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

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Lower Segment Caesarean Section

Hello students. I welcome you all to the online NPTEL certified course for the topic and 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 Multispeciality and Medical Research Centre, IIT Kharagpur. Today, we are going to discuss regarding the lower uterine segment cesarean section. So, we have dealt with the labour process, the different stages and the events occurring in labour.

Labour actually is successful if it terminates the pregnancy terminates in a vaginal delivery. In today's class, we are concentrating on the cesarean section which is a method of abdominal delivery right. So, into the class proper the concepts to be covered are LUCS or lower uterine segment cesarean section, the indications for LUCS, the complications associated with it, the salient features regarding the technique and the preoperative patient care and know I have already told that it is a method of abdominal delivery. So, the keywords are as given.

Now, coming to cesarean section. So, what is that in a you know in one sentence, in one sentence if you say it is actually laparotomy followed by hysterotomy. So, laparotomy is nothing, but when we cut open the abdomen, we have cut open the abdomen and we have entered the abdominal cavity by you know making an incision in the peritoneum. And now inside the abdominal cavity, we are entering inside the uterine cavity. So, this is the uterine cavity.

So, this is called as hysterotomy. When we give an incision on the uterus, the anterior wall of the uterus and we enter the uterine cavity to deliver the baby out of the mother's womb that is called as cesarean section. So, it is an operative procedure that is carried out under anesthesia. Anesthesia, what type of anesthesia? Mostly we go for spinal anesthesia. Spinal anesthesia at what level? At the level of T 10 that is there is loss of both you know pain sensation, both motor as well as sensory sensation from the level of the umbilicus.

So, T 10 is the level of the umbilicus. So, below this level, below this level you have no by the

spinal anesthesia, you have abolished or obliterated the motor as well as sensory sensation above it. So, the patient is alert, the patient is conscious, the patient can hear everything during the spinal anesthesia. So, it is mostly under spinal anesthesia in certain few indicated conditions where general anesthesia is given right that is you know in some cases like if there is a eclampsia. If you know it is you know there is some complications associated, then we sometimes go for general anesthesia.

So, this is an operative procedure whereby the fetus, the placenta and the membranes are delivered through an incision on the abdominal wall and the anterior wall of the uterus. We go inside the abdominal cavity and then we cut open the anterior wall of the uterus to enter the uterine cavity to deliver the baby. And it is usually carried out after the viability of the fetus has been reached. What is the age of viability? That is 28 weeks in India right. So, in India the age of viability is we have already discussed all these things age of viability is 28 weeks.

So, if we need to go for caesarean section, it should at least cross the age of viability because this caesarean section this is an operative procedure and intervention and you need to cut open the abdomen and then as a net result you need to have a baby which is you know viable because you know if the baby cannot be survived after the delivery there is no point in cutting the mother's abdomen because there is certain complications associated with this operative procedure. So, we go for caesarean section after the age of viability. Certain terminologies like primary caesarean section that means, that the mother is a priming. So, this is her first time caesarean section first time caesarean section that is a primary caesarean section. She might have a pregnancy earlier which was delivered by vaginal delivery right.

So, if she had a vaginal delivery previously and now in this pregnancy it is indicated or we are going for caesarean section then it is also a primary caesarean section. We and have another term that is post caesarean section right post CS what does that mean? She has mother has one LSCS previously. It may be a case of LSCS or lower segment LSCS meaning lower segment or it may be a case of classical caesarean section. So, she has at least one such delivery. So, now, this pregnancy is a post caesarean section pregnancy and what is repeat caesarean section? She has at least two caesarean sections previously.

