

CONTRACEPTIVE METHODS USE FOR FAMILY PLANNING: A REVIEW

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Abstract

Contraceptives prevent conception. Since they control fertility, they are also called as antifertility agents. The contraception can be done by using any contraceptive method. The contraception can occur at various level in reproductive process through a number of contraceptive products or procedures. The contraceptives may be classified into three groups: (1) Permanent method (2) Temporary methods (3) Hormonal pill or oral contraceptives. This article is designed to provide an overview of products or methods available, for the prevention of conception.

Key words: Contraceptives, Condom, Diaphragm, Sponge, Douching, Hormonal pills, Intrauterine devices.

Introduction

Contraceptives are methods or device for contraception, which is a deliberate prevention of conception or becoming pregnant. They are also termed as anti fertility or birth control agents.

The most appropriate contraceptive method must be safe, effective, available (including accessibility and affordability), and acceptable. In choosing a method of contraception, dual protection from the simultaneous risk for HIV and other sexually transmitted diseases also should be considered. Although hormonal contraceptives and IUDs are highly effective at preventing pregnancy, they do not protect against sexually transmitted diseases, including HIV. Consistent and correct use of the male latex condom reduces the risk for HIV infection and other sexually transmitted diseases including chlamydial infection, gonococcal infection, and trichomoniasis.

Classification of Contraceptives



Figure-1: Contraceptives¹

(A) Permanent methods or Surgical methods

Methods which stop the passage of fallopian tubes in female and vas-deferens in male.

- **Vasectomy:** This operation is done to keep a man's sperm from going to his penis, so his ejaculation never has any sperm in it that can fertilize an egg. The procedure is typically done at an outpatient surgical center. The man can go home the same day. Recovery time is less than one week. After the operation, a man visits his doctor for tests to count his sperm and to make sure the sperm count has dropped to zero; this takes about twelve weeks. Another form of birth

control should be used until the man's sperm count has dropped to zero. Typical use failure rate is reported to about 0.15%.

- **Bilateral tubal ligation:** In woman the fallopian tubes tied or closed so that sperm and eggs cannot meet for fertilization. The procedure can be done in a hospital or in an outpatient surgical center. The person can go home the same day of the surgery and resume normal activities within a few days. This method is effective immediately. Typical use failure rate is reported to about 0.5%.
- **Quinacrine:** This involves transcervical insertion of quinacrine pellets (252 mg) using a modified Copper-T IUD inserter. Pellets are placed at the fundus in the proliferative phase of the menstrual cycle. The drug causes inflammation and fibrosis of the proximal fallopian tube. Efficacy is presently estimated at 1 pregnancy failure per 100 women at two years.
- **Essure:** It is intended to provide women with permanent birth control. Essure is inserted through the vagina and cervix into the fallopian tubes. The procedure does not require a surgical incision. Essure inserts do not contain or release hormones.

