**Sudan University of Science and Technology**
**College of Graduate Studies**

# Assesment and Diagnosing of Placenta Praevia for Women in Second and Third Trimester Using Ultrasonography

# تقييم وتشخيص حالات المشيمه المتقدمه للنساء الحوامل في الثلثين الثاني والثالث للحمل بإستخدام التصويربالموجات فوق الصوتيه

*A Thesis Submitted for Partial Fulfillment of Requirement for the Degree of (M.Sc) In Medical Diagnostic Ultrasonography*

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# الإستهلال

بسم الله الرحمن الرحيم

**قال تعالى:**

(وَعَلَّمَ آدَمَ الأَسْمَاء كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى الْمَلائِكَةِ فَقَالَ أَنبِئُونِي بِأَسْمَاء هَؤُلاء إِن كُنتُمْ صَادِقِينَ (31) قَالُواْ سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ (32) قَالَ يَا آدَمُ أَنبِئْهُم بِأَسْمَائِهِمْ فَلَمَّا أَنبَأَهُمْ بِأَسْمَائِهِمْ قَالَ أَلَمْ أَقُل لَّكُمْ إِنِّي أَعْلَمُ غَيْبَ السَّمَاوَاتِ وَالأَرْضِ وَأَعْلَمُ مَا تُبْدُونَ وَمَا كُنتُمْ تَكْتُمُونَ (33)

صدق الله العظيم

الآيات 31-32- 33 سورة البقرة

# Dedications

***To my parents***

***To my brotherOmer's Soul***

***To my husband Alfadil***

***To my daughter leen***

***To my teachers and colleagues***

***I dedicate this thesis***

# Acknowledgements

Firstly praise and thanks are due to***Allah, the lord creator*.**

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# Abstract

This is a descriptive cross-sectional study conducted in Rufaa Teaching hospital, Elhelalya and Tamboul specliazed hospital in Elgazera state. The main aim was to identify and to study the placenta praevia in second and third trimester using ultrasound, in duration from May 2016 to December 2016.

Fifty patients women (n=50) were selected to be the sample unit in this study in difference stages of age in range between 23 and 44 years old. In antenatal clinic were scanned in their second and third trimester for fetal wellbeing and placental localization after taking a detailed obstetrical history and clinical examination. After completion of the 5 months of data regarding the detailed obstetrical and surgical history were recorded in a questionnaire and analyzed using Statistical package for social sciences (SSPS) Software. and the study found that that majority of placenta praevia took place in the age of 33 and 36 weeks of gestational age, by percentage equal 12%, there is seven location of placenta and three of them are praevia and the most frequency site of placenta praevia is praevia minor degree by percentage of 32% and only 2% of this defect is anterior high placenta praevia ,beside the study results connected the age and increase in parity with placenta paervia and found that there is direct proportional to both. And also the study cast round the weight and height of the patient and found that there is no signhficant association between them and the placenta praeviaFinally the study recommended that, use of ultrasound for early detection of placenta praevia, and increased research in this direction by increasing the number of samples and the use of ultrasound technology with high facility for more accurate results.

**الخلاصه**

هذه دراسه وصفيه اجريت في بعض المستشفيات في ولاية الجزيره مستشفى رفاعه التعليمي ومستشفيات الهلاليه وتمبول بمحلية شرق الجزيره في الفتره ما بين مايو 2016 الي ديسمبر2016 والاهداف الاساسيه من هذه الدراسه هي تقويم وتشخيص حالات المشيمه المتقدمه للنساء الحوامل في الثلثين الثاني والثالث للحمل بإستخدام التصويربالموجات فوق الصوتيه. وقد اختير عدد 50 حاله من النساء الحوامل في مختلف مراحل الحمل وكانت اعمارهن تتراوح ما بين 23 سنه و44 سنه وبعد عمل الموجات فوق الصوتيه لتاكيد سلامه الجنين والمشيمه اتضح انهن يعانين من تقدم المشيمه وبعد اخذ تاريخ مفصل عن الولادات السابقه والكشف السريري علي كل النساء الحوامل بعد عمل الموجات فوق الصوتيه ادرجت في البحث بعد اكمال فتره خمسه شهور من جمع المعلمات المفصله عن تاريخ الولادات والعمليات الجراحيه السابقه في الاستبيان وتم التحليل بواسطه البرنامج الاحصائيه للعلوم الانسانيه وتم التوصل الي ان (12%) من حالات تقدم المشيمه تحصل في الفتره من الاسبوع 33 و36 من الحمل كما اتضح ان هنالك سبعه مواضع للمشيمهمنها ثلاثه تعبر مشيمه متدمه اكثرها ذات التدرج الجزي بنسبة مئويه (32%) واقلها المتقدمه الاماميه العليا بنسبة (2%) كما ربطت الدراسه بين تقدمالعمر وزيادة عدد الولاده وحدوث المشيمه المتقدمه وقد اتضح انها تزيد مع تقدم العمر وزيادة عدد مرات الولاده، كما لم تجد الدراسه لطول او وزن الأم أي علاقه في حدوث المشيمه المتقدمه. ويتضح ايضا ان الموجات فوق الصوتيه من الفحوصات المهمه لتشخيص المشيمه المتقدمه.

وقد أوصت الدراسة باستخدام الموجات فوق الصوتية في الكشف المبكرعن حالات المشيمه المتقدمه وزيادة البحوث في هذه الاتجاه بزيادة عدد العينات واستخدام الموجات فوق الصوتية بتقنية أعلي للحصول علي نتائج أكثر دقة.

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# List of Abbreviations:

| | |
|---|---|
| AFV | amniotic fluid volume |
| APH | ante partum hemorrhage |
| APH | ante partum hemorrhage |
| CS | cesarean section |
| CD | Color Doppler |
| D&C | Dilation and curettage |
| EVS | endovaginal ultrasound |
| FMC | focal myomertial contraction |
| GA | gestation age |
| HCG | human chorionic gonadotropin |
| HCS | human chorionic somatomammotropin |
| IUGR | intrauterine growth restriction |
| LMP | last menstrual period |
| MA | maternal age |
| PD | Power Doppler |
| PP | placenta previa |
| PROM | premature rupture of membrane |
| RDS | Respiratory distress syndrome |
| SCH | sub chorionic hematoma |
| TAS | transabdminal scan |
| TPS | transperineal scan |

# Chapter One

Introduction

# Chapter One

## 1.1 Introduction:

Placenta praevia - Insertion of the placenta, partially or fully, in the lower segment of the uterus.If it lies over the cervical os, it is considered a major praevia; otherwise it is a minor praevia. This has evolved from the previous classification of 4 grades*(Sun CC. 2002)*.Partially or completely cover the internal os. There is three degree of placenta praevia generally described, firstly complete or total praevia in this case of placenta praevia the internal os totally covered by placenta and also called central placenta praevia, the second type is partial or marginal praevia the internal os partially cover by placenta and the last one is low lying placenta in this case the placenta is close to the edge of the internalos but does not extend over it *(Kraus et al. 2004)*.

Ultrasound is an image modality for choice to diagnose placenta praevia, Placenta praevia occurs in the second half of pregnancy when the placenta lies too low in the womb (uterus)*(Benirschke et al. 2012)*.A low lying placenta is often diagnosed during an early ultrasound scan. Only around one in ten women (or 10%) who has a low-lying placenta in early pregnancy will go on to have placenta praevia.Placenta praevia can be very serious as there is a risk of severe bleeding and this may threaten the health and life of the mother and baby. If you have a major degree of placenta praevia you will need a caesarean section. The placenta develops along with the baby in the womb during pregnancy. It links the baby with the mother's blood system and provides the baby with its source of oxygen and nourishment. The placenta is delivered after the baby, and is also called the afterbirth*(Langston . et al. 1997)*. In some women the placenta attaches too low in the womb and covers a part or all of the entrance to the womb (cervix). This attachment often shows up in ultrasound scans at around 20 weeks, when it is called a low-lying placenta. In most cases, the placenta is subsequently appears to move

upwards, as the womb stretches around the growing baby, and so it does not cause a problem. For some women, however, the placenta continues to lie in the lower part of the womb into the last months of pregnancy. This condition is known as placenta praevia. If the placenta covers the entrance to the womb (cervix) entirely, this is known as major placenta praevia.Rarely, placenta praevia may be complicated by a problem known as placenta accrete. This is when the placenta is attached to the womb abnormally, making separation at the time of birth difficult*(Stanek, J. 2013)*.Placenta accrete is more commonly found in women with placenta praevia who have previously had a caesarean section.If you have placenta praevia you may experience vaginal bleeding late during your pregnancy, although this could be due to some other cause. Bleeding from placenta praevia can occasionally be very severe, and so put the life of the mother and baby in danger. Because bleeding can be treated, however, deaths from placenta praevia are rare.If the placenta stays low in the womb, the baby may still be lying bottom first (known as the breech position) or lying across the womb (known as transverse) around the time of birth.Women with placenta praevia usually need a caesarean section and may need a blood transfusion. Rarely, the bleeding is so severe that the only way it can be controlled is by removing the womb (hysterectomy)*(Stanekand Biesiada 2012).*

## 1-2 Problem of the study

Placenta praevia can be very serious as there is a risk of severe bleeding and this may threaten the health and life of the mother and baby.

If there is a lot of bleeding before the baby is due to is born, the doctors may have to deliver your baby prematurely by caesarean section. The earlier the baby is born before the due date, the higher the risk of health problems. The risk is greatest if the baby is born very early, that is, before 31 completed weeks of pregnancy. Premature babies may have problems with normal activities such as feeding and breathing, and they are at greater risk of having

health problems such as infection and jaundice. Because of this, early delivery by caesarean section is only considered if the bleeding is severe enough to cause risk to the mother or baby.

