



*Reviewed By*  
RAAOUN M. JABOR



## Video Case

# Postterm Pregnancy

### Objectives:

- Define post term pregnancy.
- Identify the incidence and etiology of post term pregnancy.
- Describe the methods used for diagnosis and evaluation of prolonged gestation.
- Discuss the antepartum and intrapartum management of prolonged pregnancy.
- List the complications of prolonged pregnancy.



- Slides
- **Important**
- **Golden notes**
- Extra
- **439 Doctor's notes**
- **441 Doctor's notes**
- **441 Female Presentation**
- **Reference**

Female presentation

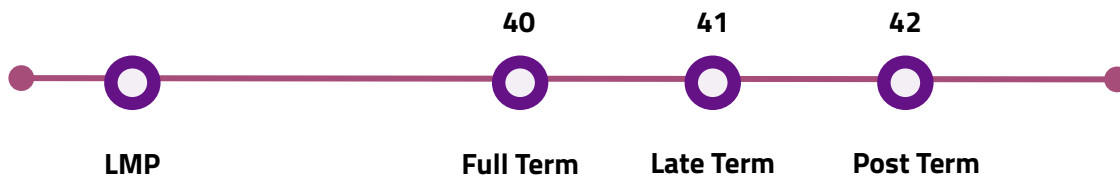
Video Case | Editing File

# Introduction



## Definition :

- The prolonged or post term pregnancy is one that persists beyond **42 weeks** (294 days) from the onset of the last normal menstrual period. Estimates of the incidence of post term pregnancy range from 6-12% of all pregnancies.
  - The incidence of post term pregnancies has been reduced significantly in the past 10 years because induction before 42 weeks has significantly reduced fetal morbidity secondary to prolonged gestation.
- Generally, 50% of patients deliver by 40 weeks, 75% by 41 weeks, and 90% by 42 weeks.
- These statistics assume ovulation occurred on day 14 of a 28 day cycle, since most patients (50%) have cycles longer than 28 days, these numbers are probably overstated.



## Etiology:

- Most common cause of Postterm pregnancy is **Inaccurate estimation of gestational age.**
- **Estimated date of delivery (EDD) calculated as 40 weeks from 1st day of last menstrual period (LMP)**
- The most common cause of true postdates cases are **idiopathic** (unknown cause).
- It does occur more commonly in young primigravidas and rarely with placental sulfatase deficiency.
- Pregnancy with **anencephalic fetuses** are the longest pregnancies reported. **This is probably related to the lack of a fetal labor-initiating factor from the fetal adrenals, which are hypoplastic in anencephalic fetuses.**

## Complications :

**Morbidity and mortality** risk for both mother and fetus ↑ with post term pregnancy.

Maternal Risk	Fetal Risk
<ul style="list-style-type: none"><li>• Obstetric <b>trauma</b></li><li>• Increased rate of <b>cesarean</b> delivery, with attendant risks:<ul style="list-style-type: none"><li>→ <b>Infection</b></li><li>→ <b>Postpartum hemorrhage</b></li><li>→ <b>Thromboembolic event</b></li><li>→ <b>Visceral injury</b> - damage to nearby tissue</li></ul></li></ul>	<ul style="list-style-type: none"><li>• <b>IUFD</b> (Risk increases after 41 weeks)</li><li>• <b>Macrosomia</b></li><li>• Postmaturity syndrome</li><li>• <b>Meconium aspiration syndrome</b></li><li>• <b>Oligohydramnios</b></li><li>• Low Apgar scores (i.e., ≤ 4 points)</li><li>• IUGH</li></ul>

# Post Term Pregnancy and Placental Function

With post term pregnancy, perinatal mortality is  $\uparrow$  two to three fold.

Placental Function in Post-Term Pregnancy	
Maintained	Deteriorates
Macrosomia (80%)	Dysmaturity (20%)
Difficulty labor and delivery	Placental Insufficiency
Increased cesarean rate (Forceps, vacuum extractor, shoulder dystocia, birth trauma).	Increased cesarean rate (acidosis, meconium aspiration, oxygen deprivation)

## Macrosomia Syndrome:

- Occurs in 2%-10% of postterm pregnancies
- In most patients, **placental function continuous** providing nutritional substrates and gas exchange to the fetus, resulting in a healthy but **large fetus** (weight more than 4500g, 4000 g).
- Macrosomia often results in abnormal labor, shoulder dystocia, birth trauma, operative vaginal delivery and an  $\uparrow$  incidence of cesarean delivery

Increase risk of hemorrhage in macrosomia baby due to instrumental delivery, perinatal injury, cervical injury, uterine rupture and atony .

