

UMBILICAL CORD & ITS ABNORMALITIES

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roll no# 04



Umbilical Cord

Definition

- **Umbilical cord** is the connection between the foetus and the placenta (uterus) through which the foetal circulation is maintained until birth.

Development

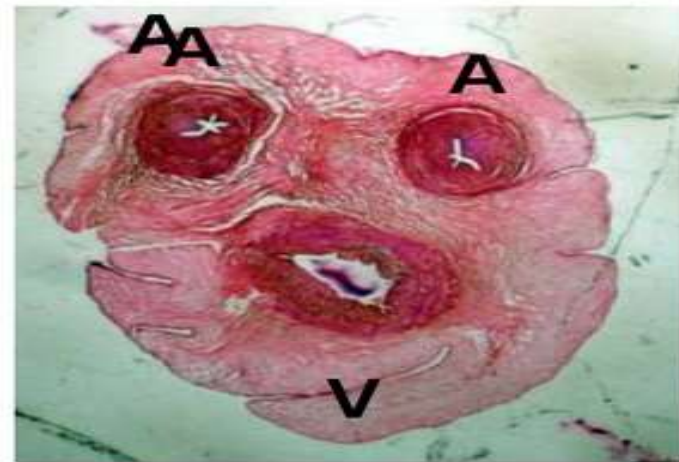
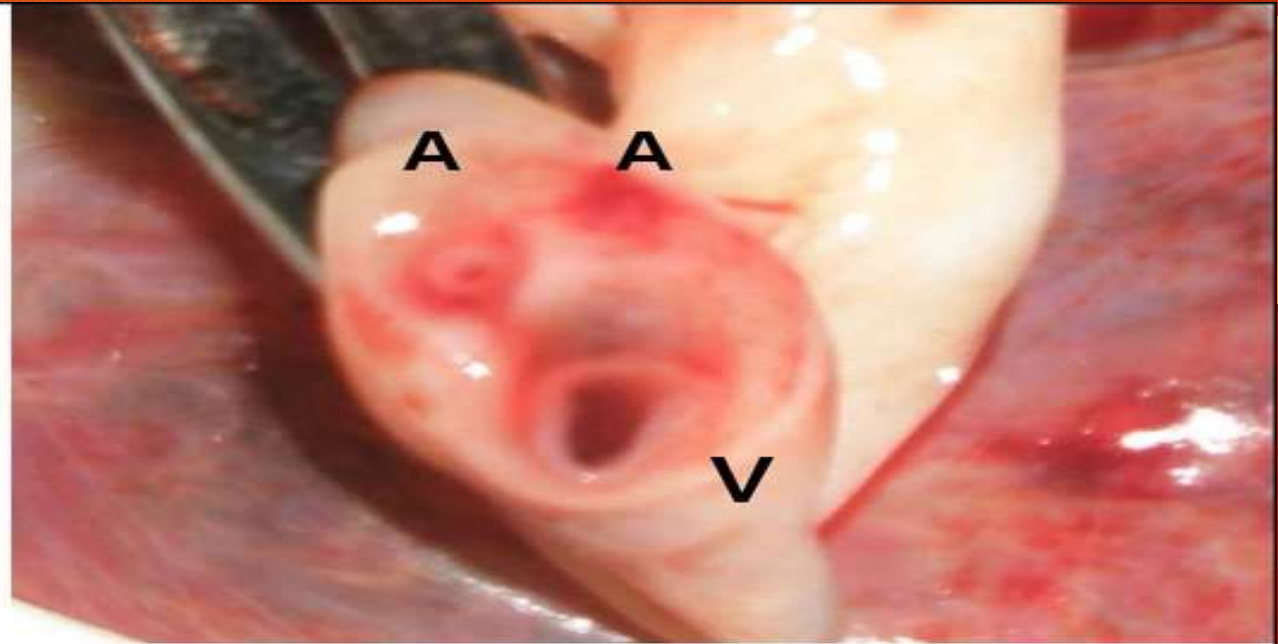
- In the early stages of development of the embryo it is called the body stalk.
- It connects the embryo to the cytotrophoblast. With the development of blood vessels it becomes the umbilical cord.
- The umbilical cord during the early stages contains the vitellointestinal duct – a connection between the midgut and the yolk sac

Structure and function

- Umbilical cord is covered by amnion and contains a single umbilical vein, and two umbilical arteries supported in Wharton jelly.
- Amnion covers the umbilical cord except near the fetal insertion, where an epithelial covering is substituted.