## 1-3Objectivesof the study:

### 1-3-1General objectives:

To Evaluate and diagnoses of placenta praeviafor women in second and third trimesterusing ultrasound.

**1-3-2Specific objectivesto:**

- Identify the normal position of placenta.
- Define complete and marginal placentapraevia.

## 1-4Overview of the study

**This study includes five chapters:-**

**Chapter one**:is an introduction theoretical framework, shows the definition and basic information about the placenta praevia, and the chapter presents the objectives of the study and statement of the problem.

**Chapter two**:shows literature review (anatomy, physiology, pathology, and previous study).

**Chapter three**:describe the methodology (material, method) used in this study.

**Chapter four**: was included result of presentation of final finding of study and description of figures and will highlight the result of the study.

**Chapter five:** included discussion, conclusion and recommendations.

And the last parts of this thesis consistof references and appendices.

# Chapter Two

Literature reviews

# Chapter Two
# Literature reviews

## 2-1-1 Anatomy:

In order to understand the chronological development of the chorionic villi it is important to have a comprehensive overview of placental anatomy. In this diagram, the placenta is roughly four months old and various fundamental structures can be recognized, namely the umbilical cord, the amnion, the chorionic plate, the already advanced branching of the villi, the basal plate and the cotyledon. The placenta (also known as afterbirth) is an organ that connects the developing fetus to the uterine wall to allow nutrient uptake, provide thermo-regulation to the fetus, waste elimination, and gas exchange via the mother's blood supply, fight against internal infection and produce hormones to support pregnancy. The placenta provides oxygen and nutrients to growing babies and removes waste products from the baby's blood. The placenta attaches to the wall of the uterus, and the baby's umbilical cord develops from the placenta. The umbilical cord is what connects the mother and the baby. Placentas are a defining characteristic of placental mammals, but are also found in some non-mammals with varying levels of development*(Sun . et al. 2002)*. The homology of such structures in various viviparous organisms is debatable and, in invertebrates such as Arthropoda, is analogous at best.

The word placenta comes from the Latin word for cake, from in reference to its round, flat appearance in humans. The classical plural is placentae, but the form placenta is common in modern English and probably has the wider currency at present*(Sun . et al. 2002)*.

Prototherial (egg-laying) and metatherial (marsupial) mammalsproduachoriovitelline placenta that, while connected to the uterine wall, provides nutrients mainly derived from the egg sac.The placenta

functions as a fetomaternal organ with two components: the fetal placenta (Chorionfrondosum), which develops from the same blastocyst that forms the fetus, and the maternal placenta (Decidua basalis), which develops from the maternal uterine tissue(*Langston . et al. 1997).*

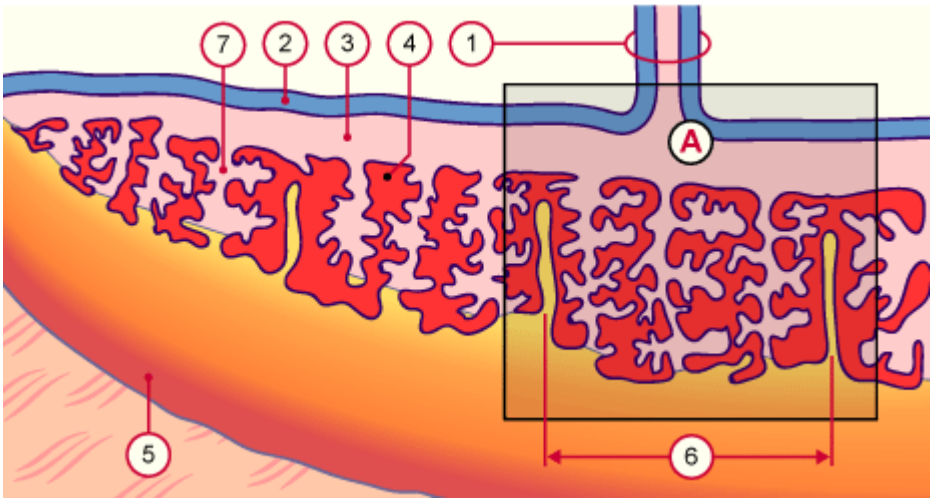


**Figure (2.1)**Schematic diagram of the placenta at around the fourth month in a sagittal section.

Umbilical cord

Amnion

Chorionic plate

Intervillous space (maternal blood)

Basal plate

Cotyledon

Villus

At birth, the placenta consists of two parts:

- maternal portion
- fetal portion

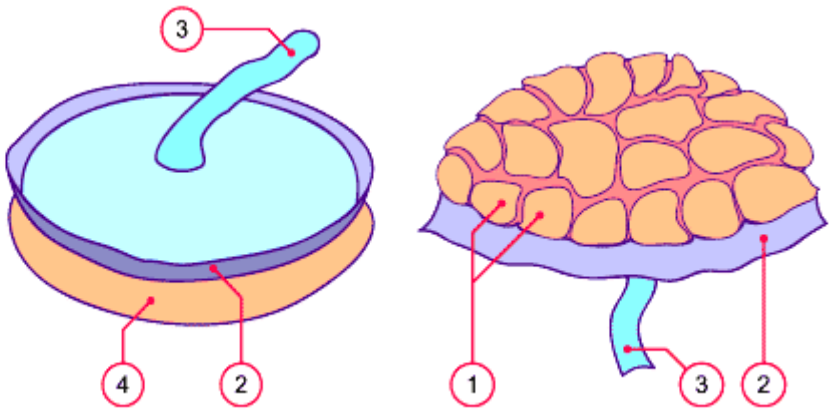


Fig. (2- 2) Placenta view maternal sideFig. (2 - 3)placenta viewfetal side

Cotyledon

Cut edge of the amnion

Umbilical cord

Decidua with the compact layer after the release of the placenta

## 2-1-2 Structure of the placenta:

In humans, the placenta averages 22 cm (9 inch) in length and 2–2.5 cm (0.8–1 inch) in thickness, with the center being the thickest, and the edges being the thinnest. It typically weighs approximately 500 grams (just over 1 lb). It has a dark reddish-blue or crimson color. It connects to the fetus by an umbilical cord of approximately 55–60 cm (22–24 inch) in length, which contains two umbilical arteries and one umbilical vein.*(Stanek, J. 2013)* The umbilical cord inserts into the chorionic plate (has an eccentric attachment). Vessels branch out over the surface of the placenta and further divide to form a network covered by a thin layer of cells. This results in the formation of villous tree structures. On the maternal side, these villous tree structures are grouped into lobules called cotyledons. In humans, the placenta usually has a disc shape, but size varies vastly between different mammalian species*(Stanek.and Biesiada. 2012).*

## 2-1-3 Formation:

The placenta consists of a foetal portion formed by the chorion and a maternal portion formed by the decidua basalis. The uteroplacental circulatory system begins to develop from approximately day 9 via the formation of vascular spaces called "trophoblastic lacunae".

Maternal sinusoids develop from capillaries of the maternal side which anastamose with these trophoblastic lacunae. The differential pressure between the arterial and venous channels that communicate with the lacunae establishes directional flow from the arteries into the veins resulting in auteroplacental circulation.

Blood begins to circulate through the embryonic and cardiovascular system and therefore into the placenta at approximately 21 days (although there is some variance across species). Seperation of the maternal and fetal blood is referred to as the "placental barrier"*(StanekJ.andBiesiada J. 2013)*. The placental barrier is made up of a number of layers;

- Syncytiotrophoblast
- Discontinuous inner cytotrophoblast layer
- Basal lamina of the trophoblast
- Connective (mesenchymal) tissue of the villus
- Basal lamina of the endothelium
- Endothelium of the fetal placental capillary in the teriary villus

## 2-1-4 Development of the placenta:

The placenta begins to develop upon implantation of the blastocyst into maternal maternal endometrium. The outer layer of the blastocyst becomes the trophoblast, which forms the outer layer of the placenta. This outer layer is divided into two further layers: the underlying cytotrophoblast layer and the overlyingsyncytiotrophoblast layer.

The syncytiotrophoblastis amultinucleated continuouscell layer that covers the surface of the placenta. It forms as a result of differentiation and fusion of

the underlying cytotrophoblast cells, a process that continues throughout placental development. The syncytiotrophoblast (otherwise known as syncytium), thereby contributes to the barrier function of the placenta.The placenta grows throughout pregnancy. Development of the maternal blood supply to the placenta is complete by the end of the first trimester of pregnancy (approximately 12–13 weeks)*(Stanek.and Biesiada J. 2013)*).

