Sudan University of Science and Technology

College of Graduate studies

A Study of Uterine Fibroid in Pregnant Women Using Ultrasonography

دراسة الورم الليفي الرحمي في النساء الحوامل بالموجات فوق الصوتية

A Thesis Submitted for Partial Fulfillment of the M.SC Degree in Medical Diagnostic Ultrasound

By:

Ahlam Subahi Mohammed Musa

Supervisor

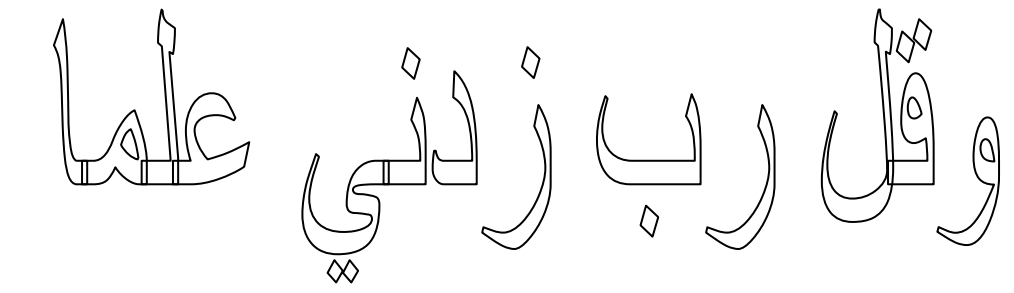
Dr.Awad AbdAlla Adlan

2017

الآية

بسم الله الرحمن الرحيم

قال تعالى:



(سورة طه – 114)

صدق الله العظيم

Dedication

To my parents

To my husband and children

To all family

To my friends

I dedicate this work

Acknowledgement

First of all I would like to express my deepest gratefulness for our great god for all graces and for every success in my life

I would like also to thank very much my supervisor Dr.Awad Adlan, the docent in College of Medical Radiological Sciences, Sudan University of Science and Technology – for his valuable guidance and supervision. Special appreciation to my husband for his support and encouragement

I would like to thank the staff of U/S departments in the hospitals and medical centers in Al- Jazeera State for cooperation and finally all and greatest thanks are for every person who had supported me and participated in accomplishment of this study

Abstract

This study was conducted at U/S department of two hospitals and three medical centers in Al-Jazeera state in the period from October 2015 – July2016.The main objective of this study is to find out the impact of the uterine fibroids on pregnancy. A sample of 50 pregnant patients with known uterine fibroids were studied for interference of fibroids with the development of the fetus during the course of pregnancy

Regular ultrasonic examinations were performed at hospitals and medical centers using transabdomenal scans with curvilinear transducers(3-5MHz) and transvaginal transducers (7MHz). The diameters of fibroids were measured in three perpendicular plains for each age group and the data of the number, type, location,size and growth patterns of fibroids and the number of previous abortions or miscarriages were collected and analyzed to show the influence of all these findings on the fetus during the course of pregnancy.

The study showed that some of these findings are associated with complications during the course of pregnancy. No complications on pregnancy outcome that are associated with the age and size of fibroid during the second and third trimesters, while the number of fibroids,number of previous abortions and the size of fibroid in the first trimester are associated with complications on pregnancy outcome,and the relation between them and having a normal delivery is inverse relationship. Also the type of fibroid had an effect on the pregnancy outcome and the submucosal fibroid took the higher percentage of abortions and complication during pregnancy. Some of these complications are, spontaneous abortion, malpresentaion of the fetus, postpartum hemorrhage

المستخلص

اجريت هذه الدراسة في اقسام الموجات فوق الصوتيه فى اثنين من المستشفيات و ثلاثه من المراكز الصحيه بولاية الجزيره فى الفتره من اكتوبر 2015م الى يوليو 2016م

هدفت الدراسه الى معرفة اثر الاورام الليفيه الرحميه على الحمل

خضعت عينه مكونه من 50 سيده من الحوامل ممن يعانين من وجود اورام ليفيه رحميه للدراسه وذلك باجراء فحوصات منتظمه بالموجات فوق الصوتيه طوال فترة الحمل استخدمت فيها نوعين من الاجهزة البطنيه والمهبليه بذبذبات 3 – 5 و 7 ميقاهيرتز بالترتيب و تم قياس اقطار الاورام الليفيه من ثلاثه مستويات عموديه من ثم جمعت البيانات المتعلقه بعدد ونوع وموضع وحجم و نمط نمو الاورام الليفيه الرحميه كذلك تم جمع البيانات المتعتقه بالتاريخ المرضى لعينة الدراسه وشملت العمر و عدد الاجهاضات السابقه لمعرفة اثر هذه العوامل على سير عملية الحمل

وفيما يتعلق بمضاعفات الحمل وجدت الدراسة أن هناك علاقة بين بعض تلك العوامل وحدوث المضاعفات في الحمل

بينت الدراسة أن العمر وحجم اللحمية في الثلثين الثاني والثالث جميعهم ليس لديهم أي تأثير على محصلة الحمل

بينما عدد اللحميات وعدد الإجهاضات السابقة وحجم اللحمية في الثلث الأول من الحمل جميعها له تأثير مباشر على محصلة الحمل,والعلاقة بينها وبين الولادة الطبيعية هي علاقة عكسية. وكذلك نوع اللحمية يؤثر على الحمل. فاللحمية التي تنشأ داخل بطانة الرحم هي التي لديها أعلى نسبة لحدوث الإجهاضات والمضاعفات خلال الحمل

ومن ضمن المضاعفات التي حدثت الإجهاض التلقائي والوضع غير الطبيعي للجنين في الرحم وأيضا النزيف بعد الولادة.

List of contents

List of tables

List of figures

List of abbreviations

C/S	Cesarean section
CT	Computed tomography
D & C	Dilatation and curettage
FOV	Field of view
GS	Gestational sac
HSG	Hysterosalpingography
ICH	Inter cranial hemorrhage
IUD	Intrauterine device
MRI	Magnetic resonance imaging
PHT	Portal hypertension
Pt	Patient
SPSS	Statistical package for social science
TA	Trans abdominal
TV	Trans vaginal
UB	Urinary bladder
U/S	Ultrasound

CHAPTER ONE

Introduction

1-1 Introduction:-

Ultrasonography is appropriate first investigation for the majority of pelvic symptoms in the female. It is however very operator dependent and when used by appropriately trained personnel with appropriate equipment is cost effective and safe. Transvaginal scanning is essential to increase the diagnostic accuracy of U/S and should be used in all cases unless there is a contraindication

Fibroids are benign smooth muscle cell tumors that grow in the uterus, and women mostly in their reproductive age get them

According to the US National Library of Medicine, one out of five women get fibroids during their child bearing years.

Fibroid also Known as leiomyoma or myoma of the uterus. They can grow on the outside or inside the uterus, or in the tissue of the uterine wall. According to these locations fibroids have five main types:subserosal, submucosal, intramural fibroids and Subserosal fibroids when they are projecting and making a stalk, they becoming pedunculated fibroids. During pregnancy, retro-placental fibroid can be seen behind the placenta where it may exerts pressure on it

Fibroid can be small or large, solitary or multiple and may interfere with pregnancy. However there are several ways that fibroid may affect a pregnancy

The aim of the study was to assess uterine fibroids co-existing with pregnancy and associated obstetric complications by routine prenatal sonography

1-2 The problem of the study:-

The fibroid may interfere with pregnancy and causes complications to the development of embryo/fetus,so we need safe and accurate tool for early diagnosis and follow up

1-3 Objectives of the study:-

1-3-1 General objective: -

To study the uterine fibroids in pregnant women using ultrasonography

1-3-2 Specific objectives: -

- To find the number of fibroids in every pregnant woman,to measure the size of each fibroid,to know the type and number of fibroids
- To correlate size,type and number of fibroid with the outcome of the pregnancy

Chapter Two

Literature Review

Chapter Two

Literature Review

2-1 Anatomy of the uterus:

2-1-1 Gross anatomy:

The uterus is a pear shaped organ located in the female pelvis between the urinary bladder anteriorly and the rectum posteriorly.

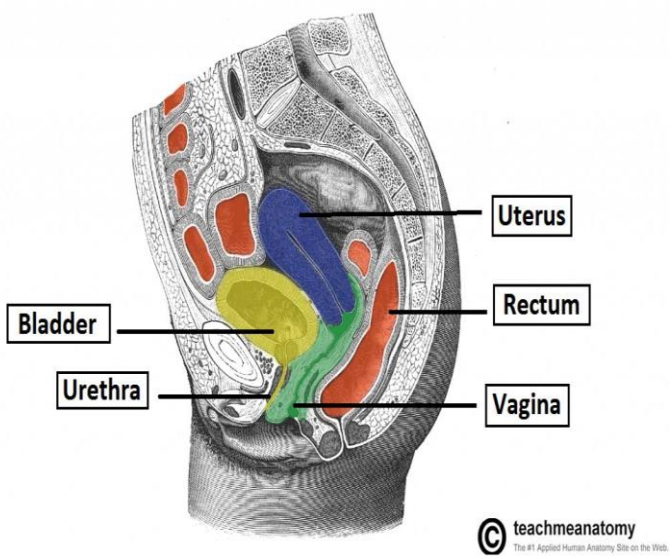


Fig (2-1) Sagittal section of the female pelvis demonstrate the position of the uterus (www.classes /reproductive system, accesed in 2/4/2016)

The average dimensions are approximately 8 cm long, 5cm across and 4 cm thick with an average volume between 80 and 200 ml.The uterus is divided into 3 main parts: the fundus, body and cervix.The fundus is the broad, curved upper area in which the fallopian tubes connect to the uterus. The body is the main part of the uterus, starts directly below the level of the fallopian tubes and continues downward until the uterine walls and cavity begin to narrow.The isthmus is the lower, narrow neck region and the lowest section, the cervix, extends downward from the isthmus until it opens into the vagina. (Millie A.B article 2015)

The anatomy of the uterus consists of the following 3 tissue layers:

- The inner layer, called the endometrium, is the most active layer and responds to cyclic ovarian hormones changes, the endometrium is

highly specialized and is essential to menstrual and reproductive function.. (Millie A. B article 2015)

- The middle layer or myometrium, makes up most of the uterine volume and is the muscular layer, composed primarily of smooth muscle cells. (Millie A.B article 2015)
- The outer layer of the uterus, the serosa or perimetrium, is a thin layer of tissue made of epithelial cells that envelop the uterus.. (Millie A.B article 2015)

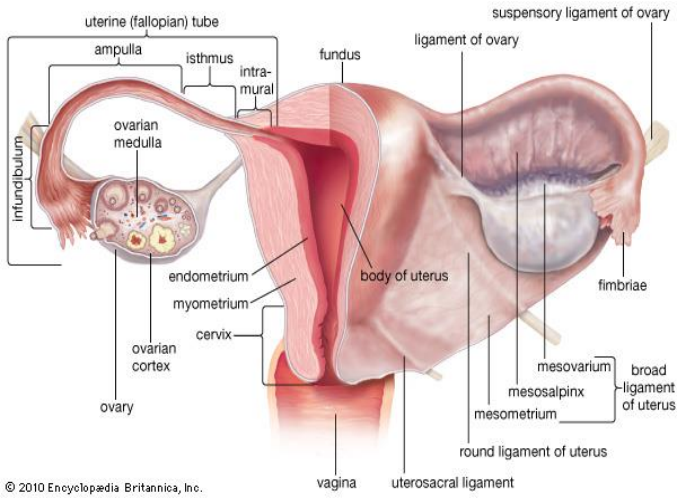


Fig (2-2) Gross anatomy, layers and anatomical compartments of the uterus (www.classes /reproductive system, accessed in 2/4/2016)

2-1-2 Anatomical position(natural variants):

The uterus can be in various positions within the pelvis. An anteverted uterus, which is normal, is tipped forward, whereas a retroverted uterus is tipped backward.