After delivery the umbilical cord crossing (cut) usually has to be done. Immediately after the umbilical cord must be examined for congenital vessels abnormalities. In normal umbilical cord the umbilical vein looks like a single big usually mildly bloody vessel. Also there are two contracted vessels which must be defined as an umbilical arteries.



Umbilical Cord Abnormalities

Cord Abnormalities capable of impeding blood flow

■ Knots

false Result from kinking of the vessels to accommodate to the length of the cord

True ■ Result from active fetal movements

■ Venous stasis

→ mural thrombosis and fetal hypoxia,

causing death or neurological morbidity

Incidence : 1.1%

Stillbirth incidence : 6%

esp)

high incidence : monoamniotic twins



False knot(Lt), true knot (Rt)

Other abnormalities of the umbilical cord

- Neoplasms of the umbilical cord
 - Thrombosis, hemangioma, hematoma, teratoma
- edema



UMBILICAL CORD COILING

- Colour flow mapping could be used to enhance the definition of umbilical cord.
- A normal umbilical cord is coiled like a telephone cord. When the umbilical cord twisted beyond It is called a hypercoiled umbilical cord when the cord has too few coils, it is called a hypocoiled umbilical cord.



Umb. Cord Coiling

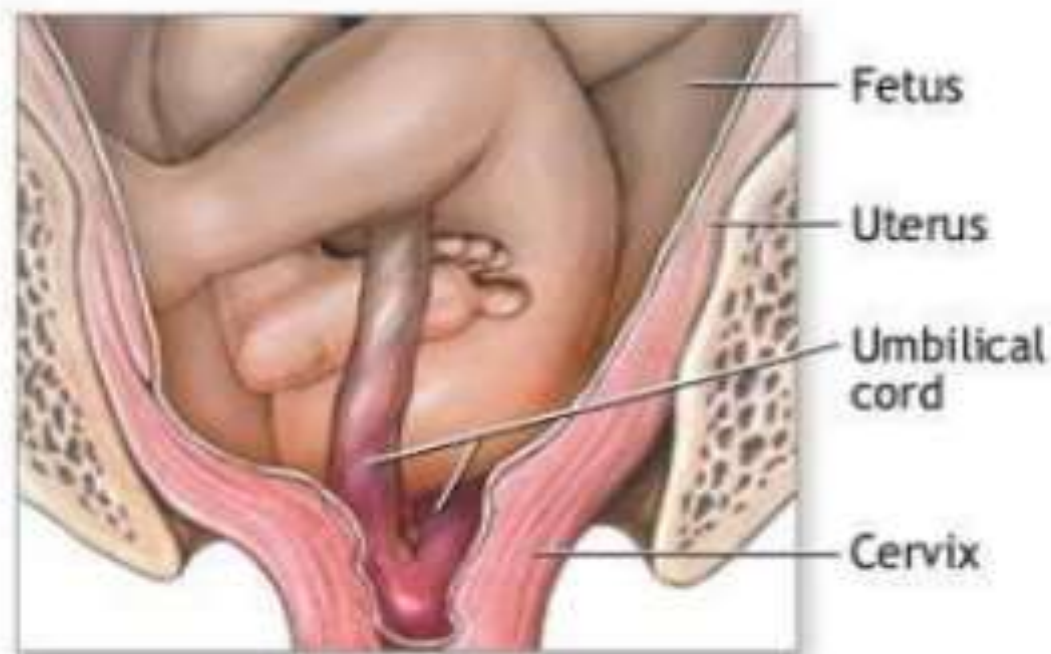


Definitions

Cord prolapse is defined as the descent of the umbilical cord through the cervix alongside (**occult**) or past (**overt**) the presenting part in the presence of ruptured membranes.