**Development:**

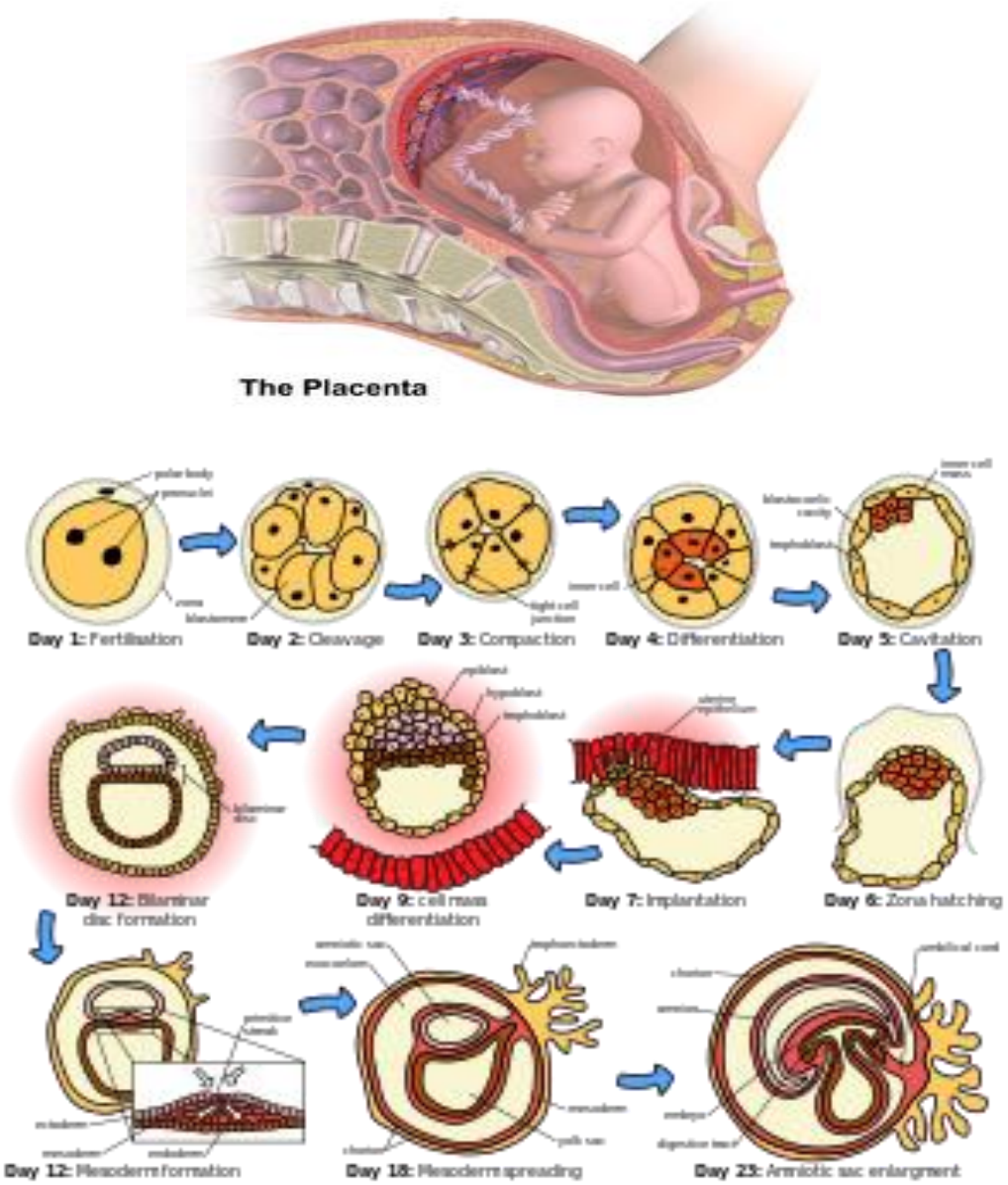


Figure (2-4)the initial stages of human embryogenesis

## 2-1-5 Placental Blood Supply:

Maternal blood carrying oxygen and nutrient substrate to the placenta must be transferred to the fetal compartment and this rate of transfer is the rate limiting step in the process. Therefore the placenta has a significant blood to facilitate improved exchange.

Fetal blood enters the placenta via a pair of umbilical arteries which have numerous branches resulting in fetal chorionic villi within the placenta, terminating at the chorionic plate. The fetal chorionic villi are then surrounded by maternal tissues. This physiology is referred to as "invasive decidualisation" as the fetal chorionic villi effectively invade the maternal tissues. Invasive decidualisationis not present in pigs or sheep*(Redline et al. 2004)*.

Oxygen and nutrient rich blood returns to the fetus via the umbilical vein. Maternal blood is supplied to the placenta via 80-100 spiral endometrial arteries which allow the blood to flow into intervillous spaces facilitating exchnage. The blood pressure within the spiral arteries is much higher than that found in the intervillous spaces resulting in more efficient nutrient exchange within the placenta

## 2-1-6 Umbilical Arteries:

The paired umbilical arteries arise from Iliac arteries along with vesicular arteries to the bladder. In the adult, the remnance of these vessels form the ventral ligament of the bladder. The umbilical arteries carry deoxygenated blood and waste products from the fetus to the placenta*(Redline et al. 2004)*.

## 2-1-7 Umbilical Veins:

A single umbilical veins runs from the fetus and joins the hepatic portal vein, effectively circumventing the liver which is not yet fully patent. The umbilical vein transports oxygen-rich and nutrient-rich blood from the placenta to the fetus*(Redline et al. 2004)*.

## 2-1-8 Shunts:

There are a number of fetal circulatory shunts that are related to the umbilical arteries and veins. The three major shunts are covered in more detail at Fetal Circulation but are important to ensure that organs are always supplied with oxygen and nutrient rich blood, to prevent waste accumulation and protect organs that are not yet fully patent. The main fetal circulatory shunts are the Ductusvenosus, Foramen ovale and the Ductusarteriosus*(Redline et al. 2004)*.

## 2-1-9 Endocrine placenta:

The placenta also plays an important role in the endocrinological management of the fetus and the activities of the maternal side. The endocrinological functions are complex and differ across species. In essence, the placenta attempts to perform the endocrine function of other organs that are either not yet able or not yet formed such as the pituitary gland and the ovary.

The types of hormones and their effects are provided in detail at Placental Endocrine Function

## 2-1-10 Maternal placental circulation:

In preparation for implantation of the blastocyst, the uterine endometrium undergoes "decidualisation". Spiral arteries in decidua are remodeled so that they become less convoluted and their diameter is increased. The increased diameter and straighter flow path both act to increase maternal blood flow to the placenta. The relatively high pressure as the maternal blood fills intervillous space through these spiral arteries bathes the fetalvilli in blood, allowing an exchange of gases to take place. In humans and other hemochorialplacentals, the maternal blood comes into direct contact with the fetal chorion, though no fluid is exchanged. As the pressure decreases between pulses, the deoxygenated blood flows back through the endometrial veins.Maternal blood flow is approximately 600–700 ml/min at term.

## 2-1-11 Fetoplacental circulation:

Further information: Fetal circulation

Deoxygenated fetal blood passes through umbilical arteries to the placenta. At the junction of umbilical cord and placenta, the umbilical arteries branch radially to form chorionic arteries. Chorionic arteries, in turn, branch into cotyledon arteries. In the villi, these vessels eventually branch to form an extensive arterio-capillary-venous system, bringing the fetal blood extremely close to the maternal blood; but no intermingling of fetal and maternal blood occurs ("placental barrier").

Endothelin and prostanoids cause vasoconstriction in placental arteries, while nitric oxide causes vasodilation. On the other hand, there is no neural vascular regulation, and catecholamines have only little effect.

The fetoplacental circulation is vulnerable to persistent hypoxia or intermittent hypoxia and reoxygenation, which can lead to generation of excessive free radicals. This may contribute to pre-eclampsia and other pregnancy complications.It is proposed that melatonin plays a role as an antioxidant in the placenta*(Harris 1988)*.

## 2-2Physiology of the placenta

## 2-2-1 Macroscopic Physiology:

The physical contact surfaces used within the process of circulatory exchange are the fetal membranes and the endometrium and this exchange takes place via microscopic chorionic villi that invade the endometrium. These chorionic villi are covered by epithelium the extent and number of these contact areas forms the basis for the classification of different types of placenta*(Redline et al 1999)*

For example, horses and pigs have many small contacts spread over the entire surface of the fetal membranes and this form of placenta is termed a diffuse

placenta. Ruminants have 15-120 button-like contact regions between the fetal membranes and the endometrium and this type of placenta is called a cotyledonary placenta. Predatory species have chorionic villi arranged in a circular band around the fetus, called the "zona placenta".

### 2-2-2Microscopic Physiology:

As well as physiologic differences in the macroscopic appearance of the placenta between species, the microscopic structure of the interaction between fetal and maternal tissues also differs between species. The interface between the chorion and uterus can consist of different numbers and arrangements of epithelial cells and basal laminae on both the fetal and maternal sides. Beneath the layers of basal laminae there are further layers of connective tissue that contain high densities of blood capillaries*(Redline et al 1999)*.

### 2-2-3Epitheliochoreal:

This type of placenta can be said to be the most complete form, where the interface between the chorion (chorionic epithelium)and uterus (endometrial epithelium) consists of intact layers of epithelial cells with a basal laminae on each side. Both sides of the placenta have supporting connective tissue and a high density of blood capillaries. This type of placenta is present in horses, pigs and ruminants.

### 2-2-4Endotheliochoreal:

In comparison to the epitheliochorial placenta, the endothelial placenta is slightly less complete in that the maternal epithelial cell layer (endometrial epithelium) and basal laminae are degraded such that the maternal capillaries present in the connective tissue traditionally found behind the basal laminae are in direct contact with the fetal membranes (chorionic epithelium) of the placenta. This reduces the length of the diffusion path between the maternal and fetal sides of the placenta. This type of placenta is found in carnivores, including cats and dogs*(Redline et al 2004)*.

## 2-2-5Exchange:

In some types of placenta including the endotheliochorial, antibodies are able to cross the various layers between the maternal and fetal circulation. This allows the maternal blood to convey passive immunity against various infectious agents. However, in some species such as horses and farm species, there are some differences between the mechanisms used to facilitate exchange in different placentas. These species are not able to confer immunity via the placenta and instead rely on the passive transfer of antibodies via colostrum. This is the case for species with epitheliochorial placentas*(Redline et al 2004)*. The names and main differences in exchange characteristics are noted below;

## 2-2-6 Histotrophic Exchange

This type of exhange facilitates nourishment of the embryo prior to implantation, i.e. where no placenta exists. In ungulates, this type of exchnage is very important as there is a long period prior to implantation. For example, in the horse implantation can take up to 35 days, whilst in ruminants it can take between 15 to 20 days.

Nutrition is supplied by uterine secretions/debris, often referred to as 'uterine milk'. Uterine milk secretions are usually maintained by progesterone. Pinocytosis (cellular drinking) is the main exchange mechanism.

