Sudan University of Science & Technology

College of Graduate Studies

Assessment of Abnormal Vaginal Bleeding using Ultrasound in Um Dwanban Administrative Area

تقييم النزيف المهبلي الغير طبيعي بإستخدام الموجات فوق الصوتية في منطقة ام ضوابان الإدارية

A thesis Submitted for Partial Fulfillment of the Requirements of MSC Degree in Medical Diagnostic Ultrasound

Prepared by

Altayeb Saad Altayeb Saad

Supervisor

Dr. Asma Ibrahim Ahmed Elamin

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بسم الله الرحمن الرحيم

الآيــــة

قال تعالى:

(وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى الْمَلَائِكَةِ فَقَالَ أَنبِئُونِي بِأَسْمَاءِ هَٰؤُلَاءِ إِن كُنتُمْ صَادِقِينَ (31) قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا ۖ إِنَّكَ أَنتَ الْعَلِيمُ الْحَكِيمُ (32) قَالَ يَا آدَمُ أَنبِئْهُم بِأَسْمَائِهِمْ ۖ فَلَمَّا أَنبَأَهُم بِأَسْمَائِهِمْ قَالَ أَلَمْ أَقُل لَّكُمْ إِنِّي أَعْلَمُ غَيْبَ السَّمَاوَاتِ وَالْأَرْضِ وَأَعْلَمُ مَا تُبْدُونَ وَمَا كُنتُمْ تَكْتُمُونَ)(33)

صدق الله العظيم
سورة البقرة من الآية (31 – 33)

I

Dedication

To my Mother, Father and Brothers who always picked me up on time and encouraged me to go on every adventure.

I dedicate this work

Acknowledge

The first and last thank to ALLAH.

Deep thank to my family for their support, bearing and encouragement.

Deep thanks to my supervisor Dr. Asma Ibrahim for her thoughtfulness, generosity and support during this difficult time while I write this research.

Great appreciation to my friends whom pushed me forward and encouraged me.

Abstract

This is a descriptive cross sectional study conducted in Um Dawan Ban area in medical Mohammed Saad's complex from August 2016 to January 2017, by Real Time Ultrasound Denshi Fukuda machine with Convex(Curved) probe with frequency 3.5 MHz.

The problem of the study was an incidence of abnormal vaginal bleeding was high among pregnant and non-pregnant women in Um Dwanban administrative area.

The study aimed to Assessment of Abnormal Vaginal Bleeding Using Ultrasound in Um Dawan Ban administrative area.

The data was collected from 50 patients, classified and analyzed by using SPSS (Statistical Package for Social Science)

The study found that the incomplete miscarriages were the most common causes of abnormal vaginal bleeding, followed by uterine fibroid, also the study found that was 74% of vaginal bleeding happened in first trimester of pregnancy, 8% happened in both second and third trimester, while 18% happened with no pregnancy. The incidence of abnormal vaginal bleeding was more common in patients of age 21-23 years and weight 60-64Kg. Also, the study found that the most patients were house wife. And most causes of abnormal vaginal bleeding were associated with regular menstrual cycles.

The study concluded that is the pregnancy problems are the commonest cause of abnormal vaginal bleeding, and the most patients are house wife with regular menstrual cycle.

The study recommended that ultrasound examination is very important to identify the causes of abnormal vaginal bleeding in order to prevent the complications.

مستخلص البحث

هذه دراسة وصفية تمت في مجمع محمد سعد الطبي في منطقة ام ضوابان في الفترة من أغسطس ٢٠١٦ إلى يناير ٢٠١٧م عبر جهاز موجات من نوع دينشي فوكودا عبر بروب محدب (مقوس) بتردد ٣٫٥ ميقاهيرتز.

تكمن مشكلة البحث في حدوث حالات نزيف مهبلي غير طبيعي كثيرة للسيدات الحوامل وغير الحوامل في منطقة امضوابان الإدارية.

برزت أهمية البحث في معرفة نتائج فحص الموجات فوق الصوتية للنزيف المهبلي الغير الطبيعي في منطقة ام ضوأبان الإدارية.

تم جمع البيانات وتصنيفها من ٥٠ مريض بواسطة برنامج SPSS (الحزم الإحصائية للعلوم الإجتماعية).

خلصت الدراسة إلى ان الاجهاض غير المكتمل كان اكبر الأسباب لحدوث النزيف المهبلي غير الطبيعي، تتبعه حالات الورم الليفي في الرحم. أيضاً الدراسة وجدت أن ٧٤% من حالات النزيف المهبلي غير الطبيعي تحدث في الثلث الأول من الحمل و٨% تحدث في الثلثين الثاني والثالث، بينما ١٨% تحدث بدون حمل. وقد حدث النزيف المهبلي الغير الطبيعي بصورة شائعة في الفئة العمرية بين ٢١-٢٣سنة و وزن بين ٦٠-٦٤كجم. أيضاً الدراسة وجدت ان معظم المرضى عبارة عن ربات منزل مع انتظام في الدورة الشهرية.

أوصت الدراسة بأن فحص الموجات فوق الصوتية في غاية الأهمية للتعرف على مسببات النزيف المهبلي الغير طبيعي، من أجل منع حدوث المضاعفات.

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Appreviations

Appreviation	Meaning
AUB	Abnormal Uterine Bleeding
CD	Color Doppler
D&C	Dilation and Curettage
DUB	Dysfunction Uterine Bleeding
EVS	Endovaginal Scan
FSH	Follicle-Stimulating Hormone
GnRH	Gonadotrophin-Releasing Hormone
GTD	Gestational Trophoblastic Disease
GTN	Gestational Trophoblastic Neoplasia
hCG	Human Chorionic Gonadotropin
HM	Hydatidiform Mole
KHz	Kilo Hertz
LH	Luteinizing Hormone
LMP	Last menstrual Period
MHz	Mega Hertz
PD	Power Doppler
RI	Restive Index
SAb	Spontaneous Abortion
SD	Spectral Doppler
TAS	Transabdominal Scan
TVS	Transvaginal Scan

Introduction

1.1 Introduction

The uterus has two layers, the thin inner layer is called the endometrium and the thick outer layer is the myometrium. In women who menstruate, the endometrium thickens every month in preparation for pregnancy. If the woman does not become pregnant, the endometrial lining is shed during the menstrual period. After menopause, the lining normally stops growing and shedding. (Richard - 2007)

Under normal circumstances, a woman's uterus sheds a limited amount of blood during each menstrual period, bleeding that occurs between menstrual periods or excessive menstrual bleeding is considered to be abnormal vaginal bleeding. Once a woman enters menopause and the menstrual cycles have ended, any bleeding, other than the small amount that may occur in women on hormone therapy, is considered abnormal. (Richard - 2007)

Vaginal bleeding can occur during pregnancy for many reasons, twenty to twenty-five percent of women have spotting or bleeding during pregnancy. This can be caused by many reasons, some women have implantation bleeding during early pregnancy. This usually occurs during the first few weeks of pregnancy. You may notice slight bleeding around the time of the period was supposed to arrive. This happens because the fertilized egg is attaching to the uterine wall. Sometimes light bleeding or brown spotting will follow this. (Mohan – 1999)

In general, any vaginal bleeding that is not normal menstrual bleeding may be abnormal and must be investigated.

The use of ultrasound machine in the investigation is important because it is noninvasive, easy to conduct, with no hazard to patient and accurate to identified the causes of abnormal vaginal bleeding.

1.2 Problem of the study:

An Incidence of abnormal vaginal bleeding is high among pregnant and non-pregnant women in Um Dwanban administrative area.

1.3 Objectives:

1.3.1 General objective of the study: -

The general objective of this study was to assessment of abnormal vaginal bleeding using ultrasonography.

1.3.2 Specific objective

1. To determine the common causes of abnormal vaginal bleeding.

2. To evaluate the role of ultrasound in diagnosis of All types of miscarriages, All types of placenta previa, Abruption placenta, Fibroids, Polyps, Ectopic pregnancy, Molar pregnancy, Cancer of the cervix or uterus, IUFD and Ovaries Masses.

3. To correlate the relationship between the causes of abnormal vaginal bleeding with different trimesters.

3. To correlate the relationship between the causes of abnormal vaginal bleeding with occupation.

4. To correlate the relationship between the causes of abnormal vaginal bleeding with age group.

5. To correlate the relationship between the causes of abnormal vaginal bleeding with weight group.

1.4 Overview of the study

This study consisted of five chapters with Chapter one is an introduction which includes (problem and objective of the study), Chapter two is a literature review

which includes (Anatomy, physiology, Pathology and previous study), Chapter three about research methodology, Chapter four deals with result and Chapter five include discussion, conclusion and recommendation.

Literature review

2.1 Anatomy of internal Genital Organs

2.1.1 Vagina:

The vagina is an elastic fibro muscular canal extending upwards and backwards forms the vulva at an angle of 60-70 degrees to the horizontal, although it is not straight as it is generally supposed but angled backwards. The vagina pierces the triangular ligament and the pelvic diaphragm. The level of these structures being approximately 1 and 2.5cm, respectively from its lower end. The vagina has blind upper and except in so far that the cervix with its external os projects through its upper anterior wall. (Roger and Peter - 1996)
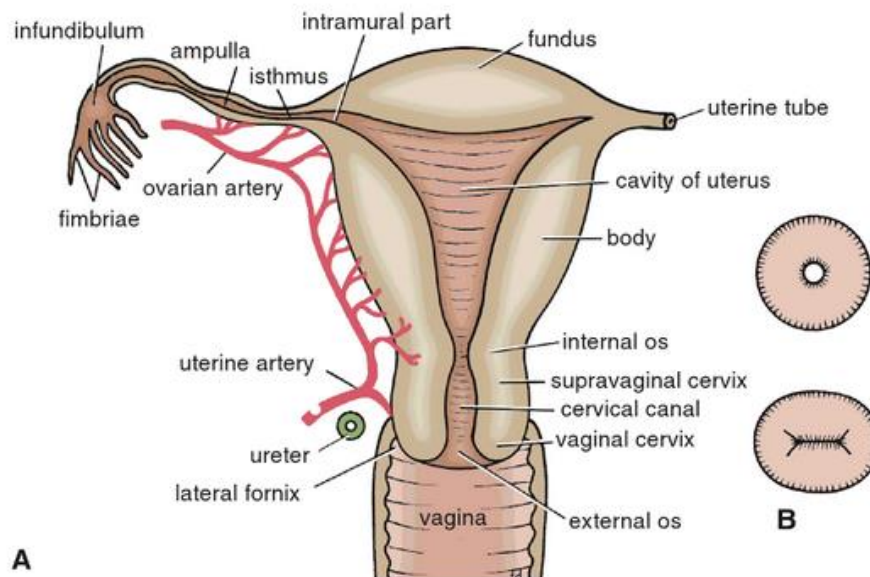
Figure (2.1) Reproductive System (Richard - 2007)

The vault of the vagina is divided into four areas according to cervix, the posterior fornix, which is capacious, the anterior fornix that is shallow and the two lateral fornices. Because the cervix is inserted

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below the vault, the posterior vaginal wall is approximately 10cm, whereas the anterior wall is approximately 8cm, in length. (Roger and Peter - 1996)

The introitus is functionally closed by the labia, which are in contact with each other. Moreover, the lumen of the vaginal is ordinarily obliterated by the anterior and posterior walls lying in opposition. In its lower parts it appears H-shaped on cross-section with lateral recesses anteriorly and posteriorly. When, however, a woman is in the knee-chest, sim's or kneeing position and the labia are separated, the vaginal balloons out. This is a result of a negative intra-abdominal pressure, transmitted to the vagina causing entry of the air. Exceptionally, such air can enter the uterus, tubes and peritoneal cavity. (Roger and Peter - 1996)

If the walls are separated, the vagina of the nulliparous married women has a diameter of approximately 4-5cm at its lower and end and is twice as wide at its upper end. Although the width and length of the vagina show considerable individual variations, anatomical shortness or narrowness is rarely a cause of difficulty or pain on coitus because the vagina is distensible and accommodates itself. The functional width is determined to a large extent by the tone and contractions of surrounding muscles. (Roger and Peter - 1996)

A raised double column formed by underlying fascia can often be seen running sagittaly down the anterior wall and there is a less definite median ridge on the posterior wall. Running circumferentially from these columns are folds of epithelium (rugae) which account in part for the ability of the vagina to distend during labour. (Roger and Peter - 1996)

2.1.1.1 The supports of the Vagina:

The vagina is supported in its upper part by the lower components of the transverse cervical ligaments, which fuse with its fascial sheath. Below this it is held by the fibers of the lavator's ani which are inserted into its side walls, by the urogenital diaphragm, and by the peroneal muscles. The anterior vaginal wall, urethra and bladder base are supported by the pub cervical fasica and also, it is said, by posterior vaginal wall and perineal body on which they rest when the woman is standing, the posterior vaginal wall rests on recto-vaginal fascia and perineal body. The support, which the perineal body gives to the vaginal wall, is minimal and the pelvic diaphragm does not sustain and cradle the pelvic viscera as is so often supposed. The latter offers no more than an elastic foundation to which the important inelastic ligaments are attached. (Roger and Peter - 1996)
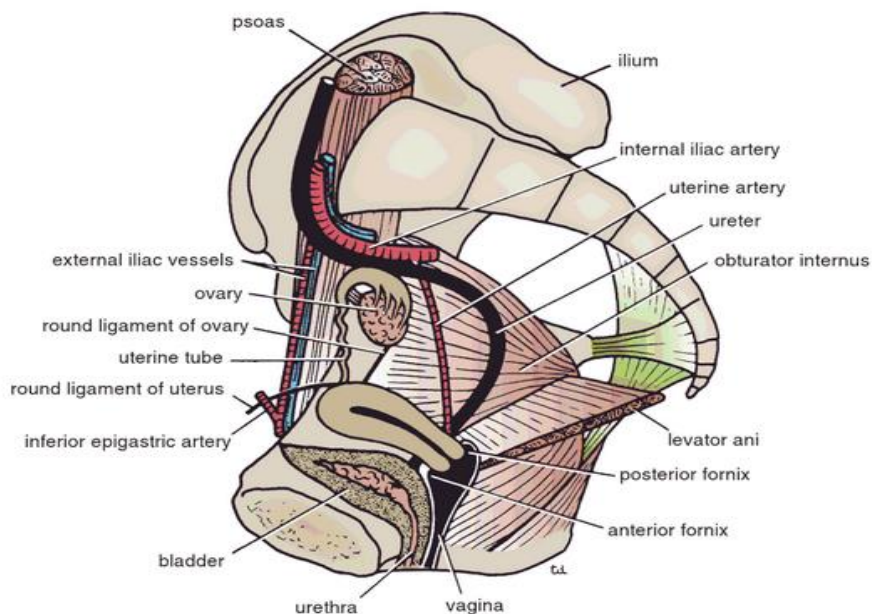
Figure (2.2) Sagital section of pelvis. (Richard S- 2007)

