The placenta

Learning module

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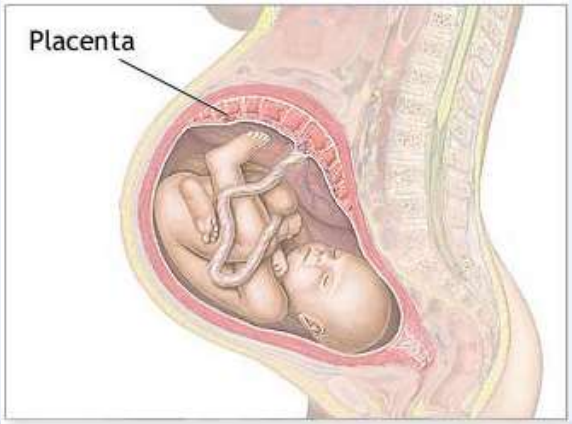
Introduction

What is the placenta?

•The placenta is a *"vascular (supplied with blood vessels) organ in most mammals that unites the fetus to the uterus of the mother. It mediates the metabolic exchanges of the developing individual through an intimate association of embryonic tissues and of certain uterine tissues, serving the functions of nutrition, respiration, and excretion."* (Online Britannica encyclopaedia)

•As the fetus is in full development, it requires a certain amount of gases and nutrients to help support its growth. Because the fetus is unable to do so on its own, the placenta provides these gases and nutrients throughout pregnancy.



http://health.allrefer.com/health/placenta-abruptio-placenta.html

What are the main roles of the placenta?

•The placenta provides the connection between fetus and mother in order to help carry out many different functions that the growing baby is incapable to do so alone. During pregnancy, the placenta has 6 main roles to maintain good health and a good environment for the growing child:

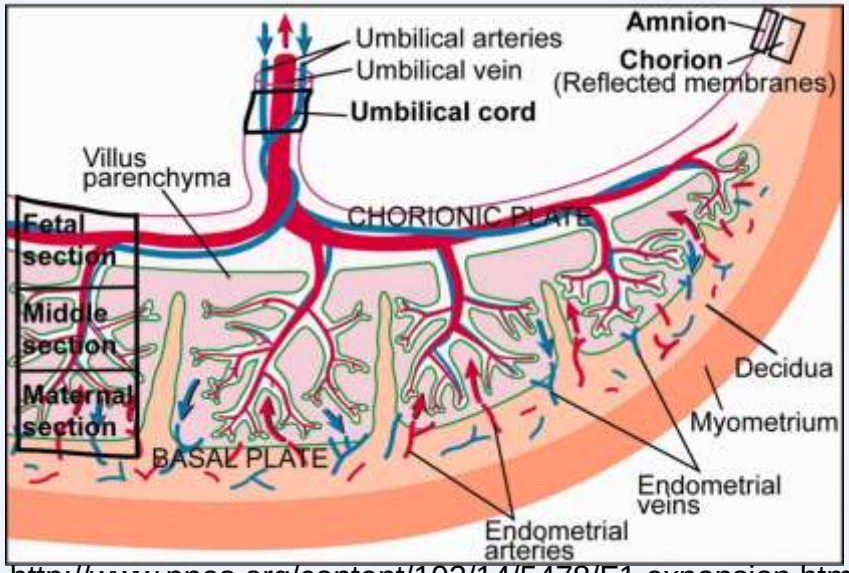
- •Respiration
- •Nutrition
- •Excretion
- •Protection
- •Endocrine
- •Immunity

Anatomy and physiology

Structure

•A placenta is an organ of round or oval shape that is relatively flat. It is about 20 cm in length and has an average weight of 600g. These numbers can vary according the to weight of the fetus. It is said that the placenta weighs about one-sixth of that of the fetus.

•The placenta is composed of two different surfaces, the maternal surface, facing the towards the outside, and the fetal surface, facing towards the inside, or the fetus. On the fetal surface, we can observe the umbilical cord, the link between the placenta and the fetus.



http://www.pnas.org/content/103/14/5478/F1.expansion.html

Placenta at term

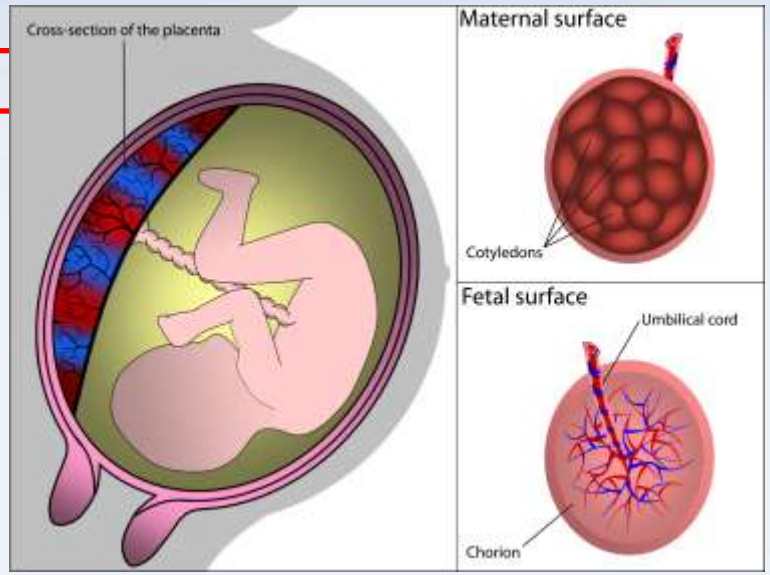
Fetal surface

•The fetal surface of the placenta is covered by a structure called the amnion, or amniotic membrane. The amniotic membrane secretes amniotic fluid, a fluid that is breathed in and out by the fetus and serves as a form of protection and cushion against the walls of the uterus. It also helps maintain constant pressures and temperatures, allows space for fetal growth and protects against infection. It is the amniotic membrane that gives this surface a shinny appearance.

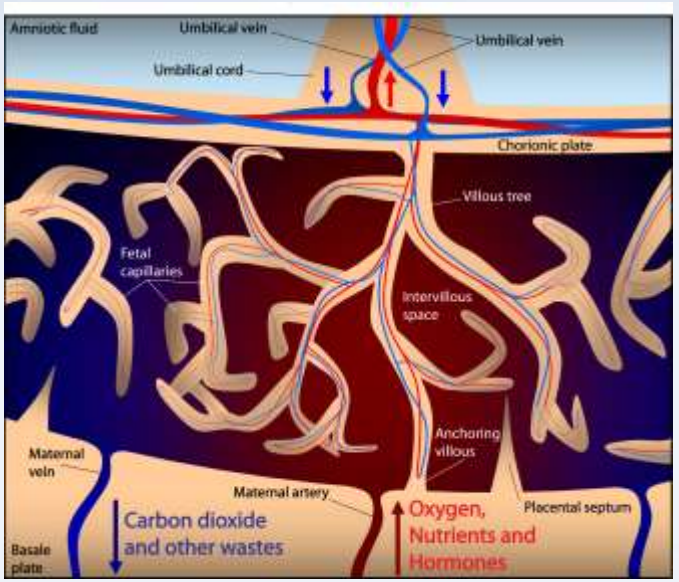
•Underlying the amnion is the chorion, a thicker membrane. This structure of the placenta is continuous with the lining of the uterine wall. Emerging from the chorion are the villi where lies a system of fetal capillaries (blood vessels) to allow maximum contact area with the maternal blood (also known as the intervillous space) for gas, nutrient and waste exchange.

