

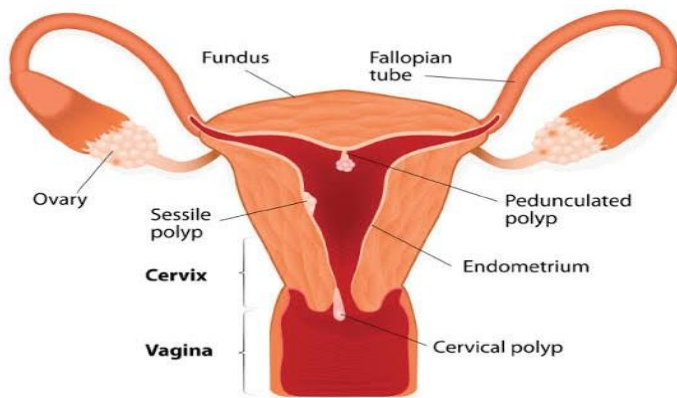
# INTRAUTERINE DRUG DELIVERY SYSTEM (IUDs)

**CONTENT:** Introduction, advantages and disadvantages, Development of intrauterine devices (IUD's) and Applications.

**INTRODUCTION:** Intrauterine Device (IUD) is a small object that is inserted through the cervix and placed in the uterus to prevent pregnancy. A small string hangs down from the IUD into the upper part of the vagina. The IUD is not noticeable during intercourse. IUDs can last 1-10 years. They affect the movements of eggs and sperm to prevent fertilization.

**DEFINITION:** IUD's are medicated or non-medicated devices which exert their contraceptive action in the uterine cavity continuously for a prolonged period of time without requiring patient motivation.

## ANATOMY OF UTERUS:



**Fig.1: Anatomy of uterus**

1. The uterus is pear shaped, thick walled muscular organ suspended in anterior wall of pelvic cavity.
2. The measures normally about 3 inches long 2 inches wide.

3. Fallopian tubes enter its upper portion one on each side and the lower portion of the uterus projects into the vagina.

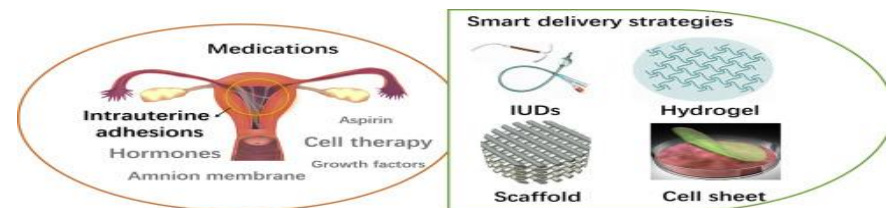
4. The uterine cavity is normally triangular in shape and flattened antero-posteriorly.

**1. Endothelium:** It is the inner coat of the uterine wall and is a mucous membrane which consists of epithelium lining and connective tissue. There are two types

a) straight arteries: supplies deeper layer  
b) coiled arteries: supplies superficial layer

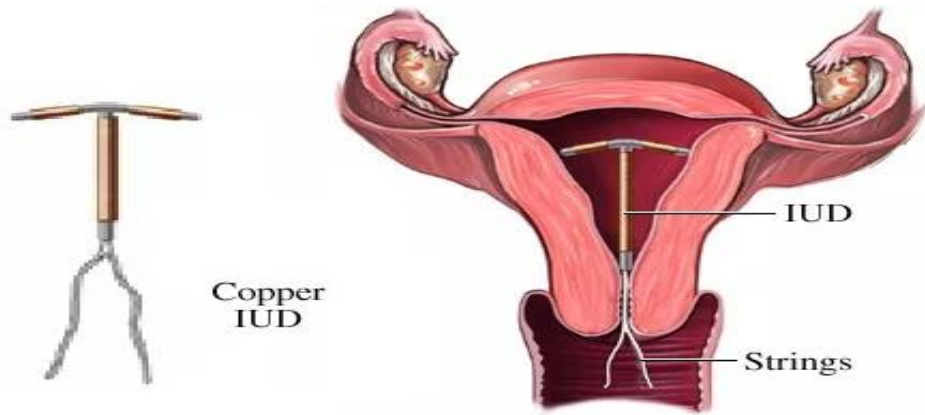
**2. Myometrium:** It is a thick, muscular middle layer made up of bundles of interlaced smooth muscle fibers embedded in connective tissue. It is subdivided into three ill-defined, interwining muscular layers containing layer blood vessels of uterine walls.

**3. Peritoneum:** It is the external surface of the uterus, which is attached to both sides of the pelvic cavity by blood ligaments through which the uterine arteries cross.



**Fig.2: Medication**

## DEVELOPMENT OF INTRAUTERINE DEVICES (IUDs)



**Fig.3:Intrauterine devices**

These device cause more endometrial compressed and myometrial distension, leading to uterine cramps, bleeding and expulsion of IUDs.



Research developed IUDs past 30 years with aim to add antifertility agent to more tolerated



As a T-shaped device, to enhance effectiveness; or antifibrinolytic agent



Tatum developed a T – shaped device that would work better with the shaped of the uterus, with forms a T when contracted. Copper bearing IUDs such as cu-7 and progesterone releasing IUD's such as progestasert.