2.1.1.2 Vascular Connections:

The vaginal artery mainly, branches of the uterine artery, branches of the internal pudendal artery, and twigs from the middle and inferior rectal arteries. (Roger and Peter - 1996)

A plexus of veins around the vagina connects with those around the bladder and rectum, and ultimately drains into the internal iliac veins by branches, which mainly accompany corresponding arteries. (Roger and Peter - 1996)

The lymphatics of the lower vagina accompany those of the vulva to the inguinal nodes. The drainage of the upper is the same as that of the cervix, to the internal iliac (hypo gastric), external iliac, obturator and sacral nodes. (Roger and Peter - 1996)

2.1.2 Uterus:

The uterus is a thick walled, muscular, hollow organ shaped like a pear, its tapering end being the cervix, which projects into the upper vagina. The measurements were formerly given as 3x 2x1 inches. But this understates its size. Their dimension varies but the nulliparous organ measure approximately 8-9cm (3.5inch) in overall length, 6cm (2.5in) across its widest part and 4cm (1.5inches) from before backwards in its thickest part. It weight 45-55g. The wall is 1-2cm thick, so the length of normal uterine cavity, including the cervical canal, is not less than 7.5-8cm. The uterus is made up of a body or corpus, isthmus and cervix. The part of the body situated above the level of insertion of the fallopian tubes is described separately as the fundus, especially during pregnancy. The area if insertion of each fallopian tube is termed the cornu. The opening of the cervix into the vagina is the external os. The cavity of the uterus is triangular in shape when seen from the front, but is no more than a slit when seen from the side. It communicates with the vagina through the cervical canal. (Richard - 2007)

2.1.2.1 Corpus (including fundus):

The corpus makes up two thirds or three quarters of the uterus of the mature woman. The main muscle coat (myometrium) is lined by

endometrium a specialized form of mucous membrane. The later varies in thickness from 1-5 mm according to the phase of the menstrual cycle. It is covered by a single layer of cuboidal or columnar epithelium which dips in to form simple un branched tubular or spiral glands, some of which are so long that they extend from the surface to the myometrium. The glands lie on a stroma, which is made up of loosely vessels, lympathics and leukocytes. Stromal cells are spindle- or star- shaped with little cytoplasm so, in microscopic sections, it is the dark staining, small round or oval nuclei, rather than the cell outlines, which are seen. The myometrium show cyclical histological and functional changes related to menstruation. (Richard - 2007)

2.3.2.2 Isthmus:

The isthmus is an annular zone, measuring no more than 0.1-0.5cm from top to bottom in the non-pregnant uterus, which lies between the cervix and the corpus. The obvious constriction between the uterine cavity and the cervical canal is the anatomical internal os and the isthmus is below this. The junction between the isthmus and the cervical canal proper, which is only recognized microscopically, is the histological internal os. The mucous membrane of the isthmus is intermediate in structure and function between corpus and cervix. The importance of the isthmus is that it is the area, which during late pregnancy and labour becomes lower uterine segment. (Richard - 2007)

2.1.2.3 Cervix:

The cervix is barrel-shaped, measuring 2.5-3.5cm from above downwards. Half of it projects into the vagina (vaginal cervix or portivaginalis) while half is above the vaginal attachment (supervaginal cervix). The vaginal part is covered with squamous epithelium continuous with that of the vagina. The supervaginal part is surrounded

by pelvic fascia except on its posterior aspect where it is covered with the peritoneum of the pouch of Douglas. A spindle-shaped canal, disposed centrally connects the uterine cavity with the vagina. The part of the cervix is composed mainly of involuntary muscle, many of the fibers being continuous with those in the corpus. The lower half has a thing peripheral layer of muscle (the external cervical muscle) but is otherwise entirely composed of fibrous and collagenous tissues. (Richard - 2007)

The mucous membrane lining the canal (endocervix) is thrown into fold, which consists of anterior and posterior columns from which radiate circumferential folds to give the appearance of tree trunk and branches, hence the name arbor vitae. Historical the endocervix differs considerably from the endometrium. It is covered by a single layer of more cuboidal 'basal' or 'reserve' cells from which new surface cells are believed to develop and which can undergo squamous metaplasia. (Richard - 2007)

The surface epithelium dips down to form complicated glands and crypts, which are said to number approximately 100. They penetrate the fibro muscular tissue and lie in a stroma more fibrous and dense than that of the endometrium. The epithelium of these glands is taller than that of the endometrial glands and the nuclei are always basal in position. (Richard - 2007)

2.1.2.4 The support of the uterus:

The uterus is held in a position of anteflexion and anteversion by its weight, by the round ligaments, which hold the fundus forwards, and by the uterosacral ligaments, which keep the supravaginal cervix far back

in the pelvis. The broad ligaments have asteadying effect on uterus. (Richard - 2007)

The round and broad ligament don't, have any significant action in preventing descent of the uterus. This function is performed almost entirely by the transverse cervical ligaments and their posterior extensions the uterosacral ligaments. These ligaments also contribute to support the vaginal vault, which is also important in preventing uterine prolaps. (Richard - 2007)

2.1.2.5 Arterial:

Uterine and ovarian arteries.

2.1.2.6 Venous:

Pampiniform plexuses in board ligament, Uterine and ovarian veins andVaginal plexus and vertebral plexuses.

2.1.2.7 Lymphatic drainage:

The cervix is paraervical plexus, external iliac and internal iliac (hypogastric) nodes, obturator nodes and sacral nodes. The corpus same as the cervix also the aortic nodes (via lymphatics accompanying the ovarian vessels) and the superficial inguinal nodes (via lymphatics in the round ligament). (Richard - 2007)

2.1.3 Fallopian Tubes:

The tow fallopian tubes are oviducts, which extend from the ovaries to the cornua of the uterus, one on either side. They are somewhat tortuous and their outer parts curve backwards. Each lines in the free upper border of the broad ligament and, when straightened is 10cm in length. Its lumen communicates with the uterine cavity at its inner end and with the peritoneum cavity at its outer, and thus provides the final section of an open, or potentially open, canal, which lead from the exterior to the

abdominal cavity. The fallopian tube is divided into four parts. (Richard - 2007)

2.1.3.1 Interstitial or intramural parts:

This only 1-2cm in length and is the part which transverse the uterine wall. It was a very narrow lumen (1mm in diameter) and is different from the remainder of the tube in that it is without a peritoneal coat, and in that, the outer longitudinal muscle has disappeared to cover the uterus. (Richard - 2007)

2.1.3.2 Isthmus:

This is the straight and narrow portion adjacent to the uterus and measures 2-3cm. It has thick walls but the lumen is so narrow that it only admits the finest probe (1-2cm in diameter). (Richard S- 2007)

2.1.3.3 Ampulla:

This is the wider, thin-walled and tortuous outer portion approximately 5cm in length, which lead to the infundibulum.

2.1.3.4Infundibulum:

This is the trumpet-shaped outer end with an opening into the peritoneal cavity (abdominal ostium). The latter is surrounded by fronds or fimbriae, one of which is longer than the others and is directed towards the ovary. (Richard S- 2007)

2.1.3.5 Structure:

Except for a narrow a strip opposite to its attachment to the broad ligament, the extra uterine part of the fallopian tube is covered with peritoneum. Beneath this are an outer longitudinal layer and an inner circular layer of involuntary muscle. Zone is thick at the isthmus and thin at the ampulla. It is separated from the mucosa lining the lumen

(endosalpinx) by a delicate connective tissue submucosa. The tube is lined by columnar epithelium supported by a thin stroma, about half of the epithelial cells especially the outer parts of the tube are ciliated and create a current. This combined with peristaltic action of the muscle propels the ovum towards the uterus. (Richard S- 2007)
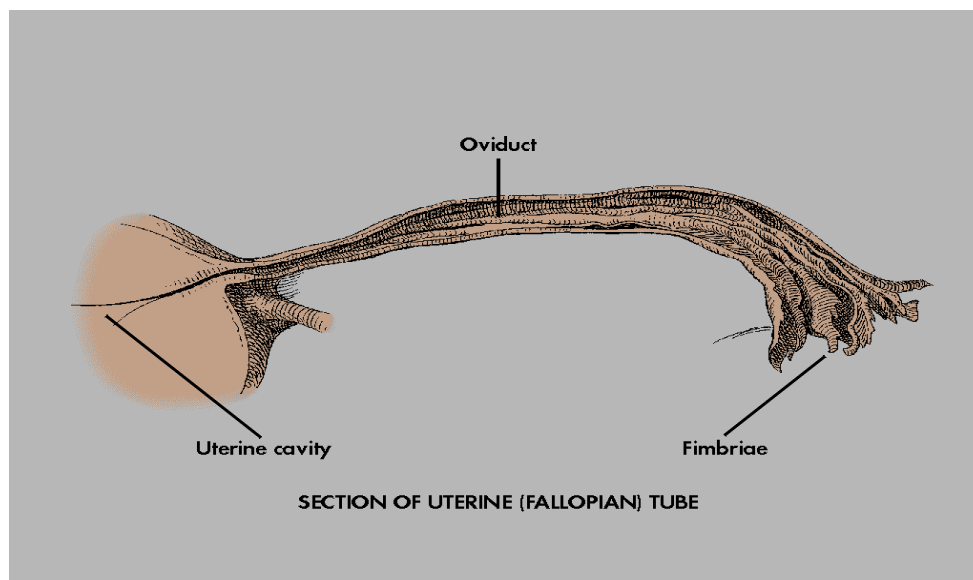
Figure (2.3) Fallopian Tube (Sandra Hagen-Ansert - 2012)

2.1.4 Ovaries:

2.1.4.1 General Descriptions:

The two ovaries are mainly solid ovoid structures, approximately 3.5cm in length and 1.5-2.5cm in thickness. Each weights 4-8g, the right tending to be larger than the left. They are attached to the back of the broad ligament by the mesovarium, one on either side of the uterus. Each is suspended form the cornu of the uterus by an ovarian ligament. The surface of an adult active ovary is corrugated, and is pale except where there happens to be some structure such as a corpus luteum. The ovary is the only organ in the abdomen, which is not covered by peritoneum. The part of the ovary attached to the mesovarium is the helium and all nerves and vessels enter and leave at this point. In the

hilum and adjacent mesovarium are small collections of hilus cells, which homologous to the interstitial cells of the testis. (Last – 2005)
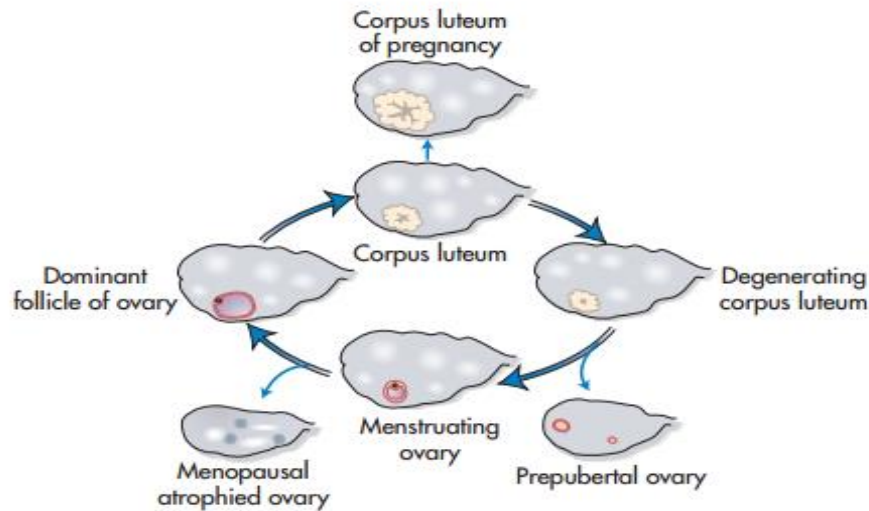
Figure (2.4): Diagram of cyclic changes of the normal ovary. (Sandra, Hagen-Ansert - 2012)

2.1.4.2 Structure:

The ovary has a cortex (outer zone) and medulla (inner zone) but they are not clearly defined. Primordial follicles are mostly found in the cortex is covered with germinal epithelium, which consists of a single layer of low cuboiudal cells but is only seen in early life. Later, the ovary is coated by the connective tissue tunica albuginea. It is now recognized that the germinal epithelium does not give rise to germ cells, so many prefer to cell it surface epithelium, the tunica albuginea is not well developed and as resistant as the comparable structure in the testis, so distention of the ovary by ripening follicles or by pathological states does not cause pain. Even when the tunica is unusually thick, as in the skin- leuenthal syndrome, it does not prevent ovulation. (Last – 2005)

2.1.4.3 Vascular connection:
2.1.4.3.1 Arterial:

Uterine and ovarian arteries.

2.1.4.3.2 Venous:

Pampiniform plexus, ovarian vein and uterine vein.

