أهلا وسهلا

الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب – جامعة الزقازيق – مصر

رئيس قسم التشريح و الأنسجة و الأجنة - كلية الطب - جامعة مؤتة - الأردن

دكتوراة من جامعة كولونيا المانيا

اليوتيوب **Dr. Youssef Hussein Anatomy**

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Functions of placenta

• Functions of the placenta

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(I) Gases Exchange (respiration)

- The fetus takes **oxygen** from the maternal blood cross the placental barrier.
- The **carbon dioxide** passes to the maternal blood cross the placental barrier.

(II) Nutrition: The fetus takes **nutrients and electrolytes** from maternal blood cross the placental barrier *(*such as carbohydrate, fat, protein, amino acid, vitamins, minerals)

(III) Excretion: Waste products resulted from the metabolism like urea and uric acid pass from the fetal blood to the maternal blood cross the placental barrier.

(IV) Protection:

a- It allows the passage of antibodies (**IgG**) from the maternal blood to the fetal blood (**passive immunity**).

b- It prevents the passage of **most of the microorganisms and drugs** from the maternal blood to the fetal blood.

- However, some organisms like poliomyelitis, AIDS, syphilis and measles, also few drugs cross the barrier produce congenital anomalies of the fetus.

(V) Endocrine function:

a- Human chorionic gonadotrophic hormone (HCGH)

1- it is used as an **early indicator of pregnancy**.

2- It is important for maintaining growth of the **corpus luteum** to secret estrogen and progesterone till the 4^{th} month of the pregnancy.

3- It helps development and descends of the **gonads** (testis or ovary).

b- Human Chorionic thyro-trophin hormone

c- Human Chorionic cortico-trophin hormone

d- Human Chorionic somato-mammo-trophin hormone: regulates carbohydrate, lipid and protein metabolism of the mother to produce glucose, fatty acid and protein for nutrition of the fetus.

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(V) Endocrine function:

e- Estrogen and progesterone hormones:

1- Help maintenance of the pregnancy by:

a- support of the endometrium.

b- Maintains dilations of the spiral arteries of the endometrium.

2- Inhibit release of FSH and LH (inhibition of ovulation during pregnancy).

3- They stimulate the development of the breast.

4- At the end of the pregnancy,

a- Estrogen hormone **relaxes the pelvic ligaments** and increases smooth muscle contractility of the uterus.

b- Estrogen hormone makes **uterus more sensitive to oxytocin** hormone.

c- Drops off the progesterone hormone stimulates the beginning of the uterine contractions.