## 2-2-7 Haemotrophic Exchange:

Haemotrophic exchange is the main exchange mechanism utilised in most types of placenta. This type of exchnageutilises direct transfer of nutrients from the maternal to foetal blood via simple diffusion, facillitated diffusion, active transport and complex diffusion.

## 2-2-8 Functions:

The perfusion of the intervillous spaces of the placenta with maternal blood allows the transfer of nutrients and oxygen from the mother to the fetus and the transfer of waste products and carbon dioxide back from the fetus to the

maternal blood supply. Nutrient transfer to the fetus occurs via both active and passive transport. Active transport systems allow significantly different plasma concentrations of various large molecules to be maintained on the maternal and fetal sides of the placental barrier.*(Redline . 2005)* Adverse pregnancy situations, such as those involving maternal diabetes or obesity, can increase or decrease levels of nutrient transporters in the placenta resulting in overgrowth or restricted growth of the fetus*( Redline. et al 2003).*

**2-2- 9 Excretion:**

Waste products excreted from the fetus such as urea, uric acid, and creatinine are transferred to the maternal blood bydiffusion across the placenta.

**2-2-10 Immunity:**

IgG antibodies can pass through the human placenta, thereby providing protection to the fetus in utero*(Han . et al. 2010)*. This transfer of antibodies begins as early as the 20th week of gestational age, and certainly by the 24th week. This passive immunity lingers for several months after birth, thus providing the newborn with a carbon copy of the mother's long-term humoral immunity to see the infant through the crucial first months of extrauterine life. IgM, however,cannot cross the placenta, which is why some infections acquired during pregnancy can be hazardous for the fetus.Furthermore, the placenta functions as a selective maternal-fetal barrier against transmission of microbes. However, insufficiency in this function may still causemother-to-child transmission of infectious diseases*(Redline RW. 2007)*.

## 2-2-11 Endocrine function:

During pregnancy, a woman’s hormones go through many significant changes. Hormones have a very important role in the human body, especially during pregnancy. Hormones help the body function and change by causing communication from organs to tissues throughout the body. Hormones

regulate the body physiologically and in other ways, including: digestion, metabolism, respiration, tissue function, sensory perception, sleep, excretion, lactation, stress, growth and development, movement, reproduction, and mood. The excretion of hormones is effected by other hormones, mental activity, environmental changes, and the concentrations of ions or nutrients throughout the bloodstream. Hormones aid in metabolism regulation, immune system changes, cravings, reproductive changes, etc.The placenta, among many of its other functions, also secretes hormones that are essential to fetal life.

The first hormone released by the placenta is called the human chorionic gonadotropin hormone. This is responsible for stopping the process at the end of menses when the Corpus luteum quits working and atrophies. If hCG did not interrupt this process, it would lead to spontaneous abortion of the fetus. The corpus luteum also produces and releases progesterone and estrogen, and hCG stimulates it to increase the amount that it releases. hCG is also what is the indicator of pregnancy, and the hormone that pregnancy tests look for. These tests will work when menses has not occurred or after implantation has happened on days seven to ten. hCG may also have an anti-antibody effect, protecting it from being rejected by the mother's body. hCG also assists the male fetus by stimulating the testes to produce testosterone, which is the hormone needed to allow the sex organs of the male to grow*(Kim . et al. 2010)*.

Progesterone helps the embryo implant by assisting passage through the fallopian tubes. It also affects the fallopian tubes and the uterus by stimulating an increase in secretions necessary for fetal nutrition. Progesterone, like hCG, is necessary to prevent spontaneous abortion because it prevents contractions of the uterus, and is necessary for implantation.

Estrogen is a crucial hormone in the process of proliferation. This involves the enlargement of the breasts and uterus, allowing for growth of the fetus

and production ofmilk. Estrogen is also responsible for increased blood supply towards the end of pregnancy through vasodilation. The levels of estrogen during pregnancy can increase so that they are thirty times what a non-pregnant woman mid-cycles estrogen level would be.

Human placental lactogen is a hormone used in pregnancy to develop fetal metabolism and general growth and development. Human placental lactogen works with Growth hormone to stimulate Insulin-like growth factor production and regulating intermediary metabolism. In the fetus, hPL acts on lactogenic receptors to modulate embryonic development, metabolism andstimulate production ofIGF, insulin, surfactant andadrenocortical hormones. hPL values increase with multiple pregnancies, intact molar pregnancy, diabetes and Rh incompatibility.

They are decreased withtoxemia, choriocarcinoma, and Placental insufficiency.((*Kim . et al. 2010*),( *Fitzgerald . et al. 2012*)

## 2-3Pathology of Placenta:

### 2-3-1Placental Problems:

Freemartinism: Freemartinism is a condition usually found in bovine species (although it is found in other species) and occurs in the female offspring of dizygotic twins in a mixed sex pregnancy, i.e. a male and female pair of twins. Placental fusion between the male and female fetuses occurs and this permits the 1exchange of fetal cells and hormones. Testicular hormones from the male can result in the androgenisation of the female fetus resulting in a "chimeric" female (XX/XY)which will be sterile*(Stallmach et al 2001)*. Freemartins occur in 1% of births and in 99% of cases, the female is rendered sterile. For more detailed information, please see bovine freemartinism.

### 2-3-2Abruptio placenta:

is characterized by large central retroplacental hematomas, often with overlying intravillous hemorrhage or recent villous infarction). Underlying

risks include chronic hypertension and preeclampsia. Marginal abruptions are common causes of spontaneous preterm birth, particularly in the context of ascending infection, and when chronic can be associated with FGR. Chronic abruption is associated with organizing marginal or subchorionic hematomas, circumvallate membrane insertion, and deposition of hemoglobin pigments (usually hemosiderin) in the placental membranes*(Redline RW. et al. 1999)*.

**TABLE 2 Associations between pathological processes and adverse clinical outcomes**

| | Recurrent pregnancy loss | Preterm labor or PROM | Preterm FGR or IUFD | Term FGR | Term IUFD | CNS injury |
|---|---|---|---|---|---|---|
| Histologic chorioamnionitis | 0 | +++ | 0 | 0 | 0 | + |
| Maternal arterial malperfusion | + | + | +++ | ++ | 0 | + |
| Marginal abruption | 0 | ++ | + | 0 | 0 | 0 |
| Maternal floor infarction/ histiocytic intervillositis | +++ | ++ | ++ | + | + | + |
| Villitis of unknown etiology | ++ | 0 | 0 | ++ | ++ | ++ |
| Fetal vascular obstruction/ thrombotic vasculopathy | 0 | 0 | + | + | ++ | +++ |
| Distal villous maldevelopment | 0 | 0 | + | + | ++ | + |
| Elevated circulating NRBC | 0 | 0 | + | + | ++ | ++ |
| Prolonged meconium exposure | 0 | 0 | 0 | 0 | + | ++ |

Abbreviations: CNS, central nervous system; FGR, fetal growth restriction; IUFD, intrauterine fetal demise; NRCB, nucleated red blood cells; PROM, premature rupture of membranes
0, rare; +, uncommon; ++, common; +++, very common

Figure (2-5): shows association between pathological processes andadverse clinicaloutcomes.

### 2-3-3Chronic fetal vascular obstruction:

as reflected by the pathologic finding of significant numbers of avascular villi (AV), is a clinically silent process strongly associated with adverse clinical outcome. Numerous small foci of AV reflect the effects of globally decreased villous perfusion on the most distal terminal villi and are often seen with other indicators of chronic intermittent umbilical cord obstruction. Larger foci

of AV indicate thrombosis of major chorionic or stem villous vessels (fetal thrombotic vasculopathy) *(Redline et al, 2004)*.

Although maternal diabetes and inherited fetal thrombophilias can be associated with fetal thrombotic vasculopathy, the major risk factor is stasis, again related to compromised umbilical blood flow. Significant numbers of AV are a major risk factor for central nervous system (CNS) injury at term. The frequent finding of large areas of contiguous AV with degenerative changes antedating the estimated time of fetal demise suggests that chronic fetal vascular obstruction is also a major cause of stillbirth at term.[7] Significant numbers of AV are a robust indicator of a serious underlying process and can be very helpful in both clinicopathologic correlation and medicolegal contexts*(Redline . 2005)*.

**2-3-4Histologic chorioamnionitis:**

is the gold standard for defining the maternal and fetal inflammatory responses to microbial organisms in the amniotic fluid. Early inflammation is extremely sensitive and may occur before organisms are detectable in tissue. Clinical symptoms such as fever and leukocytosis are notoriously unreliable in this context. Chorioamnionitis is the major cause of spontaneous preterm birth and other neonatal complications. Assessing the stage and grade of inflammation may help to distinguish between chorioamnionitis as the cause of spontaneous preterm birth and a secondary response following preterm labor and/or rupture of membranes*(Redline . 2003)*.

Recognizing specific patterns of inflammation can suggest specific organisms, such as Candida or Listeria, that require special attention. Risk of recurrence is low for chorioamnionitis that develops outside of the context of cervical insufficiency. Most cases of chorioamnionitis develop due to ascending infection by cervicovaginal flora, but some may represent hematogenous seeding by oral flora*(Han et al. 2010)*. Appropriate periodontal care can potentially decrease recurrence of the latter in

subsequent pregnancies.Villitis of unknown etiology (VUE) is widely believed to be a host-versus-graft response by the mother directed at fetal antigens in the villous stroma. This break in fetomaternal tolerance depends on maternal-fetal traffic through defects in the trophoblastic barrier and is promoted by previous fetal antigen exposure (multiparity), degree of antigenic disparity (increased VUE in ovum donation pregnancies), and less specific conditions such as diabetes and obesity. It is largely restricted to the third trimester. A related lesion, chronic chorioamnionitis, recently has been associated with spontaneous preterm birth.[16] High-grade VUE (>10 contiguous villi) is associated with term and near-term FGR and, when complicated by inflammatory fetal vascular changes (obliterative fetal vasculopathy), is a major risk factor for CNS injury and stillbirth. VUE has a significant recurrence risk of 20% to 30%*(Andres et al. 1990)*.

