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

Professor Name: Dr. Barnali Ghosh

Department Name: Multidisciplinary

Institute Name: IIT Kharagpur

Week:03

Lecture:02

Placentation (normal and abnormal) (contd.)

Hello students. Today we meet for the NPTEL online certified course on the topic the overview on maternal health, the antenatal, intranatal and postnatal care. I am Dr. Barnali Gh Ghosh an obstetrician and gynecologist working as assistant professor at B.C.Roy Medical College and Research Center, IIT Kharagpur. Today we will continue with our previous class discussion that is the placenta, the abnormal types of placentation.

In the last class we did have a discussion regarding the structure of placenta, the structure of normal placenta at the placental circulation, the methods of separation of placenta, the grades of placenta in USG that is the Grannum's grading of placenta and also the function of a normal placenta. Now coming to the abnormal types of placenta. So what are they? We know that the umbilical cord is attached at the center of the placenta and the placenta is like a disc, discoid in nature with thickness at the center approximately on an average of 2.5 centimeter and the diameter being 15 to 20 centimeter right.

So this is a normal placenta which has one lobe and what are the abnormal variants? First is bilobed placenta. So we see here these are two lobes of the placenta. They are more or less you know more or less equal in size, equal in size the two lobes are equal in size and the attachment of the cord at the middle of the two lobes. So what happens this is the uterus and this placenta has two lobes with the umbilical cord attachment. So during separation of placenta it may happen that this lobe with the umbilical cord gets separated and this remains you know as persistent or within the uterus.

This will form as retained products of conception after the delivery this lobe may be retained within the uterus. So what will happen there can be bleeding. So following delivery due to this retained lobe of the placenta there can be bleeding which will you know which will have which can present as primary PPH or secondary PPH right postpartum hemorrhage. So secondary PPH occurring within 24 hours and secondary PPH occurring after 24 hours up to 12 weeks of puerperium. So it can result in bleeding, it can result in you know sub involution why because there is retained bits of placenta within the uterus.

So the uterus which after the delivery of the baby was to revert back to its pre pregnancy state. So this revert back to the pre pregnancy state is called as involution of the uterus, but as the placental beats are present in the uterus it cannot revert back to its pre pregnancy state. So there will result in sub involution and number 3 this retained product of placenta within the uterine cavity will be a need for infection resulting in endometritis and sepsis right. So these are the complications of bilobed placenta as a whole it is very rare bilobed placenta is very rare and sometimes there can be trilobed placenta or multiple lobed placenta. So these there can be 3 lobes right with the umbilical cord attached at the middle.

So this is tri lobe these are all very rare right. Next is marginal insertion of the cord. The cord is inserted at the center of the placenta in most cases if the umbilical cord is attached at the margin of the placenta this is called as battle dor placenta right and this you know this has complications of IUGR intrauterine growth retardation of the fetus and sometimes it can lead to abruption right placental abruption. So immediately after the diagnosis of the you know marginal insertion of the cord in USG in the antenatal period the clinician should be cautious regarding these complications and he or she must be extra vigilant regarding these complications right. Now coming to the succenturiate lobe succenturiate placenta right.

So what happens this is the original lobe of the placenta this is the main lobe of the placenta and here this is a accessory lobe. So this is the original lobe of the placenta and there is a accessory lobe right and these two are attached by the membranes and here is the attachment of the umbilical cord. So the two lobes this principal lobe and the accessory lobe this is called as the accessory lobe which is smaller in size than the principal lobe and this is attached to each other by membranes with the intervening placental you know blood vessels these are the fetal blood vessels. Now what happens with this if this becomes the presenting part this membrane intervening the principal lobe and the accessory lobe if this becomes the presenting part then it will be called as vasa praevia type 1 right sorry it is type 2 we will come to type 1. So what happens this is the uterus this is the fetus inside the uterus and say this is the placenta this is the principal placental lobe and this placenta is has an accessory lobe here and in between the accessory lobe this is the membrane and through the membrane are passing the fetal vessels.

So this becomes the presenting part this is called as vasa praevia type 2. So any trauma during you know examination or any trauma in the antenatal period can lead to antepartum hemorrhage. Now this hemorrhage with to point to notice this hemorrhage is fetal in origin this bleeding is fetal in origin these are the fetal blood vessels. So these are fetal bleeding and these needs to be intervened early or the fetal will die inside the uterus due to blood loss. Other points being what will happen with the succenturiate lobe yes so the placenta the main placenta has got separated and the succenturiate lobe which is the accessory lobe is retained inside the placenta.