Congenital anomalies of placenta

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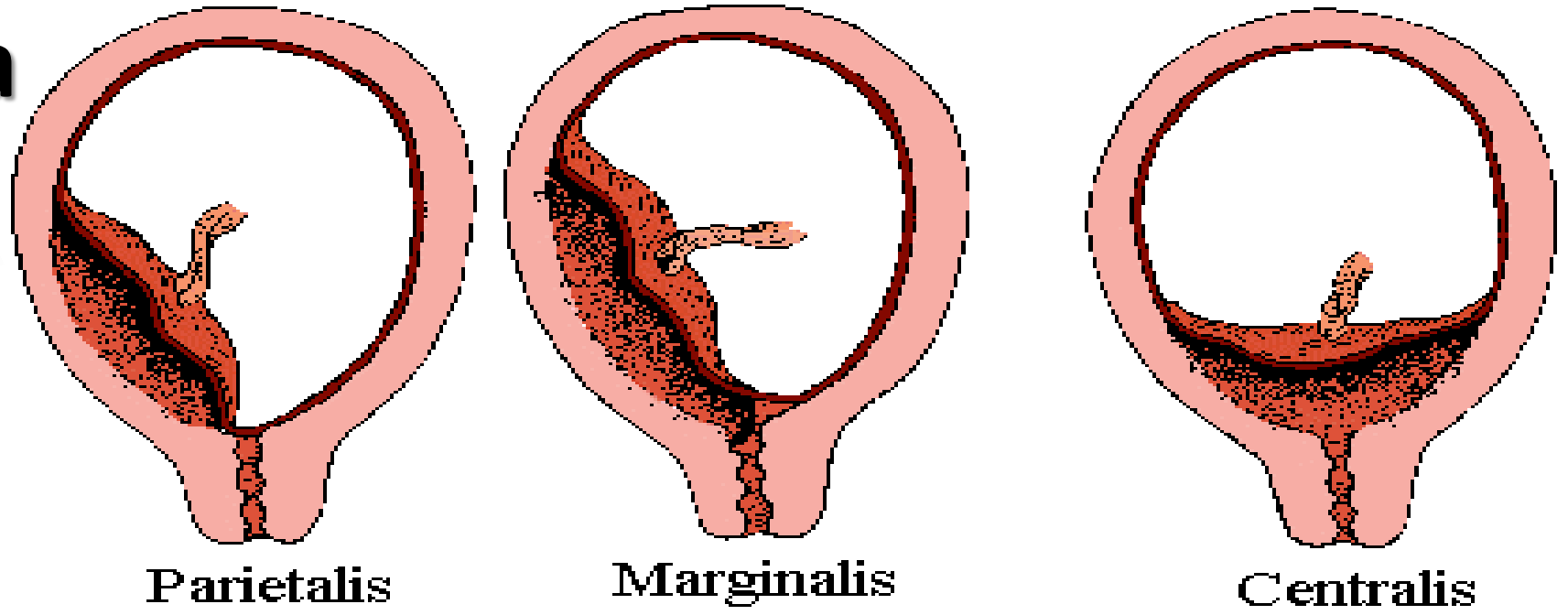
Placenta praevia



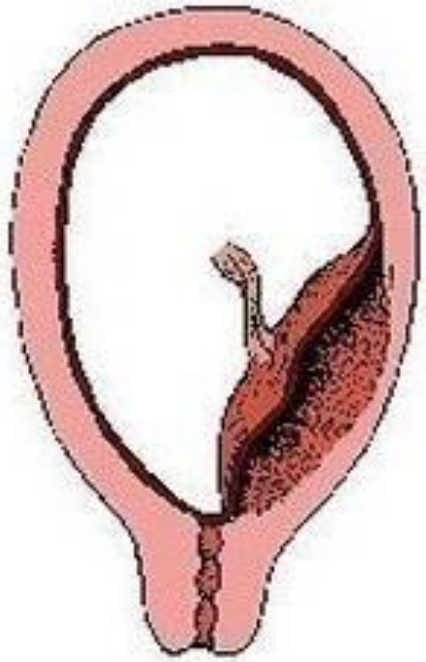
❖ Anomalies in the position (Placenta praevia)

** The placenta is attached to the lower half of the uterus due to delayed rupture of zona pellucida (low level of implantation of the blastocyst). It causes severe antepartum hemorrhage.

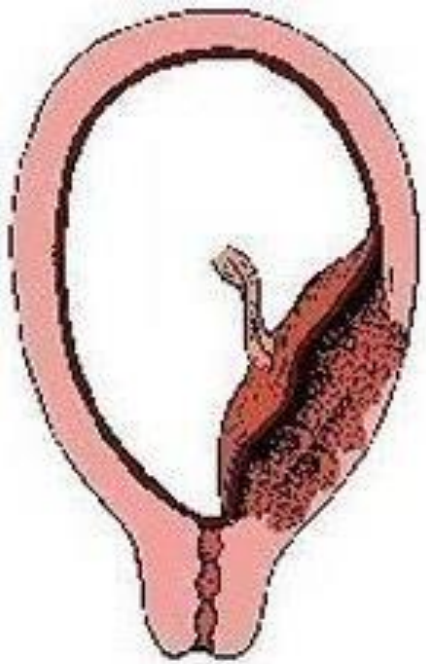
1- Placenta praevia parietalis: lies in the **lo**wer segment of the uterus.