So, two CS sections has been done previously and this is her third pregnancy two or more than two right. So, there is at least two or more than two caesarean sections have already been done on this female on this mother previously and now she is again pregnant. So, that is a case of repeat caesarean section. Now, to note very very important that the incidence of caesarean section is steadily increasing it is now rising why because you know the different complications associated with vaginal delivery you know and also certain you know cases we go for over treatment right and also we have a terminology that is caesarean section on maternal request right caesarean section on maternal request because mother is apprehensive regarding the

vaginal delivery she is you know fearing or fearful regarding the pain that occurs during the vaginal delivery and the labor process and she wants a caesarean section to alleviate all these difficulties that she might face during the labor process and thus we go for a caesarean section. So, that is called as caesarean section on maternal request and all these cases have been increasing the rate of caesarean section which is alarming because associated with caesarean section the complications are also somewhat higher and in comparison to vaginal delivery right.

So, what is the statistics 2 to 3 fold rise in the incidence from the initial rate right of about 10 percent. So, there is gradually rise in the incidence there is facilities of improved anesthesia there is facility for you know 24 hour availability of blood transfusion and also antibiotics. So, we prefer caesarean section right then increased awareness regarding fetal well being you know any minute complication regarding the fetal well being or say any deviation in the fetal assessment in the antenatal period or intranatal period we very quickly you know try to go for caesarean section to you know prevent intrauterine fetal death right when it is indicated when there is truly fetal distress we should go for caesarean section to expedite the delivery, but you know now in these scenario there is somewhat over treatment we identify the risk factors we go for multiple test and sometimes there is you know increased awareness on the part of the parents who will request for caesarean delivery. And lastly the operative vaginal deliveries manipulative or operative vaginal deliveries that is the forceps and vacuum delivery are gradually gradually decreasing because these are associated with sphincter injuries perineal tear lacerations and to avert them we go for caesarean section. Now coming to the indication.

So, I have been talking about what is caesarean section. Now what are the indications of caesarean section where in those conditions where you need to go for caesarean section if we consider the mother maternal indications what are the maternal indications the absolute indications being number one vaginal atresia. So, if there is a vaginal say septum or say vaginal atresia there is a congenital defect in the vaginal opening and that has led to vaginal atresia which will prevent the fetus from coming down or getting delivered during the process of labour. So, in that case you have to go for caesarean section in case of advanced cases of carcinoma cervix in case there is a lower segment fibroid that will obstruct the descent of the fetal head right as in case of cervical fibroid or broad ligament fibroid. In case of severe degree of contracted pelvis say mother is of short stature less than 140 centimeter and also the pelvis is heavily contracted due to certain you know in cases of congenital defects of the mother as you know in case of bone disorders or certain defects of the maternal pelvis right rachitic pelvis there are different types of pelvis and if the pelvis is heavily contracted right.

So, in that case also in comparison to the fetus if the fetus is more than 4 kgs or it is a macrosomic fetus and the pelvis is contracted then we must go for caesarean section. In case of active genital herpes if there is a history of genital herpes which has been cured then you can go for vaginal delivery, but if this is a case of active genital herpes vaginal delivery is

contraindicated in case of central placenta previa. So, the lower segment is having the placenta and this placenta will obstruct the descent of the fetal head. So, you always have to go for caesarean section and this is a very very high risk pregnancy because in caesarean section if you go for lower segment incision you have to cut through the placenta that may lead to torrential hemorrhage in some cases and you know PPH central placenta is also notorious for being adherent placenta there will be no difficulty in separation of the placenta from the uterine bed and there will be hemorrhage postpartum hemorrhage and that is a emergency situation. So, in this case caesarean section will be an upper segment caesarean section the incision given on the anterior wall of the uterus will be above the level of the placenta to decrease the blood loss during the delivery of the baby right in case of prior full thickness myomectomy.

So, in this uterus there is an incision right. So, there was a fibroid in the past and now you have the history of removal of the fibroid and there is an incision in the upper segment. So, it is a full thickness myomectomy done previously and this incision or this scar in the upper segment can lead to uterine rupture. So, this is high risk for uterine rupture. So, you will not go for vaginal delivery in this case also same as classical caesarean section.