Distal villous maldevelopment is a more heterogeneous and less well understood category of placental pathology. Distinct patterns include diffuse distal villous hypoplasia, distal villous immaturity (decreased vasculosyncytial membranes), villous capillary proliferative lesions (chorangiosis/ chorangiomatosis), and dysmorphic villi (proximal-distal villous disproportion and abnormal villous contour)*(Fitzgerald . et al. 2012)*.Distal villous hypoplasia is characteristically associated with abnormal uterine artery Dopplers secondary to poor perfusion in villous vessels. The latter 3 processes can all occur independently, but in severe cases often overlap. They represent aberrant morphogenesis of the villous tree in response to environmental factors such as maternal glucose intolerance, smoking, anemia, pregnancy at high altitudes, and air pollution, or genetic/epigenetic abnormalities such as confined placental mosaicism, aneuploidy, or Beckwith-Wiedemann syndrome*(Andres et al. 1990)*.

Maternal floor infarction (massive perivillousfibrinoid deposition) and chronic histiocyticintervillositis (massive chronic intervillositis) are

extremely rare and poorly understood placental lesions that share 2 characteristics.*(Boyd and Redline . 2000)*They are risk factors for virtually all adverse outcomes ranging from miscarriage to CNS injury, and they have recurrence risks approaching 50% to 75%, meaning that many affected women will never achieve a successful pregnancy. Immunologic, developmental, and genetic etiologies are under investigation with no clear conclusions at this time. Many therapeutic strategies have been proposed, including corticosteroids, aspirin, heparin, other immunosuppressive agents, intravenous immunoglobulin, and paternal leukocyte immunization. There are no controlled studies, but anecdotal evidence supports use of the first 3 agents*(Altshuler et al. 1992)*.

Prolonged meconium exposure and increased circulating nucleated red blood cells (NRBCs)are not true placental lesions but a fetal response to placental hypoxia, independent of its cause. Meconium is released in up to 50% of term and post-term deliveries and does not require placental pathology for diagnosis. However, prolonged meconium exposure, as indicated by a large number of meconium-laden macrophages in the chorionic plate and especially by meconium-associated medial necrosis of chorionic or umbilical vessels, is a recognized risk factor for CNS injury. Increased NRBCs are detectable within fetal capillaries and can serve as a biomarker for significant fetal hypoxia of at least 6 to 12 hours.*(Redline RW. 2008)* A placental NRBC count >10 NRBC/10 high-power fields in a term placenta has been shown to correlate with a circulating NRBC count of >2500/$mm^3$ in the infant*(Boyd and Redline . 2000)*.

## 2.4: Ultrasound:

Ultrasound is the imaging modality of choice for the prenatal diagnosis of placenta previa however the sonographer must be aware of technical limitations and common interpretation pitfalls leading to false positive and false negative diagnosis.

The false negative rate for the detection of placenta previa is very low (ultrasound misses the diagnosis of placenta previa), and makes ultrasound a good screening tool to rule out the diagnosis.

The most significant factors contributing to a relatively high false positive rate (ultrasound falsely indicates the diagnosis of placenta previa) include distortion of the lower segment by an over distended bladder and focal myometrial contractions (Devin 2005).

Bladder distention Pushes the anterior wall of the uterus posteriorly towards the posterior wall with the net effect of bringing an anterior lower segment placenta artificially closer to the cervix and also compressing the anterior and posterior lower segment walls together and masking the true location of the internal os. For these reasons, when evaluating a placenta that reaches the lower segment of the uterus and appears to be low-lying or previa, the sonographer should re-evaluate the patient after she has voided (postvoid scans). In the majority of cases, the postvoid study willresolve the situation, with most placentas changing in appearance from previa or low lying to normal (cases that remain suspicious should be evaluated with endovaginal (EVS) or transperineal (TPS) techniques). (Devin 2005).

### 2.4.1: Technique:

In general, there are no special equipment or transducer considerations (the equipment and transducer deemed most appropriate for the obstetrical ultrasound study may be used). If the system has electronic beam focusing, the focal zone should be adjusted to optimally visualize the placenta. (Carne JM2001).

A posterior placenta is more difficult to visualize in its entirety due to attenuation and shadowing from the overlying fetus. If indicated, positioning the patient in a left or right posterior oblique position may be helpful in better visualizing a posterior placenta. (Carne 2001).

For the standard transabdominal study (TAS), the bladder should be adequately distended to optimize visualization of the cervix and lower uterine segment and to show the relationship of the placenta to the internal os. Overdistention of the bladder distorts the appearance of the cervix and lower uterine segment and may lead to the false positive diagnosis of placenta previa. Endovaginal (EVS) or transperineal (TPS) techniques should be performed whenever TAS does not adequately show the relationship of the placenta to the internal os (e.g. due to attenuation by fetal parts or the patient presents with an empty bladder) and there is a high index of suspicion of placenta previa (e.g. patient presents with third trimester bleeding**.** (Devin 2005).

Routine evaluation of the placenta with colour Doppler is now favoured to rapidly find the placental cord insertion site and to detect vascular abnormalities in the placenta and the retroplacental uterine wall. This is especially important if the placenta is anterior and appears to be low-lying or previa since the risk of placenta acreta is highest in this situation. An important view is the median lower segment and cervix image which may identify vasa previa associated with velamentous insertion of the cord or succenturiate lobe. Pulsed Doppler spectral waveform analysis of the placenta may be helpful to characterize flow in masses or abnormal appearing vessels. (Devin 2005).

### 2.4.2: Echo Texture:

The normal placenta appears as a sonographically uniform structure with mid amplitude echoes (in contrast, the adjacent uterine wall (decidua and myometrium) appear less echogenic or hypoechoic). In the third trimester, the placenta generally appears less homogeneous and may have small anechoic or hypoechoic areas of different pathological etiologies. Calcium deposits are seen in the majority of placentas in the third trimester and appear as high amplitude (white) linear echoes.

The fetal or amniochorionic surface of the placenta (generally referred to by authors as the chorionic plate) forms a strong interface with the amniotic fluid. This surface is very angle dependent (specular reflector) and appears as a bright (white) echo when the sound beam strikes at normal incidence (perpendicular to the interface)**.** (Devin 2005).

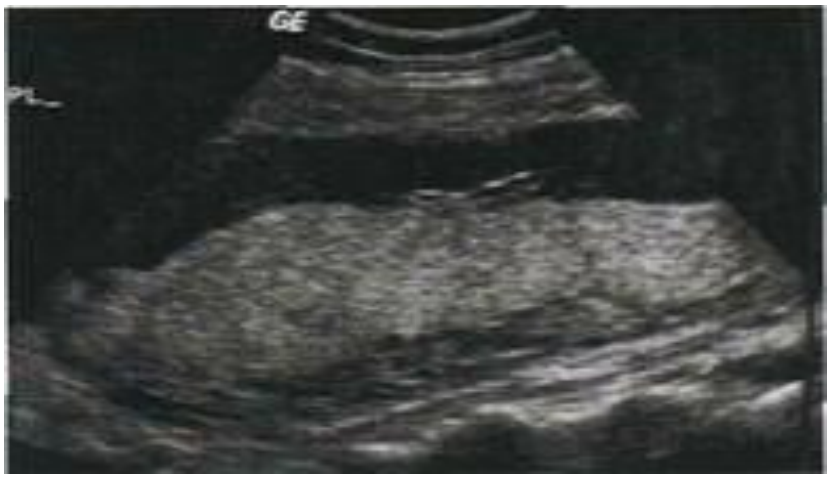


Fig2 -5 Posterior Placenta Transverse TAS image of a posterior placenta shows the normal hypo echoic uterine wall behind the placenta. . (Devin D 2005).

## 2.5 Previous Study:

**Study 1:**

Association of placenta previa with repeat cesarean section,age and multi parity in Sudan and Saudi Arabia 2014-2015 done by;

Abdelraheem et al (2016) the total number of deliveries in hospitals at Omdurman city in Sudan during the study period was 200 pregnant women.

The prevalence of PP in this study increased with increasing number of previous CS, and was associated with adverse feto-maternal outcome. This study provides a reason to reduce elective CS and encouraging vaginal birth after CS (VBAC). To enhance patient safety, it is important that the delivery performed in an operating room by an experienced obstetric team that includes an obstetric surgeon, with other surgical specialists, such as

urologists, general surgeons, and gynecologic oncologists, available if necessary.

**Study2;**

Placenta previa is a common obstetrical problem associated with considerable maternal & fetal morbidity and mortality. Done by ;SitanaAlaminButranAbdalla –Sudan University M.Sc degree 2013.

this study demonstrates an elevated risk for placenta praevia among women with prior cesarean delivery. Moreover, this risk increases dramatically with increasing number of prior cesarean deliveries and maternal age. This study provides yet another reason for reducing the primary cesarean delivery rate and for advocating vaginal birth for women with prior cesarean delivery.

Early diagnosis of placenta praevia, and identification of risk factor such as previous caesarean section, may help in better outcome by reducing the fetomaternal complication

**Study3**

Frequency of Placenta Praevia and Maternal Morbidity Associatedwith old maternal age , multiple gestatios and previous CS*Done by:

Nankali et al (2014)

Findings of this study showed that frequency of placenta praevia was incresed among patients with history of pervious C-cesarean delivery. 74.5% of patients with placenta praevia had history of one previous C-section and the rate of the need for hysterectomy in these patients was 47.6%. The most common type of abnormal placentation was accreta, percreta and increta respectively.

# Chapter Three

## Materials and Methods

# Chapter Three
# Materials and Methods

This study carried out in Rufaa Teaching hospital and elhelalya , tamboul specialized hospital in elgazera state.