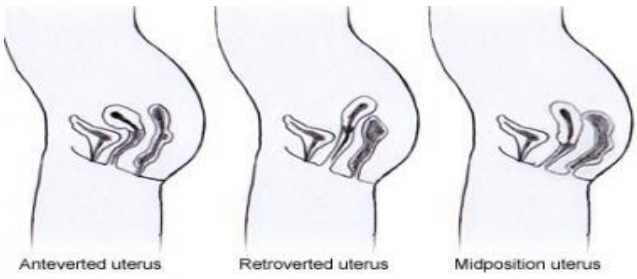


Fig (2-3) Diagram show the normal variants of the position of the uterus (www.Emedicine.medscap.com/article accessed in 25/3/2016)

The uterine position can also be described based on the relative location of the fundus that is anteflexed uterus, which is normal, is where the fundus tilts forward, and a retroflexed uterus is tilted backward (Palmer P.E.S et-al 2003)

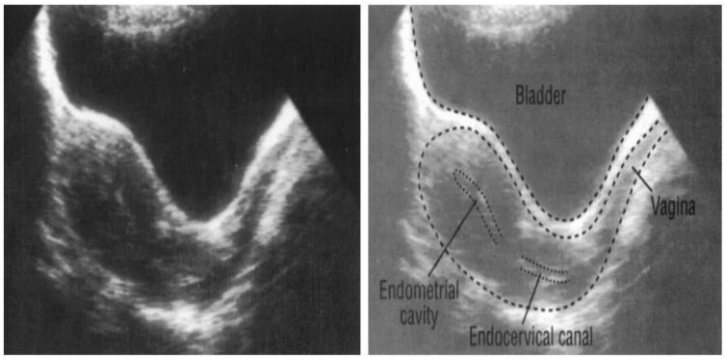


Fig (2-4) Sagittal TA ultrasound showing anteflexed uterus (Palmer P.E.S et-al 2003)

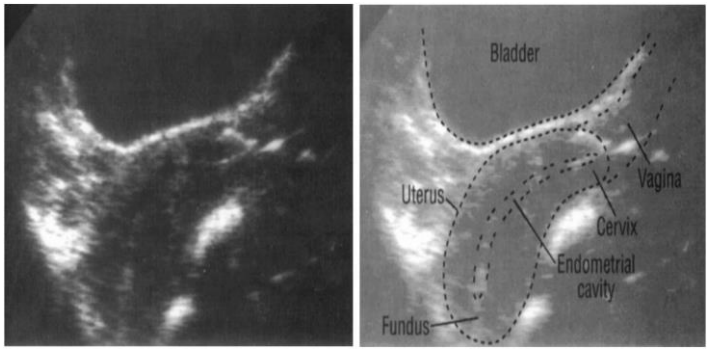


Fig (2-5) Sagittal TA ultrasound showing a retroverted uterus (Palmer P.E.S et-al 2003)

The uterus can also exhibit normal variation in size and shape based on reproductive stage and exposure to ovarian steroid hormones. For example, the prepubertal uterus is generally small, but during the reproductive years, the uterus become larger. In addition, a nulliparous uterus, in which no previous pregnancy has occurred, can be smaller than a multiparous uterus, in which multiple pregnancies have occurred. Furthermore, the postmenopausal uterus may also appear small and atrophic to reflect the lack of hormonal stimulation. www.Emedicine.medscap.com/article accessed in 25/3/2016)

2-1-3 Ligaments:

The tone of the pelvic floor provide the primary support for the uterus.Some ligaments provide further support, securing the uterus in place and they are:-

-Broad Ligament:

This a double layer of peritoneum attaching the sides of the uterus to the pelvis. It acts as a mesentery for the uterus and contributes to maintaining it in position. (www.Emedicine.medscap.com/article accessed in 25/3/2016)(

-Round Ligament:

A remnant of the gubernaculums extending from the uterine horns to the labia majora via the inguinal canal. It functions to maintain the anteverted position of the uterus. www.Emedicine.medscap.com/article accessed in 25/3/2016)(

-Ovarian Ligament:

Joins the ovaries to the uterus.

-Cardinal ligament:

Located at the base of the broad ligament, the cardinal ligament extends from the cervix to the lateral pelvic walls. It contains the uterine artery and vein in addition to providing support to the uterus .(www.Emedicine .medscap.com/ article accessed in 25/3/2016)(

-Uterosacral Ligament:

Extends from the cervix to the sacrum. It provides support to the uterus.. (www.Emedicine.medscap.com/article accessed in 25/3/2016))

2-1-4 Blood supply:-

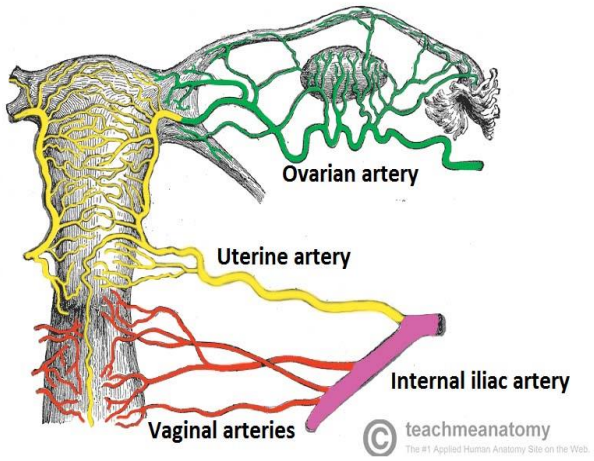


Fig (2-6) Posterior view of the main supply of the uterus (from article:teach me anatomy (accessed in 7/4/2016)

Blood is provided to the uterus by the ovarian and uterine arteries, the latter of which arise from the anterior divisions of internal iliac artery. The uterine artery occasionally gives off the vaginal artery (although this is usually a separate branch of the internal iliac around) which supplies the upper vagina, and the arcuate arteries, which surround the uterus. It then further branches into the radial arteries, which penetrate the myometrium to provide blood to all layers, including the endometrium.Once these vessels reach the endometrial level, they branch into the basal arteries and spiral arteries, which support the specialized function of each layer. The basal arteries are not responsive to hormones, they support the basal endometrial layer which provides the proliferative cells for endometrial growth. The spiral arteries supply the functionalis layer and uniquely sensitive to steroid hormones. In ovulatory cycles in which pregnancy does not occur, menses results following constriction of these terminal arteries, causing endometrial breakdown with desquamation of the glands and stroma (from article:teach me anatomy (accessed in 7/4/2016)

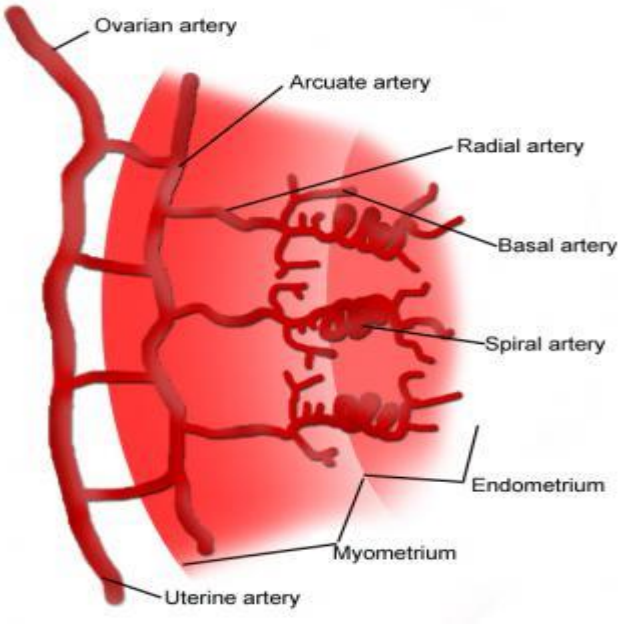


Fig (2-7) The blood supply of the layers of the uterus(www.classes.Midland teach.edu/reproductive system(accessed in 7/4/2016)

2-1-5 Lymphatic drainage:

Lymphatic drainage of the uterus is via the iliac, sacral, aortic and inguinal lymph nodes

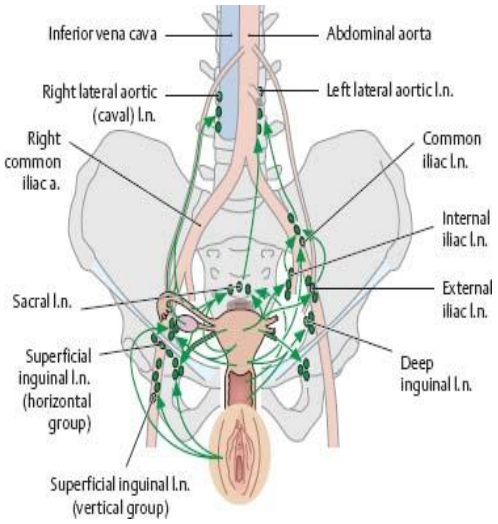


Fig (2-8) Diagram show the lymphatic drainage of the female uterus and genitalia(Millie A.B 2015)

2-1-6 Innervations:

Sympathetic nerve fibers of the uterus arise from the uterovaginal plexus.This largely comprises the anterior and intermediate parts of the inferior

hypogastric plexus. Parasympathetic fibers of the uterus are derived from the pelvic splanchnic nerves (S2-S4) (www.human nerves/ spinal /Genital(accessed in 6/1/2016)

The cervix is largely innervated by the inferior nerve fibers of the uterovaginal plexus. The afferent fibers mostly ascend through the inferior hypogastric plexus to enter the spinal cord via T10-T12 and L1 nerve fibers. (www.human nerves/ spinal /Genital(accessed in 6/1/2016)

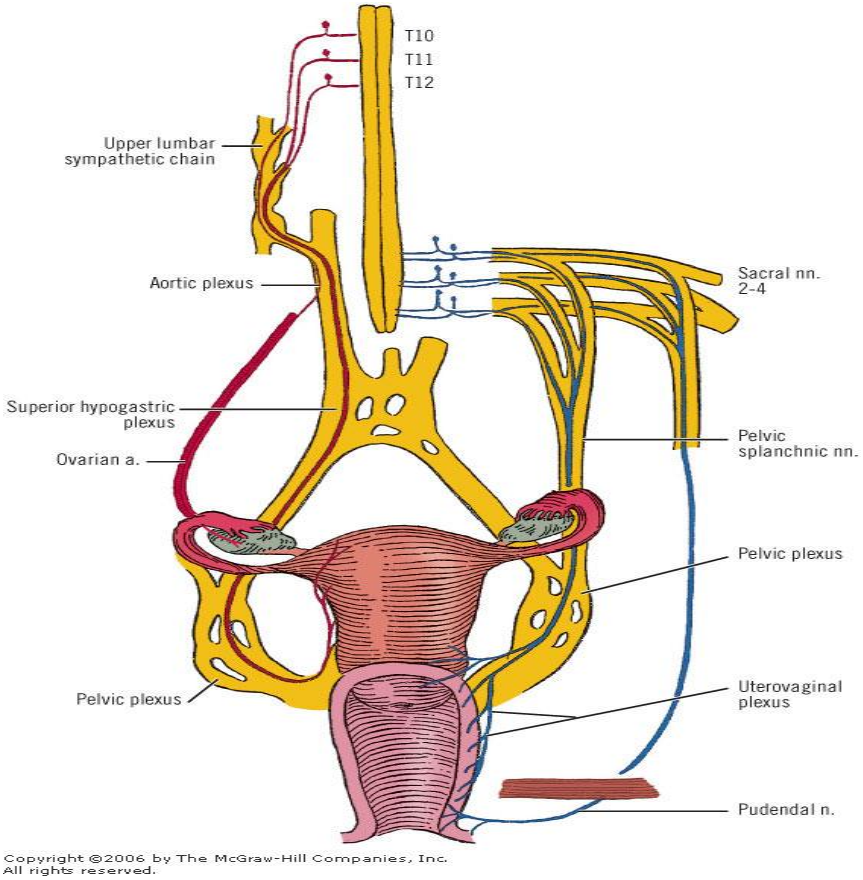


Fig (2-9) Diagram show the nerve supply of the uterus(www.human nerves/ spinal /Genital(accessed in 6/1/2016)

