Course Name :An Overview on Maternal Health Antenatal, Intranatal and Postnatal Care

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Institute Name: IIT Kharagpur

Week:05

Lecture:03

Obstetrical Examination

Hello students. I welcome you all to the NPTEL online certified courses on the topic, an overview on maternal health, the antenatal, intranatal and postnatal care. I am Dr. Barnali Ghosh, an obstetrician and gynecologist working as an assistant professor at B.C.Roy Medical College and Research Center, IIT Kharagpur. Today, we are going to discuss regarding the obstetrical examination. We will be discussing the different grips in the obstetrics and also a detailed regarding the palpation part right of the obstetrics.

So, the concepts covered in this class will be the obstetric grips, the Leopold maneuvers and the Crichton's maneuver. Key words for today's class are as follows right. So, coming to the topic proper. So, this is a picture of the fetus in utero. Fetus is inside the uterus in the mother's womb right. So, you say that here is the maternal pelvis, this is the maternal pelvis and say the maternal spine will be passing like this at the midline. These are the maternal spine which are going like this right. Now see the uterus is slightly dextro-rotated. The uterus is slightly dextro-rotated towards the right of the maternal spine and this is normal in case of pregnancy.

But the fetal spine say this is I am drawing a line along parallel to the fetal spine. So, that is the fetal back and the spine is going like this. The fetal spine is parallel to the longitudinal axis of the maternal uterus. Say I draw it with another color. So, this is the longitudinal axis of the mother's uterus.

So, the longitudinal axis of the mother's uterus is in alignment with the fetal spine. But the maternal spine is at different plane right. So, this is important. Why I am discussing this because from this you have a concept regarding the lie, the presentation, the presenting part of the fetus which we need to examine and thus we can assess whether the delivery will be by vaginal delivery or we need to go for a caesarean section right. So, say this is the maternal pelvis and here is the fetus.

So, the fetus can be you know in the same line as the maternal long axis of the uterus. So, it is in the same line and when the uterus is dextrorotated always or most of the times the uterus is

slightly dextrorotated. So, the fetus is also slightly rotated towards the right. Now the uterus is centralized and now the fetal spine this is the fetal spine which is parallel to the maternal spine. This position of the fetus is called as longitudinal lie.

This is most favorable for the fetus and also favorable for vaginal delivery right. So, this is called as lie that is the relation of the fetal spine with the longitudinal axis of the centralized uterus or the maternal spine. Say this is the longitudinal lie, the fetus can be like this. This is called as transverse lie. It is perpendicular to the maternal spine.

The maternal spine is here. So, this fetus is perpendicular. This is called as transverse lie. Sometimes the fetus can be like in this position inside the uterus. So, this is called as oblique lie right.

So, from here we get a idea regarding the lie. Now, so we have from this picture you have got an idea regarding the lie of the fetus. It is the relation of the fetal spine with the maternal spine or the longitudinal axis of the centralized uterus and most commonly is the longitudinal lie. There are also other types of lie which are called as the transverse lie or the oblique lie. Now, coming to the presentation, see what is the definition of presentation? It is the part of the fetus which overlies the lower uterine segment.

So, what overlies this is the lower uterine segment. What overlies the lower uterine segment? It is the fetal head which is also called as cephalic end. So, the presentation in this case is the cephalic presentation right. So, the part of the fetus which is coming in relation to the lower uterine segment is called as presentation. In case the head is below, it is cephalic presentation.

If the podalic end is below, say the head is above and the podalic end is below, then it is bridge presentation right. Another definition is the presenting part. What is presenting part? It is that part of the fetus which overlies the internal oss. So, this is you know here will be the vagina coming and you have the internal oss. So, the part of the fetus that part of the presentation which overlies the internal oss is called as the presenting part.

So, the presenting part is nothing but a segment of the presentation. So, this full head, this is the full head of the fetus and now we can divide the head into different segments. Say this is the face, this is the vertex right. So, this is the brow, this forehead region, now this skull is the vertex. So, which part of the fetus overlies the internal oss which we can palpate during part vaginal examination is called as the presenting part right.

It can be vertex in case of cephalic presentation, it can be vertex, it can be brow, it can be face right in case of cephalic presentation. So, most commonly longitudinal lie, most common presentation is cephalic presentation and most common presenting part is vertex right. Now, we

will go into directly into the obstetrical examination or the obstetrical grips. These are to be examined by the clinician or the nursing staff to assess the lie, the position, the presentation of the fetus in the third trimester thereby helping us to assess whether it will be by the delivery will be favorable for vaginal route or not right. So, how to go for the obstetric examination? They are by the Leopold maneuvers right.