•Also visible on the fetal surface of the placenta are the umbilical veins and arteries that spread out from where is situated the umbilical cord, near the center of the organ.

Fetal surface



(**By Dr Yockell-Lelievre)**



Circulation through the placenta
(Dr Yockell-Lelievre)

Fetal (baby's) side of the placenta

Maternal surface

•The maternal surface of the placenta is composed of the decidua, what is known as the uterine lining during pregnancy. Previous to pregnancy the decidua is more commonly known as the endometrial lining of the uterus. It is this portion that gives this structure a dark red, blood like appearance. There are different portions to the decidua that have specific names according to where they are located and what their function is:

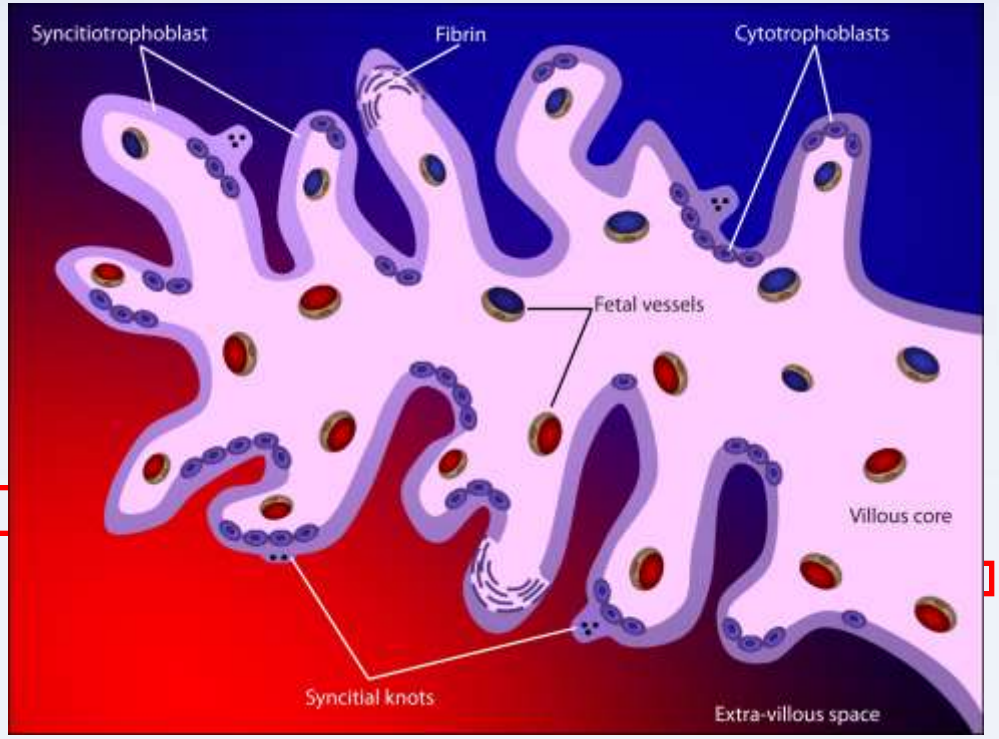
- •Decidua capsularis, decidua basalis, decidua placentalis, decidua vera, decidua parietalis

•Also visible on the maternal surface are lobules, approximately 15 to 20 called cotyledons. They are divided by deep channels more commonly known as sulci. Each individual lobule is divided into smaller sections containing one villi. These villi are the same ones emerging from the chorion, containing fetal capillaries, which bathe in the intervillous space (it is important to note that fetal and maternal blood **never** mix).

•Embeded in the decidua are maternal veins and arteries that end in the intervillous space. They are also in continuous with the maternal circulation.

Maternal surface

Surface of the placenta on the mother's side



Functional unit of the placenta called villous

(By Dr Yockell-Lelievre)

Umbilical cord

•The umbilical cord emerges from the fetal side of the placenta to the belly button region of the fetus. At its full length, the cord has an average length of about 50 to 60 cm and can have a width of 2 to 3 cm.

•The cord contains 2 arteries and 1 vein that are in continuation with the fetal circulation. These vessels are longer then the cord and tend to twist and spiral to add strength and protect against entanglement, compression and tension.

•The cord itself is composed of a jelly substance known as whartons jelly. This substance helps to protect the vessels within the cord.

•The whole of the umbilical cord is encased by the continuous layer of the amnion that is also covering the fetal surface of the placenta.

Placental circulation

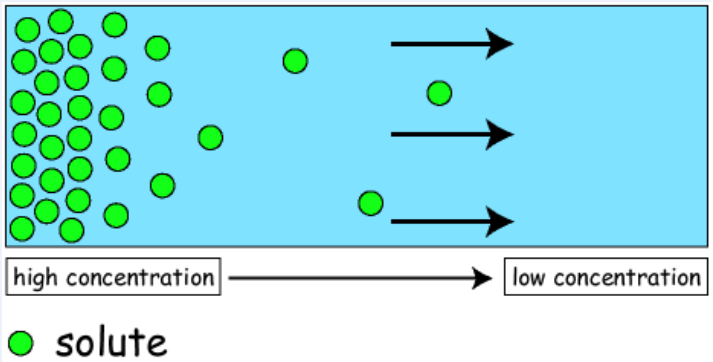
•Placental circulation encompasses two different circulation systems, the maternal and the fetal. Although these two come in very close contact with each other, they will never mix together, they are separated by what is known as the placental barrier. This organisation keeps the mothers body from rejecting the fetus as an object of foreign origin.

•These two independent blood flows can be influenced by different factors such as blood pressure, medication, uterine contractions, hormones, etc.

•It is the nutrients, gases, wastes and hormones that flow through these circulation which can then switch systems (fetal to maternal or vise versa) by mainly diffusion.

- •Diffusion is the process by which particles flow from areas of higher concentration to areas of lower concentrations.

•These nutrient particles, gases, hormones and wastes can cross directly through the placental membrane by diffusion in either direction to alter fetal or maternal blood concentrations.