2- Placenta praevia marginalis: reaches **ma**rgin of the internal Os of the cervix.

3- Placenta praevia centralis: **co**mpletely covers the internal Os of the cervix.



Accreta



Increta

Percreta

❖ Anomalies Of attachment of the placenta to the uterine wall

Delayed formation of cytotrophoblastic shell

1- Placenta accreta: The placenta is too deep in the endometrium but does not penetrates the myometrium

2- Placenta increta: The placenta penetrates the myometrium

3- Placenta percreta: The placenta penetrates the uterine wall and attaches to the another organ as urinary bladder

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Marginal (Battledore) placenta

Velamentous placenta

❖ **Abnormal attachment of the umbilical cord:**

1- Battledore placenta, it is attached to the margins of the placenta.

2- Velamentous placenta, it is attached to the amnion away from placenta and blood vessels are ramify before reaching the placenta

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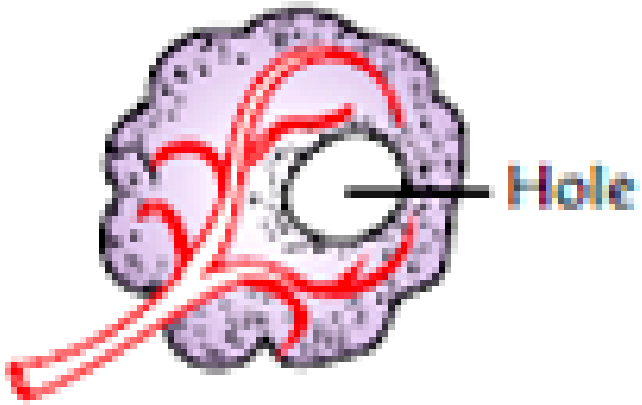
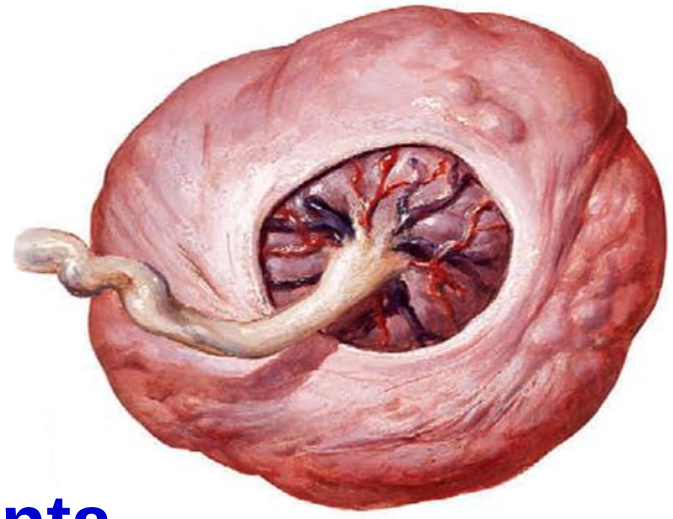
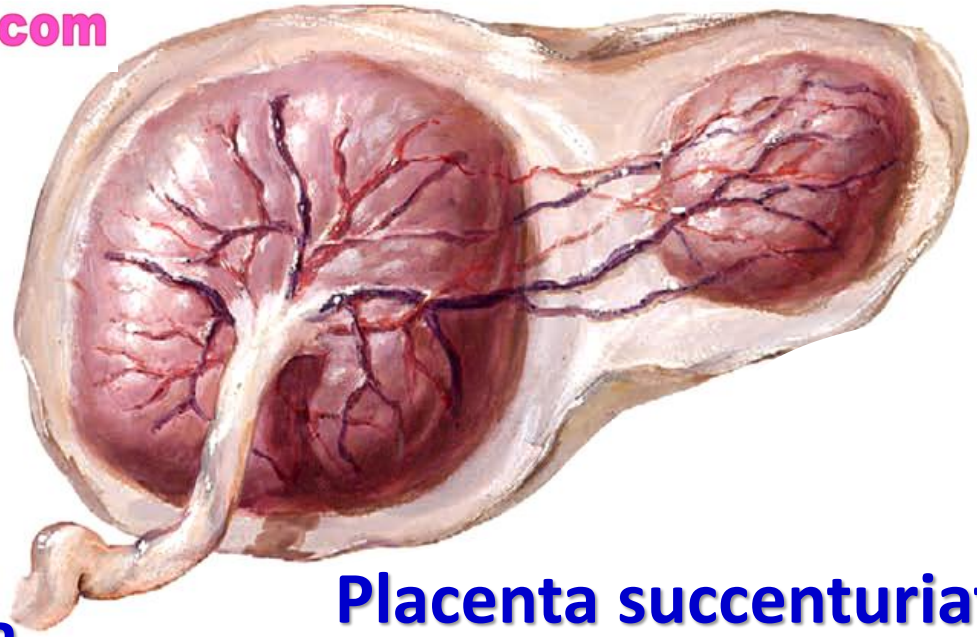