Now, prior to this Leopold maneuver discussion, we need to know what is the prerequisite before any obstetrical palpation. Number 1 is bladder, bladder should be empty. The patient should be asked to evacuate her bladder before any examination. Next, when to palpate and when not to palpate? When not to palpate is when there is Braxton Hicks contraction right. So, say you are putting your hand on the mother abdomen and you feel that the uterus is in contracted state.

So, that may be in a case of Braxton Hicks contraction. So, you need to wait and when this Braxton Hicks contraction goes away, the uterus is again relaxed, then you start your examination. What is the position? Position is you know supine position, dorsal supine position and it should be in a most comfortable manner so that the abdominal muscles are relaxed. This relaxed abdominal muscles will help to palpate the fetal parts more accurately and always, always, always be gentle. Explain the procedure to the mother and take her into your confidence, you know make her feel comfortable and always go for a consent, mostly oral consent for the examination.

Right and just you know in India though it is not so much of cold but still you need to rub your palms so that the temperature of your palm is not very cold. It is you know around 25 degree Celsius. So, this rubbing the palms will help to increase the temperature and that will you know help to you know that will not excite the uterus or you know any change, any decreased temperature can cause you know uterine contraction. So, rub the palms before going for the examination, rubbing of palms. So, these are the things that you do before examination.

Now, coming to the position of the mother. So, mother should be in the most comfortable position. This is the say the bed and this is the head end. Right. So, this is the bed and this is propped up at 45 degree.

Right. The head end is propped up and mother is you know lying down here say this is the head of the mother and say she rests on this and you go for the examination. Right. So, this is the picture and you know the her legs should be folded. Right. The mother should be in a dorsal supine position propped up at 45 degrees in a relaxed state in a comfortable environment and sometimes we give a pillow, pillow under the head.

We give a pillow here under the head for headrest and also a pillow here below the knees to

help in flexion of the knees. Right. And then we go for examination. Now, the examiner is on the right side of the mother and she or she will take the concern and start the examination. What are the examination or the grips? That is the Leopold maneuvers.

There are 4 Leopold maneuvers. What are they? 1, 2, 3 and 4. Number 1 Leopold 1 is also called as the Fundal grip. So, these are the newer terminologies. Right. So, Leopold 1 is called as the Fundal grip.

Leopold 2 is called as the Lateral grip. Leopold 3 is called as the Pawlick's grip. Right. And Leopold 4 is also called as the Pelvic grip. Previously, older days, this third Leopold maneuver was called as second pelvic grip and fourth Leopold maneuver was called as the first pelvic grip.

Right. Now, it has changed. It is called as Pawlick's grip and the pelvic grip, the third and fourth Leopold maneuvers. Okay. Now, coming to the examination. So, the mother is in supine dorsal position in propped up state at 45 degrees in a relaxed position with a pillow under her head and under her knees. The knees are semi flexed and she is very comfortable.

Now, you on the right side of the mother, you start examining how with the palms of the surface of the palms, not the fingers, you put the surface of the palms and you put, you know, the two palms with the two hands, two palms of both the sides. You palpate the fundus of the uterus and while palpating the fundus of the uterus, you know, this is called as the fundal grip. You palpate the fetal part. What you feel if it is, you know, some smooth, irregular and non-ballotable.

Right. So, it will be some smooth, irregular, non-ballotable part being palpated. Smooth, irregular, non-ballotable part being palpated. It is signifying that it is the breech or podallic end of the fetus. This is the inference from Leopold 1. So, from Leopold 1, we get our idea regarding which part of the fetus is present at the uterine fundus, also called as the fundal grip.

Right. So, this is Leopold 1. Now, Leopold 2. Leopold 2 is also called as the lateral grip. So, with these two hands, the two palms on two sides of the lateral wall of the uterus, you palpate. One hand, you palpate the left side or one hand, the left hand for the right side of the mother and the right hand for the left side of the mother.

Right. So, you palpate and say this hand, this hand from this picture, as per this picture, as per the position of the fetus in this picture, your left hand will be palpating some knob like irregular knob like structures. So, you come to the conclusion that yes, on the maternal right side are the limbs of the fetus. And this hand is palpating a smooth carved structure of uniform resistance. Right. So, with this hand, you feel a smooth carved round structure of uniform resistance which corresponds to the fetal spine.

So, you get to know on which side of the mother is the fetal spine and on which side are the limbs. Right. So, this is from the lateral grip. Now, coming to Leopold 3 or the Pawlick's grip or the second pelvic grip. And this is also all the three first three Leopold maneuvers are done with the face of the examiner facing the face of the mother.

Now, you stand towards facing the mother. Right. And with the right hand of the examiner, you put the under border of the right hand along the symphysis pubis and you feel the part which is at the lower pole of the uterus. Right. If you feel here hard, smooth, say hard smooth, it will be valuable from the rest of the body. Right. So, regular, these are all signifying that it is the fetal head.