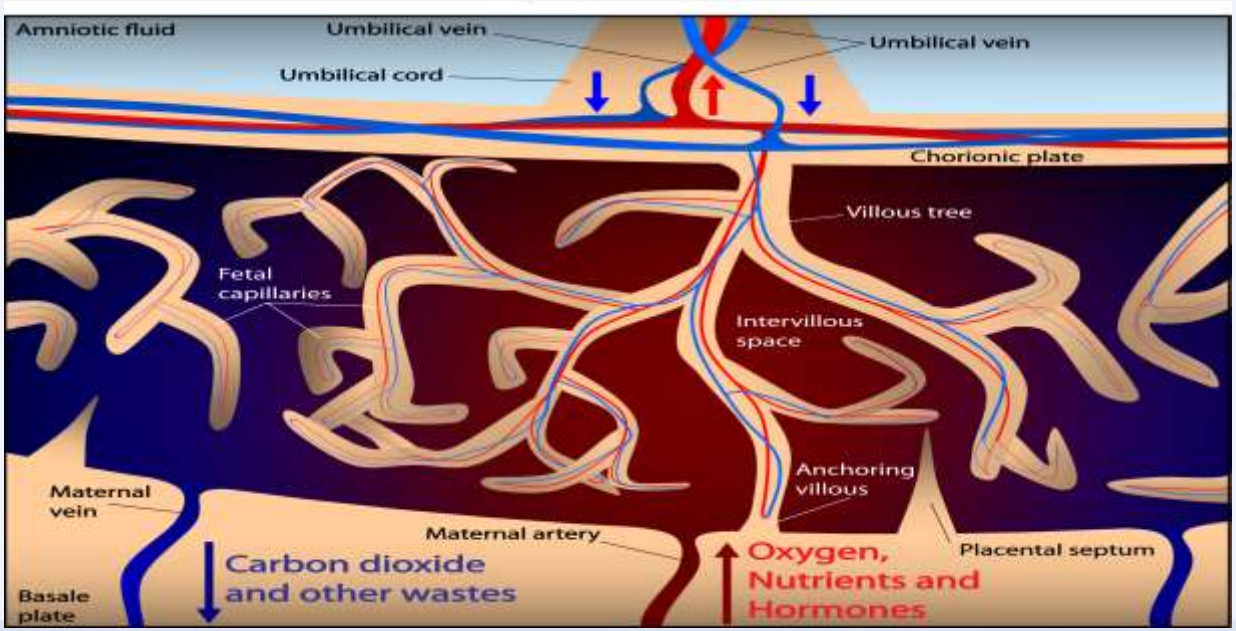
http://finleysciencep8.blogspot.com/2010/12/december-21-diffusion-and-osmosis.html

Placental circulation

Fetal circulation

•This circulation system takes place in the fetus, umbilical cord and villi located in the placenta.

•Deoxygenated blood (low oxygen content in blood) from the fetus goes through the two umbilical arteries into the fetal capillaries located in the villi of the placenta. In this section, waste and carbon dioxide (CO_2) are eliminated from the fetus by diffusing into the maternal circulation and leave the placenta by the maternal vein.



(By Dr Yockell-Lelievre)

Placental circulation

Maternal circulation

•This circulation takes place in the mother and the intervillous space of the placenta. This circulation is constantly changing to meet the needs of the growing fetus.

•Oxygenated blood (high oxygen content in blood) arriving from the mother enters the placenta through the maternal arteries into the intervillous space. From here, oxygen, nutrients and hormones diffuse into the villi, then into fetal capillaries, where they are now delivered to the baby via the umbilical vein.

Placental circulation

Here in a short video to clarify some of the concepts previously discussed.

http://www.youtube.com/watch?v=jQzRkbBNIYA

Roles and functions

Respiration

•Early in pregnancy, the fetus does not have adequate developed lungs to breath on its own, therefore, one of the main functions of the placenta is to help the fetus breathe. It is only after delivery that the child can breath with its own lungs.

•When we breathe, we inhale oxygen and exhale carbon dioxide. This is the same principal with the fetus.

•In response to a pressure gradient between the mothers circulation and the placenta circulation, oxygen rich blood coming from the mother enters the placenta by the maternal artery and diffuses into the fetal blood. The oxygen will travel along the umbilical vein and finally reach the fetus.

•On the other hand, the fetus produces more carbon dioxide then the mother which needs to be eliminated. The carbone dioxide will thus make it's way through the umbilical arteries to the placenta and diffuse from the villi into the intervillous space to be added to the maternal circulation and eliminated by the mothers lungs.

•This demonstrates the first of many very important roles of the placenta.

Nutrition and excretion

•A good supply of nutrients for the fetus is needed for energy and a healthy growth. Nutrients such as glucose, amino acids and fatty acids are essential to life and are mostly found in the foods we eat. Because the fetus is not physically eating, it is the mother that supplies these nutrients via the placenta.

•Different foods that the mother eats are broken down and transported by the blood to the uterine wall. These nutrients found in the maternal circulation are absorbed by the placenta and can be broken down into smaller particles to facilitate the uptake of these molecules by fetal cells. Some of these nutrients can also be stored in the placenta and used later on when they are needed. The placenta is once again essential to the life of the fetus.

•When we eat, we also produce waste that is eventually excreted. The fetus also produces waste which needs to be eliminated. These fetal wastes cross over into the maternal circulation via the placenta to be also be eventually excreted by the mother.

Protection and immunity

•The placenta is a very important form of protection. One of its functions is to prevent the mothers body from rejecting the fetus. Because the two can have different chromosomes and blood types, the mother would perceive the fetus as an object of foreign origin and would want to reject it because it is not part of her own tissues. However, this scenario does not happen because the placenta serves as a barrier to prevent the two different circulation from mixing therefore the mothers immune system will not attack the fetus.

•The placenta also plays a role as a protective barrier against bacteria. Most bacteria are too big to cross into the fetal circulation, however, micro-organisms such as viruses can do so and infect the fetus. Drugs can also cross the barrier and cause harm to the baby. Drugs such as acetaminophen (tylenol) are harmless however others such as warfarin (an anticoagulant) are dangerous to the growing fetus.

•The placenta can also allow certain maternal protective antibodies to cross into the fetal circulation and help protect the fetus from dangerous organisme which can last up to several month after birth. (It is important to consider that not all antibodies are protective and some can be dangerous and cause harm to the fetus.)

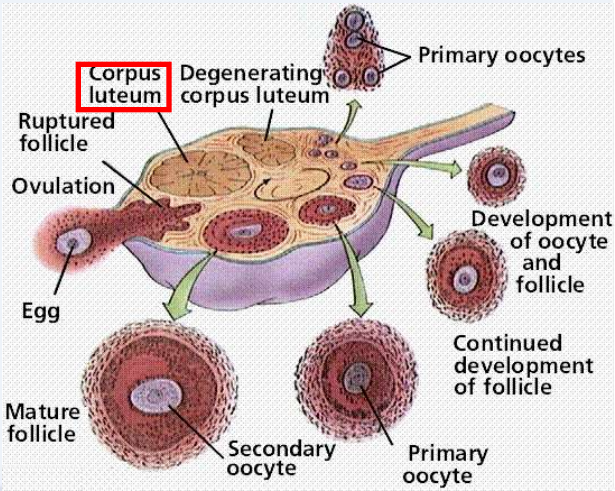
Endocrine

•An other main function of the placenta is acting as an endocrine gland which is a gland that secrets hormones directly into the blood acting as a regulator for the body. The placenta secretes many different hormones into the blood stream to support pregnancy and fetal growth.