2.1.4.3.3 Lymphatic drainage:

Aortic nodes (via lymphatics accompanying the ovarian vessels) and external iliac nodes. (Last – 2005)

2.2 physiology of ovarian Cycle:

Throughout the reproductive years, at the onset of each menstrual cycle, a number of small, immature follicles known as primary or primordial follicles. The hormonal stimulus that activates the follicular process is mediated by follicle-stimulating hormone(FSH) which is secreted by the anterior pituitary gland. With each menstrual cycle, there is usually only one mature follicle, known as the dominant or Graffian follicle, which makes its way to the surface of the ovary where it appears as a transparent cyst. The mature preovulatory follicle contains the ovum at one end and a cystic cavity or antrum at the other. There are several layers of specialized cells known as theca and granulosa cells which secrete estrogen, progesterone and luteinizing substances. (Guyton Hall – 2000)

2.3 Pathology

2.3.1 Abnormal vaginal bleeding:

In women of reproductive age, the possibility of pregnant related bleeding must always be considered in any patient with abnormal uterine bleeding. Condition such as miscarriage, ectopic pregnancy and gestational trophoblastic disease may present as complaint related to abnormal menstruation. (Robbins - 1999)

2.3.1.1 Miscarriage

Is a loss of a pregnancy before 20 weeks of gestation, or also may be referred to as an "early pregnancy loss" There are many words that define miscarriage including threatened, spontaneous, complete, incomplete, criminal, illegal, habitual, induced, elective, therapeutic, inevitable, missed. Miscarriage may be spontaneous (occurring naturally) or induced (elective or therapeutic). (Robbins - 1999)

Table (2.1) Types of Miscarriage (Sandra, Hagen-Ansert - 2012)

Type	Symptoms	Signs
Threatened	Bleeding	Cervical os is closed Fetal Heart present, with normal intrauterine growth
Inevitable	Bleeding + Pain	Cervical os open
Incomplete	Bleeding + Pain	Cervical os open, some fetal parts may have been passed.
Missed	No symptoms	The os is closed and the uterus is small for dates
Complete	Passage of embryonic/ fetal parts , the pain and bleeding have subsided	Cervical os is closed and the uterus empty.

2.3.1.1 Ultrasound finding:

Empty uterus with clean endometrial stripe, Moderate endometrial echoes, also Presence of trophoblastic Doppler waveforms surrounding the endometrium normally persists for 3days post SAb, Presence of gestational sac with or without fetal component and Gestational sac identified in the cervix or lower uterine segment. finally, no identifiable embryo in a gestational sac of 25mm or larger. (Bates -2006)
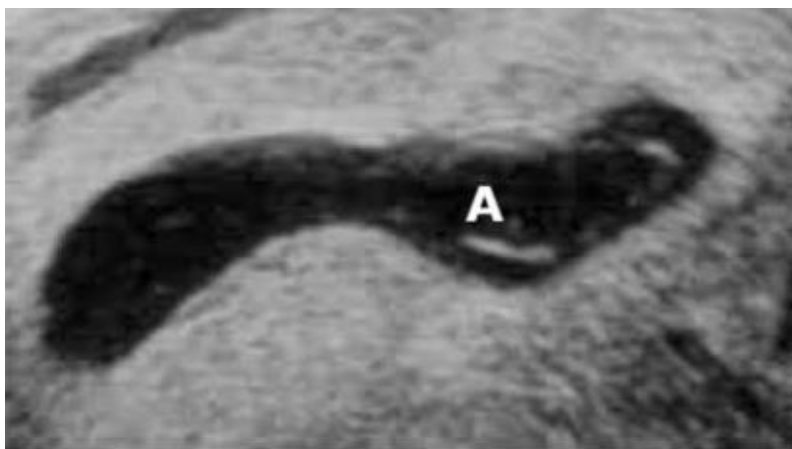
Figure (2.5): A case of missed miscarriage at 8 weeks' gestation. An irregularly shaped gestation sac is seen containing a small amniotic cavity (A) with no fetal pole. (Chuldleigh and Thilaganathan - 2004)
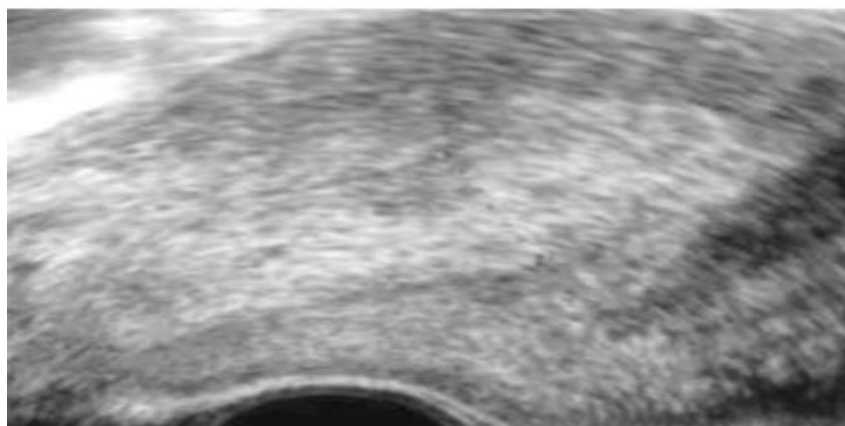
Figure (2.6): A longitudinal section of the uterus showing the uterine cavity, contains large amount of irregular echogenic tissue. This is a typical finding in incomplete miscarriage. (Chuldleigh and Thilaganathan - 2004)

2.3.1.2 Ectopic pregnancy

An ectopic pregnancy is defined as implantation of the fertilized ovum outside the uterine cavity.

Ultrasound findings of ectopic pregnancy Traditionally, the findings of a positive pregnancy test and an empty uterus seen at the time of ultrasound scan have been synonymous with the presence of an ectopic pregnancy. (Carol and Ronald – 1980)
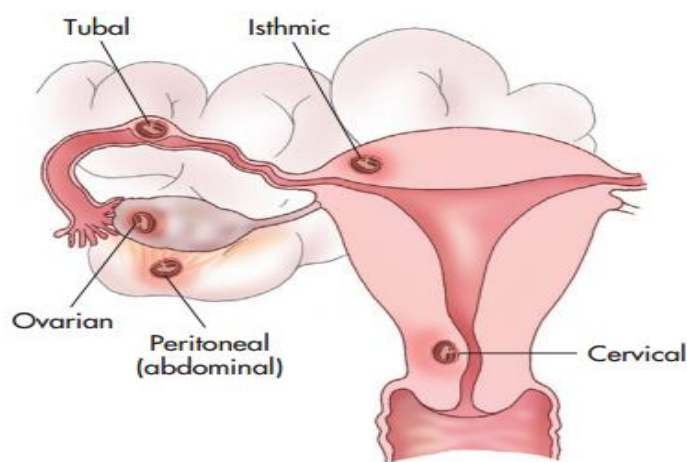
Figure (2.7): Potential sites for ectopic pregnancy. (Sandra, Hagen-Ansert - 2012)
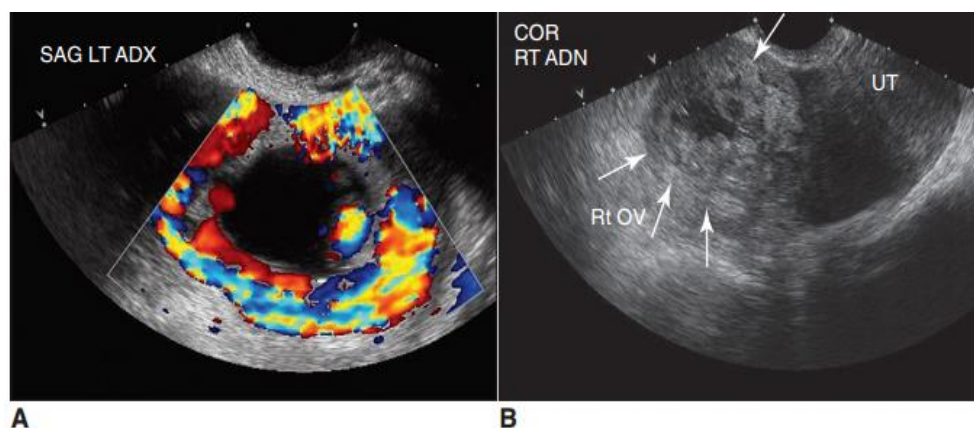
Figure (2.8): A, Sagittal sonogram demonstrating high-velocity color flow in the left adnexa. **B,** Coronal sonogram demonstrating uterus   (UT) and right ovary (Rt OV), with an echogenic concentric ring and embryo seen centrally with fetal heart motion consistent with ectopic

pregnancy. Arrows,Decidua/trophoblastic villi. (Sandra, Hagen-Ansert - 2012)

2.3.1.3 Gestational Trophoblastic Disease:

Gestational trophoblastic disease(GTD) is the general term for spectrum of trophoblastic abnormalities originating from placental trophoblasts. The classification of GTD includes hydatidiform mole (HM) and gestational trophoblastic neoplasia (GTN). (Robbins - 1999)

The ultrasound finding is important for the diagnosis of HM. however less than 60% of cases exhibit the classic sonographic appearance of "bunch of grapes or the "snowstorm" appearance. (Simpson Lynn – 2004)
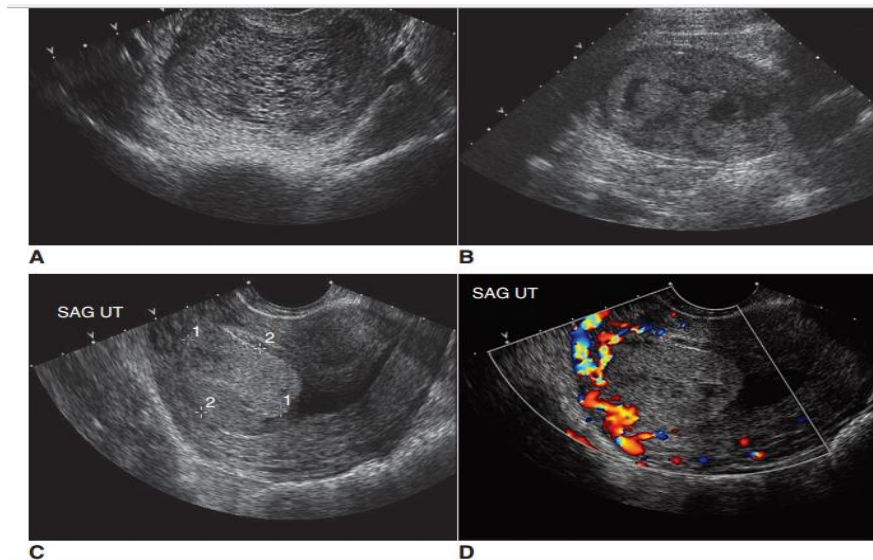
Figure (2.9): A through D, Transvaginal coronal and sagittal image of the pregnant uterus in a patient who presented larger than appropriate for dates and with bleeding. The uterus is filled with tiny grapelike clusters of tissue, which represent a HM. (Sandra, Hagen-Ansert - 2012)

2.3.1.4 Placenta previa:

Placenta previa describes a placenta that partially or completely covers the internal os. Three degrees of placenta Previa are generally described as Complete or Total, Marginal and Low-Lying Placenta.(Robbins1999)
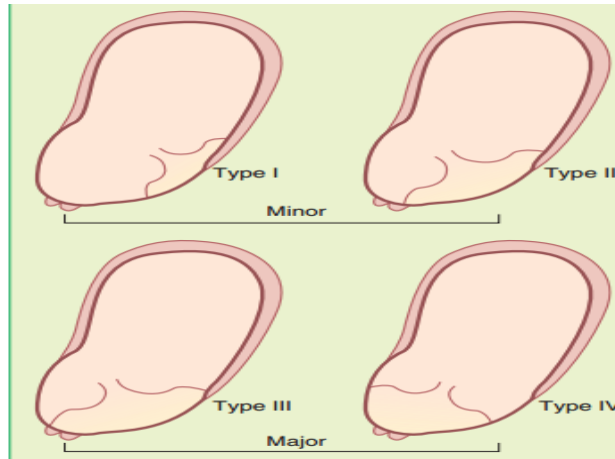
Figure (2.10): The typing of placenta previa. (Chuldleigh T, Thilaganathan B - 2004)

2.3.1.5. Abruption placenta

Placental abruption is defined as separation of the placenta prior to the delivery of the fetus. Other terms abruptio placentae are Abruption placenta, Accident hemorrhagenand Premature separation of the normally implanted placenta. (Mohan – 1999)
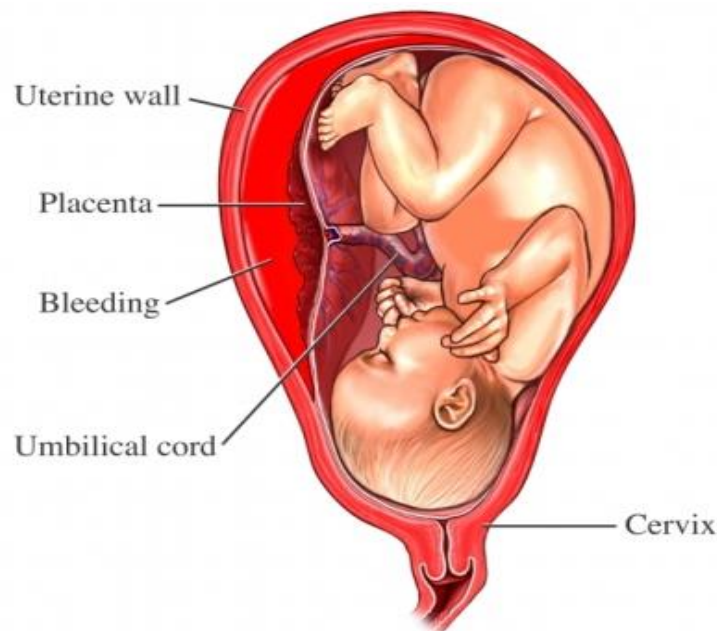
Figure (2.11): Abruption placenta (https://radiopaedia.org)

The sonographic manifestations of placental abruption are a retroplacental hematoma and/or subchorionic hematoma. Ultrasound assessment should

include measuring the size of the hematoma and observing changing in the appearance of the hematoma. (Chudleigh and Thilaganathan – 2004)

Figure (2.12): A posterior placenta in the first trimester demonstrating a retroplacental clot (*). (Chuldleigh , Thilaganathan - 2004)

2.3.2 Abnormal uterine bleeding:

Abnormal uterine bleeding is a descriptive term applied to any alteration in the normal pattern of menstrual flow. However, from a practical point of view abnormalities in menstrual flow may take from of excessive flow, prolonged flow or inter menstrual bleeding. Menorrhagia is one of the commonest gynecological complaints seen in practice as accounts for approximately 15 per cent of all referrals to a general gynecologic clinic. Among women aged 16 to 45 years it has an incidence of around 30 per cent and remains the commonest indication for hysterectomy. (Robbins C – 1999)

2.3.3 Organic causes:

The major organic causes of abnormal uterine bleeding include the following condition. Local disorder (uterine malformation, myoma or fibroids, adenomyosis ,endocervical polyps , endometrial polyps ,hyperplasia , IUCD, PID , malignant of the cervix or uterus hormone producing tumor and trauma). (Robbins – 1999)

2.3.4 Uterine malformation

A congenital uterine malformation is a deviation in the shape or structure of the uterus that occurred during a woman's own prenatal

development. Exposure to certain chemicals may cause congenital malformations, such as if the woman's mother took a drug called DES while pregnant.