## 3-1 Materials:

### 3-1-1 Population of study:

The study carried out in pregnant patients in second and third trimester attending the Department of ultrasound in Rufaa Teaching hospital and Elhelalya, Tamboul specialized hospital suffering from placenta praevia. This study will be consisted of 50 patients using convenient sample method.

The study was including all pregnant ladiesin their second and third trimester with placenta praevia.

Any patient or pregnant woman with other pathology except placenta praevia.

### 3.1.2: Machine used:

2DUltrasound machines with transducer frequency 3.5 MHz, our examinations were done by:

MINDRAY ultrasound machine. Model DP 2200.2008 – 05made in Germany with convex transducer 3.5MHz.

FUKUDA 4100 ultrasound machine made in Japan .1995 with Convex transducer 3.5 MHz.

coupling gel and TV card with 16 bit to capture the ultrasound image using the personal computer.

### 3.1.3duration of the study

This study will be conducted in the period from May 2016 to December 2016 at Rufaa teaching hospital ,tambol and elhelayaspecalized hospitals

## 3-2 Methods:

In the antenatal clinic as per protocol 50 pregnant women were selected for the study. The inclusion criterion was a pregnant ladies in their second and third trimester of pregnancy. The doctor and staff nurse on duty were trained to enter the data in a questionnaire. Then ultrasound scan was done for all selected women for foetal wellbeing and placental localization. All women with or without symptoms of PP showing placental implantation in lower uterine segment on ultrasound were documented. Then women with PP were further examined for their detailed obstetrical history-especially the history of previous CS, parity and - maternal age and socioeconomic status. After completion of the 5 months, data regarding the detailed obstetrical and surgical history were recorded in a questionnaire and analyzed using SPSS software.

### 3.2.1 Technique used:

The examination begins with the patient in the supine position. Scans are sng the bladder as acoustic window. In general, there are no special equipment or transducer considerations (the equipment and transducer deemed most appropriate for the obstetrical ultrasound study may be used). If the system has electronic beam focusing, the focal zone should be adjusted to optimally visualize the placenta.

A posterior placenta is more difficult to visualize in its entirety due to attenuation and shadowing from the overlying fetus. If indicated, positioning the patient in a left or right posterior oblique position may be helpful in better visualizing a posterior placenta .

### 3-2-2Method of collection:-

All placenta praevia patients recruited for scan selected for this study and the data were collect on master data sheet from the diagnostic stations which was include all parameters need for evaluations.

### 3-2-3Variables of the study:-

This study will be collected using the following variables: patient's age, weight, height, GA(week), placenta location, Parity.

### 3-2-4 Data Analysis:

All collected data from the reports of ultrasound images put in sheets and then analyzed by statistics programmer which use for entry and analysis, and the computer provide details information.

### 3.3: Ethical consideration

.A written permission is issued and taken from the hospital director; also anyone in the study signed an agreement to be one of the study objects after had been told about what should be done for her to collect the suitable data for the study; personal information from any patient is written in the datacollection sheet as well as the results .This includes the following: General information, Clinical information and Ultrasound findings. See the append

### 3-4.Statistical analysis:

All data were presented as mean ± SD values. Data were analyzed by correlation analysis with the use of the SPSS (Inc., Chicago, Illinois version 21.0). A value of $P<0.05$ was considered significant.

# Chapter Four

## The Results

## Chapter Four

## The Results

This chapter consists the results of placenta praevia patients using ultrasound, and the following tables demonstrate the data which collected from the patients.

**Table (4 -1):** Shows the descriptive Statistics of the study variables

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age | 50 | 23 | 44 | 33.96 | 5.387 |
| Weight | 50 | 49 | 85 | 64.96 | 9.543 |
| GA | 50 | 24 | 41 | 32.28 | 4.545 |
| Placent l | 50 | 1 | 7 | 4.96 | 2.231 |
| Hight | 50 | 148 | 175 | 162.44 | 7.489 |
| Parity | 50 | 2 | 10 | 4.92 | 2.146 |
| Valid N (listwise) | 50 | | | | |

**Table (4 -2):** Shows the descriptive Statistics of maternal age

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age | 50 | 23 | 44 | 33.96 | 5.387 |
| Valid N (listwise) | 50 | | | | |

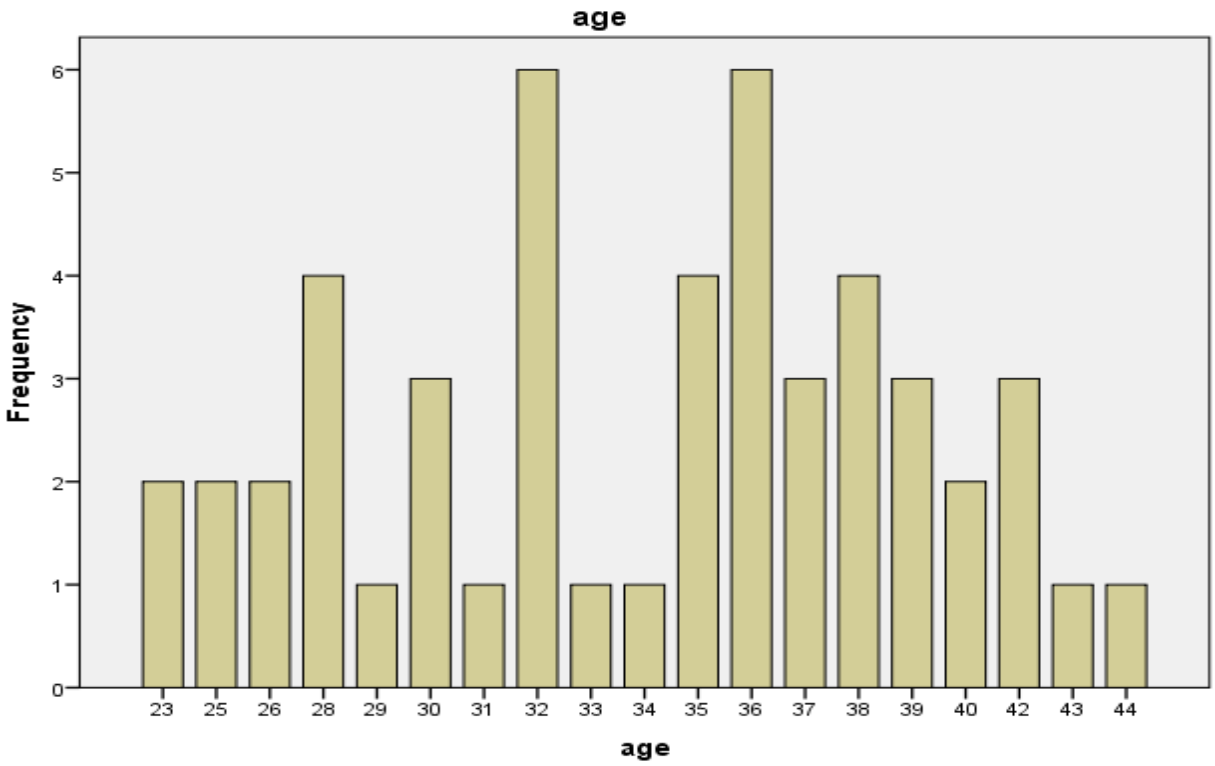


**Figure (4 -1):** Shows the frequency distribution of the maternal age.

**Table (4 -3):** Shows the ofdescriptive Statistics of the maternal weight.

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Weight | 50 | 49 | 85 | 64.96 | 9.543 |
| Valid N (listwise) | 50 | | | | |

