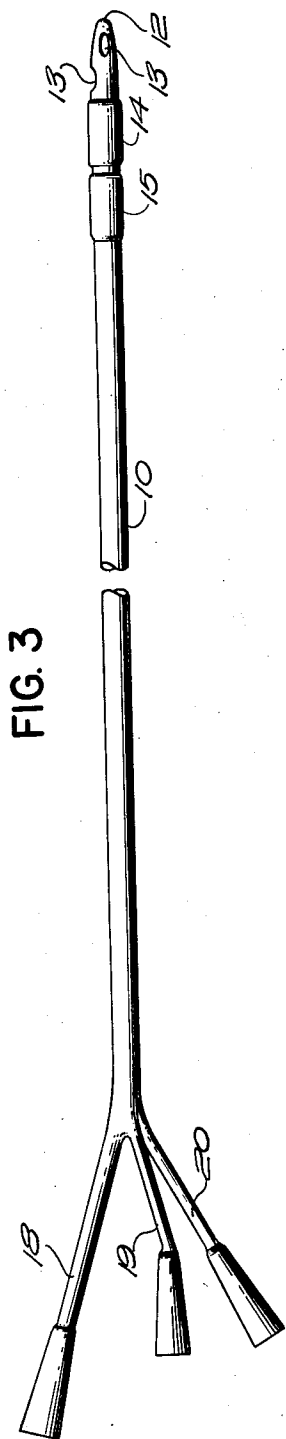


FIG. 5

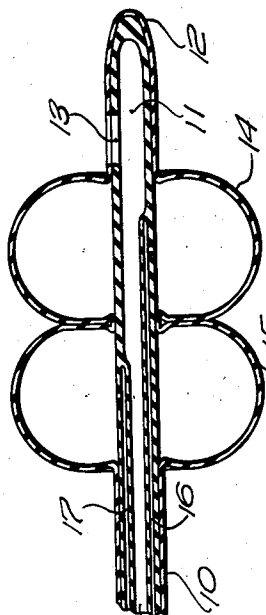


FIG. 4

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HAEMOSTATIC CATHETER

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4 Claims. (Cl. 128—325)

My present invention relates to a surgical apparatus and more particularly to a haemostatic catheter.

The principal object of the present invention is to provide a catheter which can be used for stopping or checking bleeding in certain types of operations.

Another object of the present invention is to provide a catheter particularly adaptable to check bleeding after a prostatectomy has been performed.

A further object of the present invention is to provide a catheter which will apply pressure to the affected areas and check or stop bleeding immediately.

Another object of the present invention is to provide a haemostatic catheter which is simple in construction and easy and economical to manufacture and assemble.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts, more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the appended claims.

In the drawings:

Fig. 1 is a hemisectional view of the male pelvic region.

Fig. 2 is an enlarged view of the bladder and urethra with the catheter of the present invention in place.

Fig. 3 is a side elevation of the catheter.

Fig. 4 is an enlarged view of the distal end with the balloons inflated.

Fig. 5 is a longitudinal section of the portion of the catheter shown in Fig. 4.

In certain types of operations there is a great deal of post operative bleeding which is difficult to check. More particularly, an operation for the removal of the prostate gland results in bleeding in the prostatic bed and the vesical neck. This is true regardless of the technique or method used in removing the gland. A conventional method of attempting to stop the bleeding is by inserting a balloon catheter, inflating the balloon in the bladder and pulling outwardly. This applies some pressure to the lower portion of the bladder and the upper portion of the vesical neck. But there is no pressure on the prostatic bed or the inferior portion of the vesical neck. Therefore the bleeding will usually continue for about one or two days or longer with the result that the patient becomes very weak.

The present invention is designed to provide a catheter which will apply a direct pressure to the affected areas thus immediately checking or stopping the bleeding. This is accomplished by providing the catheter with two adjacent balloons designed to press against each other. By positioning one balloon in the bladder and the other in the prostatic bed, direct pressure can be brought to bear on the walls of the prostatic bed and on the vesical neck.

Referring more in detail to the drawings illustrating my invention, Figs. 3, 4, and 5 illustrate the construction of the catheter. While any type of material and construction may be used, I prefer that the catheter be made in an integral one piece construction of flexible rubber.

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The catheter comprises a tubular body portion 10 having a central drainage channel 11 which is closed at the distal end 12. The body portion 10 is provided with one or more openings 13 adjacent the distal end 12 and communicating with the channel 11. Integrally mounted on the body portion 10 and spaced from the distal end but adjacent thereto is an inflatable balloon portion 14. Mounted on the tubular body 10 and slightly spaced from the balloon 14 is a second balloon 15 to the same size, shape and capacity as the balloon 14.

A plurality of inflating ducts are imbedded or formed in the walls of the tubular portion 10, the duct 16 communicating with the balloon 14 and the duct 17 communicating with the balloon 15. The rear end of the catheter is trifurcated as shown in Fig. 3. A funnel portion 18 communicating with the drainage channel 11 and the funnel portions 19 and 20 communicating with the inflating ducts 16 and 17.

It is preferable that the balloons 14 and 15 be shaped as illustrated in a general torus shape having bulging ends so that the adjacent walls of the balloons will press against each other in inflated position as shown in Figs. 4 and 5. With this construction it is of course possible to inflate one balloon more than the other as the circumstances may require and either air or water may be used.