Some type's congenital uterine malformations can increase the risk of miscarriages or preterm delivery. Specific malformations include septate uterus, bicornuate uterus, unicornuate uterus, arcuate uterus, didelphic uterus, or T-shaped uterus. (Robbins – 1999)
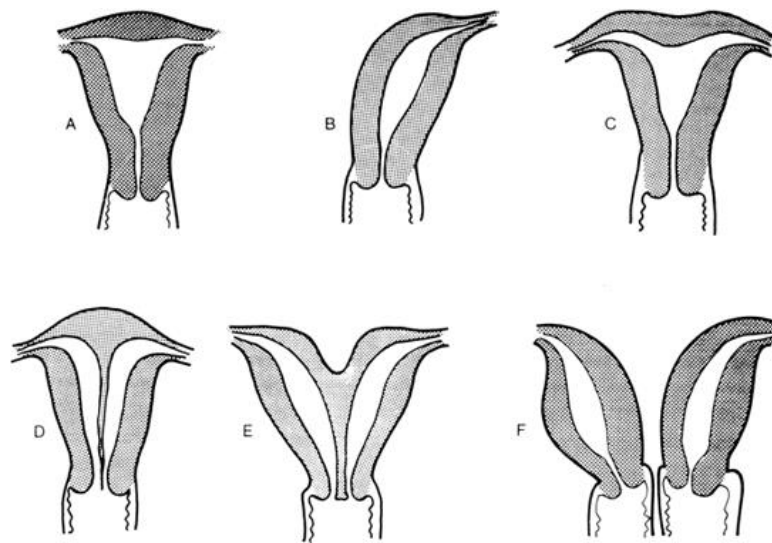
Figure (2.13): Uterine fusion anomalies. **A**. Normal uterus. **B**. Unicornuate uterus. **C**. Arcuate uterus. **D**. Septate uterus. **E**. Bicornuate uterus. **F**. Didelphic uterus with a septate vagina. (Sandra, Hagen-Ansert - 2012)

2.3.5 Fibroid:

Myomas or myoma are benign tumors arising from smooth muscle. A myoma is composed mainly of smooth muscle with varying amounts of fibrous tissue. (Robbins – 1999)

There are four general locations for fibroids Subserosal - on the outside surface of the uterus, Intramural within the muscular wall of the uterus, Submucous - bulging in to the uterine cavity and Pedunculated fibroid within out wall of the uterus. (Sandra, Hagen-Ansert - 2012)
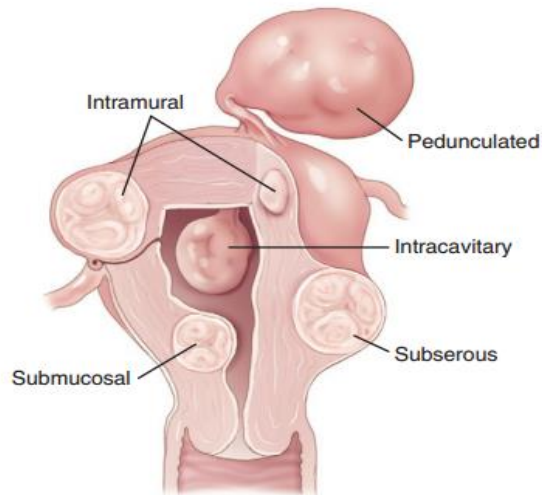
Figure (2.14): Various locations of fibroid tumors found within the uterine cavity. (Sandra L, Hagen-Ansert - 2012)
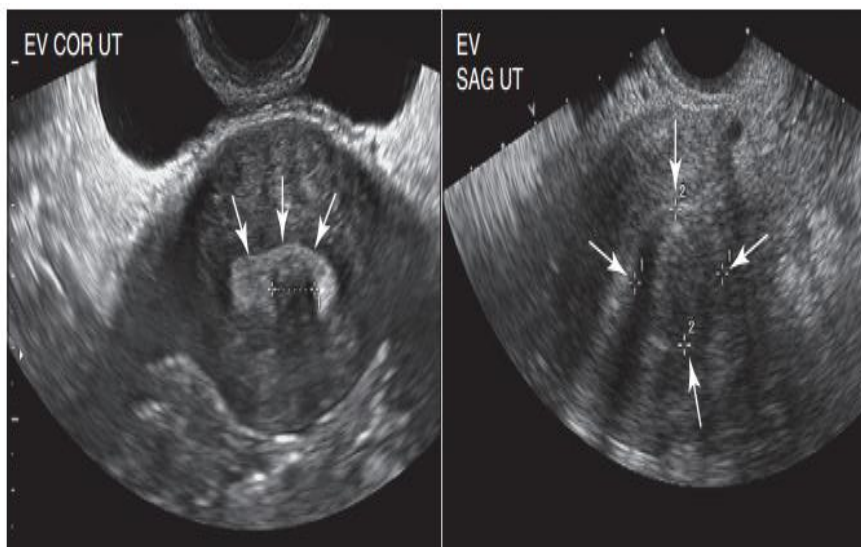
Figure (2.15): Transvaginal views of the uterus reveal subtle submucosal myomas (arrows). (Sandra, Hagen-Ansert - 2012)

2.3.6 Adenomyosis:

Adenomyosis is defined as ectopic endometrial tissue within the myometrium. Adenomyosis can coexist with endometriosis however it is usually a separate disease. The term "internal endometriosis" is sometimes used to refer to adenomyosis. (Robbins – 1999)
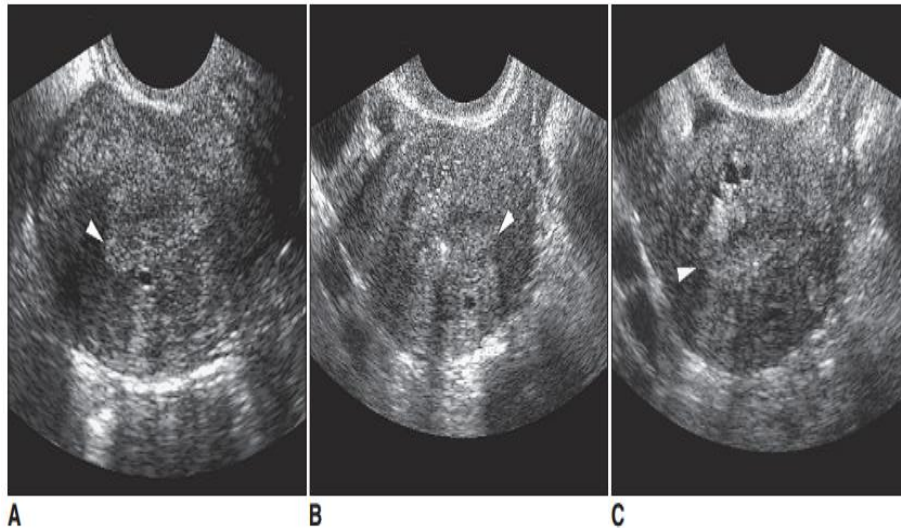
Figure (2.16): Adenomyosis on transvaginal scans spectrum of appearances. **A**, Subendometrial cyst (arrowhead). **B**, Cysts with heterogeneity in both anterior and posterior myometrium. **C**, Cysts with heterogeneity in anterior myometrium. (Sandra, Hagen-Ansert - 2012)

2.3.7 A Polyp:

Endometrial polyps are localized overgrowths of endometrial glands and stroma. These lesions may be either sessile (broad-based) or pedunculated. (Robbins – 1999)

Ultrasound with TAS, endometrial polyps are generally too small to be defined and typically produce nonspecific endometrial thickening. With EVS, polyps are generally discretely visualized and appear as focal echogenic masses with a uniform echo texture (slightly more echogenic than normal adjacent endometrium). On CD/PD evaluation, polyps typically demonstrate a single feeding vessel in the center of the lesion. Sonohysterography with the aid of CD provides more accurate EVS distinction between polyps, submucous myoma, clots, and synechia. (Maulik and Zalud – 2005)
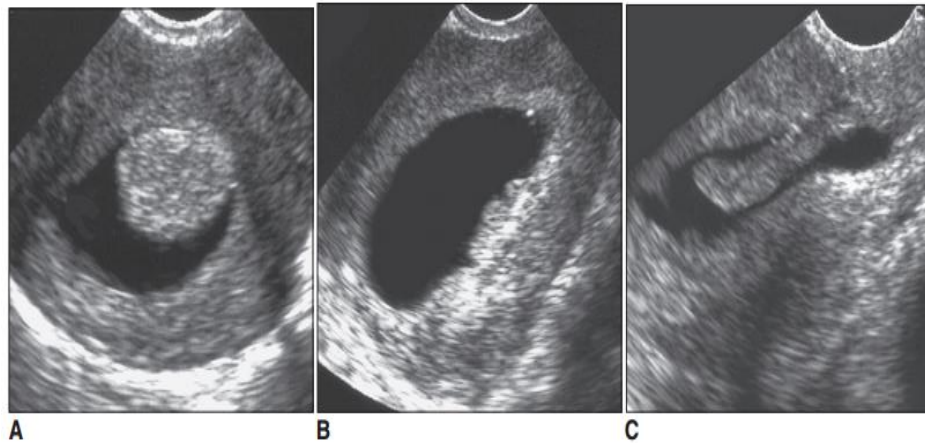
Figure (2.17): Sonohysterograms. **A,** Well-defined, round echogenic polyp. **B,** Carpet of small polyps. **C,** Polyp on a stalk. (Sandra L, Hagen-Ansert 2012)

2.3.8. Endometrial hyperplasia

Endometrial hyperplasia is defined as generalized overgrowth of the endometrium. (Mohan – 1999)

On ultrasound, endometrial hyperplasia appears as generalized thickening of the endometrium with a smooth myometrial boundary and no evidence of myometrial invasion. It may be indistinguishable from endometrial polyps or carcinoma, even on EVS. Sonohysterography can provide more accurate distinction. Diagnosis is usually confirmed by endometrial sampling. (Mohan – 1999)
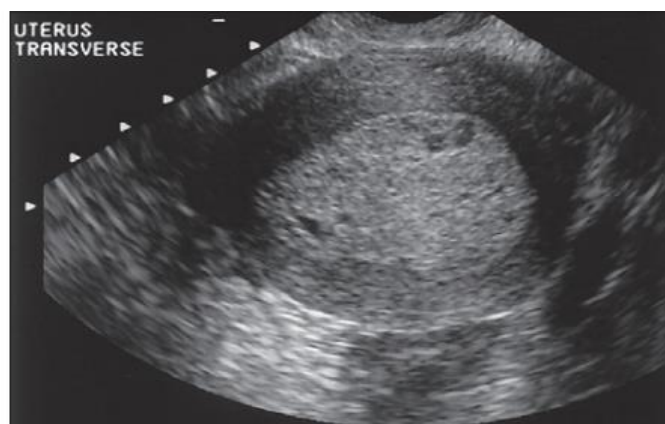
Figure (2.18): Transvaginal coronal image of the uterus with a very prominent endometrium measuring more than 23 mm. On biopsy the patient had endometrial hyperplasia. (Sandra, Hagen-Ansert - 2012)

2.3.9 Ovarian Mass

Ovarian masses represent a wide variety of pathologies including functional cysts, endometriosis, benign or malignant neoplasms. The term "tumor" does not mean benign or malignant. It simply means the mass in the ovary is not a functional, ovulatory cyst. (Mohan – 1999)

The ovarian cysts are anechoic (black) fluid filling the cyst cavity and thin walls. Simple cysts are less than 40-50 mm in diameter. A complex cyst with hyperechoic regions may indicate a dermoid, and cysts with uniform hypoechoic texture can suggest endometriomas. (Mohan – 1999)

Figure(2.19):simple overian cyst. The cyst is well defined and anechoic with increased through-transmission. (Sandra L, Hagen-Ansert - 2012)
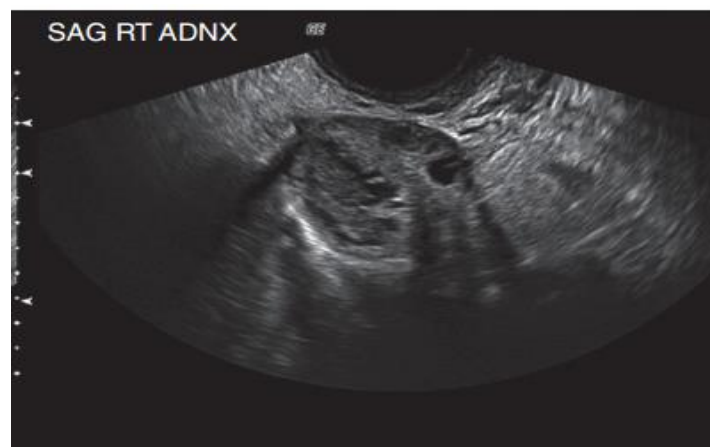
Figure(2.20): Complex ovarian cyst. Transvaginal sagittal image of a simple cyst that has hemorrhaged. (Sandra, Hagen-Ansert - 2012)

2.3.10 Polycystic ovarian syndrome:

PCOD is a complex endocrine disorder characterized by chronic an ovulation associated with elevated serum androgen levels (hyperandrogenemia) and unbalanced elevations of serum LH levels (PCOD is the most common cause of chronic anovulation). (Robbins – 1999)

Ultrasound for Patients with PCOD typically have bilateral ovarian enlargement, numerous immature follicles without evidence of dominance (cysts <15 mm), and stromal hypertrophy with increased echogenicity. (Robbins – 1999)