Fenestrated placenta



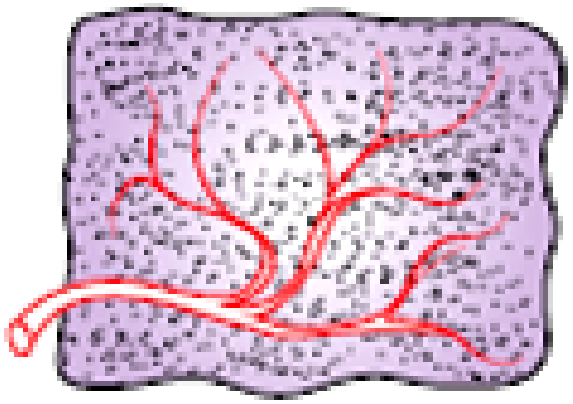
Circumvallate placenta



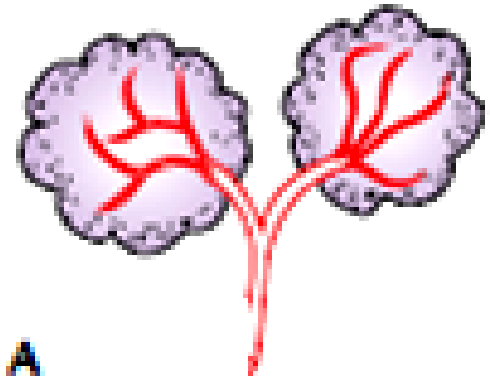
Placenta succenturiate

❖ Abnormalities in the shape of the placenta

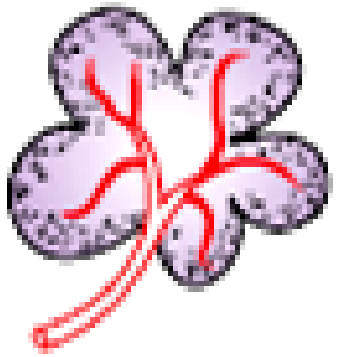
- ❖ **Fenestrated placenta:** small window in the placenta.
- ❖ **Circumvallate placenta:** it has a central depression on its **fetal** surface and the margin is elevated.
- ❖ **Placenta succenturiate:** a small part of the placenta is separated from the main part, but remains connected through blood vessels and placental membranes.



Membranous



Bilobed



Multilobular

❖ **Abnormalities in the shape of the placenta**

❖ **Membranous (Diffuse) placenta:** it is thin and lines the greater part of the cavity of the uterus. It occurs when chorionic villi persist all around the blastocyst

❖ **Bilobed (bidiscoidal) placenta:** The placenta consists of two lobes

❖ **Multilobular placenta: The placenta consists of more than two lobes**

❖ Abnormalities in size and weight

1.Very small placenta (under weight).

