ABSTRACT: Device for collecting urine from incontinent females wherein improved means are provided for stabilizing the apparatus and for conforming it to the anatomical structure of the patient.
FEMALE INCONTINENCE DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention
This invention relates to female incontinence devices and, more particularly, to devices of this class having improved stabilizing means and improved anatomy-conforming features.

2. Description of the Prior Art
Prior art devices for draining and collecting urine specimens from incontinent female patients are found in U.S. Pat. Nos. 660,388; 994,884; 2,483,079; 2,490,969; 2,640,484; 2,648,335; 2,815,511; 2,840,079; 2,844,147; 2,893,678; 2,989,052; 3,072,125; 3,116,734; French Pat. No. 378,760 and German Pat. No. 100,854.

The foregoing patents disclose various types of urine collecting and draining devices, but none of them has been sufficiently satisfactory in use as might be desirable since they lack suitable stabilizing means in respect of the comfort of the patient and in respect of ensuring against shifting of the apparatus when in use. Also, these previous devices have been deficient in not being conformable to the female anatomy for ensuring the collection and drainage of urine without embarrassing leakage.

SUMMARY OF THE INVENTION

The present invention comprises a device for draining and collecting urine from incontinent female patients. The device disclosed herein functionally utilizes adjacent genital organs and all available genito-urinary anatomical structures to give maximum stability of the device to provide liquid-tight security against constantly wet clothing and associated offensive odor.

A novel vaginal stabilizer is provided for resiliently conforming to the individual patient's anatomical structure. The vaginal stabilizer bar which is integrally formed upon a face plate is made of a somewhat soft, polyvinyl plastic material or the like that is resilient. The stabilizer bar has a plurality of evenly distributed finger-like projections which, by their frictional engagement with the vaginal rugae, substantially prevents anterior-posterior motion of the collection device when in position, while the stabilizer bar itself also prevents lateral displacement.

The face plate has an inlet aperture which is located relative to the stabilizer bar in a position where it surrounds the urethral meatus. The inner surface of the face plate has a pair of somewhat coaxial grooves which mate with the labia majora and labia minora to create a liquid-tight seal. The groove which accommodates the labia majora is lined with plastic foam or the like for optimum liquid seal and anatomical conformation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a forward elevation of the device of the present invention, some parts being broken away and other parts being shown in dotted outline;

FIG. 2 is a generally rear perspective view of the device shown in FIG. 1, some parts being broken away and shown in section;

FIG. 2A is a section view taken on line 2A—2A of FIG. 2;

FIG. 3 is a view similar to FIG. 2 showing several parts in section and indicating the manner in which some of the parts are connected together;

FIG. 4 is a section view taken on line 4—4 of FIG. 2;

FIG. 5 is an enlarged view of an alternative receptacle for the device shown in FIG. 1;

FIG. 6 shows the manner in which the outlet of the receptacle may be plugged as an alternative to the drain tube;

FIG. 7 is a fragmentary view of a replaceable intravaginal stabilizer, illustrating in exploded form a modified tampon embodiment thereof;

FIG. 8 is a cutaway view of the manner in which the device of the present invention is placed in position; and

FIG. 9 is a central section anatomical view showing the manner in which the device of the present invention is stabilized in and on the body of the patient, some parts of the device being shown in elevation.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings in detail, there is shown in FIGS. 1 and 2 a generally elliptically shaped face plate 11 made of a somewhat flexible polyvinyl plastic material or the like which is compatible with the external and internal tissues of the human anatomy. The external surface of face plate 11 is convex in both longitudinal and transverse diameters. Above the mid portion of the rear of face plate 11 is an integrally formed elliptically shaped urine outlet 12 which extends through face plate 11. Outlet 12 is defined by integrally formed, inwardly curving walls 13 and 14, which terminate at the bottom portion thereof in a drain floor 16. Walls 13 and 14 slope inwardly toward the respective bottom portions thereof.

Formed around the inner wall of face plate 11 adjacent the periphery thereof is a groove 17 which is intended to accommodate to and conform with the labia majora. A second groove 18 substantially parallel to groove 17 is formed in the rear portion of face plate 11 and is adapted to accommodate to and conform with the labia minora. As shown in FIG. 4, groove 17 which accommodates the labia majora is lined with a suitable plastic foam material 19 for optimum water seal and anatomical conformation.

Formed integrally with rear surface of face plate 11 just beneath the outlet floor 16 of urine outlet 12 is a rearwardly protruding elongated intravaginal stabilizer bar 21 which is also made of a somewhat flexible polyvinyl plastic material or the like, said bar 21 having a narrowed neck portion 22 which permits the radial movement thereof in several directions so that it may conform to the anatomical idiosyncrasies of the particular patient to which the device is applied.