2-2 Physiology of the uterus:

The main purpose of the uterus is to nourish a fetus prior to birth. In menstruating females, the ovaries release eggs(ova) that travel via fallopian tubes to the uterus. If fertilized, the egg will bind itself to the wall of the uterus and the fetus will develop. The uterus nourishes and protects the fetus

until birth. The myometrium layer assists with labor in pushing the baby out of the uterus via the cervix and vagina. The serosa layer allows the uterus to move in the pelvic and abdominal areas as required, without damaging other organs or allowing the uterus to be damage in turn. (www.uterine anatomyandphysiology.com(accessed in 12/12/2015)

If the egg is un fertilized, the endometrial wall shed its outer layer of cells, the egg and excess tissue are then passed from the body during menstrual bleeding. The endometrium also produces secretions that help keep both the egg and sperm cells alive. The component of the endometrial fluid include water, iron, potassium, sodium, chloride, glucose (sugar) and proteins. Glucose is a nutrient to the reproductive cells, while proteins aid with implantation of the fertilized egg. The other constituents provide a suitable environment for the egg and sperm cells. (www.uterine anatomyandphysiology.com(accessed in 12/12/2015)

2-3 Pathology of the uterus:

2-3-1 congenital anomalies:

The female genital tract originate embryologically from two Mullerian ducts. The proximal portions of these ducts from the fallopian tubes. The distal portion of the Mullerian ducts fuse to form the uterus, cervix and vagina. Developmental arrest or familiar in fusion of these ducts gives rise to a spectrum of anomalies. These condition s are often accompanied by anomalies of the urinary tract and may be associated with an increased frequency of spontaneous abortion and infertility (Carol A.K et-al 2003)

2-3-1-1 Segmental Mullerian Agenesis:

- *Cervical and vaginal atrasia:*

Absence of the endocervical canal (vaginal atrasia) or absence of the anterior and posterior lips of the cervix (cervical atrasia) of results from developmental arrest of the Mullerian ducts (Carol A.K et-al 2003)

- *Uterine Atrasia:*

This anomaly is characterized by absence of the uterus and cervix. A structure of containing fibrous tissue may be identified in the region of the uterus. It is important to distinguish this anomaly from a hypoplastic uterus. Uterine atrasia results from developmental arrest of both Mullerian ducts, while a hypoplastic uterus is caused by a lack of estrogen. Absence of the uterine cervix on physical examination suggests the uterine atrasia rather than a hypoplastic uterus. (Carol A.K et-al 2003)

Fig (2-10) U/S image showing congenital cervical and vaginal atrasia (Wikipedia 2016)

2-3-1-2 Unicornuate Uterus (Uterus Unicornis Unicollis):

This anomaly results from developmental arrest of one Mullerian duct. Rather than demonstrating a typical pear- shaped appearance of the body and fundus, the uterus is usually asymmetrical with one cornu being more prominent. (Carol A.K et-al 2003)

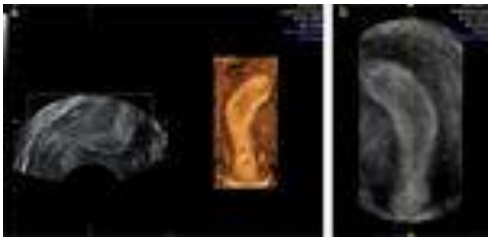


Fig (2-11) 2D & 3D U/S images showing Unicornuate uterus (M.L. Stitely 2006)

2-3-1-3 Uterus Didelphys:

This anomaly occurs when the two Mullerian ducts fail to fuse. It results in patient having two vaginas, two cervices and two uterine bodies (each containing an endometrial cavity). (Carol A.K et-al 2003)

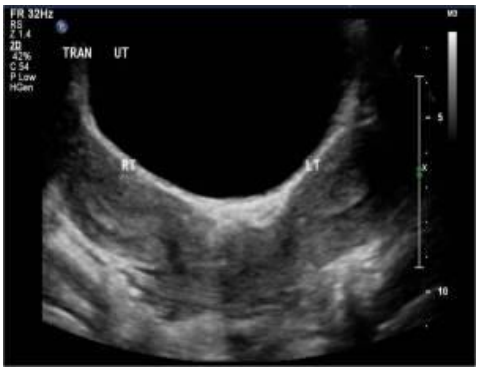


Fig (2-12) U/S image showing uterus didephys (by radiologypics 2013)

2-3-1-4 Bicornuate Uterus (Uterus Bicornis Unicollis):

This anomaly is characterized by the presence of one vagina, one cervix and two uterine horns. Careful sonographic examination can identify two endometrial cavities.The demonstration of an eccentric GS should also suggest this diagnosis. However, neither U/S nor HSG can distinguish a bicornuate uterus from a septated or subseptated uterus. (Carol A.K et-al 2003).

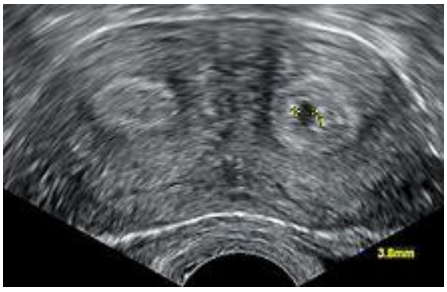


Fig (2-13) U/S image sowing bicornuate uterus (Wikipedia 2013)

2-3-1-5 Uterus Bicornis Bicollis:

This is differing from a bicornuate uterus in that the former has two cervices. In both conditions, there are two uterine bodies and one vagina.. (Carol A.K et-al 2003).

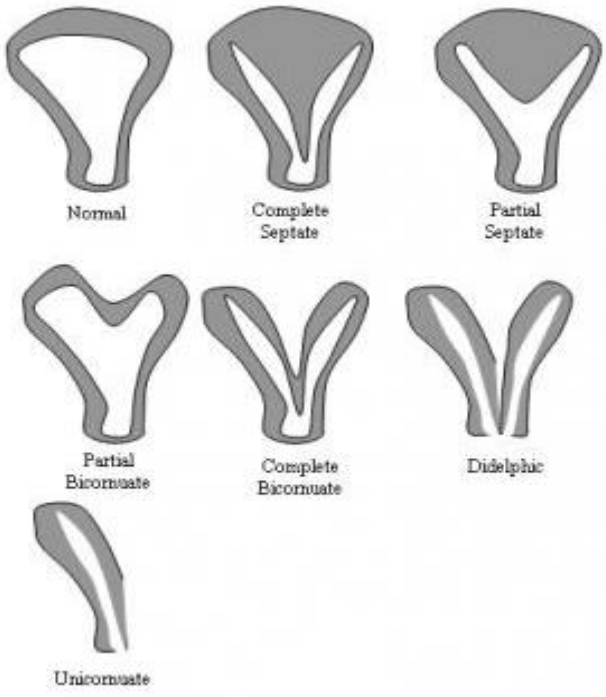


Fig (2-14) diagram show the congenital anomalies of the uterus(www.Emedicine.medscap.com/ article 2016)

2-3-2 Disorders:

2-3-2-1 Adenomyosis:

Adenomyosis, also referred to as "uterine endometriosis ", is a benign disease confined to the uterine muscle. Endometrial cells from the lining of the endometrial cavity,migrate from that lining, most commonly into the posterior side or bake wall of the uterus. As these cells respond to monthly hormonal changes,blood can get trapped in the myometrium. (www. Alternative surgery.com /adenomyosis(accessed in 12/12/2015)

Fig (2-15) U/S image showing adenomyosis of the uterus(www. Alternative surgery.com /adenomyosis(accessed in 12/12/2015)

2-3-2-2 Asherman syndrome:

Asherman syndrome is the formation of scar tissue in the uterine cavity. the problem most develop after uterine surgery (www.pathology outlines.com/uterus(accessed in 22/3/2016)

Fig (2-16) U/S image showing Asherman syndrome(www.pathology outlines.com/uterus(accessed in 22/3/2016)

2-3-2-3 Endometrial polyps:

Endometrium is the lining of inside of the uterus. Overgrowth of this lining can create polyps. Polyps are fingerlike growths that attached to the wall of the uterus. They can be as small as a sesame seed or larger than a golf ball. there may be just one or many polyps. (www.pathology outlines.com/uterus(accessed in 22/3/2016)

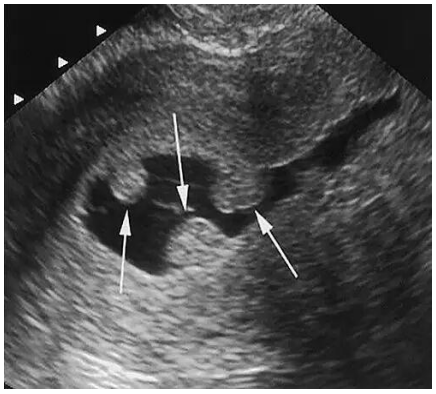


Fig (2-17) U/S image showing endometrial polyps(www.pathology outlines.com/uterus(accessed in 22/3/2016)

2-3-2-4 Endometritis:

It is an inflammation or irritation of lining of the uterus (the endometrium). It is not the same as endometriosis. It can be due to infections (e.g.: Chlamydia,

gonorrhea, tuberculosis or a mix of normal vaginal bacteria. (www.pathology outlines.com/uterus(accessed in 22/3/2016)

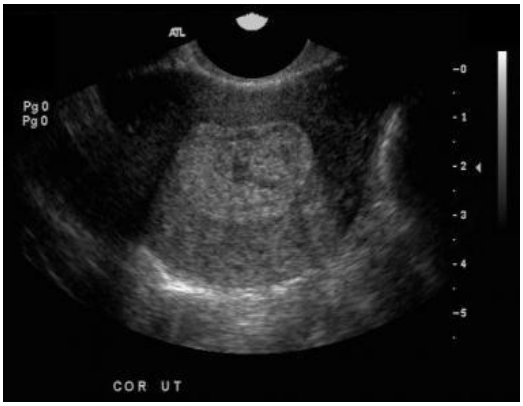


Fig (2-18) U/S image showing endometritis. (www.pathology outlines.com/uterus(accessed in 22/3/2016)

2-3-2-5 Sarcoma of the uterus:

Sarcoma of the uterus is a rare malignant neoplasm (0.5 to 5 percent of all malignancy) that usually occurs in the 5^{th} or 6^{th} decade of life. histological types include leiomyosarcoma, endometrial stromal sarcoma,and mixed mesodermal tumor. These neoplasms disseminate by the hematogenous and lymphatic routes and can affect both the pelvic and retroperitoneal lymph nodes. (www.cancer-information/uterine.com(accessed in 12/12/2015)

Other sarcomas involving the uterus include osteosarcoma,liposarcoma, and mixed sarcomas, and rare rhabdomyosarcoma. (www.cancer-information/uterine.com(accessed in 12/12/2015)

-Some disorders of the cervix: Nabothian cyst and carcinoma of the cervix

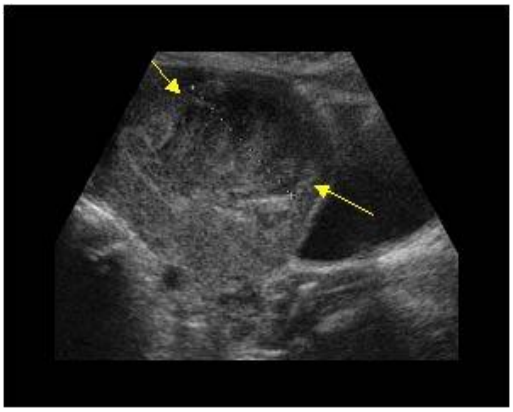


Fig (2-19) U/S image showing sarcoma of the uterus (Dr TSA 2016)

2-3-2-6 Uterine fibroid:-

Uterine fibroid is a hormone- dependent benign connective tissue tumor of the smooth muscle cells of the myometrium. It is the most frequent uterine tumor.