The peripheral pattern is referred to as the "necklace" or "string of pearls" pattern. (Robbins C – 1999)
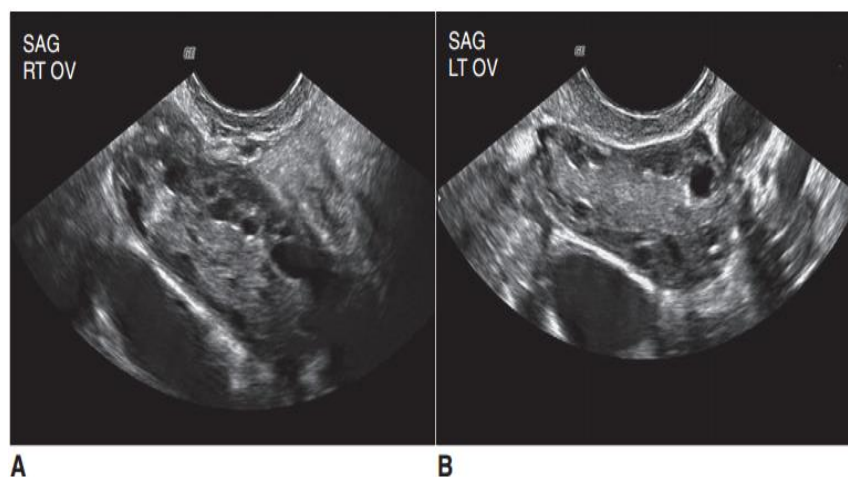
Figure (2.21): Polycystic ovarian syndrome. A, The right ovary is enlarged with prominent follicles around the periphery of the outer margin. B,The left ovary is "string of pearls" appearance . (Sandra, Hagen-Ansert – 2012)

2.3.11 Trauma

Trauma to the lower genital tract should also be considered as a cause for an acute presentation of abnormal bleeding. Postcoital laceration to the vagina can occur and in many situations a history may not be readily forthcoming. (Robbins – 1999)

2.3.12 Neoplasm of genital tract:

The most common malignant disease affecting the uterine is adenocarcinoma. Squamous carcinoma is rare, but when it occurs it develop in a glandular epithelium which has undergone squamous metaplasia. (Robbins – 1999)

Ultrasound appearance is variable, depending on the stage at presentation. Generally, no uterine enlargement at the time of diagnosis but changes in the endometrium and inner myometrium may be apparent. Endometrium thickening is always pathological but no morphological features to malignancy have been identified. Small cystic area may be identified within the endometrium. (Robbins C – 1999)
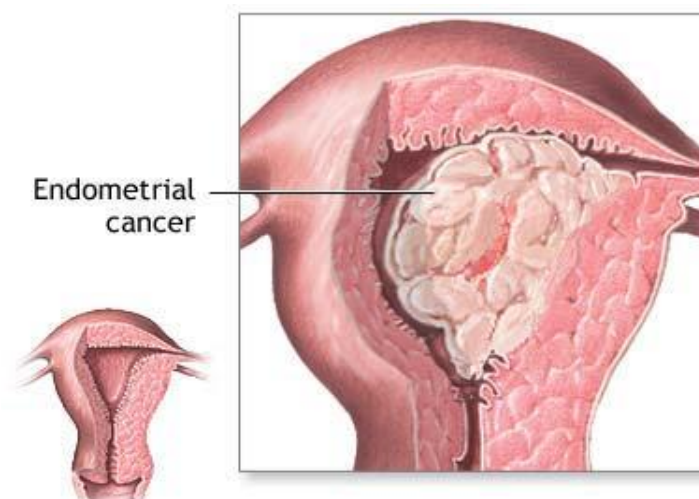
Figure (2.23): Endometrial Cancer (Robbins C – 1999)
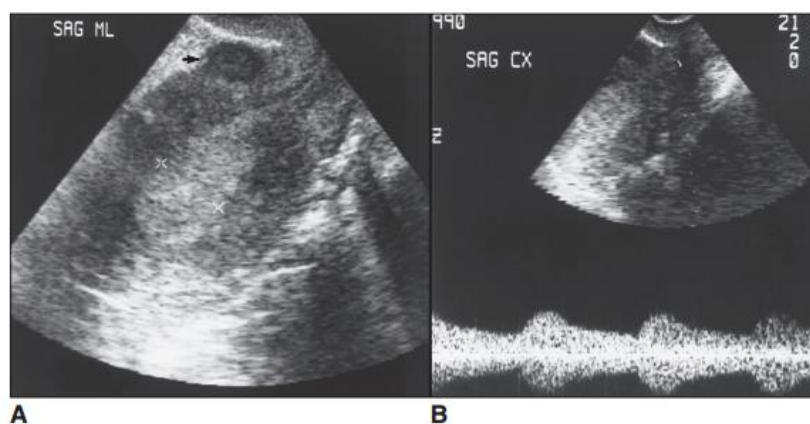
Figure (2.24): endometrial carcinoma in a 52-years-old women. A, sagittal view of the uterus. B, Doppler examination of the uterine artery.

2.3.13 Systemic disorder:

Endocrine disorder may manifest themselves as abnormality of menstruation. The following conditions may be associated with menstrual dysfunction. Hyper-or hypothyroidism, diabetes mellitus, adrenal disease, prolactin disorders. (Robbins C – 1999)

2.4 Investigation Done:

2.4.1 Lab Investigation:

Laboratory studies for patients with abnormal uterine bleeding (AUB) include human chorionic gonadotropin (HCG), complete blood count (CBC), Pap smear, endometrial sampling, thyroid functions and prolactin, liver functions, coagulation studies/factors, and other hormone assays as indicated. (Mohan – 1999)

Perform a biopsy to rule out endometrial hyperplasia or cancer in high-risk women >35 years and in younger women at extreme risk for endometrial hyperplasia/carcinoma. Women with chronic eugonadal anovulation, obesity, hirsutism, diabetes, or chronic hypertension are at particular risk. (Mohan – 1999)

2.4.2 diagnostic ultrasound:

Ultrasound is the preferred imaging modality for the diagnosis and monitoring of pelvic organs. Pelvic ultrasound can help to identify and evaluate a variety of urinary and reproductive system disorders in both sexes without even the minimal risks. (Stewart and Benjamin – 1991)

2.4.2.1 Ultrasound Technique: -

To perform a pelvic ultrasound examination using the abdominal route, the woman must have a full bladder. To examine the pelvis adequately, a probe with a small area of contact or 'footprint' is needed. This is most commonly of the sector type, but phased array, annular array and

small curvilinear probes are also appropriate. Place the probe on the abdomen in the midline, immediately superior to the symphysis pubis to obtain a longitudinal section of the pelvis. The bladder should be seen on the right of the screen. (Chuldleigh and Thilaganathan - 2004)

The vagina is usually immediately visualized as threebright parallel lines posterior to the bladder. If only the lower part of the uterus is seen, rotate the probe slightly towards the right side of the woman, to compensate for the dextrorotation of the uterus. The section should clearly demonstrate the uterine fundus. If the uterine fundus cannot be adequately seen because the bladder is insufficiently filled, the examination should be postponed until this situation is rectified. The ultrasound appearances of the uterus obtained transabdominally are comparable to those obtained transvaginally. (Chuldleigh and Thilaganathan - 2004)

The cervical canal can be difficult to define in non-pregnant women because of the angle at which it lies relative to the sound beam. This remains a problem irrespective of whether the uterus is anteverted or retroverted. The position of the internal os can be gauged as it lies directly beneath the point at which the posterior wall of the bladder appears to change direction. This change in direction occurs because the lower part of the bladder (the trigone) is fixed to the cervix and cannot change position as the bladder fills. The external os is not seen transabdominally. Cross-sectional views of the uterus are obtained by rotating the probe through 90° while keeping the cavity line in view. Sliding the probe up and down the abdomen will produce transverse sections of the uterus from fundus to cervix. (Chuldleigh and Thilaganathan - 2004)

2.5 Previous Studies:

There are many studies carried on abnormal vaginal around the world, the Goldstein was referring to {Abnormal uterine bleeding (AUB) is highly prevalent and an important factor in female health; up to one in 20 women aged 30–49 visits her general practitioner because of menorrhagia and AUB accounts for 20% of visits to the gynecological outpatient department (Abnormal uterine bleeding. Goldstein, 2004. and Royal College of Obstetricians and Gynecologists).

Emanuel and Cornelis said that {Apart from hormonal disbalance, intrauterine abnormalities are the leading cause of AUB: more than 40% of the referred women with AUB are reported to have intrauterine abnormalities (Emanuel et al., 1995 and Cornelis et al., 2006).
Bronz and Elysia Moschos reveal that {Evaluation of the endometrium by transvaginal Ultrasonography is currently the imaging method of choice in the diagnostic workup for abnormal uterine bleeding (Bronz et al., 1997, Elysia Moschos et al., 2009).}

In Sudan also there are many studies carried on the issue, Abu baker said that {most causes of abnormal vaginal bleeding were related to pregnancy problems which constitute 59% (Abubaker Adam, Ultrasound finding of abnormal vaginal bleeding in Abu Gebiha Area, M.Sc. Research in diagnostic ultrasound, College of medical Radiologic science, Sudan University, 2007. 100 cases)}.

Motaz Bashir said that {most causes of abnormal vaginal bleeding was related to pregnant and its complications constitute 91%, (Motaz Basheir, Ultra sound finding of abnormal vaginal bleeding in El Nohoud city, M.Sc Research in diagnostic ultrasound, College of medical Radiologic science, Sudan University, 2010. 100 cases)}.

Methodology

3.1 Materials:

3.1.1 Study type:

Desceptive cross sectional study.

3.1.2 Sample:

50 cases of Sudanese women with abnormal vaginal bleeding present to ultrasound department. With the age group range from (20-40) and weight between (50-84). exclusions of normal women menstruation.

3.1.3 Duration of the study:

This study started from August 2016 up to January 2017.

3.1.4 machine:

Real time Ultrasound Denshi Fukuda machine with Convex(Curved) probe with frequency 3-5 MHz.

3.1.5 Technique:

The patients undergoing ultrasound investigation were well prepared i.e. they must come with almost reasonably full bladder, then the patient laid in supine position on the couch. Most of the patients were examined transabdominally only, then gel was applied in pelvis area and both longitudinal and transverse views of the patient's uterus, its contents and adnexa were applied.

3.1.6 Ultrasound Finding:

Ultrasound is routinely used for assessing the progression of a pregnancy. Pelvic ultrasounds can be obtained trans-abdominally where the probe is placed on the abdominal wall, or trans-vaginally, where the probe is placed in the vagina. For example, ultrasound in obstetrics/gynecology is used to diagnose growths or tumors of the ovary, uterus, or, Fallopian tubes.

3.1.7 Data collection:

The data was collected using data sheets using the following variables age, occupation, number of previous abortion, parity, weight and menstrual cycle.

3.1.8 Data analysis:

Data were analyzed by using SPSS program version 16 and the results were presented in form of graphs and tables.

3.1.9 Ethical consideration:

No identification or individual details were published, and no information or patient details will be disclosed or used for other reasons than the study.

Results

Table (4.1): shows the frequency distribution of vaginal bleeding and age group.

age group	Frequency	Percentage%
18-20	6	12%
21-23	12	24%
24-26	11	22%
27-29	7	14%
30-32	8	16%
33-35	3	6%
36-38	1	2%
39-41	2	4%
Total	**50**	**100%**
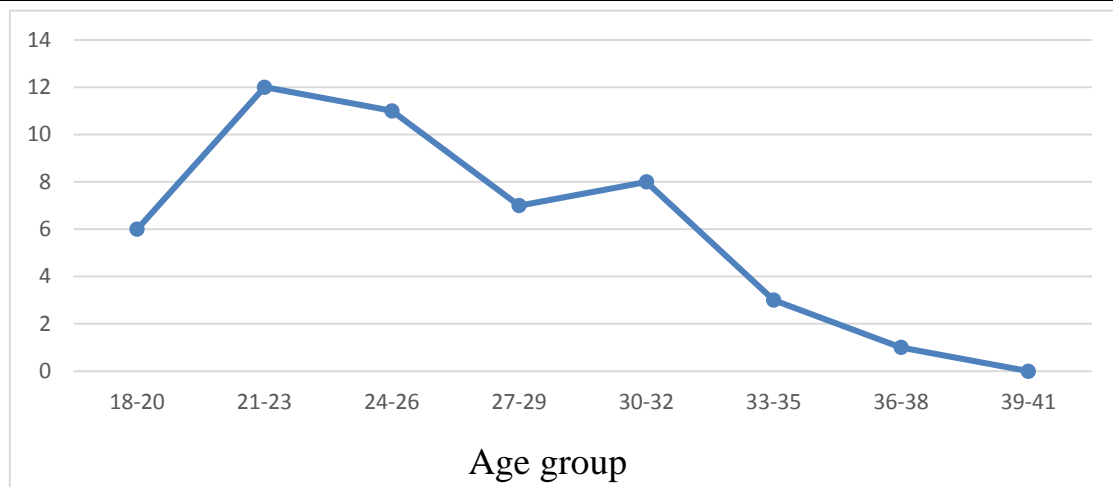
Figure (4.1)**:** shows the frequency distribution of vaginal bleeding and age group.