## Dysmaturity Syndrome (Postmaturity):

- Associated with an **aging and infarction** of **placenta**
- Complicated 10-20% of postterm pregnancies
- Typical features:
  - **loss of subcutaneous fat** (long/thin body)
  - **long fingernails**
  - **Dry**, peeling, wrinkled skin
  - **Abundant hair**

## Meconium Aspiration Syndrome (MAS):

- Pathophysiology: ANS maturity lead to pass of stool then fetus aspire.
- Can lead to:
  - **Severe respiratory distress** due to small and large airway obstruction.
  - **Green amniotic fluid.**
  - chemical pneumonitis.
  - **Low apgar score.**

Meconium is the first stool produced by the baby (debris and toxic material to lung) → baby went in shock or any problem → change in PH → open sphincter → these material will go outside the small bowel and has green color → fetal demise, icu or transient tachypnea of newborn

If meconium is present, neonatal asphyxia should be anticipated, and a neonatal resuscitation team should be present at delivery.

# Post Term Pregnancy and Placental Function

## Oligohydramnios:

Oligohydramnios can be defined as **an amniotic fluid index (AFI) of less than 5 cm.**

**Remember:** fetus always try to protect blood flow to the **brain.**

fetus senses decrease in placental flow → ↓ blood flow to the kidneys → preserve blood flow to the brain → ↓ urine production.

Delivery is indicated if there is any indication of oligohydramnios (AFI < 5) or if spontaneous fetal heart rate decelerations are found on the NST.

## Diagnosis and Evaluation

More details in fetal assessment lecture

### Diagnosis:

The key to appropriate classification and subsequent successful perinatal management is the accurate dating of gestation

#### → US:

- 1st trimester (6-11) weeks : fetal crown-rump length
- 2nd trimester (12-20) weeks : the average of multiple measurements: (eg: biparietal diameter, femur length, abdominal & head circumference)
- 3rd trimester : +/- 3 weeks , less reliable

#### → LMP

- To calculate **gestational age**: add 7 to the days of the LMP, subtract 3 from the months, add 1 year if needed

### Evaluation:

Antenatal surveillance should be considered at 41 weeks; it involves one of the following:

- Non Stress Testing (NST)
- Modified Biophysical Profile:
  - NST
  - Amniotic Fluid Volume
    - 5-25 cm normal
    - < 5 cm → oligohydramnios
    - > 24 cm → polyhydramnios
- Full Biophysical Profile
  - NST
  - Amniotic Fluid Volume
  - Fetal Movement, Breathing and Muscle Tone

	SCORE : 2	SCORE : 0
FETAL HEART RATE	2 OR MORE ACCELERATIONS OF 15 BPM FOR 15 SECONDS WITHIN 30 MINS	1 OR NO ACCELERATION WITHIN 30 MINS
FETAL MUSCLE TONE	1 OR MORE EPISODES OF ACTIVE EXTENSION AND RETURN TO FLEXION IN 30 MINS	SLOW EXTENSION AND RETURN TO PARTIAL OR NO FLEXION, NO MOVEMENT IN 30 MINS
FETAL BODY MOVEMENTS	3 OR MORE IN 30 MINS	2 OR LESS IN 30 MINS
FETAL BREATHING MOVEMENTS	ONE OR MORE EPISODES OF FBM OF >30 SEC IN 30 MINS	ABSENT OR NO EPISODES OF FBM OF >30 SEC IN 30 MINS
AMNIOTIC FLUID VOLUME	≥5CM	<5CM

BPP Score	8 or 10	4 or 6	0 or 2
Interpretation	highly reassuring of fetal well-being	worrisome (Suspect chronic asphyxia)	highly predictive of fetal hypoxia with low probability of false positive
Management	repeat the test weekly or as indicated	→ If ≥ 36 weeks deliver, → If < 32 weeks repeat testing in 4-6 hours. Test for 120 minutes persistent score ≤ 4 deliver regardless of gestational age	prompt delivery regardless of gestational age

IF the patient had regular cycles and did early US (the difference should be minimal eg 2 day .