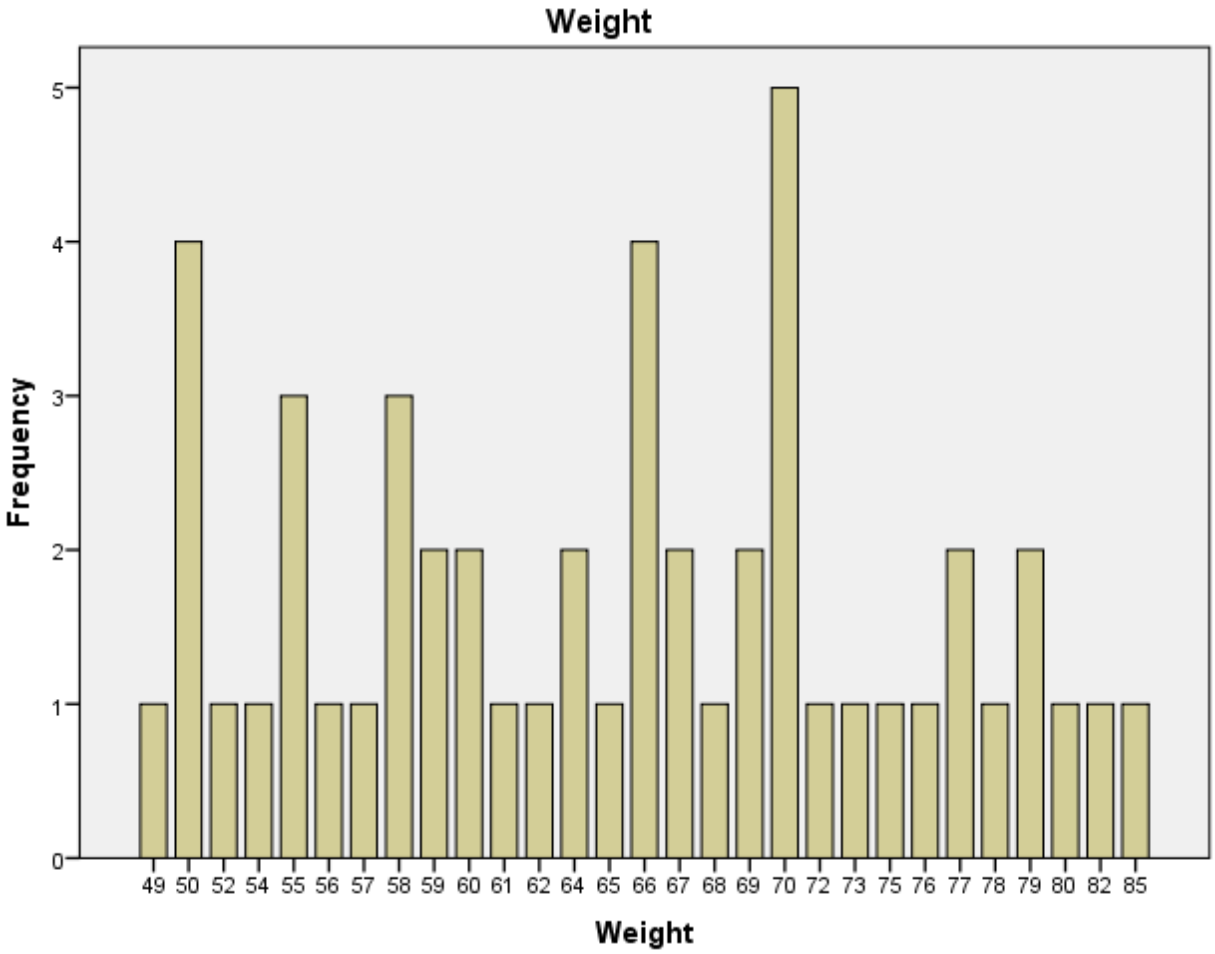


**Figure (4 -2):** Shows the frequency distribution of the maternal weight.

**Table (4 -4):** Shows the descriptive Statistics of gestational age

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| GA | 50 | 24 | 41 | 32.28 | 4.545 |
| Valid N (listwise) | 50 | | | | |

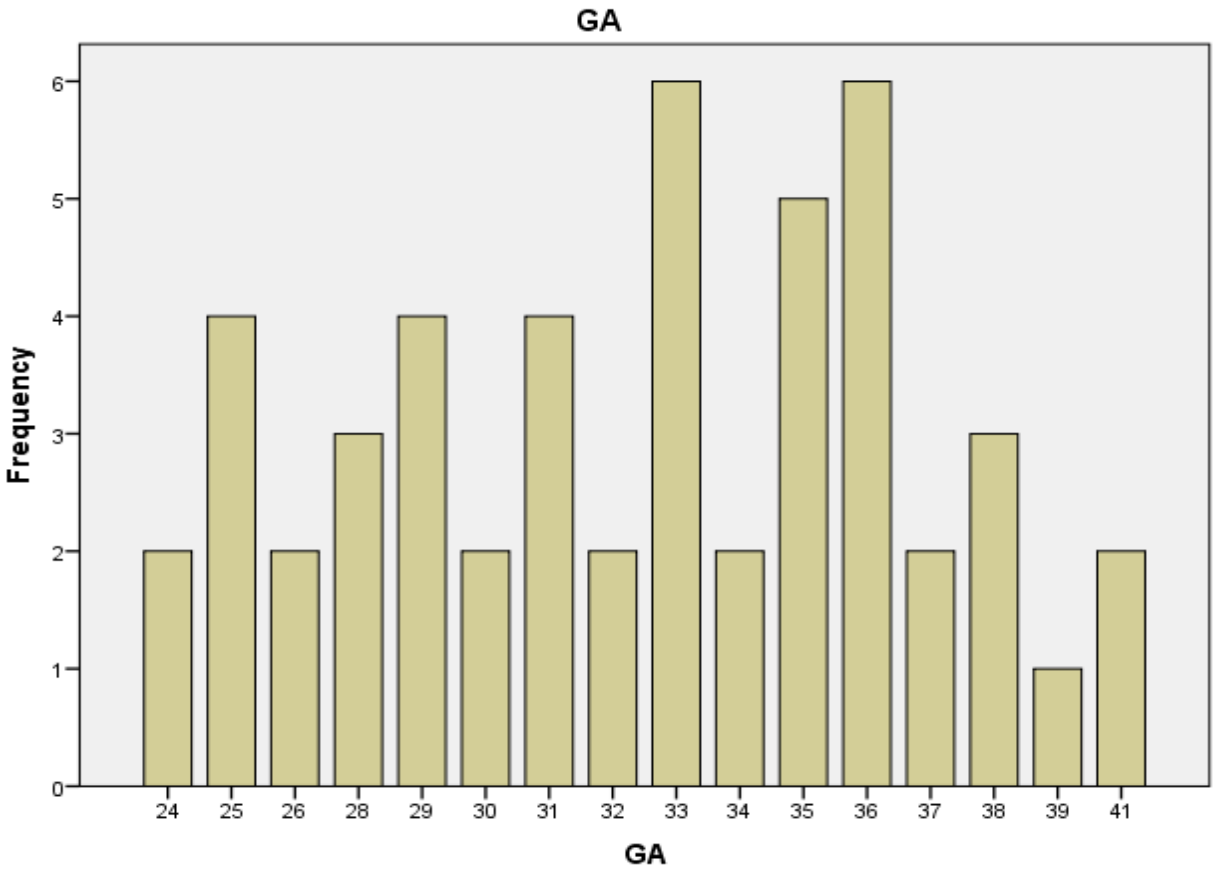


**Figure (4 -3):** Shows the frequency distribution of the gestational age.

**Table (4 -5):** Shows the descriptive StatisticsPlacent l

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Placent l | 50 | 1 | 7 | 4.96 | 2.231 |
| Valid N (listwise) | 50 | | | | |

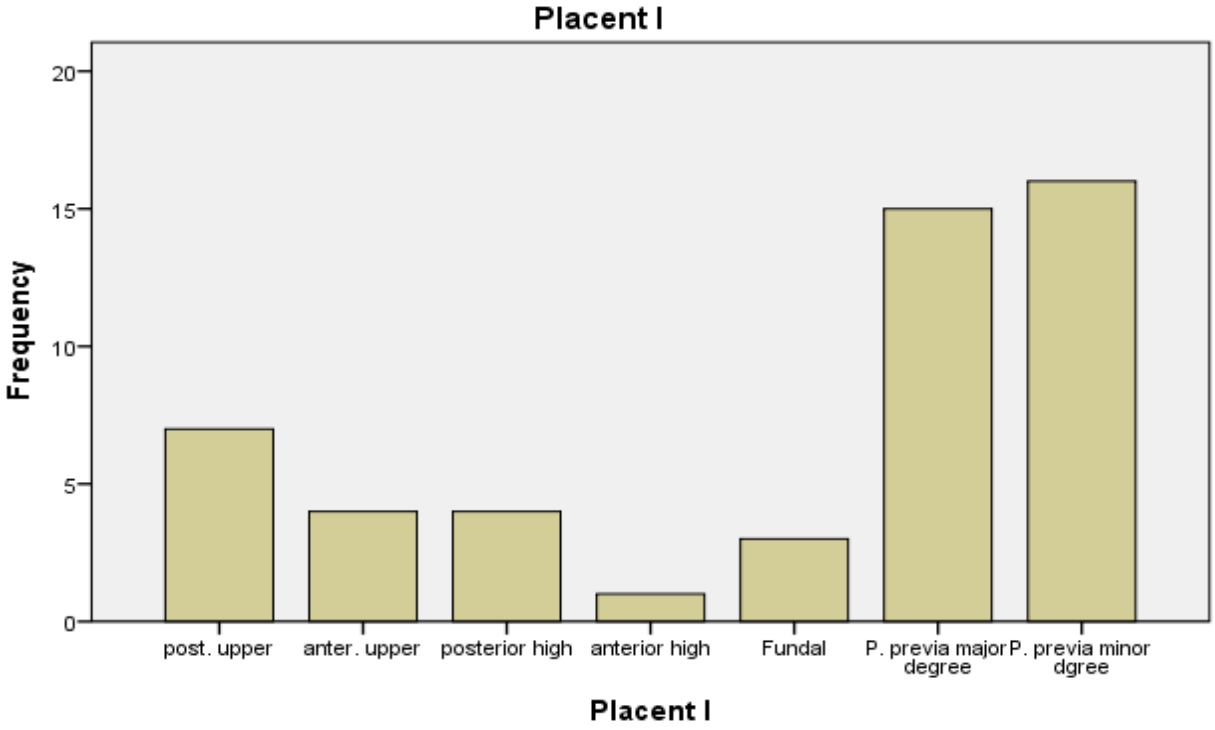


**Figure (4 -4):** Shows the frequency distribution of placental location

**Table (4 -6):** Shows the descriptive Statistics of parity (numbers of delivery).

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Parity | 50 | 2 | 10 | 4.92 | 2.146 |
| Valid N (listwise) | 50 | | | | |