2. Very large placenta (over weight).

❖ Congenital tumors of the placenta

1- Benign tumor: vesicular mole.

2- Malignant tumor: Chorion epithelioma.

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Twins

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- **Twins**

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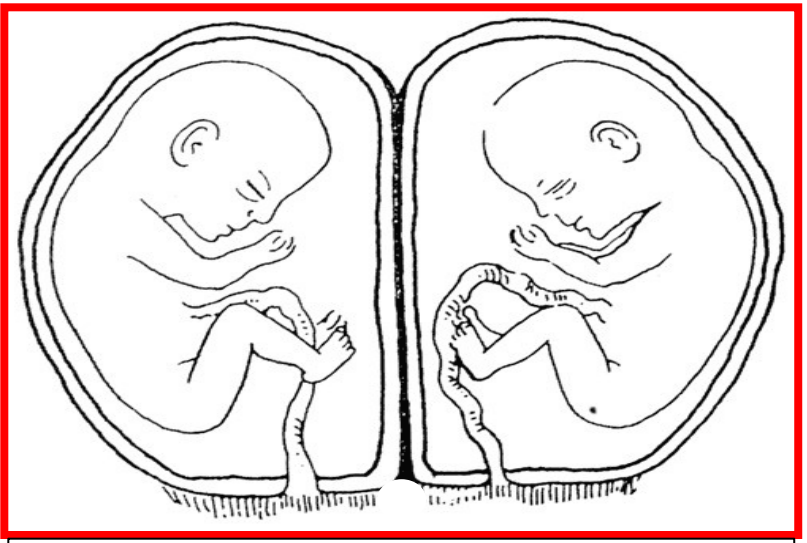
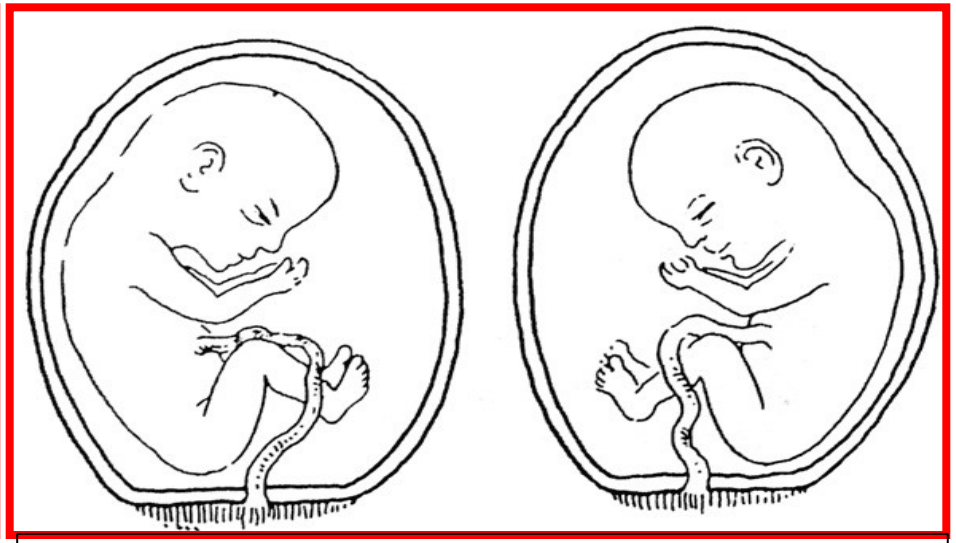
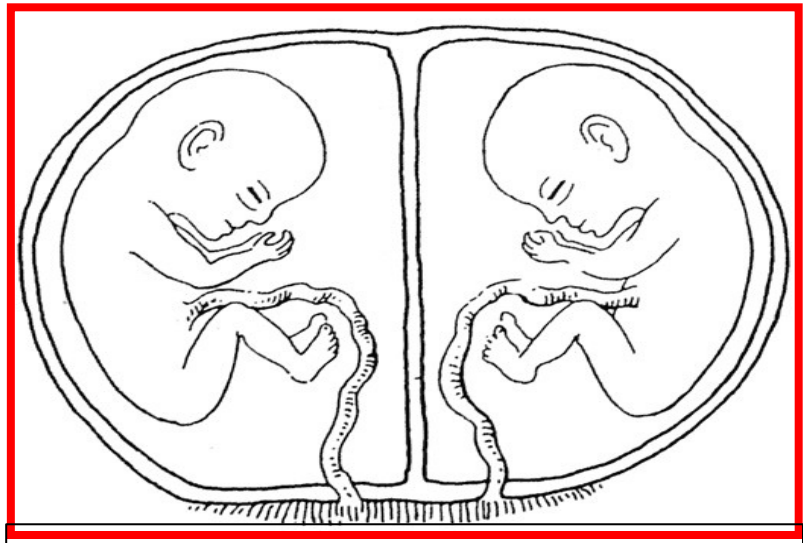
	Monozygotic (Identical)	Dizygotic (fraternal)
	One ovum + one sperm give one zygote. Zygote divided into 2 typical embryos.	2 ova + 2 sperms give 2 zygotes.
1- Sex	The same	may the same or not
2- Chromosomal pattern	Identical	Not identical
3- General features	highly similar	different
4- Amniotic cavity	2 cavities (one for each embryo)	two
5- Umbilical cord	2 cords (one for each embryo)	two
6- Placenta	one common placenta for the two embryos	Two separate placentas.
7- Chorionic vesicle	one vesicle	Two separate vesicles.