IF the patient ask you, which one is prescies ? **US**

Why? Because LMP did not account for the week of menses and week of ovulation

IF the difference between them less them 7 day go with LMP

IF more than 7 day go with early us (more accurate )

When to do antenatal surveillance? End of 2 tri or early 3red, For high risk patient that may had fetal compromise, macrosomia (IUGR) , MACROSOMIC baby

NST: 15 beat in 15 s more than baseline

# Management of Post Term Pregnancy

## Antepartum management:

Based on two factors:

### 1. Confidence in dates:

Identify how much confidence can be placed on the gestational age being **truly > 42 weeks**.

### 2. Favorableness of the cervix:

Assess the likelihood of successful induction of labor by assessing **cervical dilatation, effacement, position, consistency and station of the fetal head (Bishop score)**.

**The Bishop score** is a numerical expression of how favorable the cervix is and the likelihood of successful labor induction. Calculate Bishop score is classical exam Q.

Parameter/score	0	1	2	3
Position	Posterior	Intermediate	Anterior	-
Consistency	Firm	Intermediate	Soft	-
Effacement	0-30%	31-50%	51-80%	>80%
Dilation	0 cm	1-2 cm	3-4 cm	>5 cm
Fetal assessment	-3	-2	-1,0	+1,+2

### Unfavorable cervix:

An unfavorable cervix is **closed uneffaced, firm, and posterior**.

A **Bishop score < 3 (less than 5)** is a predictor of unsuccessful vaginal delivery with induction of labor

### Favorable cervix:

A favorable or ripe cervix is **dilated, effaced, soft, and anterior**. A **Bishop score ≥ 6 (9-13)** is an accurate predictor of successful vaginal delivery with induction of labor.

These values are based on Kaplan. Based on Amboss: Bishop score ≥ 8: favorable cervix. Bishop score ≤ 6: unfavorable cervix

Patients can be classified into three groups:

Dates: Sure Bishop: High	Dates: Sure Bishop: Low <sup>(1)</sup>	Dates: Unsure Bishop: N/A <sup>(2)</sup>
Management is <b>aggressive</b> . There is no benefit to the fetus or mother in continuing the pregnancy, <b>induce labor with IV oxytocin and artificial rupture of membranes</b> .	<b>Cervical ripening:</b> using a foley balloon catheter placed through the cervical canal, <b>sweeping</b> of the membrane or <b>prostaglandin to soften the cervix</b> , either method is <b>followed by IV oxytocin</b> .	Management is <b>conservative</b> . Perform <b>twice weekly NSTs and AFIs</b> to ensure fetal well-being and <b>await spontaneous labor</b> . If fetal jeopardy is identified. Delivery should be expedited.

1. IN unfavorable cervix giving cytotec lead to prolonged latent phase and that increases risk of infection (excluded meconium and infection and no rupture of membrane more than 18h). You can do cervical sweeping as well (sweep the membrane over the cervix this will produce natural prostaglandin E2 (more effective in multiparous)
2. One of the method is double balloon you insert the balloon above the internal canal and fill it with 200 cc and the other in the external and assess after 24h

