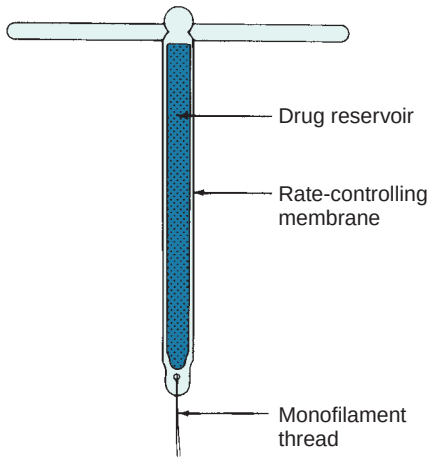

FIGURE 20.7 Schematic of the Progestasert intrauterine drug delivery system.

progesterone-induced inhibition of sperm capacity for survival and alteration of the uterine milieu to prevent nidation. The intrauterine device contains 38 mg of progesterone, a much smaller amount than would be taken by other routes of administration over the same period for the same purpose. The intrauterine device is replaced annually for the maintenance of contraception (5).

The Progestasert provides contraception without the need for daily self-medication and has the advantages of (*a*) using a natural hormone; (*b*) containing no estrogens; (*c*) using a T-shaped delivery device to ensure comfort, safety, and retention, which minimizes mechanically induced irritation; and (*d*) confining the hormonal action to the uterus.

The device contains the progesterone suspended in silicone oil; barium sulfate is added to make it radiopaque. The ethylene vinyl acetate (EVA) membrane surrounding the drug core controls the rate of drug release. Titanium dioxide is added to the EVA for a white color. At the end of a year, the device will contain approximately 14 mg of progesterone, the excess being required to maintain the thermodynamic activity of the drug reservoir.

Dinoprostone Vaginal Insert

Dinoprostone (Cervidil, Forest Pharmaceuticals) is a thick, flat, rectangular polymeric slab enclosed in a pouch of a knitted polyester retrieval system. The buff-colored semitransparent polymeric hydrogel slab contains 10 mg of dinoprostone. The retrieval system is in the shape of a long knitted tape used to retrieve, or remove, the unit after the dosing interval is complete. The product is designed to release dinoprostone in vivo at a rate of about 0.3 mg per hour. The unit contains 10 mg of dinoprostone in 236 mg of a cross-linked polyethylene oxide–urethane polymer slab that measures 29 mm by 9.5 mm and is 0.8 mm thick. When placed in a moist environment, the unit absorbs water, swells, and releases dinoprostone.

It is indicated for initiation and/or continuation of cervical ripening in patients at or near term when there is medical or obstetrical indication for labor induction.

The product is dosed at 10 mg of dinoprostone (1 unit) inserted vaginally and removed upon onset of active labor or 12 hours after insertion. After administration, the patient should remain supine for 2 hours but may be ambulatory after that time.

This product should be stored in a freezer at – 20°C to – 10°C (– 4°F to 14°F); it is packaged in foil and is stable in the freezer for 3 years. After opening and upon exposure to humidity, it is hygroscopic, and the release characteristics of the dinoprostone may be altered if it is improperly stored (6). An example is shown in Figure 20.8.

Estring

A unique method of administering estradiol is through the use of the estradiol vaginal ring (Estring, Pharmacia Corp., A Division of Pfizer) shown in Figures 20.5 and 20.6. The core of the ring contains a reservoir of estradiol, which is released immediately and then at a continuous rate of 75 mg per 24 hours over 90 days. The ring, composed of silicone polymers and barium sulfate, has an outer diameter of 55 mm and a core diameter of 2 mm. The ring is inserted into the upper third of the vaginal vault and is worn continuously for the treatment of urogenital symptoms associated with postmenopausal atrophy of the vagina.