Fig (2-20) U/S image showing uterine fibroid(www.pathology outlines.com/uterus(accessed in 22/3/2016)

2-3-2-6-1 Pathophysiology of the uterine fibroid:

(Origen and growth pattern)

Uterine fibroid arise from the myometrial layer of the uterine corpus or, less commonly, the uterine cervix, and may occure singly or multiply. Fibroids may remain with in the muscular layer (intramural) or protrude outwardly to become subserosal in location or inwardly toward the endometrial cavity, where they become known as submucous fibroids. Subserosal and submucosal fibroids may become pedunculated. (www.bestpractice/uterine pathophysiology.html(accessed in4/5/2016)

Abnormal vaginal bleeding that often accompanies the presence of fibroids is felt to occur as a result of distortion of the endometrial lining and therefore is seen much more commonly with submucous fibroids. For the same reason, cavity distortion can cause recurrent second trimester loss. Uterine fibroids that obstruct menstrual flow can cause dysmenorrhoea. Large uterine fibroids,regardless of location,can cause mass effects on contiguous organs such as the bowel and bladder and cause symptoms of urinary frequency,

urgency, and incontinence as well as constipation. They can outstrip their blood supply and cause acute or chronic pain as they degenerate. Pedunculated submucous uterine fibroids can dilate the uterine cervix and prolapse into the vagina (www.bestpractice/uterine pathophysiology .html (accessed in4/5/2016)

Various mechanisms have been proposed to explain the strong association between heavy menses and uterine fibroids. They have included ulceration over the surface of submucous uterine fibroids,an ovulation associated with uterine fibroids. increased endometrial surface area, and interference with normal uterine contractility. (www.bestpractice/uterine pathophysiology.html (accessed in4/5/2016)

More recently, research into this area has centred on a vascular dysregulation thought to be mediated by a number of growth factors. It is now hypothesized that fibroid associated bleeding is related to dilatation of the small veins(venules) within the myometrium and endometrium of uteri containing fibroids, Thus interfering with the haemostatic action of platelets and fibrin plugs. Nevertheless, a cause and effect has not been established. (www.bestpractice/uterine pathophysiology.html(accessed in4/5/2016)

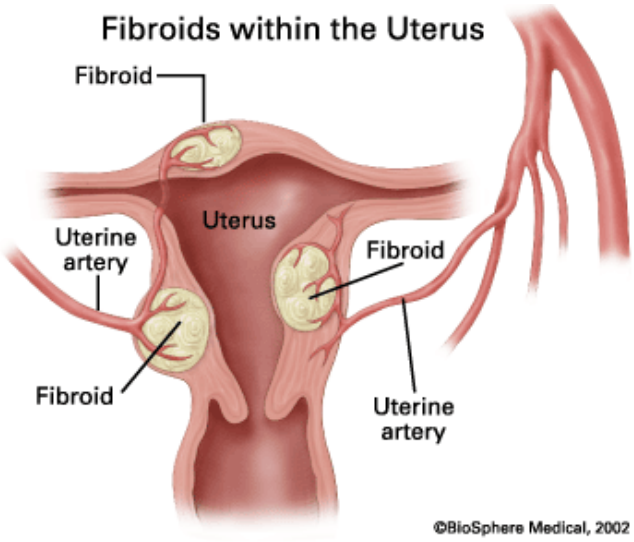


Fig (2-21) coronal section of the uterus show multiple fibroids

www.emedmd.com/ fibroids(accessed in5/1/2016)(

2-3-2-6-2 Causes of fibroids:

It is unclear why fibroids develop, but several factors may influence their formation. They are hormones, family history and pregnancy (www.radiopaedia.org/articles/uterine-leiomyoma(accessed in 7/2/2016)

2-3-2-6-3 Symptoms of the fibroid:

The symptoms will depend on the location and size of the tumor(s) and how many tumors are found in the patient's uterus

If the tumor is very small, or if the pt is going through menopause, she may not has any symptoms

Fibroid may shrink during and after menopause

Symptoms of fibroid may include:heavy bleeding between or during periods that includes blood clots,pain in the pelvis and/or lower back,increased menstrual cramping, increased urination, constipation,pain during intercourse,menstruation that lasts longer than usual, pressure or fullness in the lower abdomen and swelling or enlargement of the abdomen (www.radiopaedia.org/articles/uterine-leiomyoma(accessed in 7/2/2016)

2-3-2-6-4 Diagnosis of fibroid:

1- Ultrasonography: uses sound waves to create an image of the uterus and other pelvic organs.

2- Hysteroscopy: uses a slender device (the hesteroscope) to see the inside of the uterus. it is inserted through the vagina and cervix. This permits the doctor to see fibroids inside the uterine cavity.

3- Hysterosalpingography: is a special x-ray test. It may detect abnormal changes in the size and shape of the uterus and fallopian tubes

4- Sonohysterography: is a test in which a fluid is injected into the uterus through the cervix. Ultrasonography is then used to show the inside of the uterus. The fluid provide a clear image of the uterine lining

5- Laparoscopy: uses a slender device (the laparoscope) to help the doctor see inside of the abdomen, it is inserted through a small cut just below or through

the navel. The doctor can see fibroids on the outside of uterus with the laparoscope.

6- Other imaging modalities such as:MRI and CT scan may be used but are rarely needed and may be used to track the growth of fibroid over time.(www.advancedwomenimaging.com/pelvic-gynaecolgic-ultrasound (accessed in 29/3/2016)

2-4 Complications of Fibroid in pregnancy:

Gynecologists in the past used to be concerned that a fibroid may grow quickly due to the rising of oestrogen levels in pregnancy and cause major problems. Recent medical research has shown that most fibroids do not actually become larger during pregnancy, and those that do often return to their pre-pregnancy size afterwards. However, there are several ways that a fibroid may affect a pregnancy.So there are some women do unfortunately have some problems due to their fibroids. Such as spontaneous abortion or miscarriage, placental abruption,early onset of child birth (preterm labour),malpresentaion of the fetus (e.g.: breach fetus),an abnormal or difficult child birth (labour dystocia), Postpartum hemorrhage and need for caesarean section. www.emedmd.com/fibroids-pregnancy(accessed in5/1/2016)(

2-5 Ultrasound:-

U/S is a form of energy that uses the high frequency sound waves to scan the tissues of the body. the frequency of U/S is many times greater than that of audible sound. U/S waves are generated by a piezoelectric transducer which

is capable of changing electrical signals into mechanical u/s waves. the same transducer can also receive the reflected u/s waves and change it back into electrical signals.(Steven M.P 2011)

*Transducers are both, transmitter and receivers of u/s.

2-5-1 Obstetric and gynecological uses of u/s:-

u/s scan can be used to identify a pelvic mass,find the cause of pelvic pain,find the cause of abnormal bleeding,check the growth of uterine fibroid,confirm the pregnancy and the implantation site,estimate the age of the pregnancy,evaluate the position of the fetus and placenta,determine if there are multiple pregnancies,detect any fetal abnormalities that could happened,find the position of IUD and guide procedure to remove an ovarian follicle for invitro fertilization (jane. B,2010)

2-5-2 Doppler ultrasound:-

A special application of U/S, measures the direction of blood cells as they move through vessels. The movement of the blood causes a change in pitch of the reflected sound waves (Doppler effect). The computer collects and processes the sounds and creates graphs that represent the flow of the blood through the blood vessels (Steven M.P 2011)

There are several kinds of Doppler ultrasound:-

- Color Doppler: this technique estimates the average velocity of flow within a vessel by color coding the information. The direction of blood flow is assigned the color red and blue, indicating flow toward or away from U/S transducer (Steven M.P 2011)

- Pulsed Doppler: This method allows a sampling volume or "gate" to be positioned in a vessel visualized on the grey-scale image, and displays a graph of a full range of blood velocities within the gate versus time. The amplitude of the signal is approximately proportional to the number of red blood cells and is indicated, not in color, but simply as a shade of grey (Steven M.P 2011)

- Power Doppler: this device depicts the amplitude, or power, of Doppler signals rather than the frequency shift. This allows detection of a larger range of Doppler shifts and thus better visualization of small vessels, but at the expense of directional and velocity information (Steven M.P 2011)

2-5-3 Types of transducers used to scan the female pelvis:-

-Transabdominal (TA):

For the TA approach, a convex transducer of variable frequency can be used (2 – 5)MHz. The patient (pt) has a full urinary bladder (UB) and is positioned on an examination table. A clear gel is applied to the lower abdomen and pelvis to help the transducer make secure contact with the skin. Doppler sonography can be performed through the same transducer. (www.atlanticmedicalimaging.com/types-ultrasound (accessed in 18/4/2016)

-Trans vaginal (TV):

TV ultrasound involve the insertion of a high frequency transducer into the vagina after the pt empties her UB and is performed very much like a gynecologic exam. The transducer is long and thin to fit the female vagina, about 2cm in diameter.A protective cover is placed over the transducer, lubricated with a small amount of gel, and then inserted into the vagina. The images are obtained from different orientations to get the best views of the uterus and ovaries. Doppler sonography can be performed through the TV transducer. TV U/S is usually performed with the pt lying on her back and

with her feet in stirrups as during a gynecologic exam. (www.quizlet. com/transvaginal-ultrasound(accessed in 10/4/2016)

TV U/S may give more information than TA U/S for women who:

- Are very over weight
- Are being checked or treated for infertility
- Have a hard time with a full bladder
- Have a lot of gas in intestines

(www.atlanticmedicalimaging.com/types-ultrasound (accessed in 18/4/2016)

2-5-4 Normal pelvic scan:-

Sonographic imaging of the female pelvis can be performed either transabdominally, transvaginally or may be both are done.

TA scan need a full UB to act as an acoustic window for good visualization of the pelvic structures. In this scan a convex transducer of medium frequency (2 – 5 MHz) is used to see the deep structures of the pelvis. (www. Hopkinsmedicine.org/gynecology/pelvic-ultrasound (accessed in 3/3/2016

The anterior approach of the TA scan can be done in Sagittal and transverse views. The most superficial anatomy is seen at the apex of the monitor, in the near field.The posterior or deeper structures of the pelvis should be seen in the bottom of the screen, in the far field. In Sagittal view, the left and right sides of the display monitor correspond to cranial and caudal directions of the pelvis, respectively. (www. hopkinsmedicine. Org /gynecology/ pelvic-ultrasound (accessed in 3/3/2016)

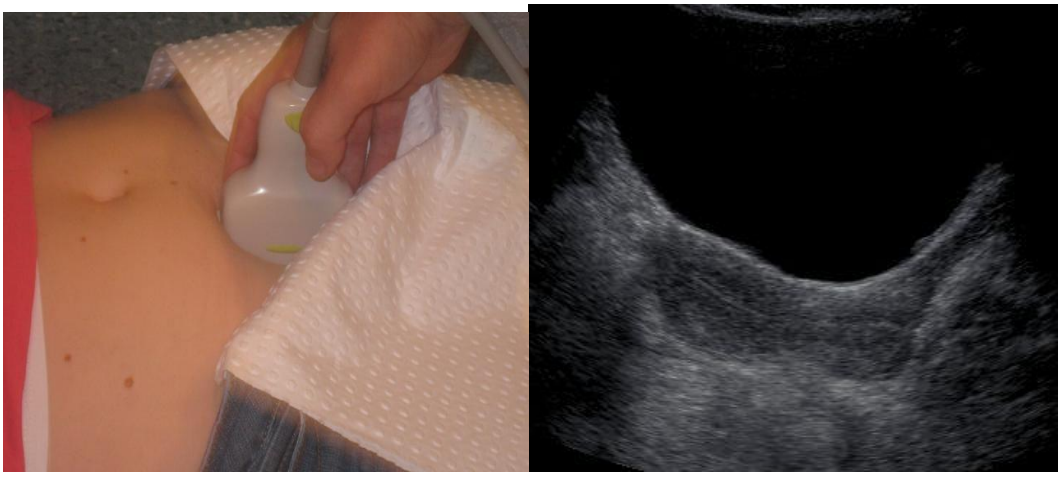


Fig (2-22) U/S image showing normal TA scan..sagittal view (www.ultrasoundpaedia.com/normal-uterus(accesed in 25/3/2016)

In transverse view, the Lt and Rt sides of the display monitor correspond to the Rt and Lt sides of the pelvis, respectively.