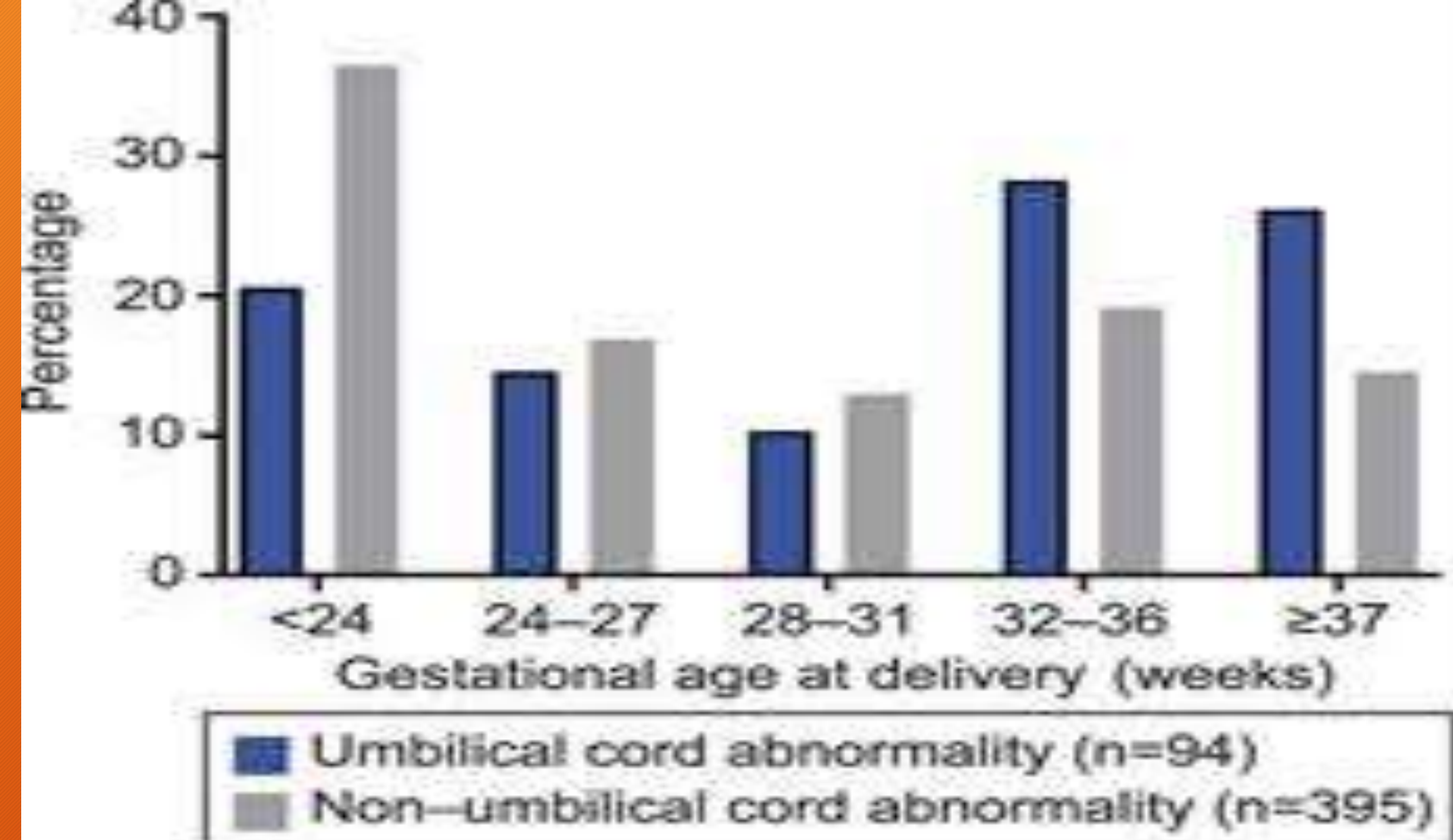
Cord presentation is the presence of the umbilical cord between the fetal presenting part and the cervix, with or without intact membranes.