In classical caesarean section you give an vertical incision and that is also in the upper segment of the uterus. So, this is the lower segment. So, low down this part is the lower segment we have already read this what is the upper segment what is the lower segment. So, this part if you say this part which develops from the isthmus this is the lower segment now when the incision has been given in the upper segment as in case of classical caesarean section that also is a high risk for uterine rupture in the subsequent pregnancy if the woman goes into labor and you know trials for vaginal delivery and so, in the pregnancy after the classical caesarean section always termination is indicated by caesarean section. So, these were the absolute indications of caesarean section where we need to go for caesarean section for the delivery of the baby.

Coming to the relative indication what are they cephalopelvic disproportion. So, you are suspecting certain cephalopelvic disproportion you can sometimes go for trial of labor right and say if with molding with adaptation of the baby you can go for trial of labor. So, after the preparations of the fetal head during the process of labor it goes down into the maternal pelvis it goes down through the birth canal there is proper descent then you can go for delivery by you know normal delivery. So, we can go for trial of labor in this case. So, these are relative contraindication.

So, if there is any abnormality or if there is labor dystocia we change our decision to caesarean section. If there is a previous lower segment uterine scar. So, lower segment I have told lower segment uterine scar which is the type of caesarean section we are now doing. So, this type of scar here you can go for vaginal delivery. If there is one LSCS scar you can go for V bag vaginal

delivery after caesarean, but if she has two LSCS two or more that is case of repeat LSCS then always go for caesarean section delivery right in case of antepartum hemorrhage.

Antepartum hemorrhage meaning there may be a chance of abruption. So, that is an emergency. Elderly priming gravida because they are notorious for labor dystocia they cannot give that much of labor pain that they cannot give that much of bearing down effect and that can lead to labor dystocia. So, sometimes we take decision of caesarean section.

Chronic hypertension. So, associated medical disorders PIH, eclampsia, diabetes, gestational diabetes or pre gestational diabetes all these you know there will be labor dystocia there will be macrosomic baby that can lead to difficulty in normal delivery and we go for caesarean section. So, this is a pictorial representation of the medical reasons for a caesarean section. See if the baby having developmental anamaly is like hydrocephalus head has increased in size. So, it cannot go down through the birth canal. Health problem heart disease, heart disease during the labor there is increase in cardiac output.

So, if the mother is already a patient of heart disease then she may want caesarean section delivery. Active genital hair pace problems with umbilical cord right cord entanglement. See this is two layers of cord entanglement. So, during this delivery during the fetal descent there will be no tension in the cord that can lead to cord tear or rupture that will lead to fetal death. Baby in bridge position, primary bridge is also a indication of caesarean section.

Placental problems like placental abruption like placental insufficiency. So, all these cases we will not risk the baby through the labor process. Stalled labor that means, obstructed labor or prolonged labor. So, this case also we go for caesarean section. Previous caesarean delivery I have told classical caesarean section if done previously then it is an indication absolute indication of caesarean section.

Coming to the fetal indications for the fetus when there is fetal distress when there is umbilical cord prolapse. So, these are emergency caesarean section. If at the time when they are detected you make the decision for caesarean section then and there. If the fetus is macrosomic if no more than 4 kg right if there is malpresentation in case of bridge in case of transverse lie. So, all these you go for caesarean section.

Abnormal umbilical cord doppler study. So, that will also detect that there is fetal compromise right in IUGR. Multiple pregnancy with first baby bridge. So, all these are indications where you beforehand say that yes you have to go for a caesarean section there is risk associated with vaginal delivery and in vaginal delivery there may be you know sometimes complications in such cases we may lose the baby.