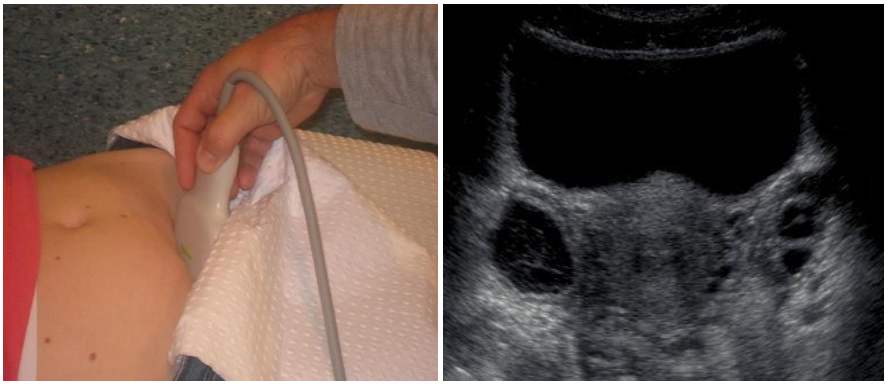
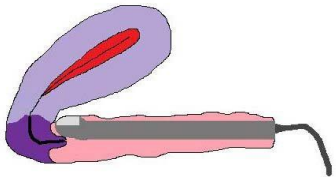


Fig (2-23) U/S image showing normal TA scan..transverse view (www.ultrasoundpaedia.com/normal-uterus(accesed in 25/3/2016)

The TV technique uses a high frequency transducer (5 -7 MHz) inserted into the vagina in order to image the uterus, ovaries and cervix. This scan need an empty UB. It has a better resolution but it is limited in its FOV. The inferior approach of the TV technique gives a Sagittal, transverse and coronal imaging planes of true pelvis.(www.hopkinsmedicine.org/gynecology/pelvic-ultrasound(accessed in 3/3/2016)



- Sagittal imaging – Anteroposterior angulation:

In longitudinal plane, notch will be facing up on the transducer. AP angulation allows optimal imaging of uterus and ovaries. A downward motion of the transducer's handle angles the transducer upward. An upward motion of the handle angles the transducer toward the patient's back. (www.hopkinsmedicine.org/gynecology/pelvic-ultrasound(accessed in 3/3/2016)

- Sagittal imaging – side to side manipulation:

Side to side manipulation of the transducer will help survey through the uterus to visualize any deviations, and all aspects of the uterus, cornua, fudus, fallopian tubes, ovaries, ligaments and vasculature. To visualize the Rt side,a sonographer should moves the transducer to the Lt and vice versa. (www.hopkinsmedicine.org/gynecology/pelvic-ultrasound(accessed in 3/3/2016)

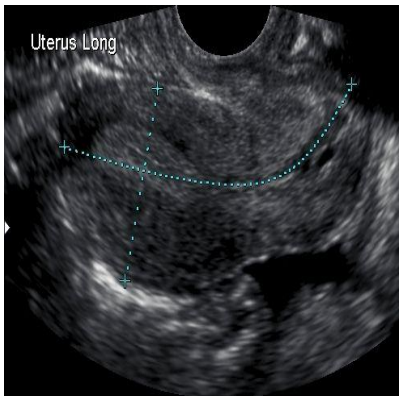


Fig (2-24) U/S image showing normal TV scan..sagittal view (www.ultrasoundpaedia.com/normal-uterus(accesed in 25/3/2016)

Transverse imaging:

A 90 counterclockwise rotation of the transducer towards patient's Rt side allows for semi-coronal / transverse planes. Once in this plane, transducer can be manipulated the same way as in the Sagittal plane with AP and side to side angulation. (www.hopkinsmedicine.org/gynecology/pelvic-ultrasound (accessed in 3/3/2016)

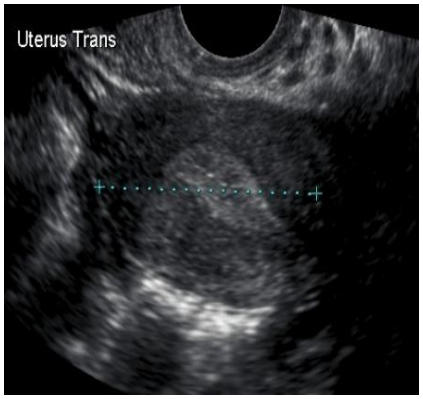


Fig (2-25) U/S image showing normal TV scan..transverse view (www.ultrasoundpaedia.com/normal-uterus(accesed in 25/3/2016)

2-5-5 Ultrasound features of uterine fibroid in pregnancy:

U/S have been used to evaluate the fibroid in pregnant women. It is used to diagnose the presence and monitor the growth of fibroids

Uncomplicated fibroids are usually incidentally discovered during routine pelvic scan of pregnant lady. The sonographer may detects an abnormal mass near a living embryo. This mass usually hypoechoic, but can be isoechoic or even hyperechoic compared to normal myometrium (www.emedmd. com/fibroids-pregnancy(accessed in 5/1/2016)

Calcification can be seen as an echogenic foci with shadowing.Cystic area of necrosis or degeneration also may be seen. Fibroid may be solitary or multiple and they may increase in size during pregnancy or they may decrease. Sometimes they show no change in size during pregnancy(www.emedmd.com/fibroids-pregnancy(accessed in 5/1/2016)

Sometimes, making the diagnoses using U/S is difficult. This mainly because of the difficulty of distinguishing fibroids from the normal thickening of the lining of the myometrium, or even from placental contraction(www.emedmd.com/fibroids-pregnancy(accessed in 5/1/2016)

Fig (2-26) U/S image showing placental contraction mimicking fibroid www.learnradiology.com/uterine/fibroid(accessed in 5/6/2016)

2-6 Previous studies:-

A previous research about the prevalence of leiomyoma in pregnant women in the first trimester done by Shanon K.Laughlin,MD &Donna D. Baird,PhD identified that subserosal, had an incidence of (42%), intramural (35%) where the leiomyomas or fibroids are most common and only (17%) for submucosal fibroids.

A research about the effects of the fibroids in the pregnancy outcome revealed that multiple fibroids had a risk of preterm labor more than solitary, written in ask 4UFE.com website in January 2015.

A study written by Samir Fouad Abdel-Aziz. (Behavior of leiomyoma during pregnancy as evaluated by U/S) MD published in scientific journal of Al-Azhar medical Faculty vol.17 No.2,July 2014, found that, with increasing age of obstetric population,uterine fibroids are more frequently detected during pregnancy

Another study found that fibroids are extremely common with an overall incidence of (40%) to (60%) by age of 35 and (70%) to (80%) by age 50. by Hee Joong Lee,MD, PhD, Rev Obstet Gynecol. 2010

Some medical researches published in a medical information site (www.eMed MD.com), have shown that, the vast majority of women with fibroids have an uncomplicated pregnancy and child birth. However, it has been found that some women do unfortunately have some problems due to their fibroids

A study done by Benson CB,Chow Js, Chang-Lee.outcome of pregnancies in women with uterine fibroid identified by sonography.2001,resulted in that, fibroids have been associated with adverse pregnancy outcomes including difficulty conceiving, spontaneous abortion, preterm birth,placental abruption and cesarean birth

A study done by Hee Joong Lee,MD, PhD, Rev Obstet Gynecol. 2010 found that, the majority of fibroids do not change their size during pregnancy, but one-third about (33%) may grow in the first trimester

A study done at the university of north Carolina by Dr. Katherine Hartmann, showed that small uterine fibroids are associated with an increased risk of miscarriage or having complications more than large one. The study also resulted in that, the type of the fibroid had an effect on pregnancy outcome,and the type that causes the most serious complication is submucos (www.women– health.co.uk/)

A study published in web site (www.life.org.nz/abortion) resulted in that, multiple previous abortions when (D&C) was done,that may cause some scarring at the top of the cervix or inside the uterus,and that can affect the ability of an embryo to implant into the uterus or the ability of the cervix to support the pregnancy

Chapter Three

Material & Methods

Chapter Three

Material & Methods

3-1 Material

3-1-1 Machine

The patients had been examined in U/S department in hospitals by an obstetrician and/or a sonographer using Zoncare I 50

Other medical centers using Siui CTS – 900 and sonosite 180 plus

Trans abdominal scan was done by using curvelinear transducer (3 -5 MHz) in all these machines

Transvaginal scan was done by a 7 MHz endovaginal transducer

By using an u/s machine with a curvilinear and endovaginal transducers, each fibroid was measured three separate times recording the maximum diameter in three perpendicular planes

Each time a sonographer (a researcher) classified size, number, type and location

3-1-2 Study design and area

This study was designed as a prospective cohort study, It was conducted at 2 hospitals and 3 medical centers of major cities in al-jazeera state in diagnostic department during period from October 2015 – July 2016

3-1-3 Study population

A sample of 50 pregnant patients presented with uterine fibroids, that had been detected by U/S examinations in their first trimester

during the regular follow up in their hospitals/or medical centers

3-2 Methods

3-2-1 Patients history

This was obtained from patient's files, the data collected about, age, number of fibroids, type of fibroid according to location, changing in the size of fibroid through all three trimesters,number of previous miscarriages and the outcome of this pregnancy

3-2-2 Patient preparation

The pt need to remove any jewelry that may be in the way of U/S, and take off most of the clothes below the waist. In TA scan, the pt must takes 4 – 6 glasses of water for an hour before the scan to fill the UB. While in the TV scan the pt should empties her bladder before the scan.

3-2-3 Patient position

The positions of the patients were supine position. TV scan was performed with the pt lying on her back and with her feet in stirrups as during a gynecologic exam.

3-2-4 Technique

For the TA approach, a convex transducer of variable frequency can be used (2 – 5)MHz. The patient (pt) has a full urinary bladder (UB) and is positioned on an examination table. A clear gel is applied to the lower abdomen and pelvis to help the transducer make secure contact with the skin.Images in sagittal and transverse view were obtained.TV ultrasound involve the insertion of a thin, long transducer into the vagina.A protective cover is placed over the transducer, lubricated with a small amount of gel, and then inserted into the vagina. The images are obtained from different orientations to get the best views of the uterus and ovaries.

3-2-5 Data collection

Using a special data sheet to evaluate the size,type and number of fibroids in all age groups,In addition to the number of previous abortions

The correlations between all these factors and the pregnancy outcome have been studied

3-2-6 Data analysis

The data was analyzed with SPSS, using tables and graphs in percentage.