Diamniotic / Dichorionic fused



Diamniotic / Dichorionic separate



Diamniotic / Monochorionic

❖ Monozygotic (Identical)

1. **Split within 3-4 days after fertilization:** the twins are **diamniotic / dichorionic**. two amniotic cavities & two placentas
2. **Split between 3-8 days after fertilization: diamniotic / monochorionic**. two amniotic cavities & one placenta.
3. **Split between 8-13 days after fertilization:** they are in one sac **monoamniotic / monochorionic** one amniotic cavity & one placenta (dangerous because cords can become entangled).

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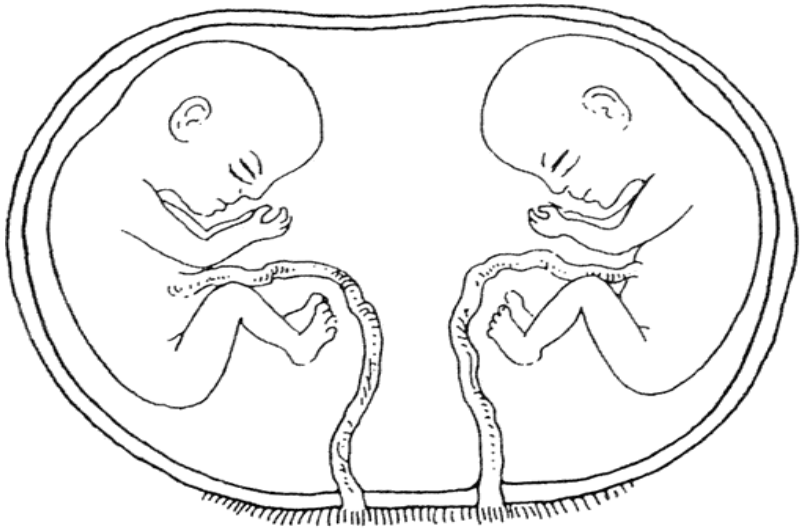

Monoamniotic / Monochronic

** Conjoind twins

- **Split after 13 days after fertilization:** they are all in the same sacs and **conjoined twins** can happen.
- **Cranio-pagus**: twins fused at their heads.
- **Pygo-pagus**: twins fused at their gluteal regions.
- **Thoraco-pagus:** twins fused at their thoracic wall.
- **Siamese twins:** twins are connected by skin bridge.

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