• The 4 main hormones produced by the placenta are human chorionic gonadotropin (hCG), human placental lactogen (hPL), estrogens and progesterone. They all playing a different role and have specific function during pregnancy.

A few things to know

•The corpus luteum is what is left of the follicle once the mother has ovulated. It produces progesterone and helps to thicken the uterine wall for the implantation of the fertilized egg. It will continue to produce this hormone until the placenta can take over. The corpus luteum is also important to maintain a healthy pregnancy**.**



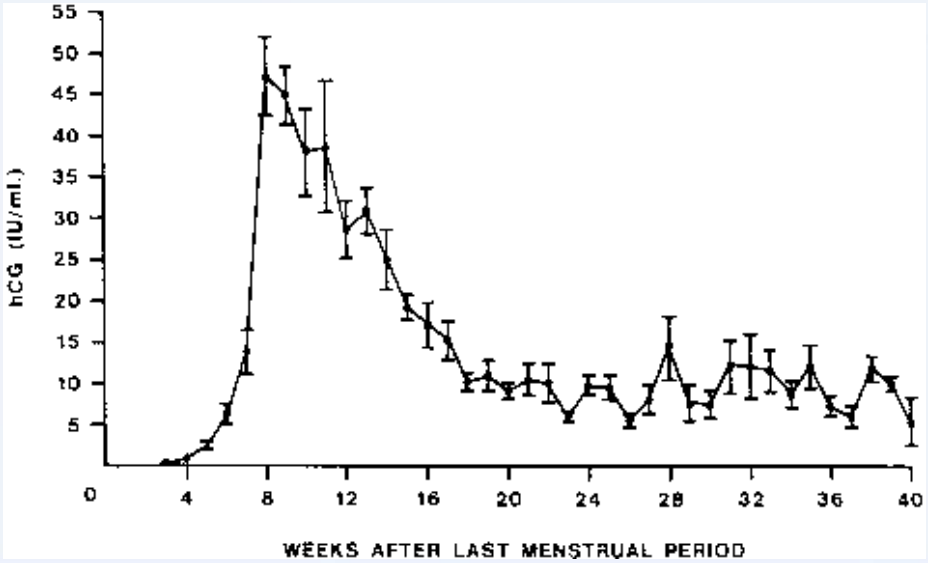
http://klikphirtual.blogspot.com/2010_05_01_archive.html

Endocrine

1) Human chorionic gonadotropin (hCG)

•This hormone, produced by the villi of the placenta, has the essential role of maintaining the corpus luteum during the early stages of pregnancy therefore maintaining adequate levels of progesterone until the placenta can take over. Once the placenta is able to produce the right amount of progesterone on its own, at about the 8th week of pregnancy, hCG levels drop and stay relitavely low.

•When taking a pregnancy test, it is the level of hCG, detected in the urine, that will give the result of a positive pregnancy.



http://www.glowm.com/?p=glowm.cml/section_view&articleid=310

Endocrine

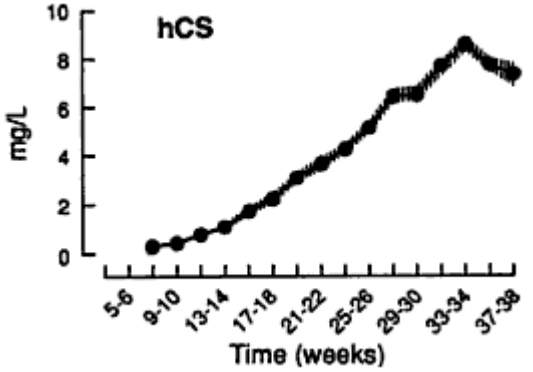
2) Human placental lactogen (hPL)

•This hormone has an important function in fetal growth by regulating the amount of glucose (sugar) that is available for the baby. As previously mentioned, glucose is a form of food for the fetus in order for it to grow healthy.

•hPL will cause the mothers body to use more fats to produce her own energy and decrease her use of glucose. As a result, this will increase the amount of sugar available for the baby in order for it to grow. With this said, hPL acts like a growth hormone during pregnancy.

•Human placental lactogen is produced in small quantities at the beginning of pregnancy and increases constantly during the next 9 months to arrive at its peak near term.

•hPL is also known as hCS (human chorionic somatosimmatotropin)



Maternal-fetal Medicine: Principles and practices, 5th edition (p.128)

Endocrine

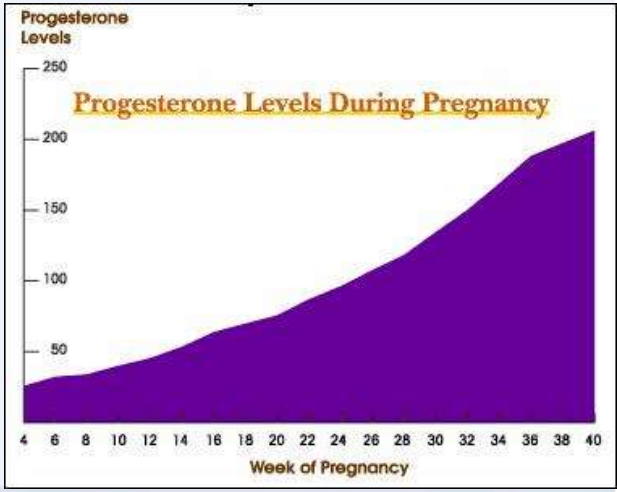
3) Progesterone

•Progesterone is produced by the corpus luteum until the placenta can take over. This hormones plays several different roles throughout pregnancy while its secretion constantly rises until birth of the baby.

•Progesterone plays an important part for decreasing the myometrial activity. The myometrium is a layer in the uterine wall composed of smooth muscle that can contract. Therefore, this hormone decreases uterine contractions to allow for better implantation and growth. This is done by inhibiting the secretion of prostaglandins, a molecule that regulates the contraction and relaxation of smooth muscle.

•An other role that progesterone plays is to maintain pregnancy by decreasing the immunologic response of the mothers body towards the Baby. This will prevent the rejection of the fetus.

•Progesterone is also important for the baby by acting as a substrate for the production of different molecule usually produced by the adrenal gland, a gland that sits on top of the kidney. Because the baby does not have all the material necessary to make those different molecules, progesterone secreted by the placenta helps achieve these.



http://www.i-am-pregnant.com/encyclopedia/Pregnancy/Progesterone-Levels

Endocrine

4) Estrogens

•Estrogen is also produced by the corpus luteum before the placenta can take over. Its secretion also rises constantly during pregnancy and plays different roles throughout this time.