Table (4.2): shows the frequency distribution of different causes of vaginal bleeding for 100 patients

The diagnosis	Frequency	Percentage%
Incomplete Miscarriage	11	22%
Complete Miscarriage	4	8%
Missed Miscarriage	6	12%
Threatened Miscarriage	9	18%
Inevitable Miscarriage	5	10%
Placenta Previa	2	4%
Molar Pregnancy	2	4%
Ovarian Mass	3	6%
Ectopic Pregnancy	2	4%
Uterine Fibroids	6	12%
Total	**50**	**100%**
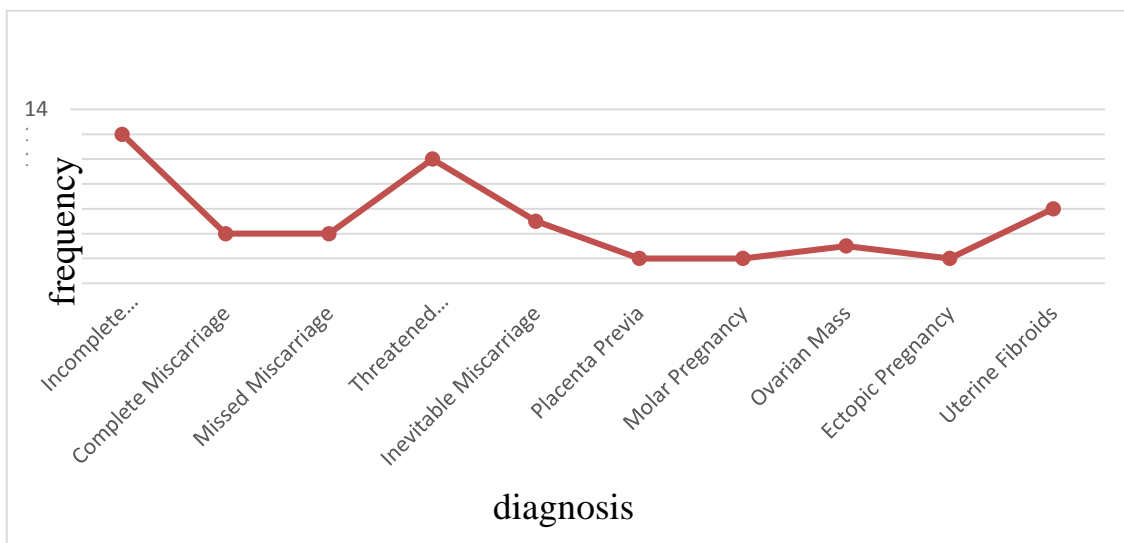
Figure (4.2): a line graph shows the distribution of the causes of bleeding

Table (4.3): shows the frequency of the vaginal bleeding in different trimesters

Trimester	Frequency	Percentage%
First	37	74%
Second	٢	٤%
Third	٢	٤%
No pregnancy	9	18%
Total	٥٠	١٠٠%
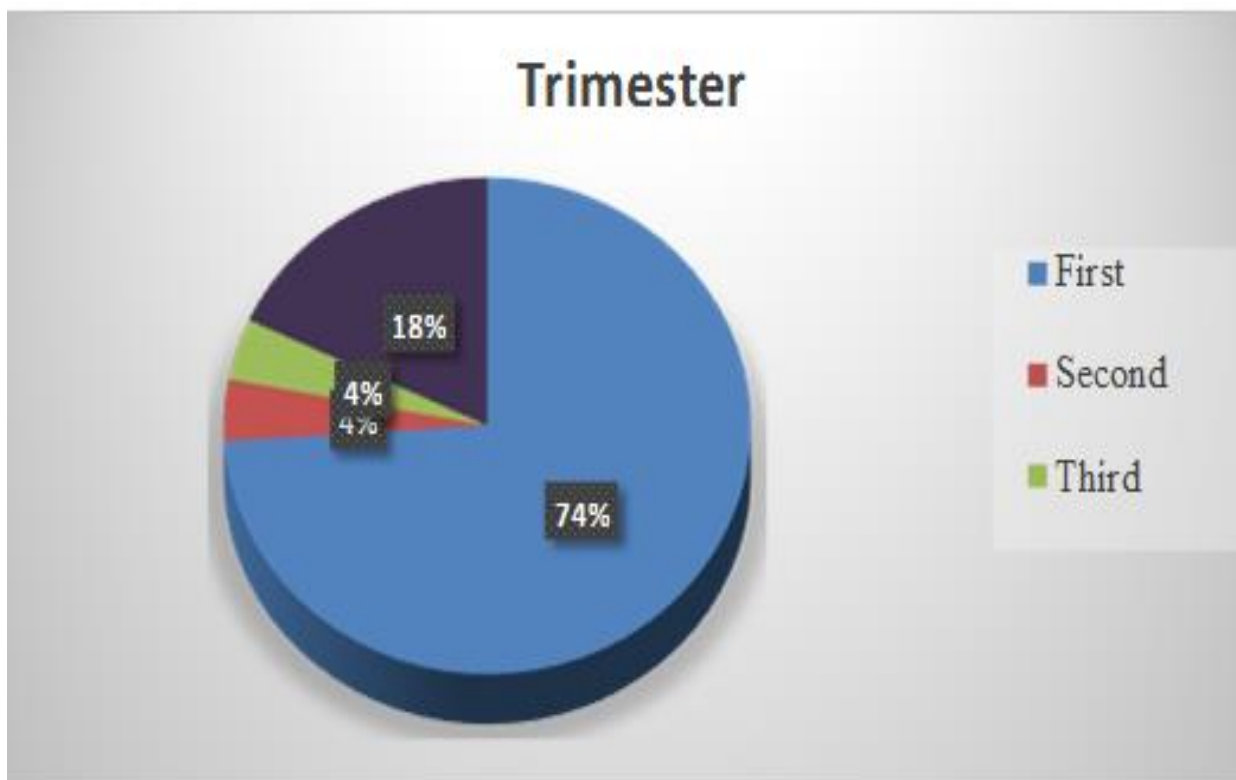
Figure (4.3): shows the frequency of the vaginal bleeding according to the trimester

Table (4.4): shows the frequency distribution of different types of vaginal bleeding according to occupation.

Occupation	Frequency	Percentage%
House Wife	٣٤	68%
Employer	10	20%
Student	6	12%
Total	**50**	**100%**
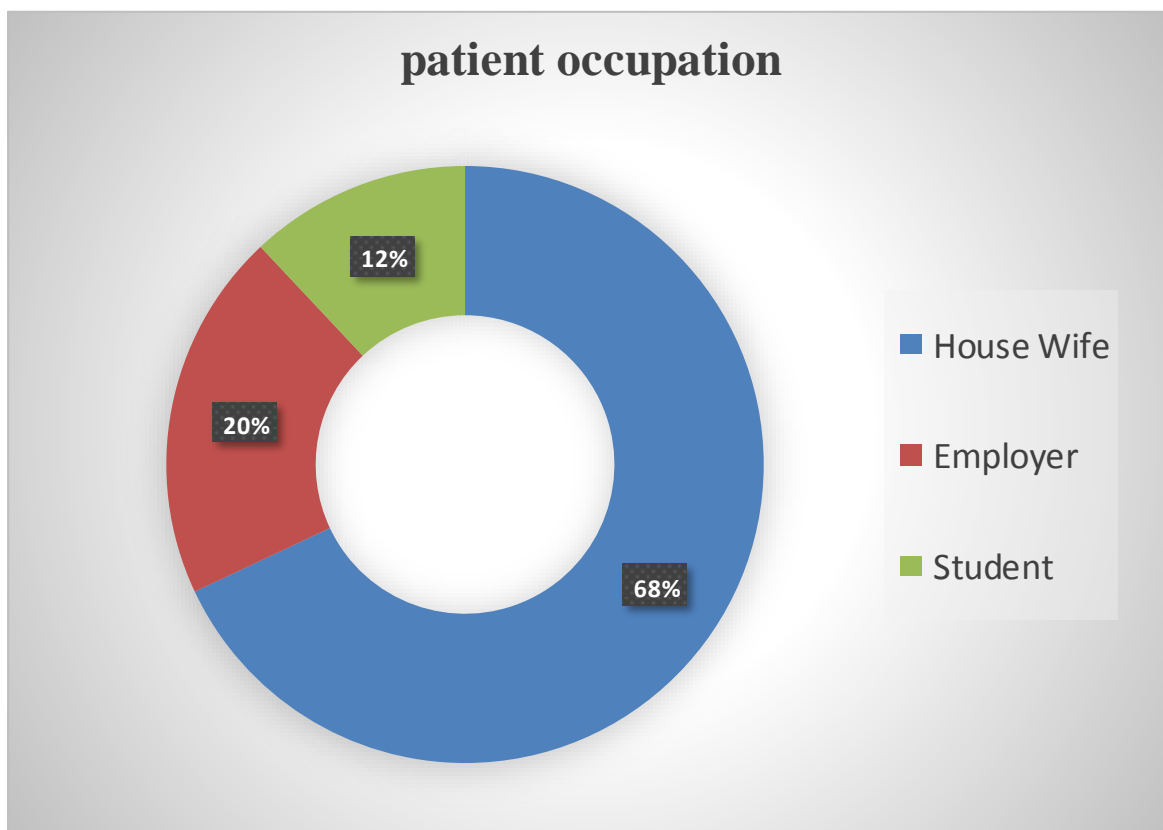
Figure (4.4): shows the frequency distribution of different types of vaginal bleeding according to occupation.

Table (4.5): shows the frequency distribution of different types of vaginal bleeding according to menstrual cycle.

Menstrual Cycle	Frequency	Percentage%
Regular	31	62%
Irregular	19	38%
Total	**50**	**100%**
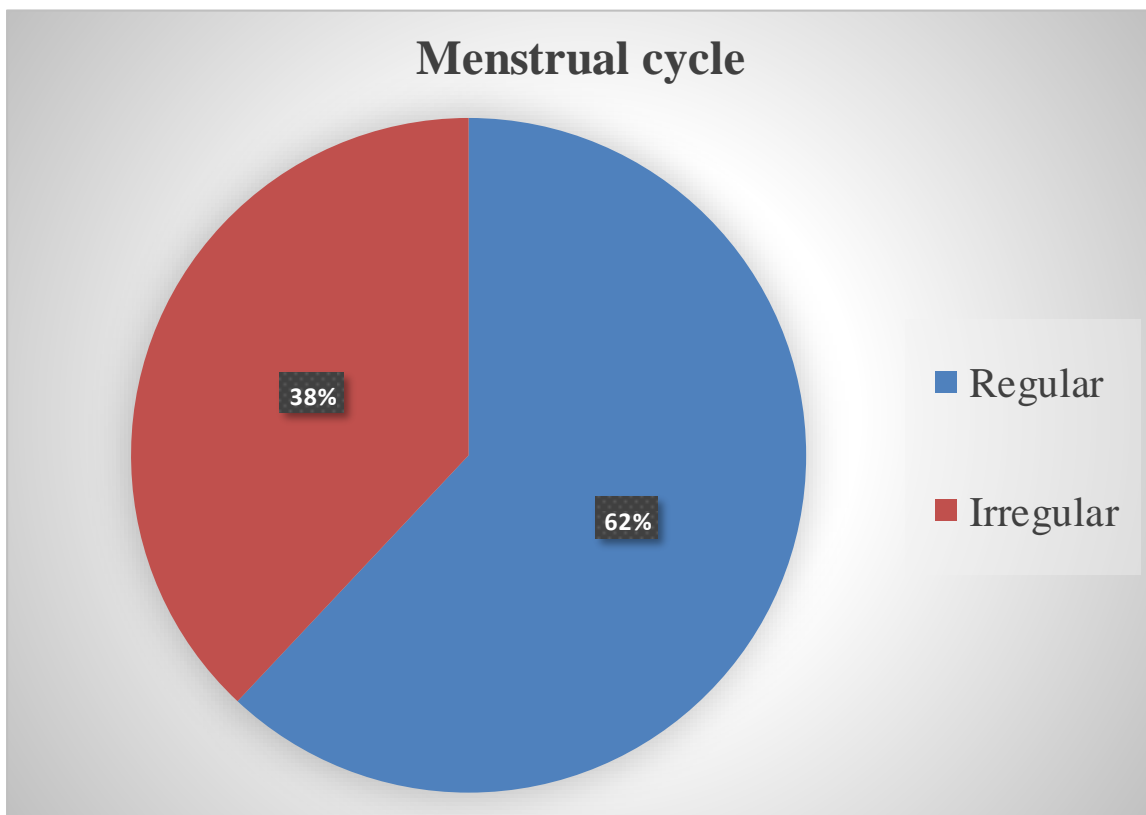
Figure (4.5): shows the frequency distribution of different   types of vaginal bleeding according to menstrual cycle.

Table (4.6): shows the frequency distribution of causes of vaginal bleeding in different trimesters.

The diagnosis	Trimester				Total
	First	**Second**	**Third**	**No-pregnancy**	
Incomplete Miscarriage	12				**12**
Complete Miscarriage	4				**4**
Missed Miscarriage	4				**4**
Threatened Miscarriage	10				**10**
Inevitable Miscarriage	5				**5**
Uterine Fibroid				6	**6**
Ovarian Mass				3	**3**
Placenta Previa			2		**2**
Molar Pregnancy		2			**2**
Ectopic Pregnancy	2				**2**
Total	**37**	**2**	**2**	**9**	**50**
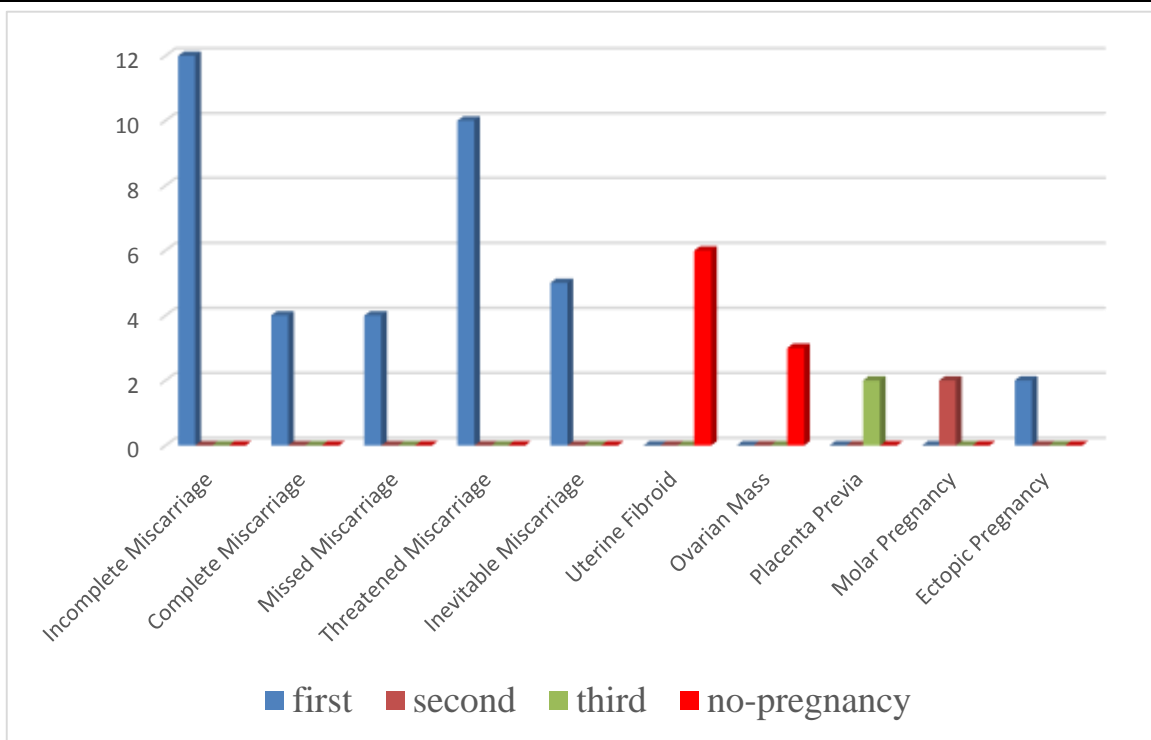
Figure (4.6): shows the frequency distribution of different causes of vaginal bleeding in trimesters.