So, we go for caesarean section. Contra indications of caesarean section what are they number one dead fetus. If the fetus is already dead then we refrain from you know cutting the abdomen because we try to deliver the baby vaginally because the fetus is already dead you are not going to get a viable fetus and so there is no point in going for operative delivery or abdominal delivery because if we go for a abdominal delivery there is number one increased blood loss number two there is you know associated anesthetic complications also in case of dead baby there is more chance of infection when the abdominal cavity is opened this infection may flare up and may lead to septicemia in the mother all these taken together vaginal delivery is recommended right. In case of presence of blood coagulation disorder. So, in that case also abdominal surgery is a risk to the life of the mother and also if the baby is too much premature. So, in that case vaginal delivery the baby can smoothly come out because it is of lower low weight and also the viability of the fetus is in question after the delivery.

So, all these cases we prefer vaginal delivery ok. So, these are the contraindications. Now, coming to when to go for caesarean section, elective caesarean section are those cases where we take the decision to deliver the baby by caesarean section before the onset of flavor or during pregnancy. During the pregnancy itself say she has come to you and she has told that yes her previous baby was by classical caesarean section. So, you know in the pregnancy period itself you have decided to go for caesarean section for this particular case.

So, that is an elective caesarean section you give the particular date and time to the patient and ask her to get admitted in the hospital you know at that appropriate time. So, when to go for this elective caesarean section if everything is normal if there is no complications on the part of the fetus and also in the mother say if there is complications they are well controlled right. So, then we go for delivery at 39 weeks of gestation not before that because at this time the fetus is properly developed and fully mature. So, what are the indications for elective caesarean section say if there is a case of cephalopelvic disproportion, if it is a case of placenta previa or there is a bad obstetric history. That means, say there are 3 or more than 3 pregnancy loss previous pregnancy loss.

So, that is a case of recurrent pregnancy loss. So, that is a bad obstetric history also if after recurrent pregnancy loss it is a case of IVF pregnancy and that is a precious baby for them. So, they are having a bad obstetric history previously and now she is elderly she has an IVF pregnancy we prefer to go for caesarean section because vaginal delivery has a slightly higher risk of fetal morbidity right so neonatal morbidity ok. So, this cases we go for elective caesarean section. Now, coming to emergency caesarean section it is performed due to certain unforeseen complication which arise either during pregnancy or during the process of labour and in this case without wasting any time following the decision of caesarean section we go and shift the mother to the OT right shift the patient to OT as soon as possible.

And, here you know the decision to incision time decision to incision time the moment you make the decision it is a case of cord prolapse this is a case of emergency caesarean section you have diagnose this that to be a case of cord prolapse. Now, from the time of making this decision to the incision time this should be less than 3 seconds ok. So, this is regarding the emergency caesarean section now coming to the indications of emergency caesarean section I have told cord prolapse uterine rupture there is rupture in case of say if the mother was in labour in a case of scarred uterus. So, there is a uterine rupture immediately or impending uterine rupture you can say impending there are signs that there will be rupture you know in if the labour progresses. So, impending uterine rupture eclampsia prolonged first stage of labour abnormal uterine contraction placenta previa diagnosed in labour.

So, placenta previa was not diagnosed previously and now in labour you have diagnosed it to be a case of placenta previa all these here you should go for caesarean section as soon as possible. So, these are all category 4 right emergency LUCS, LUCS to be done in less than 3 minutes right. Now, coming to types of LUCS I have told one is the lower segment. So, this is the uterus the pregnant uterus and this is the lower segment. So, in the lower segment when we give the incision on the anterior wall of the uterus this is called as lower segment caesarean section which is most commonly done I will tell that this is now know done almost in every institute and classical caesarean section it was done previously now in only certain cases this is done and here the incision is given in the upper uterine segment right.

So, when to go for classical caesarean section there are some indication say there is certain things in the lower uterine segment. So, in the lower uterine segment if there is a fibroid right. So, cervical fibroid you give the incision in the upper uterine segment or say if it is a cancer cervix then also sometimes for you need to go for classical caesarean section in case there is a placenta previa placenta is in the lower uterine segment and you cannot give the incision in the lower uterine segment. So, all these cases we go for the incision in the upper uterine segment why it is done rare because incision in the upper uterine segment here the musculature is more the muscles are more apposition is less now when we go for suturing of this incised wound after the delivery of the baby. So, that is difficult in case of caesarean classical caesarean section also there is more blood loss right.