Chapter Four

Results

Chapter Four

Results

Table (4.1) frequency distribution of age group

Age group	Frequency	Percent	Valid Percent	Cumulative Percent
25-30 years	14	28	28	28
31-35 years	8	16	16	44
36-40 years	15	30	30	74
41-45 years	13	26	26	100
Total	50	100	100	
Minimum =25,maximum = 45,means= 36.24,std.Deviation =6.052				

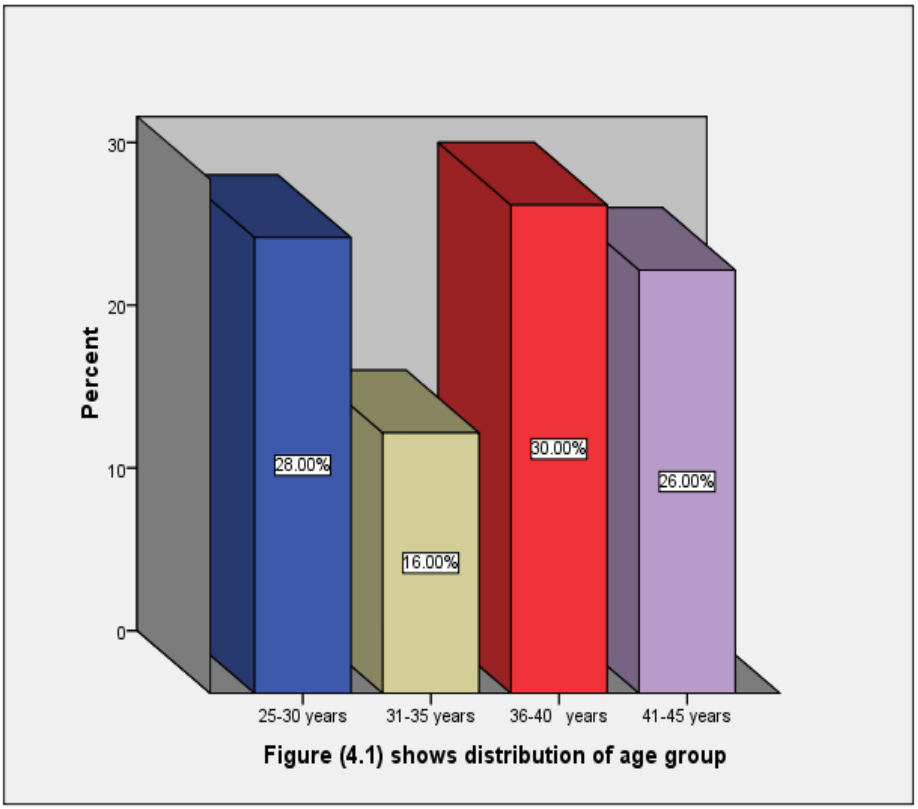


Figure (4.1) shows distribution of age group

Table (4.2) frequency distribution of number of fibroid

No of fibroid	Frequency	Percent	Valid Percent	Cumulative Percent
1	35	70	70	70
2	12	24	24	94
3	3	6	6	100
Total	50	100	100	

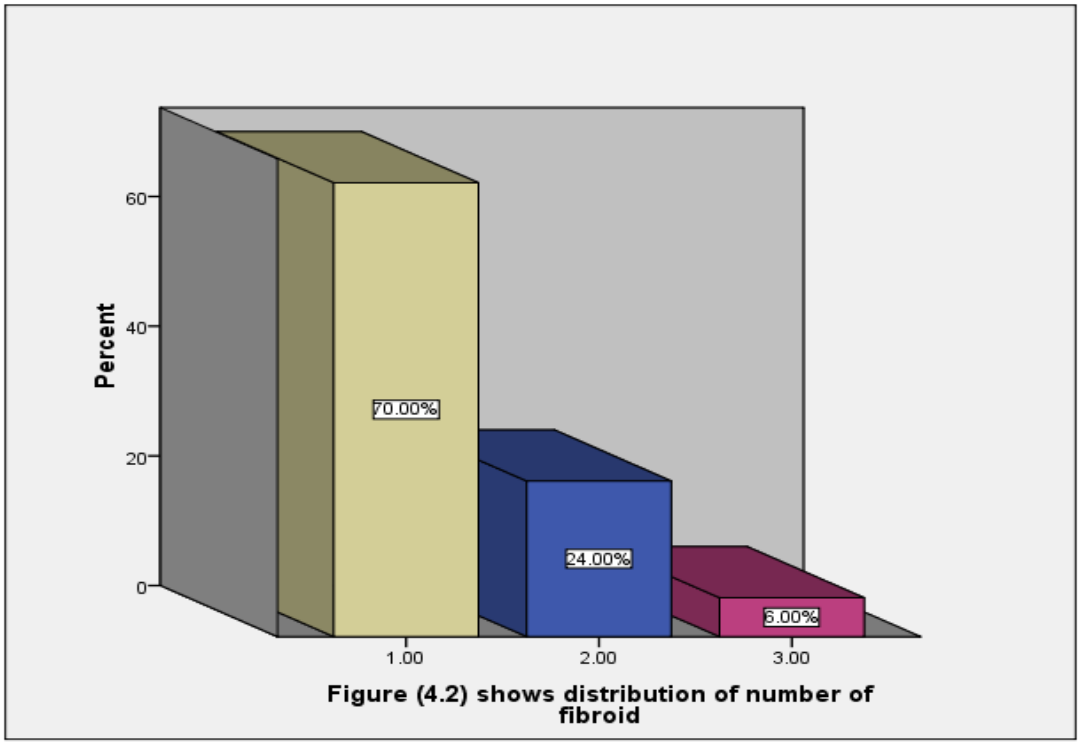


Figure (4.2) shows distribution of number of fibroid

Table (4.3) frequency distribution of number of type of fibroid

Type of fibroid	Frequency	Percent	Valid Percent	Cumulative Percent
Intramural	20	40.0	40.0	40.0
Submucosal	11	22.0	22.0	62.0
Subserosal	19	38.0	38.0	100.0
Total	50	100.0	100.0	

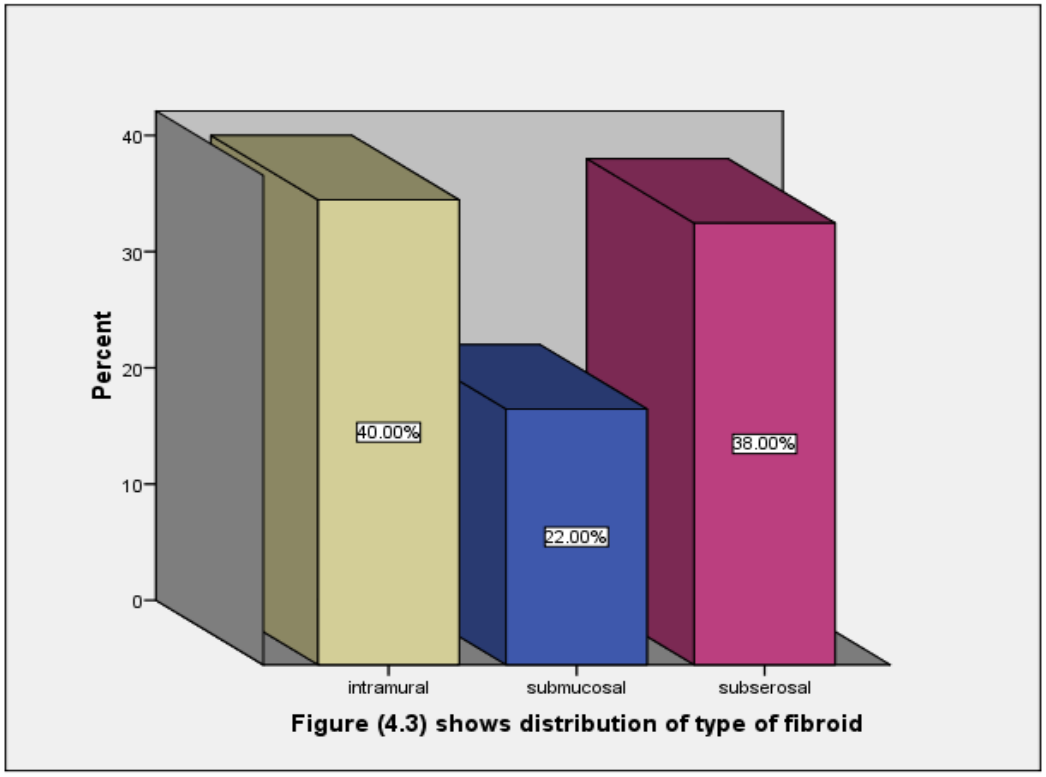


Figure (4.3) shows distribution of type of fibroid

Table (4.4) frequency distribution of number of size of fibroid in 1st trimester

Size of fibroid	Frequency	Percent	Valid Percent	Cumulative Percent
3cm	17	34.0	34.0	34.0
3.5cm	2	4.0	4.0	38.0
4cm	17	34.0	34.0	72.0
5cm	9	18.0	18.0	90.0
6cm	4	8.0	8.0	98.0
7cm	1	2.0	2.0	100.0
Total	50	100.0	100.0	

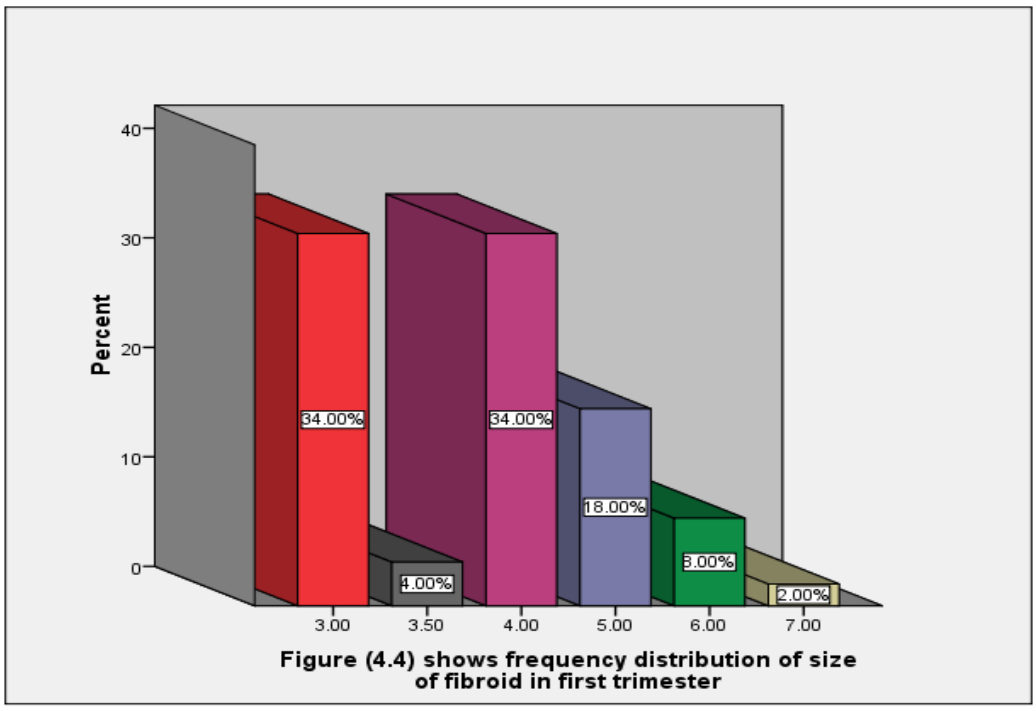


Figure (4.4) shows frequency distribution of size of fibroid in first trimester

Table (4.5) frequency distribution of number of size of fibroid in 2nd trimester

size of fibroid	Frequency	Percent	Valid Percent	Cumulative Percent
3cm	10	20	23.3	23.3
4cm	19	38	44.2	67.4
5cm	11	22	25.6	93
6cm	2	4	4.7	97.7
7cm	1	2	2.3	100
Total	43	86	100	
No measurement	7	14		
	50	100		

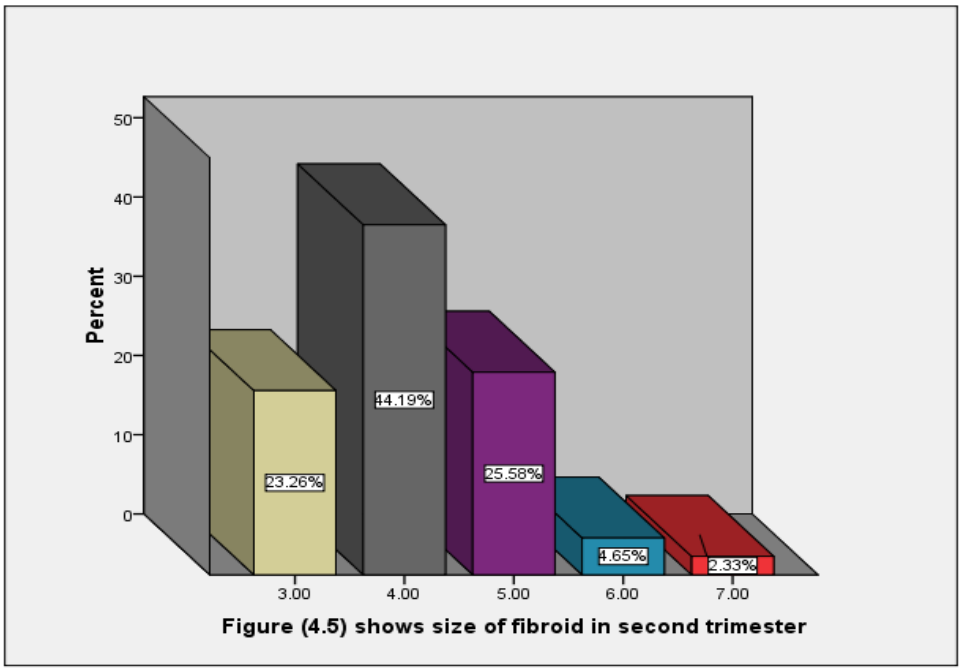


Figure (4.5) shows size of fibroid in second trimester

Table (4.6) frequency distribution of size of fibroid in third trimester

Size in 3rd trimester	Frequency	Percent	Valid Percent	Cumulative Percent
3cm	12	24.0	30.0	30.0
4cm	16	32.0	40.0	70.0
5cm	10	20.0	25.0	95.0
6cm	2	4.0	5.0	100.0
Total	40	80.0	100.0	
No measurement	10	20.0		
	50	100.0		