Zipper 1968 added contraceptive metals ( cu ) and doyle and clewe developed progestin releasing IUD.



The development initiated a new era of R and D for long term IU contraceptive, leading to generation of recent IUD's medication

IUDs



### TYPES OF IUDs:-

#### FIRST GENERATION IUDs :-

Non hormonal / inert /non medicated IUD's  
First generation is suitable for multiparous women.  
eg. Lippes loop.



**Fig.4:first generation IUDs**

## **ADVANTAGES:-**

The IUD is one of the most popular contraceptive methods. Especially for long-term reversible contraceptive, as it can be easily fitted and removed. The advantages and disadvantages are as follow:-

- i. Immediate effective.
- ii. Longest lasting method
- iii. Require no daily attention
- iv. No action needed before, during or after sex
- v. They are more than 99% effective in preventing pregnancy.
- vi. They are safe to use if you are breastfeeding.
- vii. No medication stop them from working.
- viii. They last for a long time- mirena can last for 5year,and the copper IUD can last for 10 year.
- ix. The onset of action is immediate.
- x. It is cost effective
- xi. It is suitable for lactating women.
- xii. Fertility returns promptly on discontinuation.
- xiii. It can be used by women who are on any type of medication.
- xiv. It is not associated with cancer of any organ unlike hormonal contraception.
- xv. Its action lasts for ten year if it is not removed in between.
- xvi. They are more than 99% effective to prevent pregnancy.
- xvii. They are safe to use in mothers who are breast feeding
- xviii. No medicantions can stop or counter its action.
- xix. These can taken out any time by trained doctor or nurse.

## **DIASDVANTAGES:-**

- i. It does not offer any protection against sexually transmitted infection.
- ii. Explosion of IUD may occur especially following during the periods in first three months
- iii. There is higher risk of ectopic pregnancy if conception occurs with an IUD in situ.
- iv. Nausea vomiting headache & weight gain are some of side effect.
- v. It doesn't offer any protection again sexually transmitted infection.
- vi. Insertion can be painful
- vii. Paragard may also make the menstrual cramps worse.
- viii. These side effects usually go away within the first six months of use.
- ix. Menorrhagia (prolong bleeding) is a frequent complaint, as ae dysmenorrhea (painful menstrual period) and polymenorrhea (shorter menstrual cycle).these ae major reasons for IUD Discontinuation well.
- x. Hormonal IUDs can affect mood appetics.
- xi. Doesn't prevent again STIs
- xii. Required health care provider visits for insertion and removal.
- xiii. Possible risk for future fertility.
- xiv. Expensive if used for only a short amount of time.
- xv. May cause bleeding and cramping.
- xvi. Can perforated the uterus and affected fertility.

## SECOND GENERATION IUDs

- Non hormonal / medicated IUDs
- second generation (para-guard) is for nulliparous women.
- e.g copper T



fig.5:second generation IUDs

## THIRD GENERATION OF IUDs

- Hormonal / medicated IUD
- Same mechanism like first generation but release progesterone hormone daily.
- e.g – progesterone IUD & levonorgestrel IUD
- Effective usually 7 days of insert.
- Usually T shape.
- Mechanism of action

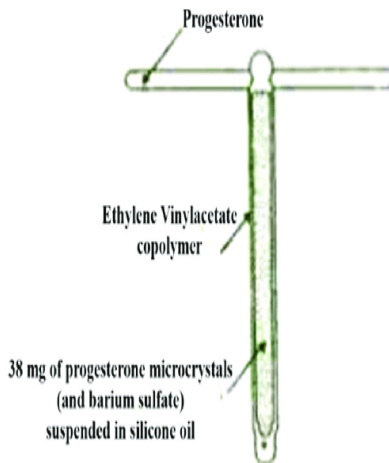
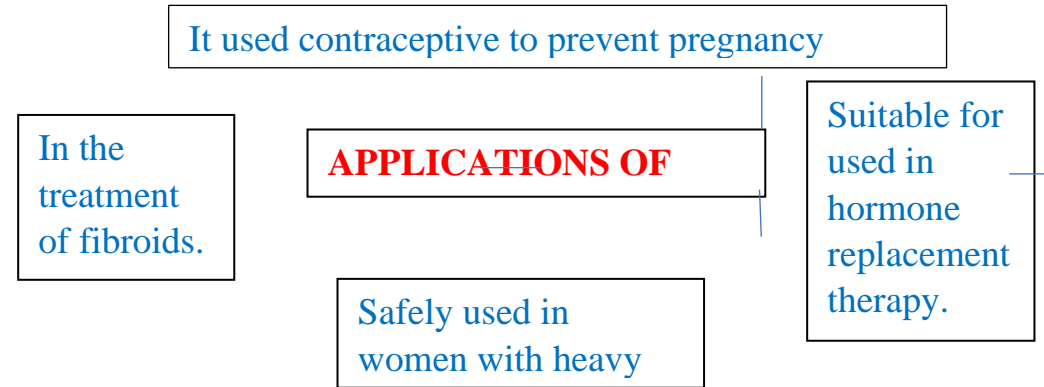


fig.6:Third generation IUDs

Third generation IUD slowly release small amount of the hormonal progestin to stop sperm from reaching the egg.

An IUD may stop a fertilized egg from growing inside the uterus.

## APPLICATIONS OF IUDs



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