# Management of Post Term Pregnancy



## Intrapartum management:

01

**Continuous electronic fetal monitoring** must be employed during the induction of labor.

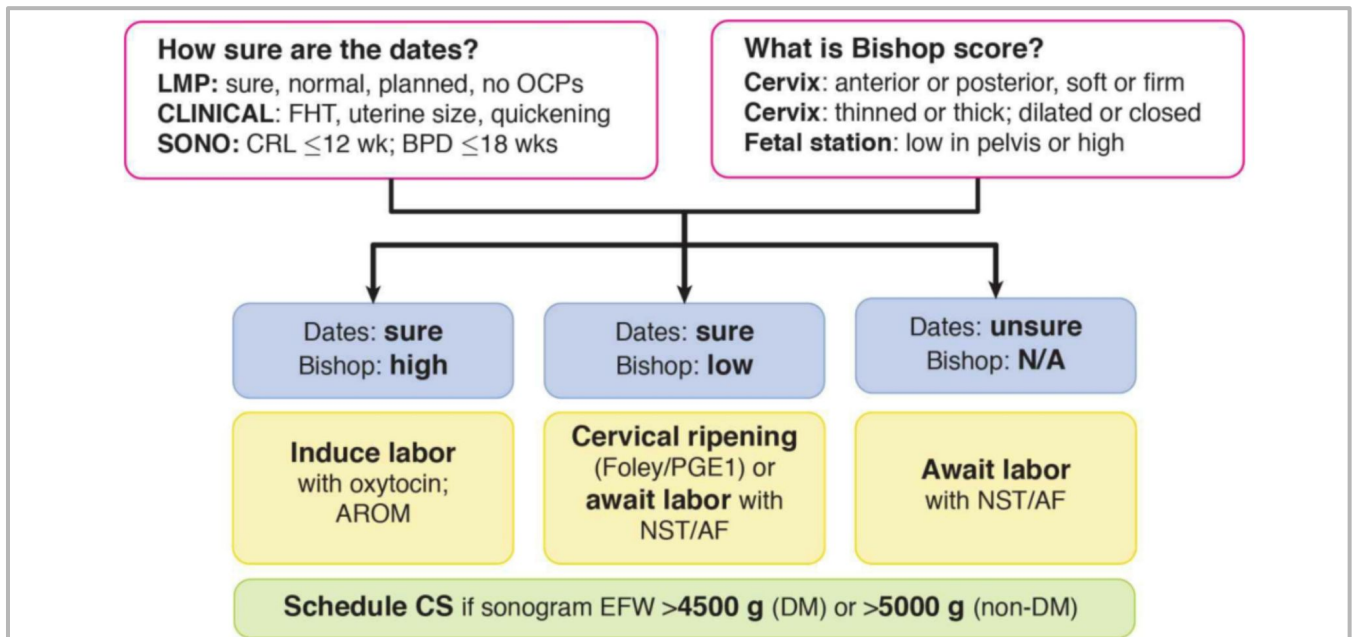
02

The patient should **lie on her left side** to assure **adequate perfusion of the uterus**

03

The **fetal membranes should be ruptured** as early as is feasible

- **Internal fetal scalp electrode**
- **Color of the amniotic fluid assessed.**



Used with permission: Elmar Sakala, MD

**Figure I-8-8. Diagnosis and Management for Post-Dates Pregnancy**

This figure from kaplan

# Teaching case

A 35-year-old, G1P0 woman, presents to your office for a routine prenatal exam. She is **5 days past her due date** that was determined by her last menstrual period and a second trimester ultrasound. While reviewing her chart, you note that she has **gained 32 pounds** during this **uncomplicated pregnancy** with  $\frac{1}{2}$  pound weight gain since last week's visit. Her BP is 110/65. She has **no glycosuria or proteinuria**. **The fundal heights measure 38cm** and fetal heart tones are auscultated at 120 bpm in the left lower quadrant. **The fetus has a cephalic presentation and an estimated weight of 8lbs.** Just before you go into the room, your nurse pulls you to the side, and tells you, "She has a lot of questions!" Once you walk into the room, the patient expresses her disappointment that she has not had the baby yet. She assumed that she would be having the baby on her due date. She asks you about potential harm to her and the baby from going past her due date, and she would like to know her options.

## Q1: What would you tell this patient is normal duration of pregnancy and what is the usual time for the onset of spontaneous labor?

The **normal** duration of pregnancy is 280 days (40 0/7 weeks) from the first date of the last menstrual period.

<b>Preterm pregnancy</b>	Defined as gestational age less than 37 0/7 weeks.
<b>Early term pregnancy</b>	Defined as gestational age between 37 0/7 weeks and 38 6/7 weeks.
<b>Full term pregnancy</b>	Defined as gestational age 39 0/7 weeks and 40 6/7 weeks.
<b>Late term pregnancy</b>	Defined as gestational age between 41 0/7 weeks and 41 6/7 weeks.
<b>Post term pregnancy</b>	Defined as gestational age of 42 0/7 weeks or greater.

- In the United states, approximately 12% of pregnancies deliver preterm.
- Approximately 80% of pregnancies are delivered at term gestation.
- Post term pregnancy is estimated to have an incidence of 6%.
- Accurate gestational age assignment with first trimester ultrasound results in a decreased incidence of post term pregnancy.

## Q2: What are the risks associated with post term pregnancy?

### Antenatal concerns

- Macrosomia.
- Postmaturity syndrome.
- Oligohydramnios.
- Perinatal death (stillbirth).
- IUFD

### Intrapartum concerns

- Labor dystocia.
- Infant birth trauma.
- Cesarean delivery.
- Postpartum hemorrhage.
- Meconium passage.