So the same things will happen there will be retained products of conception or retained placenta which will lead to postpartum hemorrhage. Postpartum hemorrhage if this is the delivery and bleeding occurs within 24 hours this is called as primary PPH. After one day of delivery occurring after 12 weeks of puerperium this duration if bleeding occurs during this period it is called as secondary PPH. So it can cause primary PPH it can cause secondary PPH it can cause subinvolution of the uterus and also it can lead to sepsis and endometritis. So all these are complications of succenturiate lobe right.

Coming to velamentous insertion of the cord what that means yes this is the lobe or this is the main principal body of the placenta and this part is the membrane. So the umbilical cord instead of being attached directly to the placenta it gets attached to the placenta via this membrane and this membrane has the fetal blood vessels right. So this is velamentous insertion of the cord. So what is the significance of this? This will cause type 1 vasa praevia. We have already talked about type 2 vasa praevia which was due to know which can be formed by the succenturiate placenta.

Now type 1 what happens in this case here this is within the uterus this is the fetus growing inside the uterus and this is the umbilical cord right and here on this side is the placenta and the umbilical cord is attached to the placenta via the membranes. So this is the membrane and the umbilical cord this is the umbilical cord which is attached to the placenta by this membrane intervening membrane and this intervening membrane will have the fetal blood vessels right. So this becomes when this becomes the presenting part this is called as type 1 vasa praevia right. So why it is important? I am telling repeatedly that any bleeding from this vessels over the underlying the just beneath the membrane the vessels are fetal in origin. So any you know bleeding from this vessels will signify that the fetus is losing blood.

What is the amount of blood present in the fetus? It is 125 ml per kg. Fetus is of 3 kgs weight at term. So maximum there is 600 ml of blood. So 500 ml right so into 3 right. So even a little amount of blood loss from this vessels may be it is 50 ml blood loss or you know 40 ml blood loss even a little amount of blood loss from this vessels will you know significantly jeopardize the fetus and you know fetal may undergo intrauterine death during the process of delivery.

So this is a very important feature to be detected during the antenatal USG and if this you know filamentous insertion of the cord is detected we need to be very sure that whether it is forming as the in the lower uterine segment it is forming the presenting part and if it is when a forming the presenting part that is type 1 vasa praevia then we have to be very meticulous and will not allow any type of you know any little bit of bleeding and in this case the delivery will be by caesarean section. Coming to the next abnormal variant which is placenta membranacea what happens these are the chorion. So the fetal surface the fetal surface is fully or wholly partially or wholly is covered by chorion. This chorionic villi are comparable to the frongs of

sea anemone this is a aquatic you know organ organism sea anemone and from the frongs of the sea anemone it looks like the chorionic villi will pass through the fetal surface will penetrate on the amnion it is the amnion and on the amniotic surface we can see the chorionic villi. So it is partial here this is there are no chorionic villi here these are the chorionic villi that can be seen on the amniotic membrane and also in this part.

So this is partial it can be partial or complete. So what is the adverse effect it can lead to torrential bleeding, profuse bleeding during delivery and also in the antenatal period. Another adverse effect of this is you know adherent placenta placenta adherent placenta there is a terminology given now that is called as placenta accreta syndrome right. So all that placenta adherent placenta that is the placenta accreta placenta increta placenta percreta they all come under this heading. So this placenta membranacea can lead to these two complications.

Coming to the next variant which is placenta fenestrata what that means, that this is the maternal surface these are the cotyledons and after the delivery of the placenta I see here or you know the clinician will see that this part is devoid of the cotyledon. It is there is missing cotyledon here right and the membrane that can be seen the membrane this is the amnion. So the cotyledon is missing what does that mean that what does that mean? If immediately after seeing the placenta after the delivery of the fetus we know we need to be extra vigilant whether there is you know any cotyledon which has got retained inside the uterine cavity right. So if it is not present inside the uterine cavity we will deduce that it is a case of placenta fenestrata where the cotyledon this middle portion or you know a part of that placenta the basal plate is missing right. Now coming to extra choroidal placenta what does that mean? Their placenta has two plates or two surfaces which have already discussed the basal surface the basal plate and the chorionic plate and as it is a disc.

So the both the fetal surface and the maternal surface they are of equal length and they are attached to each other at the periphery right. Now suppose that this chorionic plate this above is the fetal surface and this chorionic plate is smaller than the basal plate. So this is the below is the basal plate or the maternal surface and this basal plate is larger and the chorionic plate is smaller. So what happens the periphery is devoid of the chorion of when we look from the fetal surface from above we can see the chorionic plate at the center around the attachment of the umbilical cord, but the periphery of the fetal surface is devoid of the chorion as because this chorionic plate is smaller than the basal plate. So this part at the margin of the you know margin of the fetal surface the margin of the placenta where the chorion is devoid where the chorion is absent that part around the periphery this part all around the chorionic plate will be called as the extra choroidal placenta right.

