INTRA-UTERINE DEVICE

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ABSTRACT OF THE DISCLOSURE

The intra-uterine device consists of outwardly springing stainless steel wires turned inwardly at their outer ends to form loops, which tend to spring apart and are joined at their base portions to form a V-shaped structure. The ends and sides of the device are coated with silicone rubber and connected to a silicone rubber tube which loosely hangs over the opening of the uterus and serves as a means for ascertaining whether the device is in place and also for removing the same.

DESCRIPTION OF THE INVENTION

The present invention relates to an intra-uterine device and it also relates to an injector for placing the same in position.

It is among the objects of the present invention to provide an intra-uterine device which may be readily utilized and injected into position without injury to the tissues with a maximum of ease and comfort.

Another object is to provide an injector for an intra-uterine device which may conveniently receive the same and enable the injection of such an intra-uterine device in proper position without likelihood of becoming dislodged or displaced.

Another object is to provide a self-retaining intra-uterine device which will readily accommodate itself to a variety of sizes of cavities and in which there is little or no tendency of inadvertent expulsion during usage and which may be retained without any discomfort on the part of the user.

In accomplishing the above objects it has been found most satisfactory to form the device of resilient short wires of stainless steel which are joined together by welding or other joining at a lower end portion and then extending upwardly and diverging from one another into outwardly and then inwardly turned loops.

These loops are designed to receive and be embodied in silicone rubber beads, which are flat on the sides toward one another and curved outwardly on the separated side so that when the loops are pressurized together there will be a smooth oval end portion which may be readily inserted in the cervix of the uterine cavity. The silicone rubber may be applied by means of tubular members which are drawn over the wires and sealed together at the junction and then beaded together over the intumescence thereof.

From the junction of the two wires outwardly a tubular strip of silicone rubber may extend substantially from within the cavity through the cervix thereof and to within the vagina so that it may be readily contacted to ascertain whether the device is in position and also serve as a means of removal when desired without interfering otherwise with the bodily function.

The injector desirably consists of an elongated tube with a collar adjacent the inlet or injection end thereof extending outwardly therefrom to limit the injection and with the entire diameter of the tube being of sufficient dimension or diameter to receive the tubular appendage as well as the outwardly extending wires when pressed together, receiving the end portions to form a smooth, conical-like member for insertion through the cervix of the uterine cavity, which will be limited by the adjacent cover projecting outwardly from the tubular member shortly below the cervix thereof.

The injector may have a collar at the lower end of the outer tube for manipulation by the second and third fingers, sliding within the outer tube is the pressure or pusher member which will force the tubular appendage upwardly and then force the double head through the mouth or opening of the body member and then into the body member, whereupon the injector may be withdrawn, permitting the appendage to depend from the mouth of the body member.

BRIEF DESCRIPTION OF DRAWINGS

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereininafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings, wherein like reference characters denote corresponding parts throughout the several views:

FIG. 1 is a side elongated longitudinal sectional view of the injector, with the intra-uterine device in position before injection.

FIG. 2 is a diagrammatic side elevational view showing the intra-uterine device in position in the body organ after injection.

FIG. 3 is an enlarged side sectional view showing the uterine device after injection.

Referring to FIGS. 1 and 2, there is the uterus A having the body portion B and the cervix or mouth portion C. The passageways D lead to the Fallopian tubes, which in turn lead to the ovaries. The intra-uterine device E has the upper Y-shaped portion F and the tail portion G. The injector H receives the tail portion G in its intermediate portion J and the V-shaped portion F in the upper portion K, which is inserted into the cervix C.

The upper portion K and the lower portion J form the barrel of the injector H and this barrel carries the plunger L having the manual actuator M. Referring particularly to FIG. 3, the intra-uterine device E consists of the stainless steel wires 20 which terminate in the outwardly turned portions 21, which are turned inwardly at 22.

The ends 23 are embedded in the enlarged silicone rubber portions 24, which, as indicated at 25, extend substantially beyond the turned-in portion 21. The inside face of the enlarged portions 24 is flat, as indicated at 26, so that these two enlarged drop-like half-conical portions 24 may be brought closely together and form a conically shaped member, as indicated at 27 in FIG. 1. The outside faces 28 of the enlarged portions 24 will contact the side wall 29 of the interior 30 of the cavity of the uterus A below the channels or openings D to the Fallopian tubes (see FIG. 2).