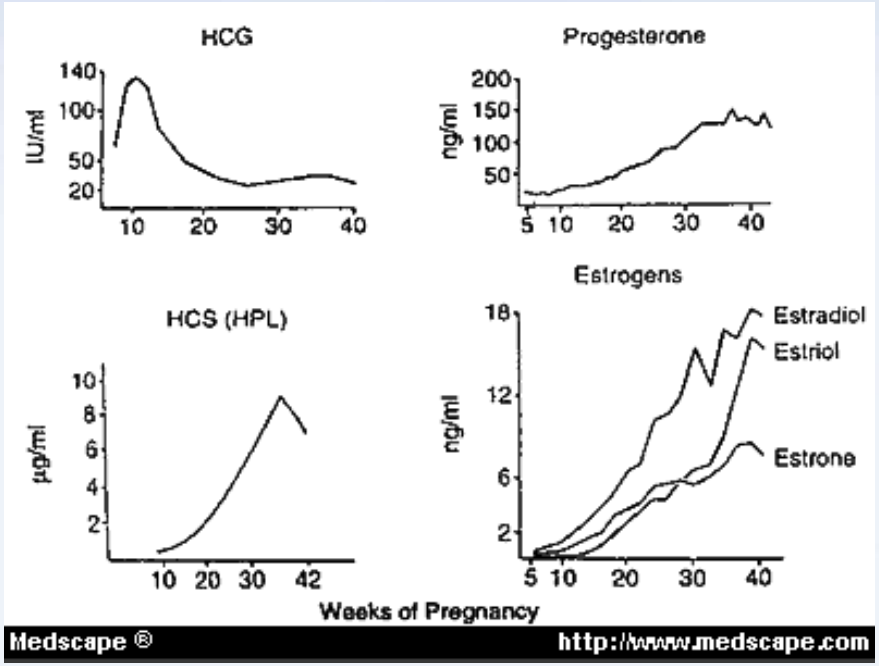
•Estrogen plays a role in child birth and determining when the time is right. This hormone has different functions such as increasing prostaglandin production and increasing myometrial activity to determine the time of labour.

•Estrogen also increases blood flow to the baby which in turn will increase the amount of oxygen and nutrient available to the fetus.

•An other role played by estrogen is to increase the secretion of an other hormone, prolactin. Prolactin stimulates the mammary glands (breast) to produce milk during pregnancy and it is only near the end of the 9 months that milk production will start, when progesterone levels drop. In other words, estrogen prepares the beast for lactation.

***It is important to note that there are many 3 main types of estrogens, esterone, estradiol and estriol all having different functions and different concentrations throughout pregnancy (shown in next slide).*

Endocrine



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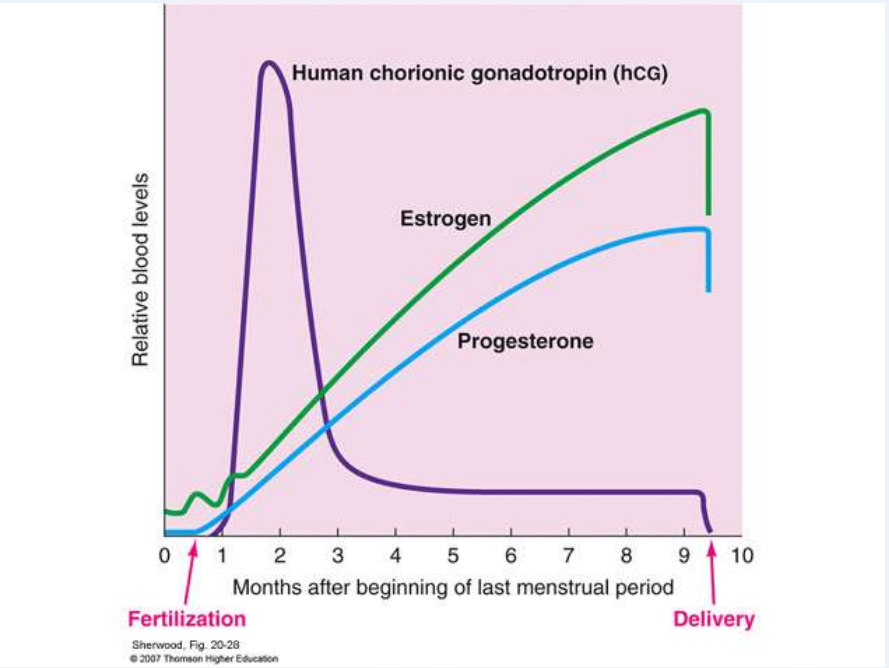


http://www.colorado.edu/intphys/Class/IPHY3430-200/image/figure2028.jpg

Development and formation

Stages of development

In order to explain and understand the development and formation of the placenta, it is important to know what happens before in order to get to that stage of the pregnancy. Listed bellow is a brief description of the different stages during pregnancy:

•First off there is ovulation. Ovulation is when the egg leaves the ovary to make its way through the fallopian tubes in order to be fertilized. Day 0.

•Next, there is fertilization. Fertilization is when there is the fusion of a spermatozoid with the ovulated egg to begin the formation a new baby. The egg is now known as a zygote. Day 1.

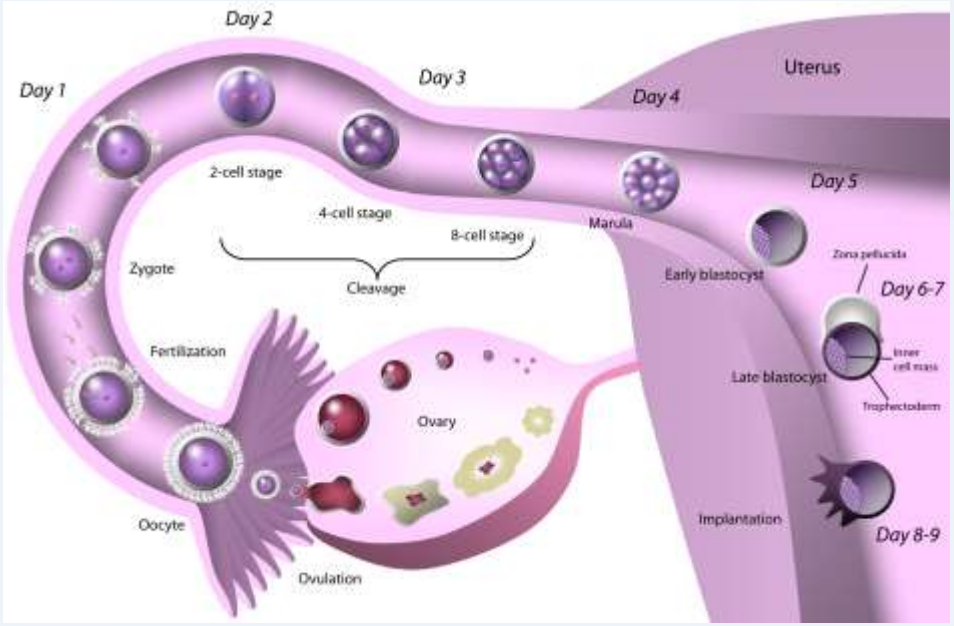
•In the next few days, this newly fertilized egg completes many cell divisions in the fallopian tube to end up with a total of 32 cells. All these cells are known as totipotent, which means that they can each become an individual baby. Day 2-4.