### Neonatal concerns

- Meconium aspiration syndrome.
- Hypoglycemia.
- Hyperbilirubinemia

# Teaching case

## Q3: What are the features of postmaturity syndrome?

Typical features include: (looks like an old man)

1. Loss of subcutaneous fat resulting in a long thin body.
2. Long fingernails.
3. Dry, peeling, wrinkled skin.
4. Abundant hair.



- Although the true incidence of the fetal postmaturity syndrome is unknown. It has been estimated to occur in 10% of pregnancies between 41 and 43 weeks.
- The syndrome results from placental insufficiency due to aging and infarction.
- Post term infants have an increased risk of perinatal mortality as compared to other post term infants.

## Q4: What management plan would be appropriate for this patient?

### Labor induction

- Appropriate at 41 0/7 weeks regardless of cervical status. **between 41 0/7 to 41 6/7**
- Is associated with a decreased risk of perinatal mortality, cesarean delivery, and cost.
- Pre-induction cervical ripening maybe required if the cervix is unfavorable.
- in case of previous C. section mechanical induction is used, since PGs are **contraindicated** because risk of uterine rupture.

### Expectant Management

- Should include antenatal testing ( **by doing antenatal surveillance and biophysical profile** ) beginning between 41 and 42 weeks.
- Induction is indicated if there is evidence of non-reassuring fetal testing.
- Expectant management should be pursued no longer than 43 weeks, and only with antepartum testing
- **any patient having birth  $\geq$  41 week, do close fetal surveillance (non-stress test, US)**



# Doctors notes

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- < 37 is preterm,
  - early Term pregnancy from 37 to 39
  - Full Term from 39 to 41
  - Late term from 41 to 42
  - >42 is post term.
  - You add a 1 year in the LMP when the pregnancy NOT in the beginning of the year
- 
- Amniotic fluid function:
    1. Growth.
    2. Breathing.
    3. Movement limbs and internal organ expansion.
    4. Maintain the temperature.
    5. Antibacterial.
    6. Prevent contracture.
- 
- We have centile for baby growth if it less than 50% = IUGR, if in the 90th that means it's bigger than normal and you need to investigate the cause (eg :genetic (her or his family are big ), maternal DM, maternal weight gain or post term (baby increase 200g/w)
  - Macrosomia = 4.5 (he or she will be in physiological and metabolic instability at birth as well as IUGR) all that may leads to ICU admission and trauma during delivery
  - Meconium is the first stool produced by the baby (debris and toxic material to lung) → baby went in shock or any problem → change in PH → open sphincter → these material will go outside the small bowel and has green color → fetal demise, icu or transient tachypnea of newborn
  - Increase risk of hemorrhage in macrosomia baby due to instrumental delivery, perineal injury, cervical injury, uterine rupture or atony .
  - Calculate bioshop score is classical exam Q
  - IN unfavorable cervix giving cytotec lead to prolonged latent phase and that increases risk of infection (excluded meconium and infection and no rupture of membrane more than 18h) :You can do cervical sweeping as well (sweep the membrane over the cervix this will produce natural prostaglandin E2 (more effective in multiparous)
  - One of the method is double balloon you insert the balloon above the internal canal and fill it with 200 cc and the other in the external and assess after 24h

# Reference

## Postterm Pregnancy

The prolonged or postterm pregnancy is one that persists beyond 42 weeks (294 days) from the onset of the last normal menstrual period. Estimates of the incidence of postterm pregnancy range from 6-12% of all pregnancies. The incidence of postterm pregnancies has been reduced significantly in the past 10 years because induction before 42 weeks has significantly reduced fetal morbidity secondary to prolonged gestation.

**Perinatal mortality is two to three times higher in these prolonged gestations.** Much of the increased risk to the fetus and neonate can be attributed to development of the fetal postmaturity (dysmaturity) syndrome, which occurs when a growth restricted fetus remains in utero beyond term. Occurring in 20-30% of postterm pregnancies, this syndrome is related to the aging and infarction of the placenta, with resulting placental insufficiency. Some of these fetuses meet the criteria for having IUGR and should not have been allowed to advance to term. If there is any evidence of intrauterine hypoxia (such as meconium staining of the umbilical cord, fetal membranes, skin, and nails), perinatal mortality is even further increased.

The fetus with postmaturity syndrome typically has loss of subcutaneous fat, long fingernails, dry, peeling skin, and abundant hair. The 70-80% of postdate fetuses not affected by placental insufficiency continue to grow in utero, many to the point of macrosomia (birth weight greater than 4000 g). Macrosomia often results in abnormal labor, shoulder dystocia, birth trauma, and an increased incidence of cesarean delivery.