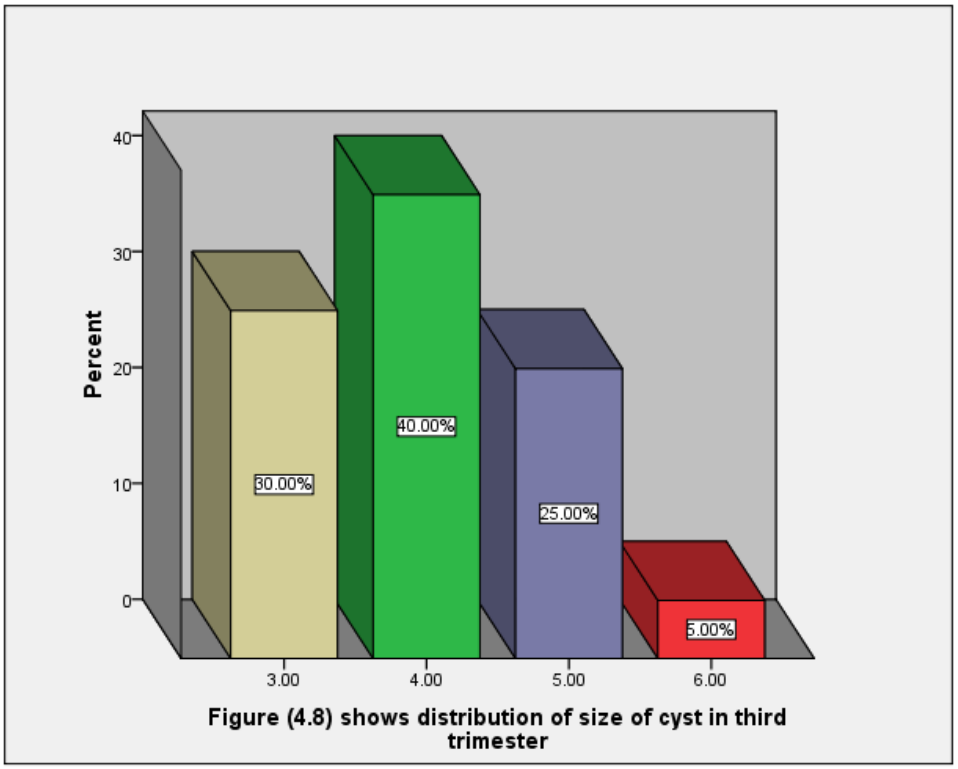


Figure (4.8) shows distribution of size of cyst in third trimester

Table (4.7) frequency distribution of number of abortion

Number of abortion	Frequency	Percent	Valid Percent	Cumulative Percent
0	19	38.0	38.0	38.0
1	16	32.0	32.0	70.0
2	6	12.0	12.0	82.0
3	9	18.0	18.0	100.0
Total	50	100.0	100.0	

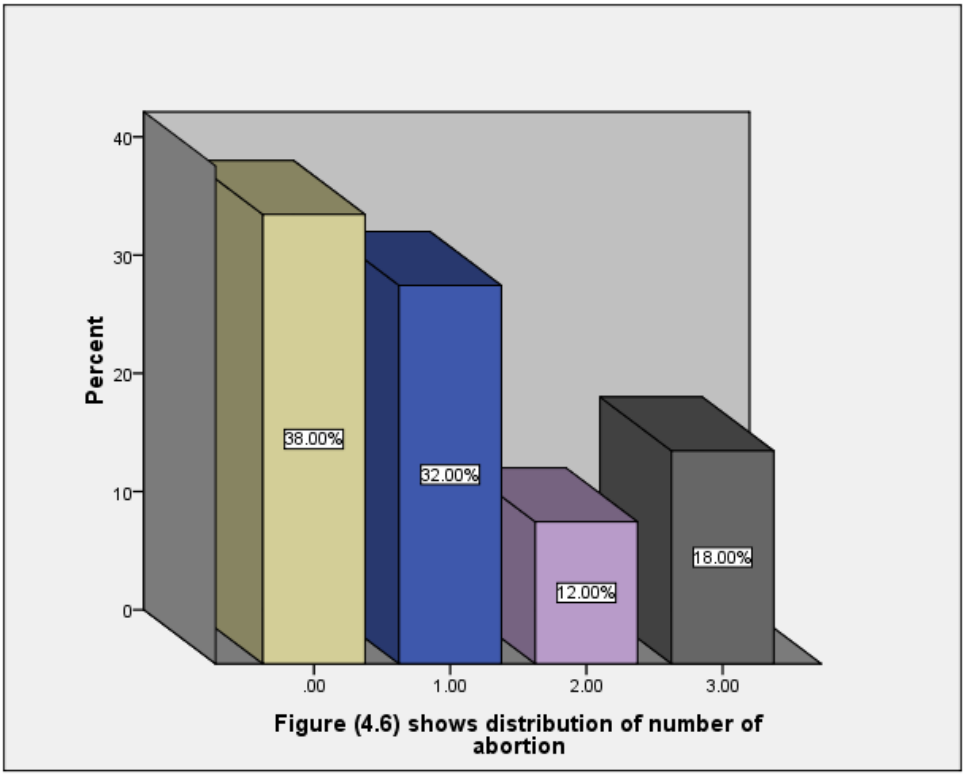


Figure (4.6) shows distribution of number of abortion

Table (4.8) frequency distribution of outcome of pregnancy

Outcome	Frequency	Percent	Valid Percent	Cumulative Percent
Complication	11	22.0	22.0	22.0
Delivery with C\S	11	22.0	22.0	44.0
Normal delivery	28	56.0	56.0	100.0
Total	50	100.0	100.0	

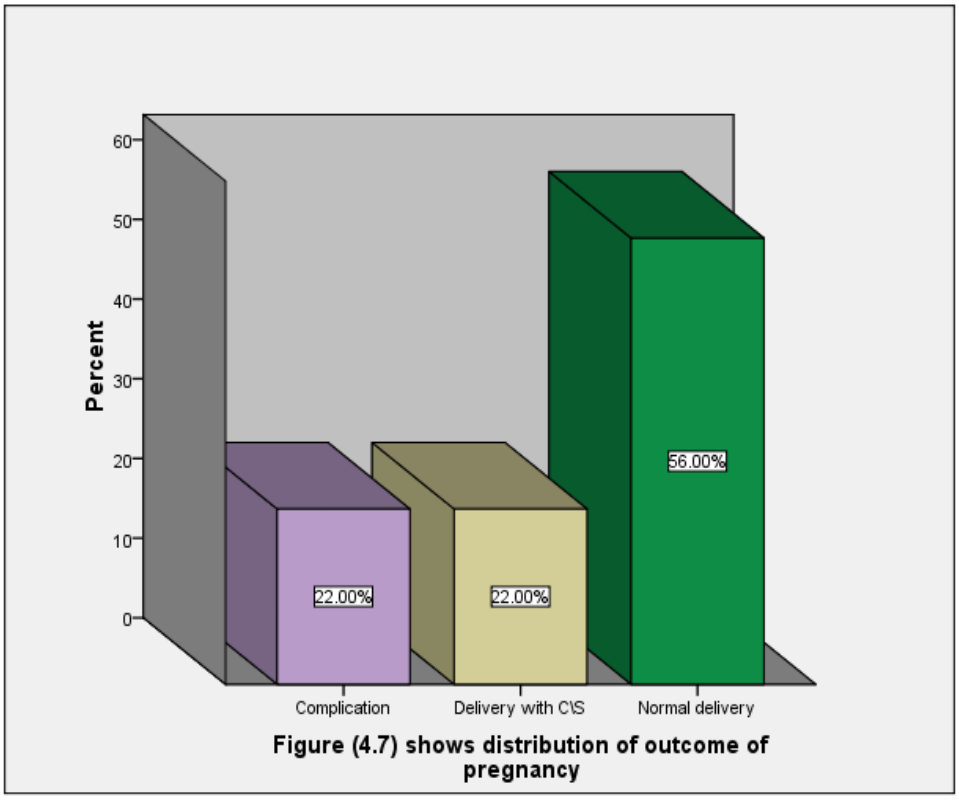


Figure (4.7) shows distribution of outcome of pregnancy

Table (4.9) cross tab age and number of abortion

Age	No of abortion				Total
	0	1	2	3	
25-30 years	5	6	1	2	14
31-35 years	4	3	1	0	8
36-40 years	6	4	1	4	15
41-45 years	4	3	3	3	13
Total	19	16	6	9	50
P value = 0.751					

Table (4.10) cross tab type of fibroid and number of abortion

Type of fibroid	No of abortion				Total
	0	1	2	3	
Intramural	6	8	4	2	20
Submucosal	3	2	1	5	11
Subserosal	10	6	1	2	19
Total	19	16	6	9	50
P value = 0.103					

Table (4.11) cross tab type of fibroid and outcome

No of abortion	Outcome			Total
	Complication	Delivery with C\S	Normal delivery	
0	0	1	18	19
1	4	3	9	16
2	1	5	0	6
3	6	2	1	9
Total	11	11	28	50
P value =0.000				

Table (4.12) cross tab No of abortion and outcome

Type of fibroid	Outcome			Total
	Complication	Delivery with C\S	Normal delivery	
Intramural	4	7	9	20
Submucosal	5	2	4	11
Subserosal	2	2	15	19
Total	11	11	28	50
P value = 0.047				

Table (4.13) cross tab No of fibroid and outcome

No of fibroid	Outcome			Total
	Complication	Delivery with C\S	Normal delivery	
1	5	5	25	35
2	4	5	3	12
3	2	1	0	3
Total	11	11	28	50
P value =0.012				

Table (4.14) cross tab No of fibroid and type of fibroid

No of fibroid	Type			Total
	Intramural	Submucosal	Subserosal	
1	15	6	14	35
2	5	4	3	12
3	0	1	2	3
Total	20	11	19	50
P value = 0.441				

Table (4.15) correlation between No of fibroid, age and No of abortion

		No of fibroid	Age	No of abortion
No of fibroid	Pearson Correlation	1	.308*	.620**
	Sig. (2-tailed)		.029	.000
	N	50	50	50
Age	Pearson Correlation	.308*	1	.197
	Sig. (2-tailed)	.029		.171
	N	50	50	50
No of abortion	Pearson Correlation	.620**	.197	1
	Sig. (2-tailed)	.000	.171	
	N	50	50	50
*. Correlation is significant at the 0.05 level (2-tailed).				
**. Correlation is significant at the 0.01 level (2-tailed).				