Prolapsed umbilical cord



THE ENTANGLEMENT
OF THE UMBILICAL CORD





Umbilical Cord Abnormalities

Single Umbilical Artery

- The umbilical cord
: typically contains two arteries and a single vein
- **Risk factors**
: in women with diabetes, epilepsy, preeclampsia, antepartum hemorrhage, oligohydramnios and hydramnios
→ increased incidence
- $\frac{1}{4}$ of all infants with only 1 artery have associated congenital anomalies
 - two-vessel cords were identified in 1.5% of 879 fetuses aborted spontaneously
 - : serious malformation, most associate with chromosomal abnormalities >1/2 of these

- Byrne and Blane, 1985-

Umbilical hernia in adults

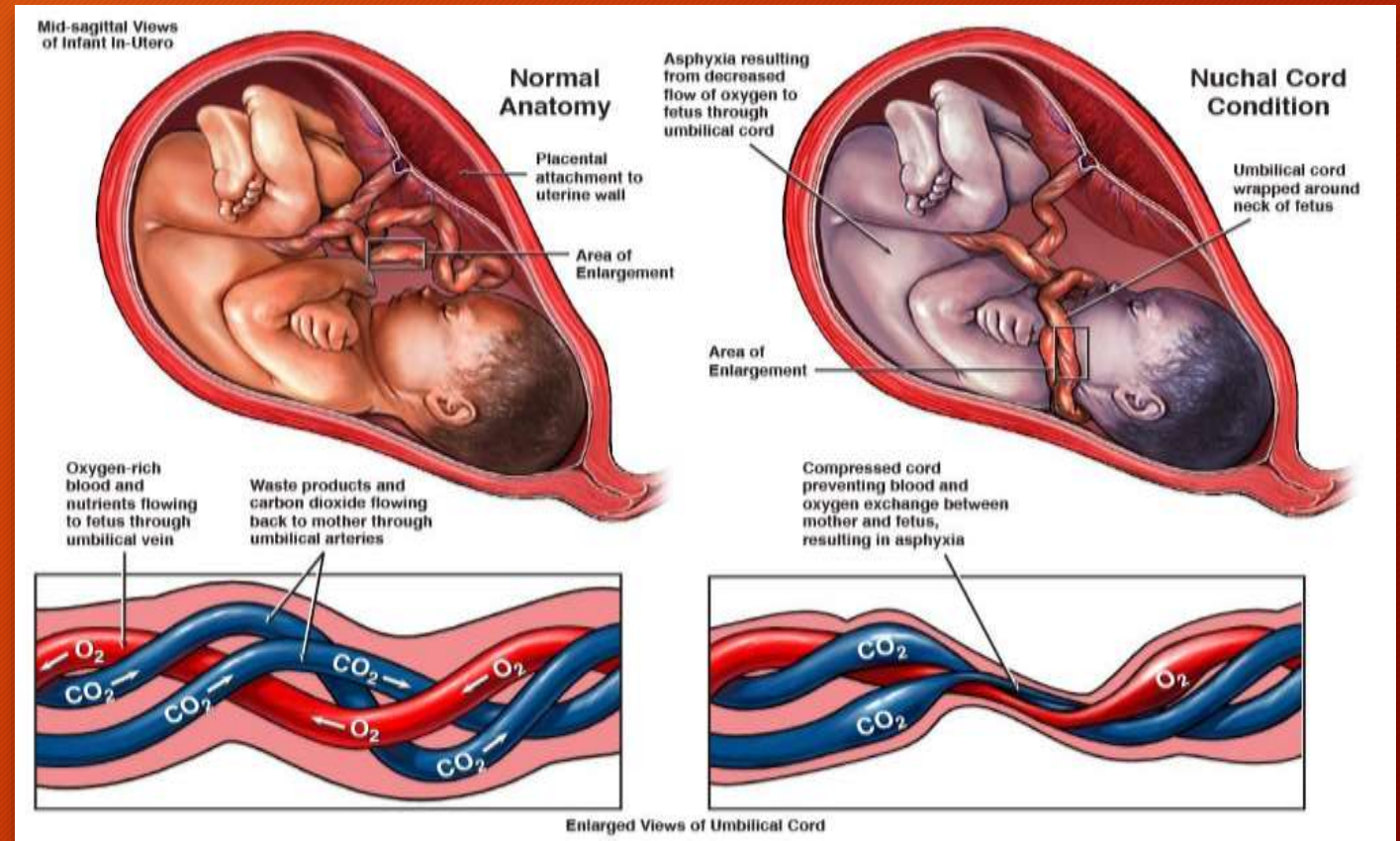
- _ Umbilical hernias in adults are mostly acquired
- _ common in women
- _ Predisposing factors are
 - increased intra-abdominal pressure
 - pregnancy
 - obesity
 - ascites
 - abdominal distention
 - single midline aponeurotic decussation
- _ Irreducibility , obstruction , strangulation and rupture are common complications

