

## Objectives:

1. To define urinary diversion and its types.
2. To understand urinary fistula.
3. To understand causes and management of urinary fistula.

## Urinary Diversion

Urinary diversion is a surgical procedure that reroutes the normal flow of urine out of the body or other non urinary tract organs.

### Types of urinary diversion:

1. Temporary and permanent.
2. Intubated and non intubated.
3. Supravesical and vesical.
4. Continent and non continent.

### Indications

1. Congenital anomalies of UT
2. Spina bifida
3. Ca.bladder – mostly after cystectomy
4. Unrepairable vesical or urethral fistula
5. In some reconstructive surgery on UT
6. Incontinance
7. sever urethral stricture
8. Ca.cervix involving the ureters
9. Urethral injuries

### Methods of diversion:

\***Kidney** : nephrostomy - intubated

Pyelostomy - nonintubated

\***Ureter**: cutaneous ureterostomy ---- loop , end.

ureterostomy in situ

ureterosigmoidostomy

uretero-ureterostomy

ileal conduit

colonic conduit

Rectal bladder

Metrofanov diversion

**\*Bladder :** Suprapubic cystostomy – intubated

Vesicostomy – nonintubated

Indication: bladder neck obstruction : congenial or aquired

Urethral injuries

Urethral stricture

**\*Urethra :** Urethrostomy: intubated or nonintubated

### Urinary fistula

It is an abnormal communication between any part of the urinary tract and any epithelial surface.

The primary cause is usually non urological.

It may occur between the urinary tract and

- Skin
- Intestine or
- Female reproductive organs.
- The chest (pleural cavity),
- Lymphatics,
- Vascular system

#### Causes:

1. *Primary intestinal diseases:*

Diverticulitis

Colonic cancer

Croh's disease

2- *Primary gynecological diseases:*

Difficult labor

Advance Cancer of the cervix

*3-Treatment of gynecological disease:*

Hysterectomy  
 Low Caesarean section  
 Radiotherapy

*4-Trauma*

**Urinary –intestinal fistulae:**

Intestino-Vesical , Vesico-Intestinal Fistula.  
 Intestino- ureteric , Uertero-Intestinal Fistula.

*Symptoms:*

Vesical irritability  
 Gas +Feces per-urethra  
 Change in bowel habits due to primary intes.disease  
 Urine always infected

*Dx. Ba.enema*

Sigmoidoscopy  
 Cystography  
 Cystoscopy

*Treatment: Staged:*

Proximal colostomy  
 Closure of fistula  
 Closure colostomy

*Single stage:*

Resection of diseased bowel with closure of fistula

**Uretero-vaginal fistula:**

*clinical features:*

Dribbling of urine and NORMAL  
 VOIDING

*Dx:*

IVU  
 Cystoscopy+EUA  
 Ascending catheterization + graphy

*Treatment:*

Re-implantation of ureter

**Vesicovaginl fistula**

**Etiology:**

- **In developing countries:**
  - Obstructed or prolonged childbirth.
  - Schistosomiasis(rare)

- **In developed countries:**
  - Hysterectomy 75%
  - Pelvic surgery
  - Radiotherapy
  - Cervical malignancy
  - Pelvic endometriosis
  - Inflammatory bowel disease
  - Trauma(pelvic fracture)
  - Urinary TB.

**Symptoms:**

- Immediate or delayed onset of urinary leakage from the vagina postoperatively
- Prolonged bowel ileus
- Suprapubic pain or flank pain.

**Examination:**

- **Vaginal examination**
- **3 swab test**
- **VCUG**
- **IVU and CT scan:** because up to 12% of postsurgical VVF have an associated ureteral injury or ureterovaginal fistula
- **Cystoscopy**

**Management**

- **Small, early, benign fistula:** conservative by catheterization, antibiotic and anticholenergics.
- **Large, late, complicated fistula:** surgery(transabdomial or transvaginal)