Right. So, from this, you can assess what part of the fetus is in the lower pole of the uterus. That is the presentation of the fetus. If you palpate the fetal head, then it is a cephalic presentation. Right. And also, if you can freely move the fetal head side wise.

Right. You catch hold the fetal head and you can move the fetal head side wise. That means the fetal head is floating. It is above the pelvic inlet and engagement has not taken place.

Right. So, this we can see from Leopold 3. Now, coming to Leopold 4. The last Leopold maneuver is done by facing towards the foot end of the mother. You change, the examiner changes. If mother is lying down here, mother's head is this side. Now, you are doing all the examination, looking to the face of your face, facing the mother.

Now, if all Leopold 4, you move to the other side towards the facing the foot end of the mother. And now with both the hands, both the ulnar border of both the hands will be parallel to the inguinal ligament. So, here is the inguinal ligament and this will be parallel to the inguinal ligament. And slowly, slowly from lateral to medial side, you go in, you know, go on pressing and you can palpate the part of the fetus, which is at the lower pole of the uterus. So, what is the inference from Leopold 4 maneuver? It is the confirmation of Leopold 3, right.

So, in Leopold 3, we have already, you know, got an idea regarding the presentation, whether the fetal head is in the lower pole. From Leopold 4, we confirm that presentation. Number 2, we can palpate the occiput and the sinciput. They are the two bony prominences on the fetal head.

This is the sinciput and in behind is the occiput. We will all discuss in, you know, fetal and maternal pelvis, fetal skull maternal pelvis discussion and here, palpating the occiput and sinciput, we can get an idea. Say, this is the occiput, sorry, the sinciput is say, we are palpating at a higher level. The examiner who is palpating, he is palpating the sinciput at a higher level than the occiput, right. So, the position of sinciput and occiput helps to ascertain the attitude of the

fetus, whether the fetus is in flexed position. Now, attitude of flexion, if the fetal head is flexed, then the occiput will be at a lower level than the sinciput, right.

Another thing is whether engagement has occurred or not. If the head has gone inside the maternal pelvis, if the head has gone inside, then these two fingers cannot oppose. If the fingers of the examiner of both hands, they are able to oppose below the fetal presenting part, right. That means the presenting part is still in the abdomen, it has not gone down inside the maternal pelvis, that means engagement has not taken place. So, from this maneuver, we can ascertain whether engagement has occurred or not, right.

So, these are regarding the Leopold maneuver. In this picture, this is showing the fundal grip, which mostly we in case of cephalic presentation, we can palpate a irregular, broad, non-ballotable, you know, structure, right. Soft, soft, irregular, soft, irregular, non-ballotable structure, which is the breech, right. So, fundal grip mostly gives us the podalic end. Also, it can be the cephalic end that you need to ascertain, right. So, this is the fundal grip, these are the lateral grip, Leopold II lateral grip, where you ascertain which side is the back of the fetus or spine of the fetus, right and which side are the limbs.

So, these, you know, see, this is the spine and this side are the limbs. So, this hand, you will palpate the smooth, curved structure and here this hand will palpate the knob like structures. Now, this is the third Leopold grip, here with the right hand, you are holding the presenting part and here you feel, you can move, it is ballotable from the rest part of the body, the head, due to the neck, the head can move, right. So, it is a round, hard, smooth structure and it is ballotable from rest of the body, signifying that it is the head of the fetus. And this is the Leopold IV maneuver, which is nothing but confirmation of Leopold III, that is regarding the presentation, whether it is the fetal end, no, the head of the fetus.

Here is the head of the fetus and see, you are going down, down, down and the fingers, whether they are opposing below the presenting part, if it is opposing, engagement has not taken place and also you can say whether, where is the sinciput and where is the occiput and you can get an idea regarding the attitude of the fetus, whether it is properly flexed or extended. All these inferences will help in assessing the delivery of the mother, right. So, this is the fourth Leopold grip to assess the engagement of the fetal head. What I was telling that when these two fingers of the two sides of the examiner, they oppose below the presenting part, say here is the fetal head, here is the fetal head and you can go below this. So, that means engagement has not occurred, no engagement, but here the fetal head has gone down inside the maternal pelvis and now the two fingers cannot oppose below the fetal head by par abdominal examination.

This is par abdominal examination, right. So, the hands remain divergent. So, here we infer or we come to the conclusion that engagement has already occurred. Right. So, from this picture,

it is now clear this is Leopold I or Fundal grip. Here is the fundus and you palpate the fundus with the palms of the two hands, right and you assess the presentation.

Then number 2, this is number 2 or the lateral grip, this is number 3 or the Pawlick's grip and lastly is the Leopold IV maneuver, right. So, these were the regarding the Leopold maneuvers. Now, another important discussion regarding assessing the descent of the fetal head by par abdominal examination. We are not going for per vaginal. By just parabdominal examination, we will assess whether the fetal head is descending and whether engagement has occurred or not, right.