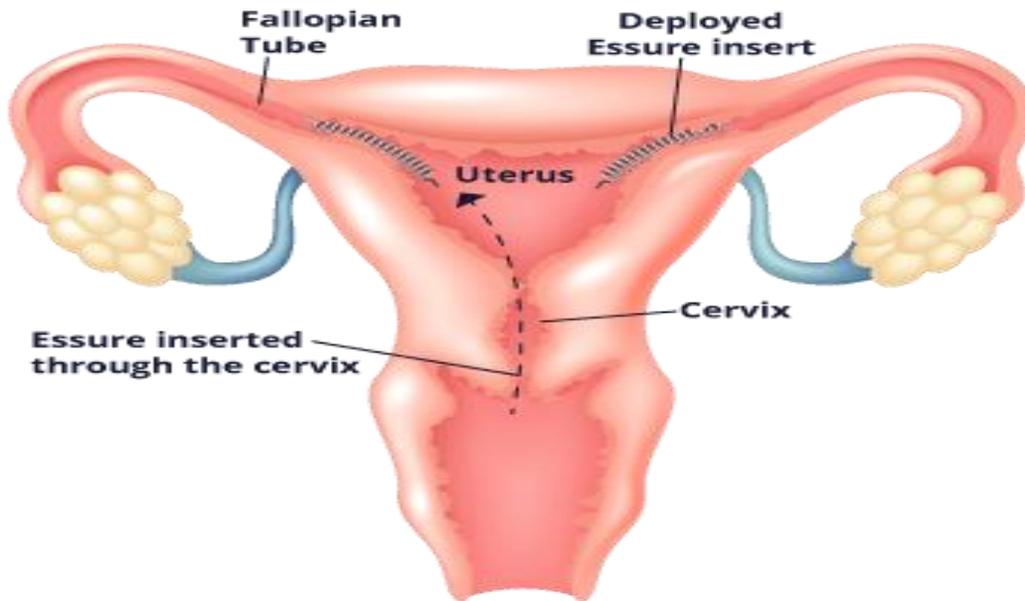


Figure-2: Essure method²

(B) Temporary methods

(1) Behavioural methods

(i) Excluding vaginal intercourse

These are the methods which prevent vaginal intercourse so that there will be no chance of conception. It includes Anal sex, Oral sex, Masturbation, Non-penetrative sex

(ii) Including vaginal intercourse

- **Breastfeeding or Lactational amenorrhea method:** For women who have recently had a baby and are breastfeeding, the Lactational amenorrhea method can be used as birth control when three conditions are met: (1) amenorrhea (not having any menstrual periods after delivering a baby), (2) fully or nearly fully breastfeeding, and (3) less than 6 months after delivering a baby. Lactational amenorrhea method is a temporary method of birth control, and another birth control method must be used when any of the three conditions are not met.
- **Creighton model:** It is a form of natural family planning which involves identifying the fertile period during a woman's menstrual cycle. It is based on observations of cervical mucus to track fertility. Creighton can be used for both avoiding pregnancy and achieving pregnancy.
- **Fertility awareness:** Understanding about monthly fertility pattern can help in planning to get pregnant or to avoid pregnancy. The fertility pattern is the number of days in the month when the women are fertile (able to get pregnant), days when women are infertile, and days when fertility is unlikely, but possible. If women have a regular menstrual cycle, women have about nine or more fertile days each month. To prevent pregnancy either the women do not have sex on the fertile days or use a barrier method of birth control on those days.

(iii) Traditional methods

- **Abstinence:** The best way to avoid pregnancy is total abstinence from sex.
- **Coitus interruption:** It is also known as withdrawal or the pull-out method (a man, during sexual intercourse, withdraws his penis from a woman's vagina prior to ejaculation).
- **Safe period or rhythm method:** This is also termed as standard days method or Cycle beads. For females 4 day before & 10 day after the menses are termed as safe period. In these days chance of pregnancy is least. So for prevention of conception these cyclic days should be monitor carefully and suitable contraceptive methods must be use according to stage in the cycle. The different techniques to monitor the cyclic days are Measurement of body temperature, Ovulation prediction devices and Cycle beads