•Once the zygote reaches the uterus cell divisions continues and the zygote becomes a blastocyst. At this stage, the cells are no longer totipotent and begin to differentiate into either the developing baby, or the placenta. Day 5.

Stages of development

•The next step is implantation. Implantation is known as the stage where the blastocyst embeds itself in the endometrium, the inner membrane of the uterus. This usually occurs near the top of the uterus. Day 6-8.

•The process of implantation is complete at about 9-10 days after ovulation.



(By Dr Yockell-Lelievre)

Development of the placenta

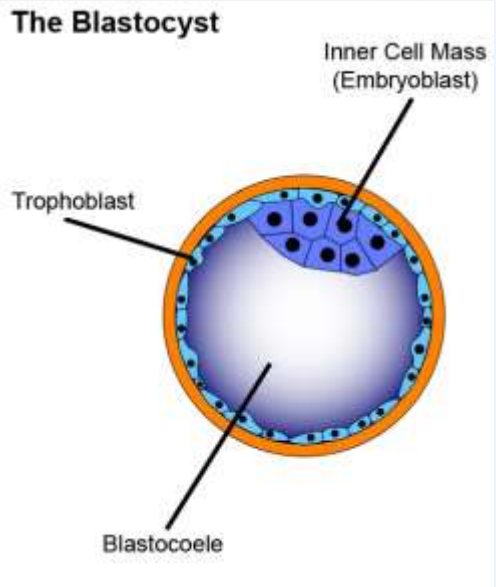
What will be explained next is the specific and more detailed development of the placenta.

•The formation of the placenta starts off when the baby is a blastocyst. At this stage, it was mentioned that the cells are no longer totipotent and have begun to differentiate. There are 2 different types of cells that can be found, the trophoblast cells and the inner cell mass.

•The trophoblast cells are a layer on the outside of the blastocyst and will become the placenta as well as other membranes while the inner cell mass is located on the inside and will give rise to the baby.

•While the blastocyst is growing, the uterine wall is preparing to accept it and once the blastocyst is in the uterus, implantation can occur, the embedding into the endometrium.

•Because the trophoblast cells are sticky, they will tend to stick to the uterine wall to initiate the implantation. Following this, there is a rapid cell division of the trophoblast to make sure that that the blastocyst can penetrate the endometrium.

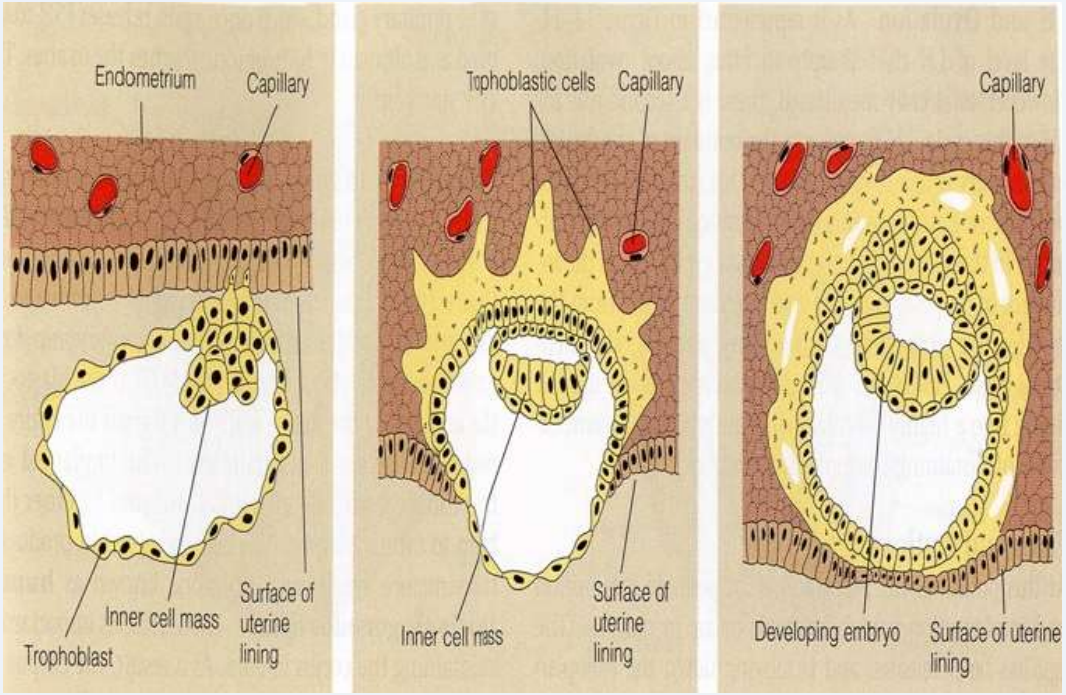


http://www.allthingsstemcell.com/tag/regenerative-medicine/

Development of the placenta

•Eventually, the blastocyst is entirely covered by cells of the uterine wall. This completes implantation.

•It is important to keep in mind that during the whole process of development, the fetal cells are always separated from the mothers uterine cells and blood. This separating is done by the trophoblast cells that have differentiated into two different cell types. The layer of cells closest to the baby are known as the chorion.

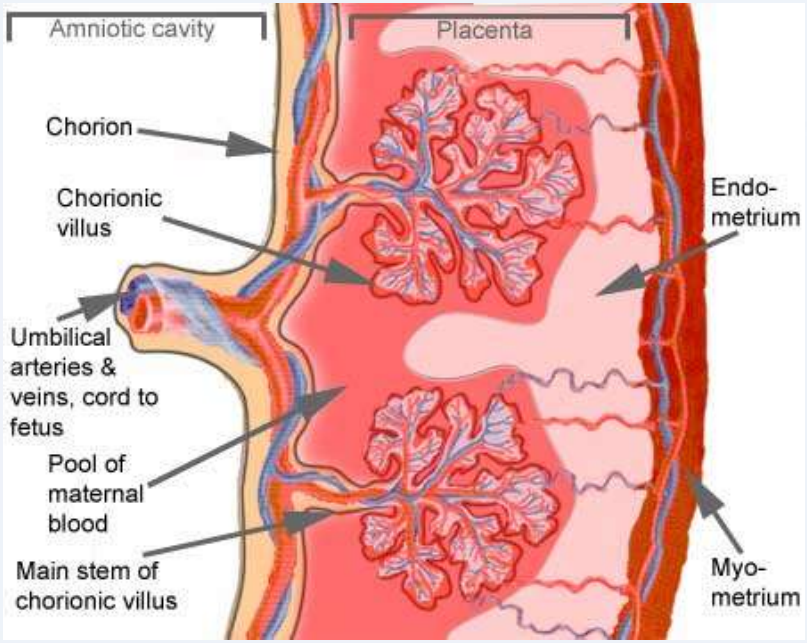


http://mcb.berkeley.edu/courses/mcb135e/Difficult%20Slides/Implantation%203.jpg

Development of the placenta

•During the next few days, the trophoblast cells that are invading the maternal tissue, also known as finger like projections, penetrate maternal blood vessels and start to form pools of blood. Together, these two structures become the chorionic villi (projections of the chorion) and the sinuses. This portion of the placenta is where all the nutrient, gas and waste exchange occurs without the mixing of blood.