The particular application of the above construction as a haemostatic catheter is illustrated in Figs. 1 and 2. Referring to Fig. 1, the general area of the lower male pelvic region comprises a bladder 21, a urethra 22, and a vesical neck 23 which provides the muscular control between bladder and the urethra. The prostate gland 24 is of generally conical shape and surrounds the urethra just below the vesical neck 23. It is generally enclosed in a bed or sheath 25 comprising the peri-prostatic tissues. In front of this area are the suspensory ligament 26, a symphysis 27 and Camper's fascia 28. To the rear is the rectum 29 and the seminal vesicle 30. Below the prostate area are various glands and ducts, the scrotal septum 31, and the perineum 32.

There are several methods of removing the prostate gland 24. One method is to cut through the front wall of the abdomen and through the wall of the bladder 21. The surgeon then inserts his finger through the vesical neck 23 and peels the prostate gland 24 away from the tissues 25 and removes it. Another method is to make an incision from underneath through the perineum 32 and remove the prostate gland 24 from that direction. In both cases the portion of the urethra which is surrounded by the prostate gland is also torn out. There is thus bleeding at the vesical neck 23 and in the entire surface of the tissues 25. At this point, referring to Fig. 2, the catheter is inserted through the urethra 22 so that the distal end 12 extends into the bladder 21. The balloon 14 is now inflated through the duct 16 and the catheter pulled downwardly so that the balloon 14 rests on the vesical neck 23. The second balloon 15 is now inflated through the duct 17 so that it will completely fill the cavity formed by the tissues 25 from which the prostate gland 24 was removed. Pressure on the catheter is now released and the catheter is now locked in place and will not fall in or out. Ultimately these tissues and muscles will shrink and organize to form a new urethral passageway. However, at this time the area is enlarged and pliable and will take the shape of the balloon 15 as it is inflated. With both balloons inflated the vesical neck 23 will be pressed from above and below between the two balloons stopping the bleeding in this area. The balloon 15 will also press outwardly and downwardly against the walls of the tissues 25 checking the bleeding from these tissues. In the meanwhile, the bladder drains

through the openings 13 and the drainage channel 11 in the usual manner.

In removing the prostate gland many veins and arteries are torn and ruptured and there is great danger of bleeding and shock following a prostate operation. The catheter of the present invention is designed to check and prevent these complications. The bleeding is checked almost immediately and the healing is more rapid.

The catheter of the present invention may also be used in other types of operations. For example, in certain lung operations the chest cavity is pierced and drained. A conventional catheter with one balloon is inserted. However, such catheters must be taped so that they will not fall into the chest cavity. The catheter of the present invention can be positioned so that one balloon will inflate inside the cavity and the second one outside the chest. The catheter will then be immovably positioned and will not move either in or out. Furthermore, the pressure between the two balloons will prevent any extraneous leakage and all drainage will be through the catheter.

While the catheter of the present invention is equipped with two balloons, it can also be used in the same manner as any other conventional catheter by inflating only one of the balloons. A choice is thus afforded as to how far the doctor wishes the distal end to extend into the drainage area.

The catheter may be constructed in any desired manner and the shape and size of the various parts may be readily altered without departing from the invention as defined in the appended claims.

I claim:

1. A surgical accessory comprising an elongated tubular body portion having a central longitudinal drainage channel closed at the distal end, a drainage opening in said body portion adjacent the distal end and communicating with said drainage channel, an inflatable balloon on said body portion adjacent the drainage opening, a second inflatable balloon on said body portion in close proximity to said first balloon, said balloons pressing against each other in inflated position, said body portion having separate inflation channels each communicating with one of said balloons, and separate conduits at the proximal end of said body portion for said drainage channel and said inflation channels.

2. A surgical accessory comprising an integral one-piece flexible rubber tubular body portion having a central longitudinal drainage channel closed at the distal end, a plurality of drainage openings in said body portion

adjacent the distal end and communicating with said drainage channel, an inflatable balloon on said body portion adjacent the drainage openings, a second inflatable balloon on said body portion in close proximity to said first balloon, said balloons pressing against each other in inflated position, said balloons being of the same shape and size, said body portion having separate inflation channels each communicating with one of said balloons, and separate conduits at the proximal end of said body portion for said drainage channel and said inflation channels.

3. A surgical accessory comprising an elongated tubular body portion having a central longitudinal drainage channel closed at the distal end, a drainage opening in said body portion adjacent the distal end and communicating with said drainage channel, an inflatable balloon on said body portion adjacent the drainage opening, a second inflatable balloon on said body portion in close proximity to said first balloon, said balloons pressing against each other in inflated position, said balloons both being of a generally torus shape, said body portion having separate inflation channels each communicating with one of said balloons, and separate conduits at the proximal end of said body portion for said drainage channel and said inflation channels.

4. A surgical accessory comprising an integral one-piece flexible rubber tubular body portion having a central longitudinal drainage channel closed at the distal end, a plurality of drainage openings in said body portion adjacent the distal end and communicating with said drainage channel, an inflatable balloon on said body portion adjacent the drainage openings, a second inflatable balloon on said body portion in close proximity to said first balloon, said balloons pressing against each other in inflated position, said balloons both being of a generally torus shape, said balloons being of the same shape and size, said body portion having separate inflation channels each communicating with one of said balloons, and separate conduits at the proximal end of said body portion for said drainage channel and said inflation channels.

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