So this is that structure this is the chorion and this is the basal plate right. So in the periphery this chorion is smaller than the basal plate and this part is devoid of the chorion this is called as

extra choroidal placenta. Same in this case this is the chorionic plate and this part is devoid of chorion this part is called as the extra choroidal placenta. Extra choroidal placenta can be of two types number one is the circum-marginate placenta and number two is circum-vallate placenta right. What happens if this extra chorionic part sorry extra choroidal part this extra choroidal part which is devoid of the chorionic plate if it gets you know covered by fibrin deposition this peripheral part is getting covered by fibrin deposition then it is called as circum-marginate placenta and in circum-vallate what happens this is the amnion.

So amnion folds upon itself so this is two folds of the amnion which will cover the peripheral extra choroidal part. So this is you know two folds of the amnion and this type will form as the circum-vallate placenta right. So it has clinical significance I will come to that. So this is the extra choroidal placenta and this is the circum-vallate placenta you can see this as the thickened rim thickened or nodular rim right. This is formed by the two layers of the amnion right.

So this portion this is the fetal surface and this portion is the chorionic plate right. This is the chorionic plate at the center, but in the periphery in the periphery this is the periphery in the periphery the chorionic plate is devoid and this is covered by the two folds of amnion right. So this can be you know differentiated by this thickened margin thickened rim like you know layer the nodular layer and this is called as circum-vallate placenta. Why it is important because it has some adverse effects. What are they it can cause IUGR, it can lead to intrauterine growth retardation, then congenital anomalies, then oligohydramnios, APH antepartum hemorrhage, abruption and one of the very specific symptom is hydrorrea gravidarum.

This is seen in circum-vallate placenta. What does that mean there is continuous watery discharge per vagina throughout pregnancy. So you know when we deduce circum-vallate placenta in USG or from the symptoms we need to be extra vigilant to rule out IUGR to rule out oligohydramnios or any types of abruption. Coming to circum-marginate circum-marginate we have already told that the extra-choroidal part is covered by fibrin deposition. So this is the umbilical cord attachment and this is the choroidal plate at the center this is the fetal surface and outside this part this margin this peripheral part which is the extra-choroidal part is covered by fibrin deposition.

This is called as circum-marginate these are all diagnosed after the delivery of the placenta. Now after the delivery of the fetus the placenta is then delivered within 15 minutes of delivery of the baby. If placenta does not you know get separated within 15 minutes we wait for another 15 minutes and if it does not get separated within 30 minutes from the delivery of the baby it is called as retained placenta right. And what is the adverse effect of circum-marginate placenta? It leads to preterm labor right. Now coming to placenta accreta spectrum.

So what does that mean? I have already discussed you know in the placental structure so these

are the chorionic villi. These are the chorionic villi this is the fetal surface and this is the maternal surface with the septa. So the point where the chorionic villi will meet the decidua basalis this is the decidua basalis and these are the chorionic villi. So the point where the chorionic villi meet the decidua basalis this point is you know denoted by a structure this is called as the nitabuch's membrane. In placenta accreta spectrum there is absence of this nitabuch's membrane.

In placenta accreta there is you know more penetration of the trophoblast or the chorionic villi. Normally the chorionic villi will penetrate inside the decidua basalis up to the Nitta books membrane. Beyond the nitabuch's membrane normally they should not penetrate, but if the chorionic villi penetrates beyond and invades the decidua basalis and reaches the myometrium then they are called as placenta accreta spectrum right. So this is normal placenta and it is confined within the decidua basalis. Now see this has crossed the decidua basalis and has reached the underlying myometrium.

So this is accreta or adhering to the myometrium. Next it will invade the myometrium. So it is invading the myometrium, but no just does has not crossed the serosa this is called as placenta accreta and when it has perforated the myometrium it has crossed the serosa outside the uterine serosa and will involve the adjoining structures. If it is present as anterior placenta it can involve the bladder and if it is present you know posterior wall of the placenta it will involve the rectum right. So this is called as placenta percreta right.