•At this stage, the basic structure of the placenta is formed.



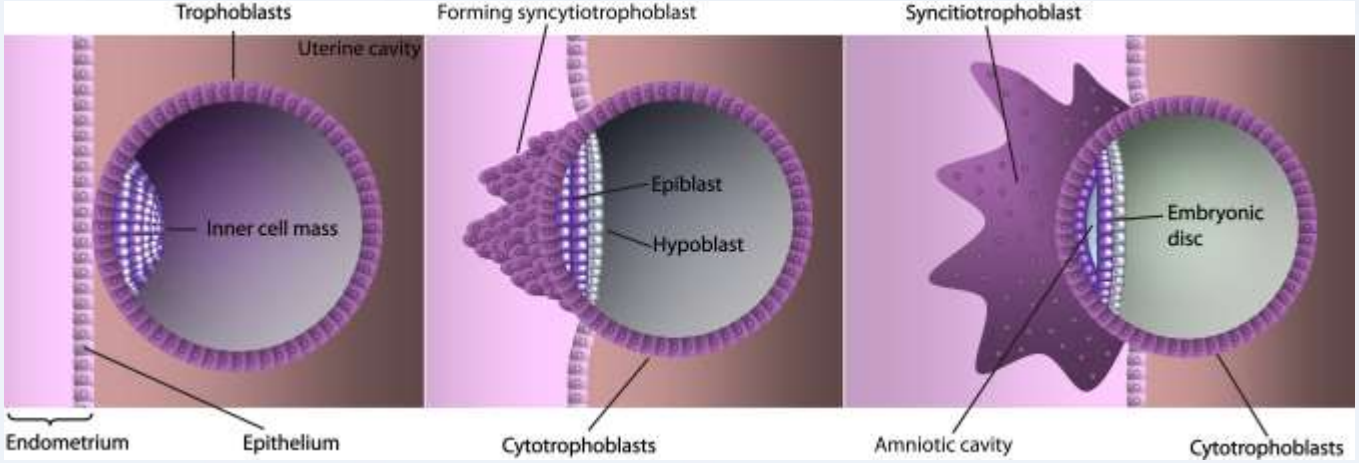
http://www.medicine.mcgill.ca/physio/vlab/Other_exps/endo/reprod_horm.htm

Development of the placenta

•Finally, the last thing that should be mentionned is the amnion, the membrane that covers the fetal part of the placenta.

•While the placenta is forming, an empty space, the amniotic cavity, has formed between the inner cell mass and the chorion. The cells that are lining this cavity are derived from the inner cell mass and are called the amnion. Therefore, the amnion does not develop from the trophoblast cells but rather from the inner cell mass.

•After a few more weeks, when the baby is bigger, the amnion will fuse with the chorion to form one combined external membrane that will envelop the fetus.



(By Dr Yockell-Lelievre)

- For more information: http://www.youtube.com/watch?v=J_knnENhzwg&feature=related
  http://www.youtube.com/watch?v=jQzRkbBNIYA (0:00-4:15min)

What happens after birth?

After birth

•Once the baby is born the placenta has to come out, it does not stay in the uterus, this is known as afterbirth. First off, there is separation. This is where the contractions and relaxations near the end of pregnancy detach the placenta from the uterine wall. Following this, the placenta will naturally come out on it's own about 15-30 minutes after the birth of the baby.

•Once the baby is born, all placenta's are brought to pathology where they are examined. Any mother who had a high risk pregnancy or any complications during her pregnancy will have their placenta thoroughly examined.

•Once examination is done, the placentas are then destroyed in pathology.

What happens when things go wrong?

Placental pathologies

•Even if a mother does everything she can to have a normal and healthy pregnancy, sometimes complications are inevitable. There are many different placental pathologies possible during pregnancy ranging from fetal complications, to maternal complications as well as infections and tumors.

•The two pathologies that will be talked about are intrauterine growth restriction (IUGR) and eclampsia. These are both very different in the way that eclampsia is a complication with the mother while IUGR is a complication regarding the growth of the baby.

Placental pathologies - Eclampsia

What is eclampsia and what are the causes?

•Eclampsia is a complication characterized by seizures (and sometimes comas) in a pregnant mother which have no link with a pre-existing condition that she may have had. A mother has a 1 in 2000-3000 chances of getting this condition.

•Eclampsia is also known as the severe case of pre-eclampsia, a condition that is defined by the onset of hypertension (high blood pressure), proteinuria (excess amounts of proteins in the urine) as well as rapid and excess weight gain after 20 weeks of pregnancy.

•If a mother has pre-eclampsia, it is hard to tell if she will develop seizures, however, women that have a more severe condition, abnormal blood tests, headaches, very high blood pressure (systolic-140mmHg, diastolic-90mmHg or higher) and vision changes are more prone of contracting seizures, therefore, having eclampsia.

•The causes of eclampsia along with pre-eclampsia are still not well known however, some suggest that a decrease in blood flow caused by a poor development of the placenta is the main source of this condition. Other suggest that a poor nutrition along with high body fat can also be a cause of eclampsia.

Placental pathologies - Eclampsia

Who is at risk?

•Some women are at higher risk in getting pre-eclampsia and consequently eclampsia. Listed below are some of the women that are at a risk of contracting this condition:

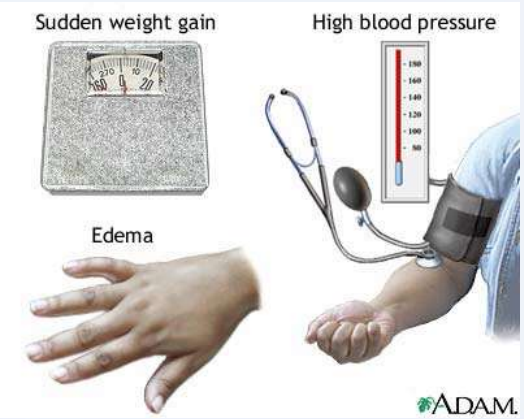
- •First time pregnancies
- •Pregnant teens and women over 40
- •History of chronic high blood pressure before pregnancy, diabetes or kidney disease
- •Obesity before pregnancy
- •Multiple pregnancies (twins, triplets…)
- •Family history of pre-eclampsia

Placental pathologies - Eclampsia

What are the symptoms?