CLINICAL FEATURES:

- An umbilical granuloma is one of the most common umbilical abnormalities in newborns.
- ...
- Symptoms of an infection may include:
- a fever.
- pain or discomfort when the navel or surrounding tissue is touched.
- increased swelling.
- warmth or redness in the area.
- red streaks leading from the navel.
- pus draining from the granuloma.

COMPLICATIONS:

Umbilical cord problems can cause birth asphyxia (dangerous oxygen deprivation), which can in turn lead to birth injuries such as hypoxic-ischemic encephalopathy (HIE) and cerebral palsy.



The abnormalities of the umbilical cord are indicative for different congenital internal organs abnormalities especially kidneys.



Clinical diagnosis

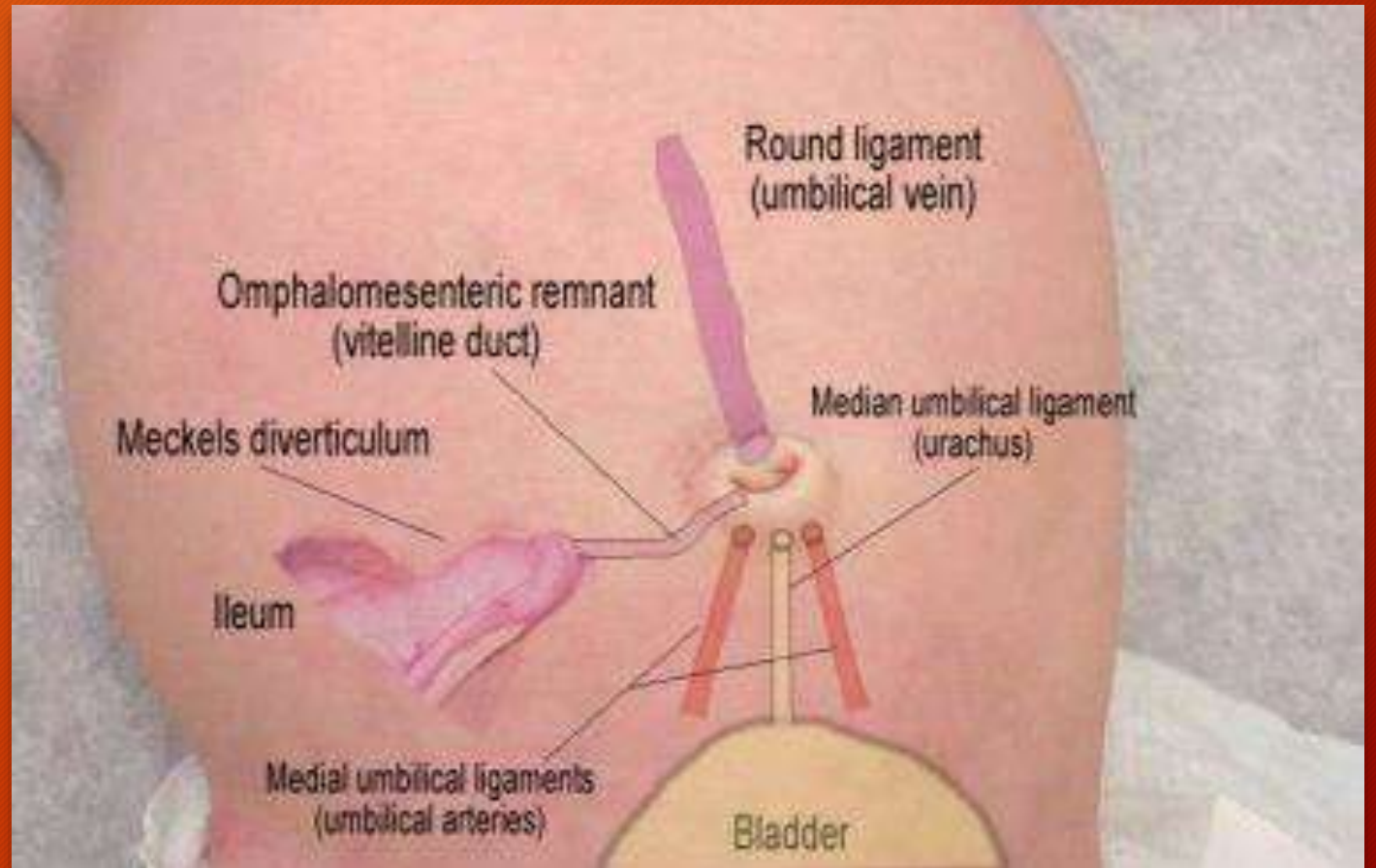
- Overt cord prolapse → visualizing the cord protruding from the introitus (*second or third degree of prolapse*), by speculum ex. or by palpating loops of cord in the vaginal canal (*first degree prolapse*).
- Funic presentation → speculum and bimanual ex.
- Occult prolapse → Suspected if fetal heart rate changes (variable decelerations) due to intermittent compression of the cord are detected during monitoring.