The vagina is wider in its proximal portion and narrower at the introitus and the vaginal rugae are roughly circular, resembling the intestinal folds. Accordingly, vaginal stabilizer bar 21 conforms to these anatomical structures by being broader in its intravaginal extremity and narrowing toward the introitus. Bar 21 is elliptical in an antero-posterior direction corresponding to the vaginal inlet. See FIG. 2A. Stabilizer bar 21 describes an angle of between 45° to 50° with face plate 11 corresponding anatomically with the vaginal rugae. As shown in the alternative embodiment in FIG. 7, stabilizer bar 21 may be removably attached in the region of neck portion 22 to the rear of face plate 11 by means of providing a socket recess 23 in a rearwardly extending boss 24 of said face plate and a necked plug 25 formed on the introitus portion of bar 21, said plug being releasably secured in said recess by stiffly flexible lips 26 extending over the mouth thereof. Thus, stabilizer bars of different sizes may be replaceably attached to the rear portion of face plate 11 to accommodate to the nuliparous and multiparous woman. Also, use of the device without the stabilizer bar by the virginal female or in smaller size by the female child is also thereby facilitated. In other embodiments for children's use the stabilizer bar 21 may be shortened or reduced in size to only a small portion thereof.

Formed integrally on the outer surface of vaginal stabilizer bar 21 is a plurality of spaced apart protuberances or projections 28 that are distributed evenly over the surface of said bar. These finger-like projections 28 make contact with the vaginal rugae in order to prevent or diminish any possible antero-posterior motion of the device when in position.

Where the patient prefers to use the device described herein during menstruation or has excessive vaginal secretions, a modified stabilizer bar 29 may be provided, as shown in FIG. 7, having an elongated axial cavity 31 therein with a slightly narrowed resilient or flexible mouth 32 at the rear thereof. Cavity 31 removably accommodates an absorbent tampon 33 having a pull thread 34 for removal purposes. In this embodiment, stabilizer bar 29 has a plurality of spaced apart radial
performances 36 substantially evenly distributed thereover and being interspersed with projections 28, said apertures providing passage of menstrual or vaginal fluids into the interior of said bar for absorption by tampon 33 held releasably captive therein by narrowed resilient mouth 32.

Formed below neck portion 22 of stabilizer bar 21 on the rear portion of face plate 11 is an integrally formed, rearwardly and upwardly extending semi-circular shelf 38, which rests upon the posterior of the vaginal fourchette and conforms therewith, is intended to prevent shifting of the device towards or onto the anal orifice.

The labia minora are directed so that their medial surfaces oppose one another. When the device is in position, these medial surfaces are in contact with the outer respective surfaces of walls 13 and 14 of the internal urinary outlet 12. The edges of the labia minora rest in groove 48 formed in the rear of face plate 11. Since the labia minora taper posteriorly into the medial surface of the labia majora, groove 18 extends on both sides to the top of shelf 38 which rests upon the posterior vaginal fourchette.

Since any internal device is a foreign body and mucoid secretion is a normal acknowledgement of its presence, a removable and interchangeably absorbent wad 39 of cotton or the like is positioned within and just above the cup-like shelf 38 and absorbs secretions which accumulate in the vestibular fossa.

The prominence of the internal urinary inlet and receptacle comprising walls 13 and 14 and floor 16 rests within the vestibule of the vagina. Said prominence is oval in shape to conform anatomically with the vaginal vestibule. Walls 13 and 14 which surround the urethral meatus may have a unitary groove 41 to contact more securely the perineal tissues and the anterior vaginal wall. A triangular depression 42, superior to the posterior urinary inlet, prevents contact of the device with the body and glans of the clitoris which would otherwise be a source of irritation.

The labia majora are normally in apposition and continue back between the thighs. The peripheral outer groove 17 is lined with a thin layer of absorbent foam 19 and it is shaped to conform to the rounded prominence of the mons pubis and labia majora which taper posteriorly to end approximately 2.5 centimeters anterior to the anus.

The internal shelf 38 which rests upon the posterior vaginal fourchette is intended to prevent shifting of the device into the anal orifice.

Integrally formed with and extending forwardly from the outer front of face plate 11 is an oval ridge 43 having an integrally formed outwardly extending flange 44. Ridge 43 and flange 44 are somewhat resilient and they releasably secure by snap action the inwardly directed oval shaped flange 46 of a dome shaped reservoir 47 that is removably attached to the front portion of face plate 11. Reservoir 47 has an outlet 48 at the bottom portion thereof, said outlet accommodating one end of a drain tube 49, the other end of which may be connected to any suitable collection receptacle, not shown.

The dimensions of ridge 43, flange 44 and flange 46 are coordinated in respect of each other whereby the interconnection therebetween forms a fluid-tight seal between reservoir 47 and face plate 11.

Where a patient is subject to precipitous voiding thereby requiring a larger reservoir receptacle, the latter may be provided in the size and shape as shown in FIG. 5 where reservoir 51 is somewhat elongated and is more voluminous than reservoir 47. The mouth portion of reservoir 51 is provided with an inwardly extending flange 52, the dimensions of which are coordinated with those of ridge 43 and flange 44 to provide a snap action, releasable connection therewith. Here, also, the dimensions of the respective ridge 43, flange 44 and flange 52 are coordinated with each other to provide a fluid-tight seal therebetween.