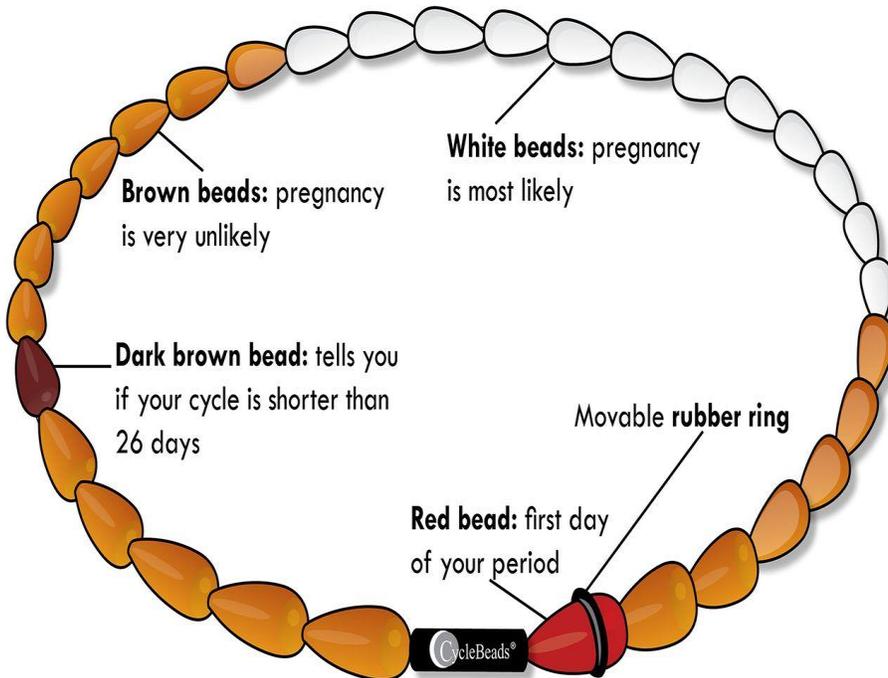


Figure-3: Cycle beads³

(2) Barrier methods

Methods which utilizes a barrier to the entry of spermatozoa mechanically.

- **Male condoms:** Worn by the man, a male condom keeps sperm from getting into a woman's body. Latex condoms and newer synthetic condoms are the most commonly used to prevent pregnancy, HIV and other STDs. "Natural" or "lambskin" condoms also help in preventing pregnancy, but may not provide protection against STDs, including HIV. Typical use failure rate is reported to about 13%. Condoms can only be used once. Oil-based lubricants such as massage oils, baby oil, lotions, or petroleum jelly should not be used with latex condoms because they will weaken the condom, causing it to tear or break.
- **Female condoms:** Worn by the woman, the female condom helps keeps sperm from getting into her body. It is packaged with a lubricant and is available at drug stores. It can be inserted up to eight hours before sexual intercourse. Typical use failure rate is reported to about 21%, and also may help to prevent STDs.
- **Diaphragm:** It is a shallow cup shaped like a little saucer that made of soft silicone. It inserts in vagina. It acts as a barrier that covers the cervix, stopping sperm from joining an egg. In order for a diaphragm to work best, it must be used with spermicide (a cream or gel that kills sperm). Diaphragm or cervical cap, each of these barrier methods are placed inside the vagina to cover the cervix to block sperm. The diaphragm is shaped like a shallow cup. The cervical cap is a thimble-shaped cup. Before sexual intercourse, insert them with spermicide to block or kill sperm. Typical use failure rate for the diaphragm is reported to about 17%.
- **Cervical loops or cups:** The cervical cap is a small, bowl-shaped latex or silicone cup with a shorter loop for easy removal. It is inserted into the vagina and fits snugly over the cervix. The cervical cap is similar to the diaphragm but smaller. It is always used with spermicidal cream or gel.



Figure-4: Menstrual cups⁴

- **Sponge:** The birth control sponge is a small, round sponge made from soft, squishy plastic. The contraceptive sponge contains spermicide and is placed deep inside the vagina before sex, where it fits over the cervix. The sponge works for up to 24 hrs, and must be left in the vagina for at least 6 hours after the last act of intercourse, at which time it is removed and discarded. Typical use failure rates are reported to be about 14% for women who have never had a baby and 27% for women who have had a baby.