DIAGNOSIS

- Cord presentation and prolapse may occur without outward physical signs.
- Suspected during clinical examinations
 - abnormal fetal heart rate pattern may suggest overt or occult cord prolapse
 - (bradycardia, marked variable decelerations etc)
 - in the presence of ruptured membranes, particularly if such changes occur soon after membrane rupture, spontaneously or with amniotomy

TREATMENT:

Large umbilical granulomas or those that persist after silver nitrate treatment require surgical excision. Omphalomesenteric remnants and urachal remnants require surgical excision. The precise diagnosis is often not confirmed until surgery is performed and the anatomy of the umbilicus is established. Aug 30, 2018



Sl.No.	Diagnosis	Treatment
1.	Urachal anomalies (15 patients)	All patients were treated by complete excision of tracts with a slip of the dome of the bladder and the dome of bladder was repaired in 2 layers
2.	Post laparoscopic surgery umbilical discharge (3 patients)	Exploration of tract & removal of foreign body (suture material in two patients and fragmented gall stone in one patient) +/- biopsy.
3.	Umbilical hernia with ulceration (3 patients)	Pre-operative eradication of infection f/b repair of hernia.
4.	Umbilical abscess (2 patients)	Treated by I&D f/b broad spectrum antibiotic coverage.
5.	Vitelline umbilical sinus	Excision of sinus tract and repair of defect
6.	Recurrent folliculitis	Local C&D of wound +/- I&D.
7.	Advanced gallbladder carcinoma	Biopsy for confirmation of diagnosis, CT/USG of the abdomen to locate cause f/b chemo- & radiotherapy as palliative t/t.
8.	Pilonidal sinus	Excision of tract with healing by secondary intention.

MANAGEMENT

- ✓ Venous access
- ✓ Consent
- ✓ Immediate CS.
- ✓ The manual replacement is NOT recommended.
- ✓ To prevent vasospasm - minimal handling of loops of cord lying outside the vagina and cover them in surgical packs soaked in warm saline.

Thank
You 😊