Number 1, we have discussed that from the 4th Leopold maneuver, we can get an idea whether engagement has occurred or not. Another is the rule of V or Crichton's maneuver, right. So, these are all clinical not USG based, right. So, I am talking about engagement. Engagement is nothing but the maximum transverse diameter of the presenting part when it crosses the pelvic inlet, right.

So, the maximum transverse diameter of the presenting part, right. So, first we need to know what is the pelvic inlet. This is the pelvic inlet. So, if I say one by one, this is the sacrum, right, the sacral promontory, then the ala of the sacrum, then the sacroiliac joint, then the iliopectineal line, then the iliopectineal eminence, then the superior border of the ischiopubic ramus, then the pubic crest, right, pubic crest, pubic tubercle, then the pubic crest, and then the superior border of the symphysis pubis, right, and the other way round. So, this is the, you know, boundary of the pelvic inlet. And now, when the maximum transverse diameter of the presenting part of the fetus crosses the pelvic inlet, engagement is said to have occurred.

So, presenting part most commonly is the cephalic presentation and vertex is the presenting part. So, in cephalic presentation, the maximum transverse diameter is the biparietal diameter. So, when the biparietal diameter, the distance between these two parietal eminences, so when this biparietal diameter of the fetal head crosses the pelvic inlet, engagement is said to have occurred. Now, how to assess? That is the rule of five.

By placing, you know, this is the size of the fetal head. The fetal head mostly comes within these five fingers. So, when we place our hand on the mother's lower uterine segment, just above the symphysis pubis, we place the left hand. And if all the five fingers, you know, grasps the fetal head, that means, whole of the fetal head is above the symphysis pubis. Whole of the fetal head is above the symphysis pubis. So, with the hand of the examiner, we can palpate the fetal head and we are palpating whole of the fetal head by all the five fingers.

And thus, we say that the fetal head is above the symphysis pubis, that is above the pelvic inlet. So, there is no engagement. Engagement has not occurred. Slowly, slowly the fetus will

go down. Now, say you are palpating four fingers, the fetal head one fifth of the fetal head has gone inside the pelvis.

When it has gone inside the pelvis, you cannot palpate it per abdomen. So, now, only four fingers of the examiner's hand can palpate the fetal head per abdomen. Next, it goes more down. The fetal head goes more down.

Now, only three fingers can palpate the fetal head. It goes more down. Only two fingers are palpating the fetal head per abdomen, right. I think you are getting. So, this say this part of the fetal head has already gone inside the pelvic inlet. So, this cannot be palpated per abdomen.

Only the part which is above the pelvic inlet, this part can be palpated. And here, only two fingers kept over the abdomen, you know, that is the part which is present above the pelvic inlet. So, from this position, when two fingers are palpating the fetal head above the pelvic inlet, from this position engagement is said to have occurred, right. So, this is the picture, right.

This is say this is a pictorial picture. This is the pelvic inlet. This is the pelvis. This is the pelvic inlet and this is the abdomen. So, on abdomen, when you are palpating five fingers, whole of the fetal head, all the five fingers can be placed over the fetal head. It is five by five engagement has not occurred. Now, little bit part of the fetal head has crossed, you know, gone inside, but you know, four fingers can palpate now the fetal head above the abdomen.

So, here also the engagement has not occurred. Fetal head goes down more and three fingers can be placed. Three fingers can be placed on the fetal head now on the abdomen. Then also the fetal head is not engaged. Now, when only two fingers can be placed on the abdomen, only two fingers, rest has gone inside.

Then only it signifies that engagement has taken place. That means this biparietal diameter, the maximum transverse diameter has crossed the pelvic inlet, just crossed the pelvic inlet. It goes further down, further down and whole head of the fetus will be inside the maternal pelvis. And you cannot palpate any part of the fetal head per abdomen that is zero by five. So, starting from two by five onwards, from this stage onwards, engagement is said to have occurred. So, we get an idea of engagement and this is important because engagement, you know, delayed engagement can tell us a lot of things that there may be some pelvic disproportion.

You know, fetal head is more larger in size, it is not going down. So, there will be difficulties in normal delivery, right. So, these were regarding the examination, the obstetrical grips and the assessment of the descent of the fetal head with, you know, the engagement, the timing of engagement. So, this was clinical examination and I have given it in a nutshell. We will also discuss the maternal pelvis, the different diameters of the maternal pelvis, the fetal skull, its

diameter, its positions and then we will move on to the different stages of labor and the steps of normal delivery. So, the references were from D.C Dutta book of obstetrics, Williams obstetrics and James book on high-risk pregnancy. So, that is all for today. Thank you, hope to meet you in the next session.