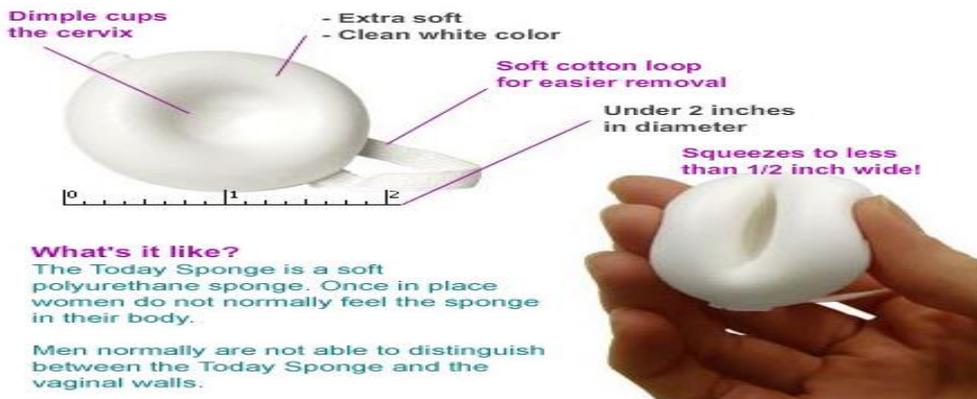


Figure-5: Contraceptive sponge⁵

(3) Use of spermicidal agents and other chemical methods

Various spermicidal agents may be used before, during and after the intercourse, which kills the sperm. They are available in different forms like Foam, Tampons foam, Tablets, Powders, Pastes, Jellies, Creams and Douching.

- **Douching:** The word douche means to wash or soak. Douching is washing or cleaning out the inside of the vagina with water or other mixtures of fluids. Most douches are prepackaged in a bottle or bag, a mixture of water and vinegar, baking soda, or iodine.



Figure-6: Vaginal douche⁷

(4) Combined methods

- **Spermicide+Barrier methods:** These products work by killing sperm and come in several forms-foam, gel, cream, film, suppository, or tablet. They are placed in the vagina no more than one hour before intercourse. Leave them in place at least six to eight hours after intercourse. A spermicide in addition to a male condom, diaphragm, or cervical cap may also be use. Typical use failure rate: 21%.
- **Spermicide+Low dose of progesterones**

(5) Intrauterine devices(mechanical obstruction)

- **Inert foams**
- **Copper bearing:** This IUD is a small device that is shaped in the form of a “T.” the doctor places it inside the uterus to prevent pregnancy. It can stay in uterus for up to 10 years. Typical use failure rate is reported to about 0.8%.

(6) Hormonal methods

- **Oral contraceptives (Combined oral contraceptives & Progestin only contraceptive pills)**
- **Hormone bearing/containing IUDs**
- **Nasal spray**
- **Injectableor shot:** Women get shots of the hormone progestin in the buttocks or arm every three months from their doctor. Typical use failure rateis reported to about 4%.
- **Implants:** The implant is a single, thin rod that is inserted under the skin of a women’s upper arm. The rod contains a progestin that is released into the body over 3 years. Typical use failure rateis reported to about 0.1%.
- **Contraceptive skin patches:** This skin patch is worn on the lower abdomen, buttocks, or upper body (but not on the breasts). It releases hormones progestin and estrogen into the bloodstream. Put on a new patch once a week for three weeks. During the fourth week, do not wear a patch, so can have a menstrual period. Typical use failure rateis reported to about 7%.



Figure-7: Birth control patch⁸

- **Vaginal rings:** The ring releases the hormones progestin and estrogen. Place the ring inside the vagina. Wear the ring for three weeks, take it out for the week for menstrual period, and then put in a new ring⁹. Typical use failure rates reported to about 7%.