Table (4.16) correlation between No of fibroid, age, No of abortion, and size in first,second and third trimester

		No of fibroid	Size in first trimester	Size in second trimester	Size in third trimester	Age of women	No of abortion
No of fibroid	Pearson Correlation	1	.043	.039	.089	.308*	.620**
	Sig. (2-tailed)		.769	.804	.585	.029	.000
	N	50	50	43	40	50	50
Size in first trimester	Pearson Correlation	.043	1	.836**	.811**	-.117-	.498**
	Sig. (2-tailed)	.769		.000	.000	.419	.000
	N	50	50	43	40	50	50
Size in second trimester	Pearson Correlation	.039	.836**	1	.968**	-.087-	.441**
	Sig. (2-tailed)	.804	.000		.000	.579	.003
	N	43	43	43	40	43	43
Size in third trimester	Pearson Correlation	.089	.811**	.968**	1	.068	.428**
	Sig. (2-tailed)	.585	.000	.000		.676	.006
	N	40	40	40	40	40	40
Age	Pearson Correlation	.308*	-.117-	-.087-	.068	1	.197
	Sig. (2-tailed)	.029	.419	.579	.676		.171
	N	50	50	43	40	50	50
No of abortion	Pearson Correlation	.620**	.498**	.441**	.428**	.197	1
	Sig. (2-tailed)	.000	.000	.003	.006	.171	
	N	50	50	43	40	50	50
*. Correlation is significant at the 0.05 level (2-tailed).							
**. Correlation is significant at the 0.01 level (2-tailed).							

Chapter Five

Discussion, Conclusion & Recommendations

Chapter Five

Discussion, Conclusion & Recommendations

5-1 Discussion:-

The discussion covered the age, number of fibroids,type of fibroid according to its location,size of each fibroid and the number of the previous abortions due to fibroid. The relation between all those factors and the pregnancy outcome also had been discussed.

From the results ; the age group (36 -40)year represented a higher percentage in this study (30%),which is meaning that,the uterine fibroids are more frequent in the women of age above 35 years, but also women below 35 years may have fibroids.

This result was coincident with literature ; a study written by Samir Fouad Abdel-Aziz (Behaviour of liomyoma during pregnancy as evaluated by U/S).MD puplished in scientific journal of Al-Azhar medical Faculty vol.17 No.2,July 2014, found that, with increasing age of obstetric population,uterine fibroids are more frequently detected during pregnancy

Another study found that fibroids are extremely common with an overall incidence of (40%) to (60%) by age of 35 and (70%) to (80%) by age 50. by Hee Joong Lee,MD, PhD, Rev Obstet Gynecol. 2010

From the results ; the patients who had only one fibroid represented a higher percentage (70%). That means the single fibroid is more frequent than multiple

There was no documented data found in literature about the rate of incidence of single vs. multiple fibroids

From the results ; the intramural fibroids had the greatest percentage (40%),the subserosal coming next with (38%) and the last are submucosal fibroids with (22%) ;which is that means the intramural fibroids are the most common type with a high incidence rate

This result was not coincident with literature ;a study done by Shanon K.Laughlin &Donna MD (prevalence of leiomyoma in pregnant women in first trimester) PhD identified that subserosal, had an incidence of (42%), intramural (35%) where the leiomyomas or fibroids are most common and only (17%) for submucosal fibroids. This is mainly because of large number of patients in their sample

From the results ; the sizes of the fibroids ranges from 3 – 7 cm

The size of 4 cm is found more than other sizes in all three trimesters

From data sheet: ; half of them did not show any change in size (50%), (30%) had increased only in the first trimester,then fixed in second and third,and (20%) of fibroids that had been increased return back to the initial size of the first trimester

This result was coincident with literature ; A study done by Hee Joong Lee,MD, PhD(Rev Obstet Gynecol). 2010 said that, the majority of fibroids do not change their size during pregnancy, but one-third about (33%) may grow in the first trimester

From the results ; most of the patients did not had a previous abortions due to their fibroids, about (38%). That means, fibroids not usually developing complications or causing an abortion

From the results ; about (56%) of patients had a normal delivery. That means most of the pregnant women with fibroid can had a normal pregnancy and delivery without any complications

This result was coincident with literature ; Some medical researches published in a medical information site (www.eMed MD.com), have shown that, the vast majority of women with fibroids have an uncomplicated pregnancy and child birth. However, it has been found that some women do unfortunately have some problems due to their fibroids

From the results ; the correlations between variables as next:-

-From the result there was no relation between age group and the number of abortions or pregnancy out come and there is no relation between them was found in literature

-From the results ; submucosal fibroid had a higher number of abortions,then intramural then, subserosal. In submucosal fibroid only 4 patients from 11 had a normal delivery, in intramural fibroid 9 from20 patients had a normal delivery,while in subserosal fibroid 15 from 19 patients had a normal delivery. That means the type of fibroid had an effect on the course of the pregnancy and this result was coincident with literature ; A study done at the university of north Carolina by Dr. Katherine Hartmann, showed that, the type of the fibroid had an effect on pregnancy outcome,and the type that causes the most serious complication is submucous (www.women–health.co.uk/).

-The number of fibroids has an effect on the pregnancy outcome. The patients who had only one fibroid most of them had a normal delivery,the patients who had two fibroids most of them had developed complications and all patients with three fibroids had a complicated pregnancy and child birth. So there was an inverse relationship between the number of fibroids and the normal delivery, that means when the number of fibroid increase,the ability to have a normal delivery was decreasing.

This result was coincident with literature ; a research about the effects of the fibroids in the pregnancy outcome revealed that multiple fibroids had a risk of preterm labor more than solitary, written in ask 4UFE.com website in January 2015.

-From the results 18 from 19 patients without previous abortions had a normal delivery without any complications, but with increasing number of previous abortions, the probability to have a normal delivery was decreased,so the number of previous abortions may affect the pregnancy

outcome,that means, when the number of previous abortions increased, the ability to have a normal delivery was decreased.

This result was coincident with literature ; a study published in web site (www.life.org.nz/abortion) resulted in that, multiple previous abortions when (D&C) was done,that may cause some scarring at the top of the cervix or inside the uterus,and that can affect the ability of an embryo to implant into the uterus or the ability of the cervix to support the pregnancy

- The size of the fibroid in the second and third trimesters did not have an effect on the pregnancy outcome. But it had an effect only in the first trimester,and it had an inverse relationship with normal delivery,so when the size increase, the ability to have a normal delivery is decreasing

This result was not coincident with literature ; a study done at the university of north Carolina by Dr. Katherine Hartmann, showed that small uterine fibroids are associated with an increased risk of miscarriage or having complications more than large one.

These results have been reported in incomplete settings with selection bias, small populations and varying inclusion criteria

- The age of the patient did not have any effect on the pregnancy outcome

From tables (17-18), When there is three fibroids found,the size in the higher value(7cm) and the number of previous abortion is high (3), so the percentage of the normal delivery is very low (2%). In case of one fibroid,the size is in lower value(3cm)and there is no previous abortion,so the probability for normal delivery is very high about(87%)

5-2 Conclusion

Fibroids are very common and women in reproductive age are usually having them.

Fibroids were found in pregnant women especially with increasing the women age and they were associated with adverse pregnancy outcome

Some of patients were unaware about their fibroid status before the U/S examination

U/S was the most suitable imaging modality to scan pregnant patients who having fibroids

Making the diagnosis using U/S was quite difficult.This was mainly because of the difficulty to distinguish fibroid from the normal thickening of the myometrium in the pregnancy or from placental contraction.

The majority of fibroids remain unchanged during pregnancy

The age and size of fibroids in the second and third trimester do not have an effect on the pregnancy outcome,while the number of fibroid, type of fibroid,number of previous abortions and the size in first trimester do have an effect on the pregnancy outcome.

5-2 Recommendations

- A sonographer or an obstetricians should be well trained for using an ultrasound machine, especially the transvaginal scan needs more experienced operator to perform an optimum examination.
- Regular follow-up for all patients with uterine fibroids, if they are pregnant or not, should be done to make the physician aware about the progression of the disease to make the right decision about the treatment
- All patients with uterine fibroids who are planning to have children should not have a myomectomy
- More researches should be done about the relation of the treatment of fibroid by removal (myomectomy) and the future infertility
- -All governmental institutions for health care should be supported by equipments and qualified medical staff,that helping to make real diagnosis for their patients, well treatment, and fast reaction when they having a complications

References

- Carol A.K et-al,2003, ultrasound atlas of disease processes, USA, copyright by Appletone & Lange, 288-296
- Hee J. L,2010, Contemporary Management of fibroids in pregnancy, PMC,published in US National Library of Medicine,Rev Obstet Gynecol, v.3(1) 20-27
- Jane.B,2010, Practical Gynecological Ultrasound,(2), published in UK,Cambridge university Press,54-78
- Millie A.B,2015, Uterus anatomy, article published in medscape
- Palmer P.E.S et-al,2003, Manual of diagnostic ultrasound, Geneva,copy rights by WHO, 3, 196-203
- Samir F. A et-al,2014, Behavior of liomyoma during pregnancy as evaluated by ultrasound, published in scientific journal of Al-Azhar Medical Faculty (Girl),vol.17, No2
- Steven M.P,2011, Examination Review for ultrasound(abdomen &obstetrics and gynecology), 3rd edition china,copy rights by Lippincott Williams & wilkins, 250

Web sites

- http:// www.alternative surgery.com/education/adenomyosis (accessed in 12/12/2015)

- http://bestpractice.bmj.com/bestpractice/pathophysiology.html (accessed in 4/5/2016)
- http://learnradiology.com/archives2008/uterine/fibroidscorrect.html (accessed in 5/6/2016)
- http://quizlet.com/76957942/pelultrasound-transvaginal-ultrasound (accessed in 10/4/2016)
- -http://radiopaedia.org/articles/uterine- leiomyoma (accssed in 7/2/2016)
- -http://sites.google.com/site/miscarriage research/fibroids-and-fertility (accessed in 3/1/2016)
- http://teachmeanatomy.info/pelvis/female/reproductive-tract/uterus/ (accessed in 7/4/2016)
- http://www.acog.org/patients/FAQs/uterin-fibroids (accessed in 25/4/2016)
- http://www.advancedwomenimaging.com.au/pelvic-gynaecolgic-ultrasound (accessed in 29/3/2016)
- http://www.atlanticmedicalimaging.com/pages/types-ultrasound (accessed in 18/4/2016)
- http://www.britannica.com/science/uterus (accessed in 21/5/2016)
- -http://www.cancer.ca /en/cancer-information/cancer-type//uterine/anatomy/and/physiology.com (accessed in 12/12/2015)
- -http://www.emedmd.com/content/fibroids-pregnancy (accessed in 5/1/2016)
- http://www.fertilityclinicmumbai.com/endoscopy/what-are-fibroid.html (accessed in 13/6/2016)
- -http://www.healthline.com/health/uterine-fibroids (accessed in 6/1/2016)
- http://www.healthline.com/human-body-maps/uterus (accessed in 5/4/2016)

- http://www.hopkinsmedicine.org/healthlibrary/test-procedures/gynecology/pelvic-ultrasound (accessed in 3/3/2016)
- http://www.medicinenet.com/script/main/art.asp (accessed in 20 /12/2015)
- -http://www.ncbi.nlm.gov/m/pubmed/10755039/ (accessed in 18/1/2016)
- http://www.pathologyoutlines.com/uterus.html (accessed in 22/3/2016)
- http://www.radiologyinfo.org/en/info.cmf (accessed in 2/4/2016)
- http://www.ultrasoundpaedia.com/normal-uterus (accessed in 25/3/2016)

Appendices

Appendix 1

U/S image (1) showing a fibroid with gestational sac in 33 year lady in her 1st trimester

U/S image (2) showing fibroid beside fetal head in 27 year lady in her 2nd trimester

U/S image (3) showing a fibroid beside fetal parts in 40 year lady in her 3rd trimester

Appendix 2

Explain the data collection sheet from 50 files of pregnant women who had a regular follow up in their hospitals and medical centers. The data was about age,number of fibroids,type of fibroid,size of each fibroid in all three trimesters,number of previous abortions and the outcome of this pregnancy

Data collection sheet

Outcome of this pregnancy	No of previous miscarriages due to fibroids	Size of fibroid/s based on trimesters		Type of fibroid according to its location	No of	Age	Serial
		3rd trimester	2nd trimester	1st trimester	Fibroids		No