Reservoir 51 has a downwardly extending outlet aperture 53 to which one end of flexible drain tube 49 may be connected for withdrawal of urine from said reservoir. Alternately, as shown in FIG. 6, outlet 53 may be closed by means of removable plug 54 whereby the reservoir may be used for the collection of routine or timed voided specimens.

Located near the top and bottom of face plate 11 are respective buttons 56 and 57 which may be integrally formed or otherwise connected to the front of said face plate, said buttons serving as anchors for harness tabs 58 and 59, respectively, to which are connected double harness straps 61 and 62, respectively, made of nylon or the like, and extending to a suitable waist band or strap, not shown, for suspending the apparatus securely to the body of the patient, as shown in FIG. 8. Harness straps 61 and 62 may be suitably elasticized or may be provided with suitable adjustment buckles, not shown, for accommodating the apparatus to patients of different sizes.

As shown in FIGS. 8 and 9, face plate 11 is located in a manner to cause vaginal stabilizer bar to be inserted into and located within the vagina while the mouth of inlet 12 is positioned opposite the urethral opening from which urine passes into reservoir 47 and thence through drain tube 49 into a suitable receptable, not shown. Straps 61 and 62 are sufficiently tensioned to cause face plate 11 to remain securely positioned whereby dislodgement thereof is prevented.

When being applied for use by the female patient, the face plate 11 is located over the labia with the reservoir 47 being removed from said plate. The urethral meatus is centered in the inlet opening 12 under direct vision. The harness straps 61 and 62 are adjusted to apply necessary external stability for face plate 11. Thereafter, the appropriate external reservoir 47 or 51 is snapped into place with either a plug 54 or drainage tube 49 connected to outlet 48 or 53, respectively.

In some embodiments, a deployment 63 may be formed in floor 16 of outlet 12, said deployment being located near the inside opening of said outlet and above the juncture between stabilizer bar 21 and neck portion 22. Depressions 63 acts as a small well to retain any possible reverse flow or back-drip of urine onto the patient, especially when in the supine position.

Although the present invention has been described with reference to particular embodiments and examples, it will be apparent to those skilled in the art that variations and modifications can be substituted therefor without departing from the principles and true spirit of the invention. The abstract given above is for the convenience of technical searchers and is not to be used for interpreting the scope of the invention or claims.

1. Urine collecting device for incontinent female subjects comprising an oval shaped resilient face plate, an elliptical oval urine aperture in said plate, a reservoir receiver removably attachable to the front surface of said face plate surrounding the area of said outlet aperture, rearwardly extending walls surrounding said outlet aperture and forming an oval prominence for contacting the medial surfaces of the labia minora, a rearwardly extending elongated resilient stabilizer bar on the rear surface of said face plate just beneath the bottom of said urine outlet, said stabilizer bar being flexibly movable radially in several directions to conform to the anatomical idiosyncrasies of the patient to which the device is applied in the region of its juncture with said face plate and removably positionable in the vagina, integrally formed grooved portions on the peripheral rear surface of said face plate being conformable to the labia majora and forming a liquid-tight juncture therebetween when said face plate is secured in position upon the female subject.

2. Device according to claim 1 wherein said stabilizer bar is broader in its intra-vaginal extremity than at its introitus portion.

3. Device according to claim 1 wherein said stabilizer bar is elliptical in an anterior-posterior cross-section diameter corresponding to the vaginal inlet.

4. Device according to claim 1 further comprising a plurality of spaced apart small finger-like projections on the surface of said vaginal stabilizer bar, said projections cooperating frictionally with the vaginal rugae for substantially preventing anterior-posterior motion of said device.
5. Device according to claim 1 and further comprising a longitudinal axial cavity in said stabilizer bar, a plurality of spaced apart small radial perforations in said bar communicating with said longitudinal cavity, said longitudinal cavity accommodating a removable, absorbent tampon.

6. Device according to claim 1 wherein said vaginal stabilizer bar is detachably connected to said face plate.

7. Device according to claim 1 and further comprising a depression above the outlet aperture on the rear surface of said face plate, said depression providing a clearance for the clitoris.

8. Device according to claim 1 and further comprising a rearwardly extending shelf on the rear surface of said face plate, said shelf being located below the juncture between the stabilizer bar and said rear surface, said shelf accommodating a removable wad of absorbent material, said shelf resting upon the posterior vaginal fourchette when said device is positioned upon the subject.

9. Device according to claim 1 and further comprising an oval liner made of resilient plastic foam material, said liner being located at the peripheral area of the rear surface of said face plate and being grooved to accommodate and cooperate with the labia majora to form a liquid-tight seal therewith when said face plate is positioned on the body of the subject.

10. Device according to claim 1 and further comprising first and second recessed grooves on the rear face of said face plate, said grooves cooperating conformably with the labia minora and the labia majora, respectively, of the subject to which the device is applied.