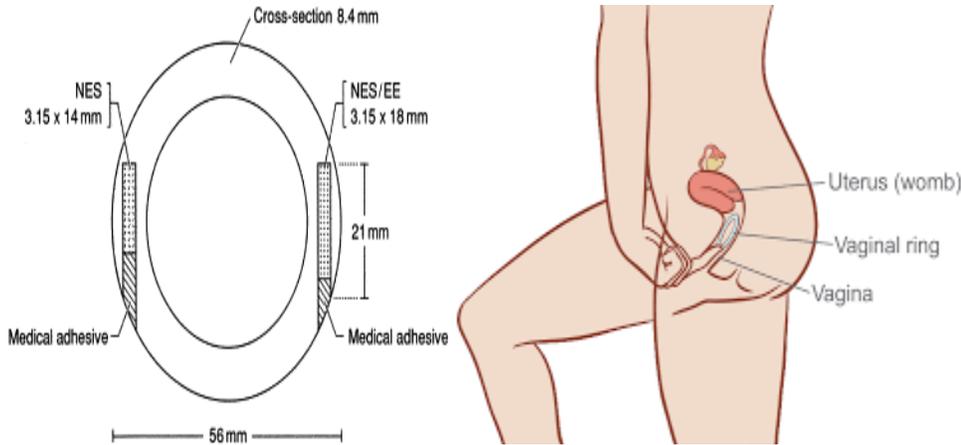


Figure-8: Vaginal ring¹⁰ Figure-9: Vaginal ring (inside vagina)^{11,12}

- **Depots**
- **Oral pills** (combined, minipills: contains progesterone only)
- (7) **Termination of pregnancy**
- **Menstrual regulation**
- **Menstrual induction**
- **Abortion** (medical & surgical)
- (8) **Immunological methods**
- (9) **Post-intercourse methods**
- **Emergency contraceptives (Pills & copper IUDs):** Emergency contraception is not a regular method of birth control. Emergency contraception can be used after no birth control was used during sex, or if the birth control method failed, such as if a condom broke. Women can take emergency contraceptive pills up to 5 days after unprotected sex, but the sooner the pills are taken, the better they will work. They may contain high doses of diethylstilbestrol or estrogens, double doses of norethindrone or norgestrel or ethinylestradiol. These are also known as morning after pills or emergency contraceptives. Three different types of emergency contraceptive pills available in market either as over the counter product or against the prescription. Copper IUD, Women can have the copper T IUD inserted within five days of unprotected sex.

(C) Pharmacological approach (Hormonal pills)^{13,14}

(a) Combined preparations (used orally): Also called “The Pill,” combined oral contraceptives contain the hormones estrogen and progestin. It is prescribed by a doctor. A pill is taken at the same time each day. If women are older than 35 years and smoke, have a history of blood clots or breast cancer, then doctor may advise the women not to take the pill. Typical use failure rate is reported to about 7%.

(i) Monophasic pills: A fixed concentration of estrogens and progestin in each pill for 21 days.

(ii) Biphasic and Triphasic pills: Containing varying amount of estrogen to progestin.

(iii) Sequential pills: Norgestrel+Ethinyl estradiol pills for 84 days

(iv) Modern pills: Low doses of estrogen and progestin

(v) Post coital pills or morning after pills or emergency contraceptives: High doses of diethylstilbestrol, High doses of estrogens, Two doses of mini pills, Two doses of mini pills and ethinylestradiol

(b) Combined preparations (used by different routes)

- Medroxyprogesterone+Estradiolcypionate for injection
- Ethinylestradiol+Norelgestronin patch for a week
- Ethinylestradiol+Etonogestrelviginal ring for 3 months

(c) Preparations containing Progestin's only

(i) Mini pills:Norethindrone or Norgestrel

(ii) Implant:Norgestrel

(iii) Intramuscular injection-Medroxyprogesterone acetate

(iv) Intrauterine devices-Progesterone or Levonorgestrel or Levonorgestrel intrauterine system: The LNG IUD is a small T-shaped device like the Copper T IUD. It is placed inside the uterus by a doctor. It releases a small amount of progestin each day to keep away from getting pregnant. The LNG IUD stays in uterus for up to 3 to 6 years, depending on the device. Typical use failure rate is reported to 0.1-0.4%.

(d) Non-steroidal preparations-Centchroman (Saheli)

(e) Male oral contraceptive-Gossypol

Conclusion

Contraceptive is required to control the birth rate and as a family planning instrument. Now a day's various approaches, methods and devices are available in the market for this purpose. They may be classified as temporary or permanent methods. Male condoms and Hormonal pills are most commonly used methods. Hormonal pills are developed on pharmacological approach and available in different combinations and devices. The suitability of method depends on ease, availability and requirement of user. The knowledge of different available options, their mechanism, use and suitability helps the individual in selection and use of contraceptive method or device.

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