The stainless steel wires 20 are preferably enclosed by a continuous tube or film 31 of silicone rubber. This rubber tube 31 is integral with the enlarged portions 24 and it commences at 32 just below the turned-in ends 23 down to the junction 32a.

At the junction 32a the lower ends 33 of the stainless steel wires 20 are joined together at 34 by welding or by means of a sleeve, and the outer walls 35 of the silicone rubber tips 31 will be caused to join together and extend at 36 over the upper portion of the tube or wall 34. Overlapping the extended portion 36 of the silicone rubber will be the enlarged sleeve 37, which is integrally joined at 38 to the extension 36 from the silicone tube 31. This
extension 37 continues into the tail G, which has a central opening 39 to give crushability and extensibility to the tail G.

The end of the tube G may be sealed, as indicated at 40. This injected device E, when inserted, should take the position as indicated in FIG. 2, with the junction 34 being above the mouth or cervix and with the tail tube G extending downwardly from the cervix into the vagina, where it may be located or grasped, indicating that the device is in position and also permitting its ready removal, when desired.

The insertion of the device E is accomplished by means of the injector H. The injector H has a barrel portion K-J, which is designed to loosely receive the tail G when the plunger L is withdrawn. The upper portion of the barrel K-J receives an outstanding circular flange 50, which will be positioned so that the distance thereof from the upper end portion 51 will be somewhat less than the distance from the junction 36 to the upper end of the stainless steel wires 20.

The collar 50 is designed to contact the lower face 52 of the uterus A and limit the insertion of the upper portion K of the barrel. Although the tail G is placed loosely in the barrel, the upper portion F consisting of the resilient wires 20 is forced into the upper portion K of the barrel K-J until the lower faces 53 of the enlarged silicone rubber portions 24 contact the upper edge 51 in the position shown in FIG. 1.

The middle portion of the barrel J continues to the lower cylindrical flange 54, which is at the end of the lower barrel J. The plunger L fits closely within the lower portion J and its lower end 55 is connected by means of the sleeve 56 to the disc 57, forming the manual actuator M. In the position shown in FIG. 1, the upper end 58 of the plunger should contact the lower end 40 of the tail G. In this position the injector H may be inserted so that the barrel portion K will fit in through the cervix C until the collar or flange 50 contacts the lower faces 52 of the uterus A.

The two body portions 24 forming the conical portion 27 may be readily inserted through the cervix C. When this is accomplished, the plunger L will be pressed upwardly by having the thumb under the disc M and the second and third fingers above the disc 54, which will first result in compression of the tail G within the barrel portion J, following which the entire device E will be injected into the cavity 30 into the position as shown in FIG. 2, with the enlarged portions 24 contacting the walls 29 just below the entrance to the Fallopian tubes.

As many changes could be made in the above intrauterine device, and many widely different embodiments of this invention could be made without departure from the scope of the claims, it is intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

Having now particularly described and ascertained the nature of the invention, and in what manner the same is to be performed.

What is claimed is:

1. An intra-uterine device comprising resilient stainless steel wires forming a Y-shape joined together at their lower ends and separated at their upper ends when in position to function as an intra-uterine device in a body cavity, the upper ends of the wires being bent outwardly and then inwardly, said bent portions terminating short of contacting the body of the wire, enlarged half-conical bodies of silicone rubber carried by and completely enclosing the upper ends of the wires and having flat inside faces adjacent each other and conical outside faces with the body of silicon rubber having extended tip portions beyond the upper bent ends, silicone rubber sleeves encircling the wires from the half-conical bodies to the junctions and integrally joined at their upper ends to the half-conical bodies and extending around the junction at their lower ends, and a tubular extended tail portion extending around the junction at its upper end and integrally joined to the silicone rubber sleeves at the junction at the lower end of the stainless steel wires.

2. The device of claim 1, said wires being welded together at their lower ends to form said junction.

3. The device of claim 1, said extended tubular tail portion being sealed at its lower end.

4. An injector for the device of claim 1, comprising a tubular barrel having an insertion end, a collar positioned below said insertion end to limit the insertion of said barrel, a finger grip portion at the lower end of said barrel, a plunger inserted into and telescoping into and out of said barrel and having a finger pressed portion at the lower end thereof, said device of claim 1 being designed to have its tubular tail portion inserted within said barrel and the enlarged half-conical bodies to form a conical insert at the top of said barrel.

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