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Table (4.7): shows the frequency distribution of different causes of vaginal bleeding and occupation.

| The diagnosis	Occupation			Total
	House Wife	Employer	Student	
Incomplete Miscarriage	6	3	3	12
Complete Miscarriage	3	1	0	4
Missed Miscarriage	3	1	0	4
Threatened Miscarriage	6	2	2	10
Inevitable Miscarriage	4	1	0	5
Uterine Fibroid	6	0	0	6
Ovarian Mass	1	1	1	3
Placenta Previa	1	1	0	2
Molar Pregnancy	2	0	0	2
Ectopic Pregnancy	2	0	0	2
Total	34	10	6	50
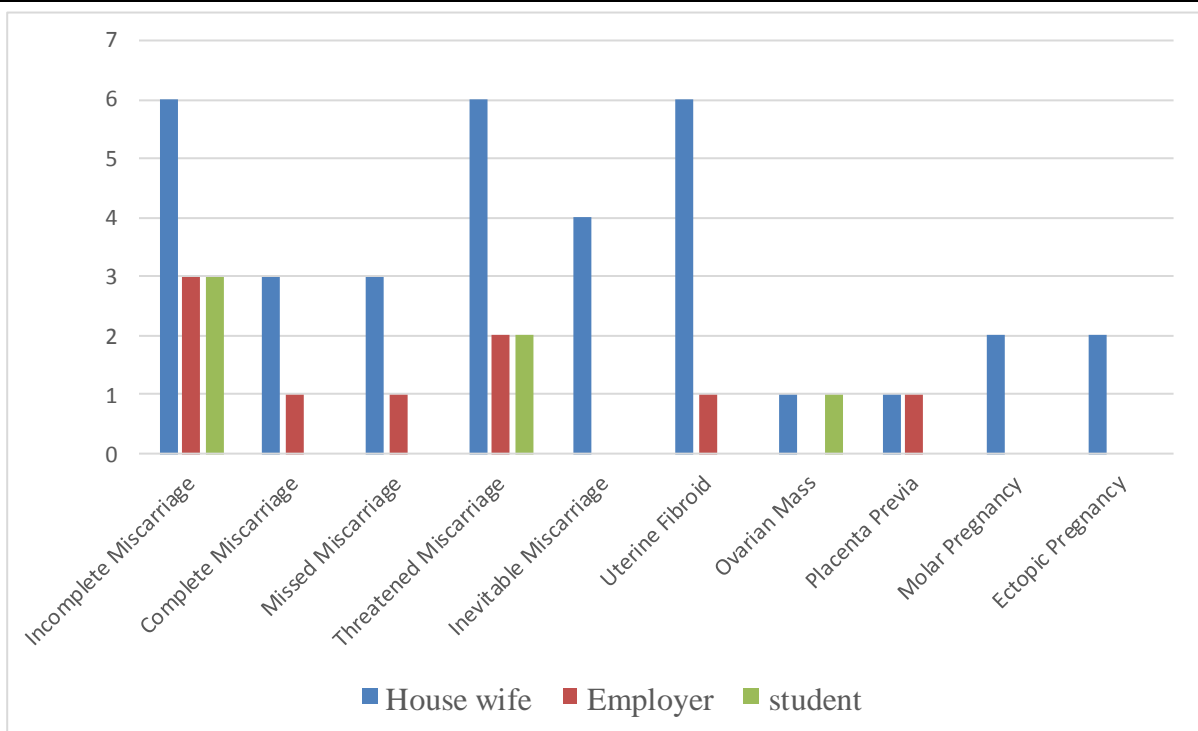
Figure (4.7): shows the frequency distribution of different causes of vaginal bleeding and occupation.

Table (4.8): shows the frequency distribution of causes of vaginal bleeding and age group.

The Diagnosis	Age								Total
	18-20	21-23	24-26	27-29	30-32	33-35	36-38	39-41	
Incomplete Miscarriage	3	2	2	0	3	1	0	1	**12**
Complete Miscarriage	1	1	0	1	1	0	0	0	**4**
Missed Miscarriage	0	4	0	0	0	0	0	0	**4**
Threatened Miscarriage	1	3	2	2	2	0	0	0	**10**
Inevitable Miscarriage	0	1	1	2	1	0	0	0	**5**
Uterine Fibroid	0	0	3	1	0	1	0	1	**6**
Ovarian Mass	1	0	1	0	0	0	1	0	**3**
Placenta Previa	0	0	1	0	0	0	1	0	**2**
Molar Pregnancy	0	2	0	0	0	0	0	0	**2**
Ectopic Pregnancy	0	0	1	0	0	1	0	0	**2**
Total	**6**	**13**	**11**	**6**	**7**	**3**	**2**	**2**	**50**

Figure (4.8): shows the frequency distribution of causes of vaginal bleeding and age group.

Table (4.9): shows the frequency distribution of vaginal bleeding and weight group.

weight group	Frequency	Percentage%
50-54	3	6%
55-59	6	12%
60-64	19	38%
65-69	8	16%
70-74	8	16%
75-79	3	6%
80-84	3	6%
Total	**50**	**100%**
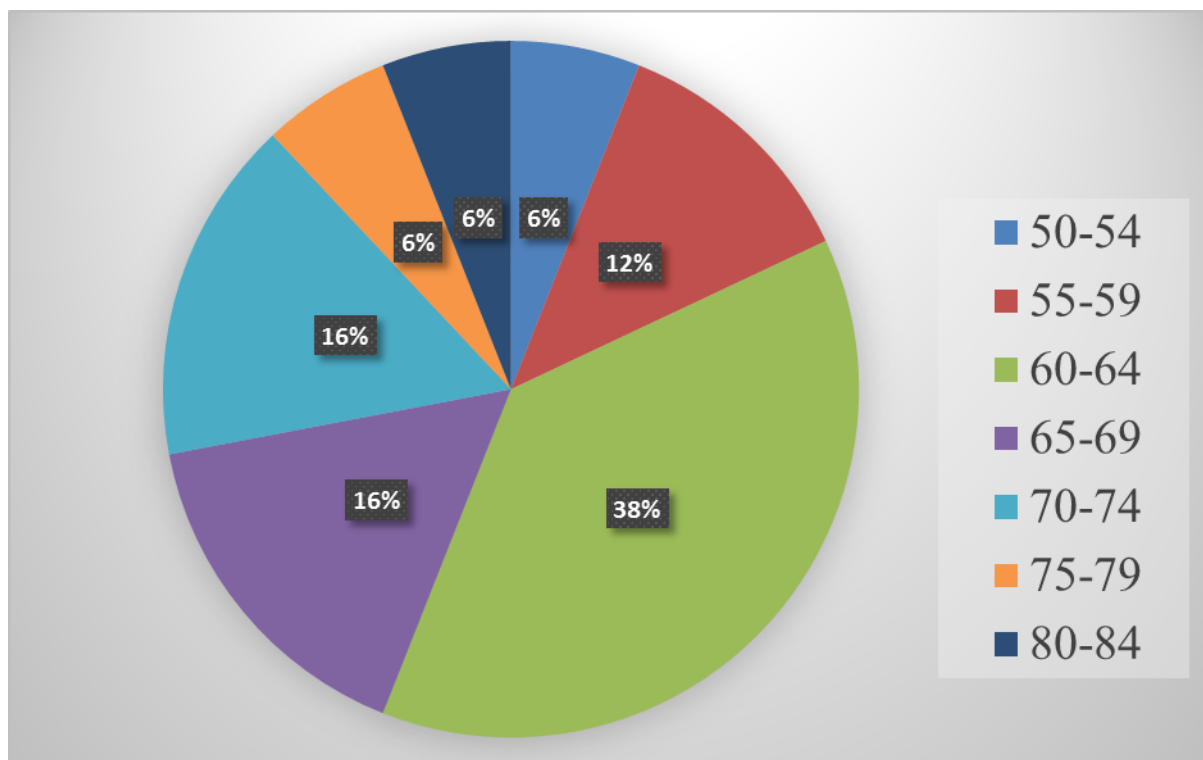
Figure (4.9): shows the frequency distribution of vaginal bleeding and weight group.

Table (4.10): shows the frequency distribution of causes of vaginal bleeding and weight group.

| The diagnosis	Weight							Total
	50-54	55-59	60-64	65-69	70-74	75-79	80-84	
Incomplete Miscarriage	2	3	3	3	0	1	0	12
Complete Miscarriage	0	1	3	0	0	0	0	4
Missed Miscarriage	0	0	3	0	0	1	0	4
Threatened Miscarriage	1	0	2	3	4	0	0	10
Inevitable Miscarriage	0	1	1	1	1	0	1	5
Uterine Fibroid	1	0	1	1	1	1	1	6
Ovarian Mass	0	1	1	0	0	0	1	3
Placenta Previa	0	0	2	0	0	0	0	2
Molar Pregnancy	0	0	1	0	1	0	0	2
Ectopic Pregnancy	0	0	1	0	1	0	0	2
Total	**4**	**6**	**18**	**8**	**8**	**3**	**3**	**50**
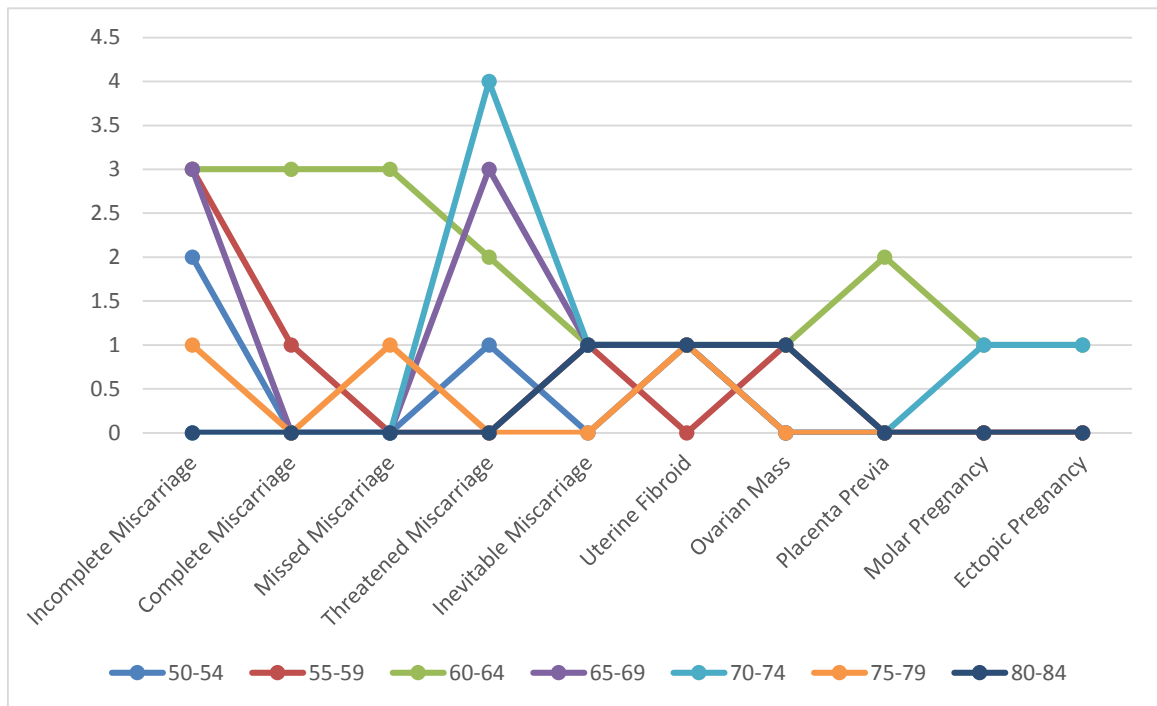
Figure (4.10): shows the frequency distribution of causes of vaginal bleeding and weight group.

Table (4.11): shows the frequency distribution of vaginal bleeding and parity.