### ETIOLOGY

The cause of postterm pregnancy is unknown in most instances. Prolonged gestation is common in association with an anencephalic fetus. This is probably

related to the lack of a fetal labor-initiating factor from the fetal adrenals, which are hypoplastic in anencephalic fetuses. Rarely, prolonged gestation may be associated with placental sulfatase deficiency and extrauterine pregnancy. Paternal genes, as expressed by the fetus, play a role in the timing of birth.

### DIAGNOSIS

The diagnosis of postterm pregnancy is often difficult. The key to appropriate classification and subsequent successful perinatal management is the accurate dating of gestation. It is estimated that uncertain dates are present in 20-30% of all pregnancies (see Box 12-2).

### MANAGEMENT

#### Antepartum

The appropriate management revolves around identifying the low percentage of fetuses with postmaturity syndrome that are truly at risk of intrauterine hypoxia and fetal demise. When biophysical tests of fetal well-being are available, the timing of delivery for each patient should be individualized. However, if the gestational age is firmly established at 41 weeks, the fetal head is well fixed in the pelvis, and the condition of the cervix is favorable, labor usually should be induced.

The two clinical problems that remain are (1) patients with good dates at 42 weeks' gestation with an unripe cervix and (2) patients with uncertain gestational age seen for the first time with a possible or probable diagnosis of prolonged pregnancy.

In the first group of patients, a twice-weekly NST and biophysical profile should be performed. The AFI is an important ultrasonic measurement that should also be used in the management of these patients. The AFI is the sum of the vertical dimensions (in centimeters) of amniotic fluid pockets in each of the four quadrants of the gestational sac. Delivery is indicated if there is any indication of oligohydramnios (AFI < 5) or if spontaneous fetal heart rate decelerations are found on the NST. So long as these parameters of fetal well-being are reassuring, labor need not be induced unless the cervical condition becomes favorable, the fetus is judged to be macrosomic, or there are other obstetric indications for delivery.

Some institutions begin weekly testing at 40 weeks to avoid missing the few fetuses that are stressed before 41 weeks. At 41 weeks' gestation with firm dates, delivery should be initiated by the appropriate route, regardless of other factors, in view of the increasing potential for perinatal morbidity and mortality.

When the patient presents very late for initial assessment but the gestational age is in question and fetal assessment is normal, an expectant approach is often acceptable. The risk of intervention, with the delivery of a preterm infant, must be considered. The woman herself can participate in the fetal assessment by doing fetal kick counts during the postterm period.

#### Intrapartum

Continuous electronic fetal monitoring must be employed during the induction of labor. The patient should be encouraged to lie on her left side to assure adequate perfusion of the uterus and the fetal membranes should be ruptured as early as is feasible so that an internal fetal scalp electrode can be applied and the color of the amniotic fluid assessed. Cesarean delivery is indicated for fetal distress. It should not be delayed because of the decreased capacity of the post-term fetus to tolerate asphyxia and the increased risk of meconium aspiration. If meconium is present, neonatal asphyxia should be anticipated, and a neonatal resuscitative team should be present at delivery.

## BOX 12-2

### FACTORS TO BE EVALUATED IN DATING A PREGNANCY

- Accuracy of the date of the last normal menstrual period.
- Evaluation of uterine size on pelvic examination in the first trimester.
- Evaluation of uterine size in relation to gestational age during subsequent antenatal visits (concordance or size-for-dates discrepancy).
- Gestational age when fetal heart tones are first heard using a Doppler ultrasonic device (usually at 12-14 weeks).
- Date of quickening (usually 18-20 weeks in a primigravida and 16-18 weeks in a multigravida).
- Sonographic measurement of fetal length (crown-rump) in the first trimester is most accurate.



## Med 441 Team:

### Leaders:

Leen Alrajhi - Yara Almufleh

### Members:

Reem Alkulaibi- Raaoum Jabor

# Good Luck!



## Med 438 Team:

### Leaders:

Ateen Almutairi - Lama ALZamil -  
Lina Alosaimi

### Members:

Joud ALJEBREEN - Amirah ALZAHHRAN  
- Sarah Alkhalife



## Med 439 Team:

### Leader:

Bushra Alotaibi - Renad Alhomaidi

### Members:

May Barakah