- The most common symptoms of pre-eclampsia are the following:
  - Headaches
  - Visual symptoms
  - Nausea and vomiting
  - Stomach pains
  - Swelling of hands and face (oedema)
  - Gaining more then 2 pounds per week
  - Decreased urine output

- If a mother possesses some of the symptoms listed above as well as the symptoms listed below, there is a bigger chance that she is diagnosed with eclampsia:
  - Muscle aches and pains
  - Seizures
  - Severe agitation
  - Unconsciousness



Placental pathologies - Eclampsia

What are possible treatments and how to manage this condition?

•There is no treatment that can cure eclampsia, it is a condition that has to be carefully monitored throughout the pregnancy in order to take the right measures at the right time. However, there are actions that one can take to manage the condition and prevent pre-eclampsia from develop into eclampsia, therefore diminishing the risk to the baby and the mother.

•The best treatment for severe pre-eclampsia is delivery of the baby in order to prevent eclampsia. This is done only if the mother has reached a pregnancy of at least 34 weeks. If the mother is between 24-34 weeks, a dose of steroids is given to the mother in order to induce the development of fetal lungs. Delivery of the baby is done as soon as possible. If the mother is under 24 weeks, the baby has a poor chance of surviving and the mother will have to consider ending her pregnancy.

•When treating eclampsia, the mother can be administered magnesium sulfate. This medication helps prevent seizures to assure the health of the mother and baby. Other medication to lower blood pressure can also be given to the mother.

•Other management strategies are bed rest and monitoring of the baby and mother at all times.

Placental pathologies – Intrauterine growth restriction

What is IUGR and what are the causes?

•Intrauterine growth restriction (IUGR) is a condition where the baby undergoes poor growth during pregnancy and its weight is less then 90% of other babies at the same gestational age. Approximately 5-8% of all pregnancies will suffer from this complication, however, not all cases are fatal.

• Depending on the cause of the condition, the baby can either have symmetric growth restriction where they are small altogether or asymmetric growth restriction where the head will be of normal size but the body will be small.

•It is sometimes difficult to asses when a baby will have IUGR because if the mother is small, it is normal for her baby to also be small. This is not considered as IUGR.

http://www.mountsinai.on.ca/care/placenta-clinic/complications/placentalinsufficiency/iugr

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What is IUGR and what are the causes?

- There are many different causes to IUGR some being either fetal, maternal or placental causes. It is important to note that this is not a specific condition but rather due to many factors leading to it. Some of these causes can affect the amount of oxygen and nutrients that is delivered and available for the baby therefore affecting its size and growth pattern.
- Listed below are the more common maternal causes:
    - Low maternal weight and inadequate weight gain during pregnancy
    - Chronic maternal diseases such as hypertension, heart disease, clotting disorders, malnutrition, diabetes, smoking, anaemia and drug or alcohol use.
    - Pre-eclampsia or eclampsia
    - High altitude
- Next are some of the fetal causes that can lead to IUGR:
    - Congenital or chromosomal abnormalities (trisomy 13, 18...)
    - Fetal infection
- Placenta causes such as the ones listed below can also lead to IUGR:
    - Multiple births (twins, triplets...)
    - Small size and placental abnormalities

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What are the symptoms?

•IUGR doesn't have specific symptoms that are physically visible to diagnose the condition. However, there are measurements that can be taken of the baby in order to diagnose IUGR.

•A measurement known as fundal height is a good way to diagnose IUGR. Fundal height is measured by the distance between the pubic bone to the top of the uterus. If this distance is more then 2cm different from what it normally should be, this is when the mother would be tested and monitored for IUGR.

•An other way to determine is a baby has IUGR is to compare fetal weight over time and comparing it to fetal growth charts in order to see if the baby is growing well or not. Measuring the circumference of the mothers abdomen is an other way to determine fetal weight.

mommymeasure.com

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What are possible treatments and how to manage this condition?

•There is no treatment for IUGR but there are different ways to manage this condition in order to maintain the health of you and your baby.
•If a mother is diagnosed with IUGR or a doctor thinks that she may be at risk, she will be under constant supervision and will be monitored closely over her pregnancy. Many ultrasounds are taken to measure the baby's health, growth, movement and blood flow. Also monitored are amounts of nutrients delivered to the baby.
•Bed rest and restraint from any physical activities are recommended as well as a healthy diet on the mothers part.
•In some cases, steroids can be given in order to promote fetal development if a premature delivery were to take place.

http://www.realestaterain.com/2008/02

Interesting facts about pregnancy

Traditions

•While most North Americans throw out the placenta after birth, other countries have different traditions regarding this organ. Different cultures will have different rituals to honour newborns along with the placenta which has a big impact during pregnancy.

- Indonesia – On the day of birth, the father will clean, wrap and bury the placenta which will act as the babies guardian angel. The placenta is perceived as the baby's twin which is why it must be buried according to their tradition.
- China – In this country, the placenta is seen as a force of life. They will dry it and then add it to recipes in order to consume it to increase vitality and energy.
- Africa – In certain regions of this continent, the placenta is wrapped up in blankets and planted under a tree. The tree then symbolizes ongoing life.
- Europe – In certain European tribes, the placenta is said to have its own spirit and is washed and then buried by the father in a shady place. If it is not done properly, it is believed that the mother or baby will become very sick.
- South America – In some regions, the placenta is burnt and planted in the ground in order to protect them from evil spirits.

Did you know?

-There are more baby boys then baby girls.
-A baby before birth will not have a bowel movement.
-All the eggs that you have as an adult are produced before you are born and are stored in the ovaries.
-It takes about 70-80 days to make a sperm.
-During pregnancy, A mothers uterus can expand up to 500 times it's normal size.
-Some say that baby boys secrete a chemical that causes the mother to be more hungry and eat more during her pregnancy.
-Tall mothers are more likely to have twins.
-Most of the amniotic fluid is sterile urine.
-The baby cannot feel when its umbilical cord is cut.
-The average age of a first time mom is 27 years old.
-The day of the week that most babies are born is Tuesday.
-August, September and October have the highest birth rates while January and February have the lowest.

Did you know?

-The baby will start moving around the 8th week of pregnancy.
-The baby's life in the uterus is so noisy that he gets used to constant noise.
-During the pregnancy, a mother will gain weight, 38% of that weight is the weight of the baby. The rest of it includes the placenta, fluid, blood and the fat gained on the breast and uterus.
-The placenta is mature by 34 weeks.
-The sex of a baby is not affected by heredity; it is a matter of chance.
-The last organ to develop in the baby are the lungs.
-According to a Swiss study, first time mothers require an average of 135 contractions and subsequent pregnancies, 68.
-A pregnant mother gains a minimum of 6.6 liters of fluid.
-Unborn babies can feel, see and hear
-One in every two thousand babies is born with a tooth.

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