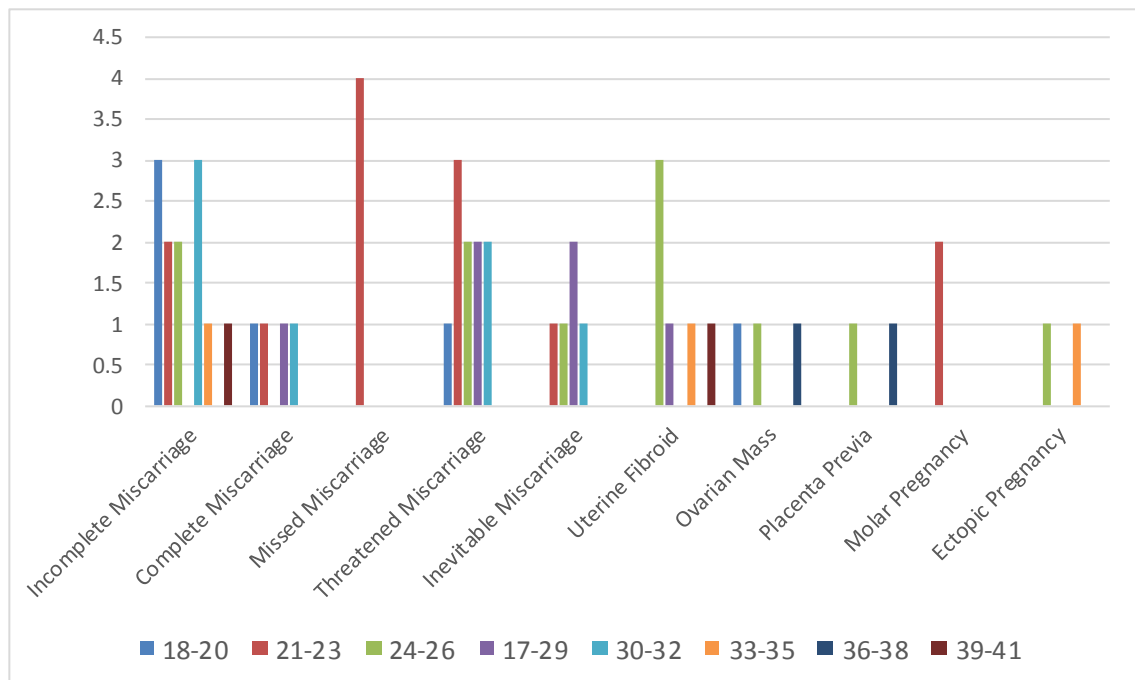| Parity	Frequency	Percentage
0	10	20%
1	12	24%
2	12	24%
3	8	16%
4	3	6%
5	2	4%
6	2	4%
7	1	2%
Total	**50**	**100%**
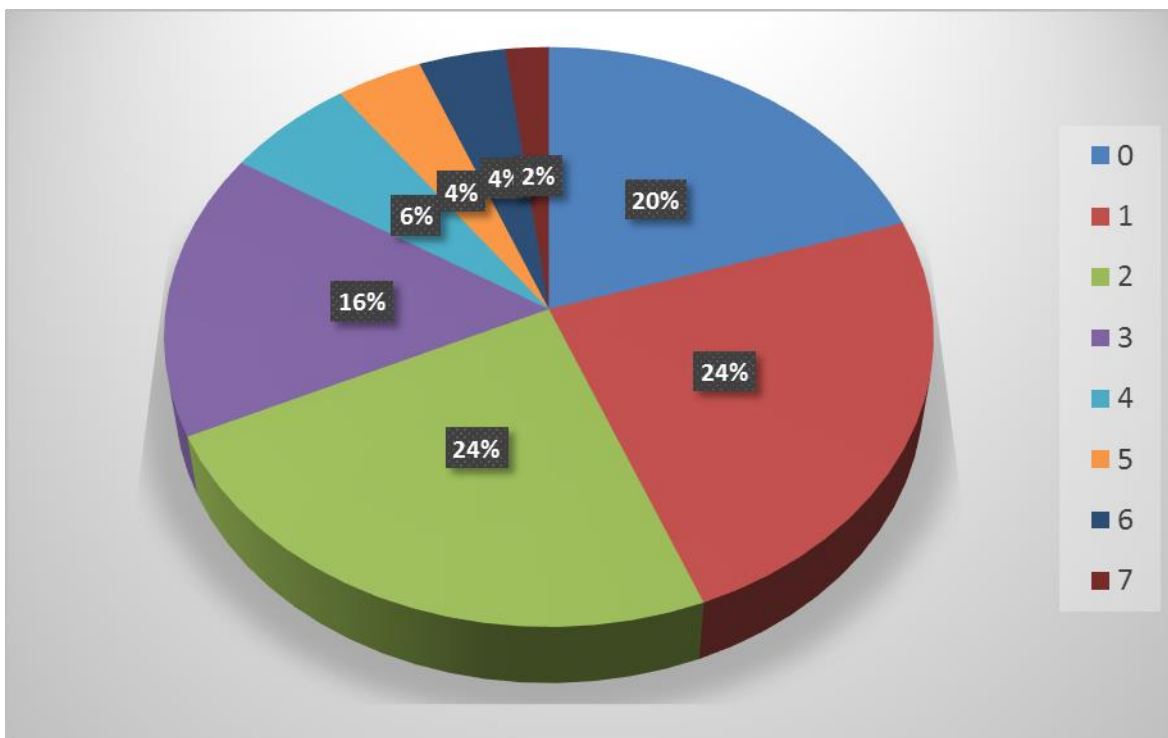
Figure (4.11): shows the frequency distribution of vaginal bleeding and parity

Table (4.12): shows the frequency distribution of vaginal bleeding and number of previous abortion.

No of previous abortion	Frequency	Percentage
0	24	48%
1	15	30%
2	9	18%
3	2	4%
Total	**50**	**100%**
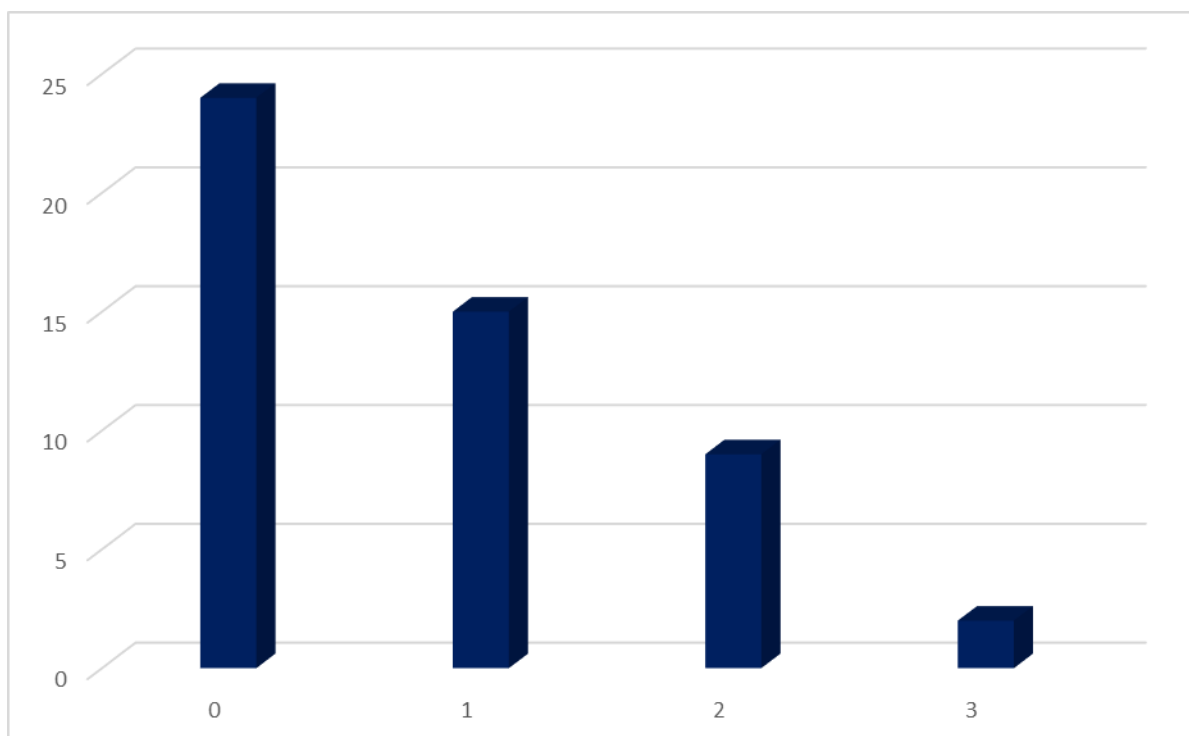
Figure (4.12): shows the frequency distribution of vaginal bleeding and number of previous abortion.

Discussion, Conclusion and Recommendation

5.1 Discussion

This study is looking for ultrasound finding of abnormal vaginal bleeding in Um Dwanban administrative area. fifty patients were investigated by ultrasound to figure out the possible causes of the abnormal bleeding. This study showed and classified the causes of vaginal bleeding on either.

Regarding to The table (4.1): shows the frequency distribution of different causes of vaginal bleeding. The table clarify that the miscarriages were the most common causes of abnormal vaginal bleeding constitute 70% followed by uterine fibroids 12%, ovarian masses 6% placenta previa 4%, molar pregnancy 4%, ectopic pregnancy 4%. This result supported the previous study that reveals the pregnant related problems are the most common causes of the abnormal vaginal bleeding. This result is constant with the previous studies which stated that is more than 40% of the referred women with AUB are reported to have intrauterine abnormalities (Emanuel 1995 and Cornelis. 2006)

Concerning to The table (4.2) shows the frequency of the vaginal bleeding according to the trimester, from this table patient on the first trimester were the most presented with abnormal vaginal bleeding constitute 74%. In the study. The result was in agreed with previous study which revealed that the most cases of AUB happened in first trimester (Motaz Bashir – 2010)

Concerning to the table (4.3) shows the house wife was the most associated with abnormal vaginal bleeding constitute 68% followed by the employee 20% and lastly student 12%. This can be easily explained that the most of samples were house wife. This result is go with the previous studies which stated that the house wife the most associated with abnormal vaginal bleeding constitute 60%. (Abu baker Adam – 2007)

Regarding to the Table (4.4) shows the frequency distribution of different types of vaginal bleeding according to menstrual cycle. The table reveals that the incidence of abnormal vaginal high with patients of regular menstrual cycle which were constitute 62% compared with irregular menstrual cycle which were constitute 38%. This results do not agree with each another study, and the reason until now still unknown.

Regarding to the table (4.7) shows the frequency distribution of vaginal bleeding and age group. The table showed patient in the age ranging from 21-23 years were the most constitute 24% and this within the reproductive age which support that the most of vaginal bleeding is associated with pregnancy, the age group range from (20-40). This result is go with the previous studies which seen the most age from 20-24 years. (Abu bakr Adam – 2007)

Concerning to The table (4.10) shows the frequency distribution of vaginal bleeding and weight group. The table showed patient in the ranging from 60-64Kg, was the most constitute 38%, the weight group range from 50-784Kg. This result is near to the previous studies which stated that 55-60kg, is the weight group suffering from AUB. (Goldstein – 2006)

Regarding to Table (4.11) shows the frequency distribution of vaginal bleeding and parity. This table showed the most patients with abnormal vaginal bleeding were 1 or 2 parities constitutes 24% and this agrees with previous study Abubaker Adam, Ultra sound finding of abnormal vaginal bleeding in Abu Gebiha Area, M.Sc Research in diagnostic ultrasound 2007.

Concerning to the Table (4.12) shows the frequency distribution of vaginal bleeding and previous abortion. This table showed the most patients with abnormal vaginal bleeding were does not suffered from previous abortion constitutes 48%, and women suffered for one time before constitutes 30%, two times 18%, three times 4%. This result is constant with the previous studies

which stated that the aborted women are susceptible to have abnormal vaginal bleeding. (Abubakr Adam – 2007)

5.2 Conclusion

The study showed that pregnancy problems are the commonest cause of abnormal vaginal bleeding. And the incidence of abnormal vaginal bleeding is more common in patients of age 21-23 and weight 60-64 Kg.in addition The study shows that the most patients are house wife and Most causes of abnormal vaginal bleeding are associated with regular menstrual cycles. And finally The most parity associated with abnormal vaginal bleeding is 2.

5.3 Recommendation

Ultrasound examination is very important to identify the causes of abnormal vaginal bleeding in order to prevent the complications which might occur due to its presence.

The researcher has come out with the following recommendations:

1. All health care centers and clinics must be provided by ultrasound units.

2. Health information should be delivered in the rural area for pregnant women.

3. Every pregnant woman must be examined by ultrasound in as routine to control the risk of vaginal bleeding.

4. Doppler ultra sound should be found with any ultrasound machine for more accurate result.

5. Ultrasound scan should be followed by hormone profile or endometrium biopsy.

6. The researcher also notes that most pregnant patients (miscarriage) came to ultrasound department complain from vaginal bleeding have history of PID, so suggest research run in this side.

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Appendices

Appendix I – Data Sheet

Sudan University for science &technology

College of graduate studies

Ultrasound finding of abnormal vaginal bleeding in Um Dwanban administrative area

Data collection sheet

Patient data   **Date:**

Patient Number: …............................   Residence: ……………………

Occupation: ……………………………   Age: …………………………….

Weight: ………………………………...   Height: …………………………..

Referral of patient from:

1. Surgeon (   )   2. Medical officer (   )   3. Unknown (   )

Gynecological and obstetrical history:

Gravidity:…………………
Parity:……………………………

Menstrual Cycle: -   Regular………..   Irregular…………………

Clinical findings including vaginal bleeding:

Pelvic pain:

  1. Symptomatic (   )   2.asymptomatic (   )

Amenorrhea:

              1. Yes (   )   2. No (   )

Pelvic masses:

              1. Yes (   )   2. No (   )

Past history of Patient:

1. Trauma   Yes ( )   No ( )

2. Fibroids   Yes ( )   No ( )

 3. Cancer   Yes ( )   No ( )

Causes of Bleeding

1. Trauma   Yes ( )   No ( )

2. Fibroids   Yes ( )   No ( )

 3. Cancer   Yes ( )   No ( )

4. Ectopic   Yes ( )   No ( )

5. Abortion   Yes ( )   No ( )

 Types:

  A-Complete ( ) b-Incomplete ( ) C- Missed ( )

D-Threatened ( )   e-Inevitable (   )

6. Placenta Previa   Yes ( )   No ( )

Trimesters:

First (   )   Second (   )   Third ( )   No pregnancy ( )

Ultrasound Findings:

………………………………………………………………………………………………
………………………………………………………………………………………………
………………………………………

Final diagnosis:

………………………………………………………………………………………………
………………………………………………………………………………………………
………………………………………

Comments:

………………………………………………………………………………………………
………………………………………………………………………………………………
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Appendix II – Images

Figure (1): Transabdominal scan with 3.5MHz of female 30-years old show large uterus with retained products and non-viable fetus demonstrated incomplete abortion.

Figure (2): longitudinal scan 3.5MHz for female 28-years show normal uterus and endometrium demonstrate complete abortion

Figure (3): Transvaginal scan with 5MHz of the pregnant female 27-years old who presented with larger than appropriate for dateswith bleeding. The uterus is filled with tiny grapelike clusters of tissue, which represent a hydatid form mole.

Figure (4): female 29-years old, TAS with 3.5MHz show enlarge uterus with multiple hypoechoic mass most likely to be Multiple Fibroids

Figure (5): Coronal Transvaginal view with 5MHz of the right ovary in 52-year old woman demonstrates Complicated RT ovarian Cyst