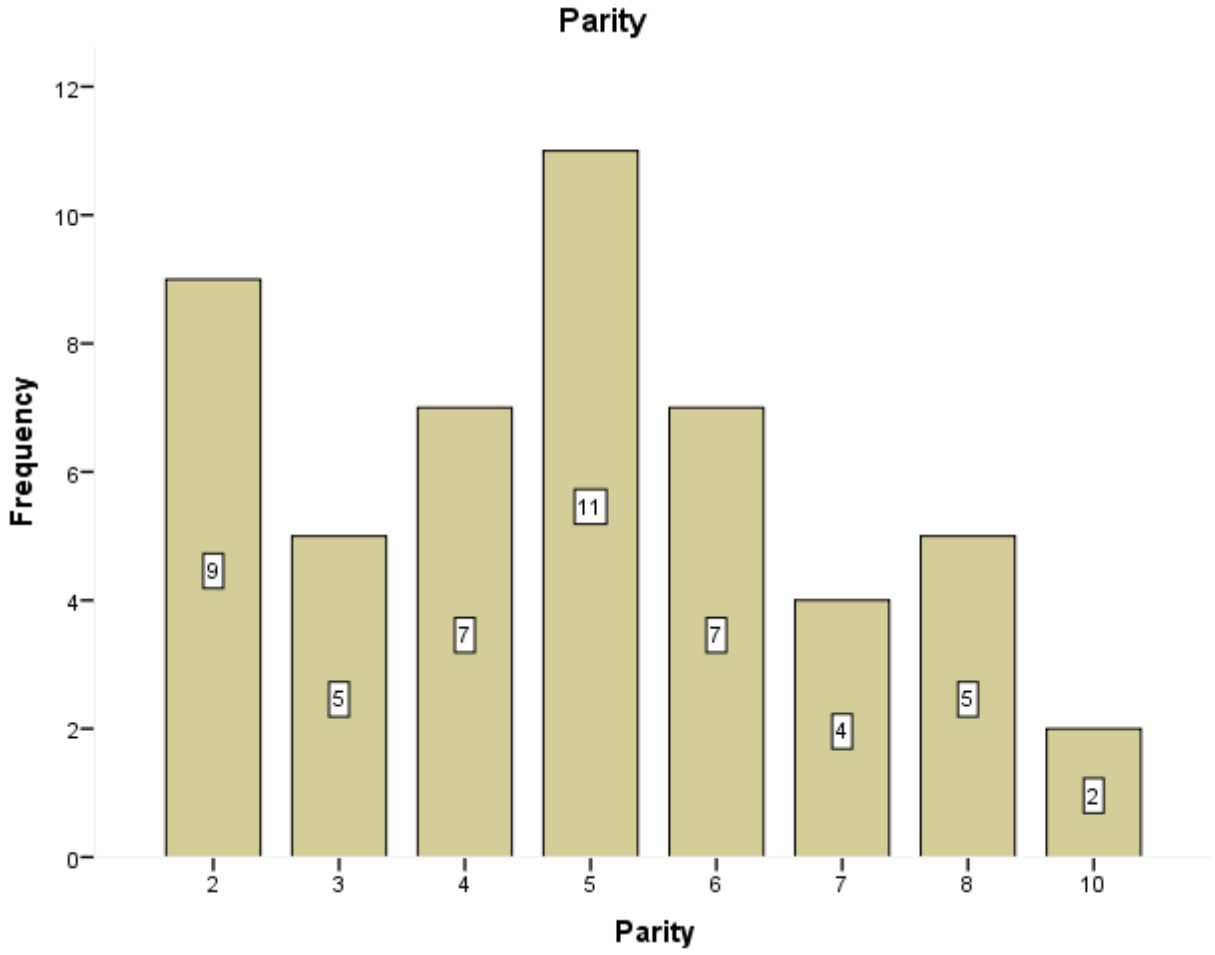


**Figure (4 -5):** Shows the frequency distribution of parity (number of delivery).

**Table (4 -7):** Shows the descriptive Statistics of maternal height.

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Hight | 50 | 148 | 175 | 162.44 | 7.489 |
| Valid N (listwise) | 50 | | | | |

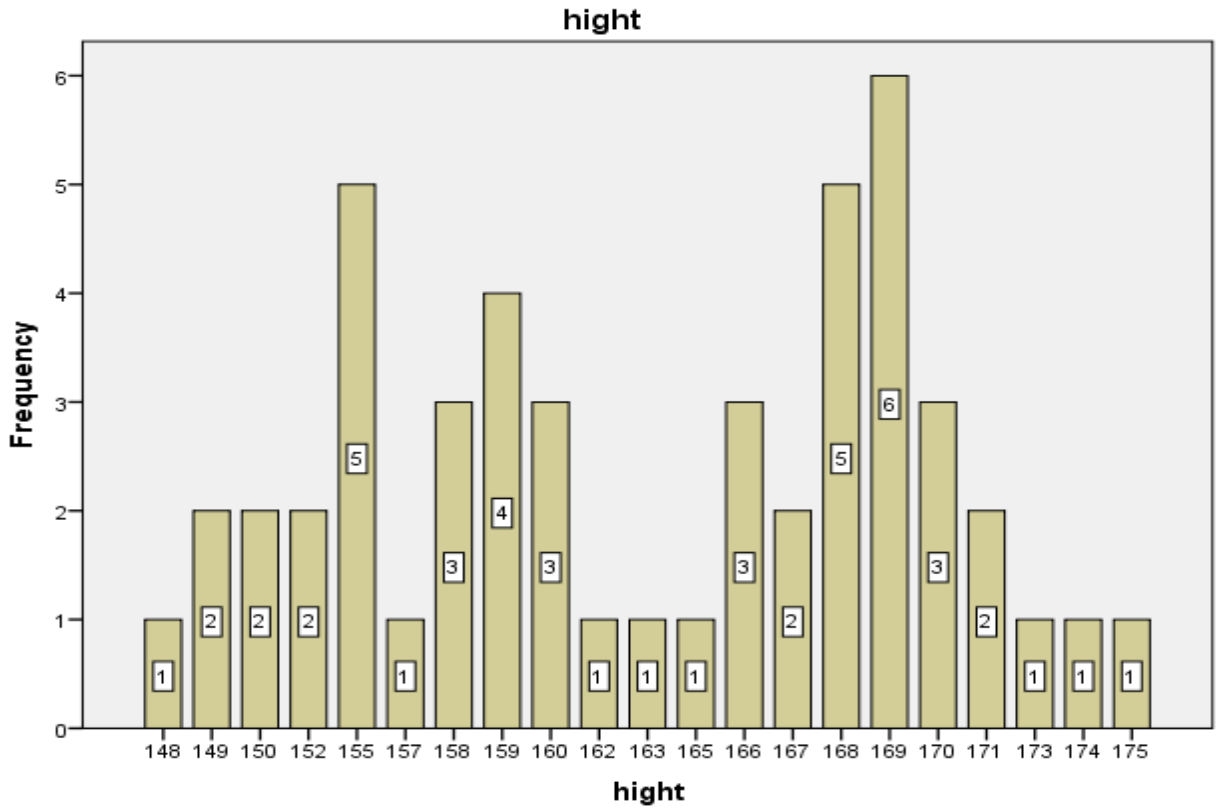


**Figure (4 -6):** Shows the frequency distribution of maternal height.

# Chapter Five

## Discussion, Conclusion and Recommendations

# Chapter Five
# Discussion , Conclusion and Recommendations

## 5-1 Discussion:

Placenta praeviais a common obstetrical problem associated with considerable maternal , fetal morbidity and mortality.

This study has been carried out at Rufaa,Elhelalya and Tamboul hospitals in Elgazera state, to study the placenta previain second and third trimester using ultrasounography, from May 2016 to December 2016.Fifty patients (n=50) were selected to be the sample unit in this study.

This study showed that, the overall incidence of placenta praevia among patients seen inRufaa,Elhelalya and Tamboul hospitals in Elgazera state is (62%), it is high among patients with scared uterus. From the findings of this study, showed a significantly, similar studies done by Singh and et al (1981) and Gilliam et al (2001) reported there is an association between maternal age,paraity and subsequent development of placenta previa and showed increase in the frequency of placenta previa. ,and old age .In the previous study from Sudan and Saudi Arabia of 400 deliveries 125women had placenta previa the percentage of placenta previa which were embedded increased from 10.25% in women to 14.5% in women who had two or more caesareans the same findings of the percentage of placenta previa which were increased from 4.1% in women with no previous section, reported by Saki et al (1998) in their study that done in Saudi Arabia and Ziadeh (1998) from Jordan. Current study showed relation between the placenta previa after one caesarean section and risk of placenta previa disagreed with Adeela et al (2012)who recorded the previous one caesarean section did not increase the frequency of placenta previa .Increasing number of scars, was associated with placenta previa.

The incidence of placenta previa was significantly higher than the incidence of normal placenta location which confirm the association of multiparity and

age with placenta previa.,and there is relation between it and height and weight of maternal.. From the statistical study and analysis that done There is strong association between maternal age and the incidence of placenta previa in which the incidence increase as maternal age increased.

## 5.2 Conclusion:

This study concluded that :there is an elevated risk for placenta Praevia among women, this risk increases dramatically with increasing careless of routine examinations like ultrasound scan.

From the analysis of data obtained it was found that the ultrasound scans can be serve as a monitor of detection of placental disorders and indicator for prognosis during the pregnancy period. And identification and early diagnosis of risk factor such as placenta praevia, and good maternal counseling, may help in better outcome by reducing the fetomaternal complications.

In conclusion, we are sufficiently encouraged the performance for preclinical detection of a large, randomized, controlled trial incorrporating the risk as a first -line test we believe that the improved operating characteristics for preclinical detection will translate into improved operating characteristics for early -stage detection and good prognosis of treatment of placenta disorders if it’s found.

Early diagnosis of placenta praevia, and identification of risk factor such as previous caesarean section and good maternal counseling, may help in better outcome by reducing placenta praevia and fetomaternal complications.

## 5.3 Recommendations:

Finally we recommended by the following scientific points of its importance:-

• Routine ultrasound scan for pregnant ladies is useful because its serve as: Method of pregnancy detection, monitor of patient response to treatment and method of early defect detection.

• Full patient history should be taken before ultrasound stating scan.

• Ultrasound is operator dependable so, the operator should be getting the utmost level of training.

• The hospitals should be equipped by with Doppler machines

•It is important that the delivery performed in an operating room by an experienced obstetric team that includes an obstetric surgeon, with other surgical specialists, such as urologists, general surgeons, and gynecologic oncologists, available if necessary to enhance patient safety.

•To Improved outcomes the patient with placenta previa should give birth in specialized tertiary centers

•In next study I recommended to increase sample size to increase chance for study more patients.

• Researchers are recommended to go ahead for such studies, to use obtained data for all the Sudan to construct a data base for the placental disorders.

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