So these are the three placenta accreta which is called as adherent to myometrium. Number 2 is placenta increta which is invading the myometrium and lastly the placenta percreta which is perforating the myometrium. These are you know very you know high risk pregnancies. Placenta accreta when diagnosed by USG. How it can be diagnosed by USG? How it can be diagnosed by USG? What are the USG features? Number 1 we have already talked about the retro pubic a retro placental hypo-echoic zone in USG which is normally present in normal placenta.

So this loss of retro pubic sorry retro placental hypo-echoic area is number 1 feature of placenta accreta spectrum. Number 2 is your now this placenta which is invading the myometrium you know this is very vascular and in between the placenta there are lakes placental lakes or placental lacuna filled with blood. So this gives a picture of Swiss cheese appearance or moth eaten appearance of the placenta that is number 2 feature of USG. Number 3 the myometrial thickness that is starting from the serosa to the retro placental vessels this thickness will be less than 1 millimeter right and number 4 is you know loss of bladder line loss of bladder line or there are sometimes you know projections into the into the wall of the bladder. So if these features are present so retro pubic hypo-echoic sorry retro pubic no retro placental hypo-echoic zone is lost.

Placental lacuna or lakes filled with blood giving it a Swiss cheese appearance. So all these features in USG will you know will make the clinician suspicious of adherent placenta and thereby will change the whole management of the patient. So we will be more you know from beforehand we can suspect that this placenta will not separate as usual there will be adherent placenta there will be profuse bleeding during delivery and ultimately it can lead to peripartum hysterectomy. Coming to low lying placenta, placenta originally is present the upper uterine segment when it is present in the lower uterine segment it is called as low lying. The definition of low lying placenta this is the internal oss and this is the margin of the placenta.

If the distance between the internal oss and the margin of the placenta if this distance is less than 2 centimeter it is called as low lying placenta. Number 2 this is the internal oss and the margin of the placenta just abuts the internal oss this is called as marginal placenta previa. In this picture the internal oss is covered by the placenta when it is closed, but when the internal os opens during labor the placenta recedes and the internal oss is not further covered by the placenta. So, this is partial placenta previa and complete placenta previa is placenta covering the internal os both when it is closed as well as when it is open this is complete placenta previa right. So, these are all the different abnormal variants of placenta.

Coming to the tumors of placenta most common benign neoplasm of placenta most common is chorioangioma. Incidence of chorioangioma is 1 percent it can be of two types depending upon the size of the chorioangioma small which is less than 5 centimeter you know we can you know detect the size of the chorioangioma in ultrasonography. So, less than 5 centimeter small in size nothing to worry about you know nothing to worry just rest assured no need for any treatment. But if it is large less than 5 centimeter then there can be some problems in the mother it can cause polyhydramnios, it can cause preeclampsia, in the fetus it can cause cardiomegaly, it can lead to high output congestive cardiac failure, it can lead to high drops fetalis right. So, these are the complications of large chorioangioma and if it is detected then it needs to be treated.

Now this is treated by fetoscopic laser surgery causing coagulation of the blood vessel supplying the chorioangioma causing you know fetoscopic laser coagulation of the blood vessel supplying the chorioangioma. So, this is the about the most benign neoplasm of placenta. Coming to the metastatic tumors of placenta, most common metastatic tumor of placenta is melanoma right. Other tumors are lymphoma, leukemia, breast cancer as on an average as such their metastasis to the fetus is uncommon. It can metastasize to the placenta these tumors these maternal tumors can metastasize to the placenta, but metastasis to the fetus is uncommon.

But if it is asked that what is the most common tumor with metastasis to the fetus it is uncommon, but still there can be metastasis to the fetus in case of this is also answer is melanoma. Right. So, these are all regarding the tumors of the placenta. So, this is all for

today's class. We have read about the abnormal variants of placenta their clinical significance and you know we need to know in depth regarding the placenta adherent or placenta accreta, increta and percreta which are the adherent placenta their clinical significance their complications you know in the antenatal period in the intranatal period causing profuse bleeding and difficulty in separation of placenta.

Sometimes you know to save the life of the mother we need to go for you know peripartum hysterectomy and in the end we have discussed about low lying placenta, you know marginal placenta previa, partial placenta previa and complete placenta previa or central placenta previa. A point to be noted is in case of central placenta previa which will cover the internal os fully even you know when the internal os is closed as well as when it is open in this type of placenta complete central placenta previa the mode of delivery is only and only by caesarean section vaginal delivery cannot be allowed right. And lastly we have discussed a little bit regarding the tumors of the placenta. So, this is for today's class in the next class we will carry forward with the discussion on umbilical cord, its attachment, the structure and also the length the variations in length and their clinical significance and also we will discuss some of the MCQs. Thank you.