So, all these taken together lower segment caesarean section is of more advantage. So, this is the lower segment lower uterine segment caesarean section this is the skin incision right. So, skin incision this is the name is pfannenstiel incision. So, this is also now this is the symphysis pubis you palpate the symphysis pubis and just say two fingers above the symphysis pubis along the Langer's line along the Langer's line of the skin you give the incision and this is the vertical midline incision it is sometimes given when the operative field is required to be more right as say you are expecting certain tumor fibroid associated with pregnancy or say you are expecting that there is certain anomalous baby which will be difficult to deliver. So, in that case we go for

vertical midline incision here the operative field is much more, but here this is this type of incision is poor healing less blood loss, but still there is poor healing and also now post surgery hernia in hernia incidence is more in this case ok.

So, that was regarding your incision type now coming to LSCS I have told pfannenstiel incision or bikini line incision this is along the Langer's line of the skin right and why this is very advantageous number one the lower segment has less muscle it is less retractile than the upper segment and so, the healing is much better. Number two the transverse incision made in the lower segment heals faster and successfully and number three there is more fibrous tissue which will reduce the risk of rupture in the subsequent pregnancy in the pregnancy following this one right. So, in the subsequent pregnancy as there is more fibrous tissue more good wound healing more strength of the scar of the uterus. So, there is less chance of rupture of uterus.

So, all these are advantages of LSCS. So, this is the skin wound in case of LSCS see how it has healed there is only a thin scar mark on the skin which sometimes cannot be even appreciated after say 5 years right. So, that much healing is there now coming to the steps of cesarean section this is the spinal anesthesia you make the patient lie down and head end sometimes is elevated and also a little left lateral tilt till the baby is delivered after the baby is delivered the left lateral tilt is made straight right and then after OT the baby is handed over to the mother and here breast feeding can be done 4 hours after LSCS ok. So, that was lower segment coming to classical cesarean section it is done only in 4 circumstances I have told that the lower uterine segment there is something as in case of carcinoma cervix. So, there is a mass in the cervix there is a big fibroid on the lower uterine segment there is a constriction ring as in case of obstructed labor. So, that case also you need to go for upper segment incision lower segment is difficult or risky.

So, lower segment incision is difficult as in case of placenta placenta in the lower segment or there is very dense adhesion due to previous abdominal surgeries and you know the bladder is adhered very firmly to the lower uterine segment. So, you cannot go for the incision in the lower uterine segment because or otherwise you will ensure the bladder then you give a little higher up in the upper uterine segment. Now, coming to the complications associated to cesarean section as a whole for the mother complications are postpartum hemorrhage right due to uterine atony. Say after prolonged first stage or second stage of labor you have taken the decision of cesarean section in that case there is more chance of postpartum hemorrhage following which there will be more blood loss relating you know resulting in shock anesthesia hazards all the types of anastasia hazards can happen there can be sepsis because the abdominal cavity is being open. So, more chance of infection more chance of thrombosis or venous thromboembolism DVT.

So, you need to ambulate the patient early chance of lung infection. So, this can be averted by IV antibiotics which are to be given just prior to your LSCS 15 to 30 minutes prior to LSCS and

what type of antibiotics cephalosporins right cefazolin IV antibiotic can be given right and it is recommended to give at least you know before the cesarean incision on the skin before 15 to 30 minutes you give one prophylactic antibiotic dose to decrease the chance of sepsis. For the fetus what are the complications iatrogenic prematurity you go for cesarean section much before the viability. So, we have told that it should be at least 39 weeks and in some cases you need to go for previous cesarean now you need to prepone the date of delivery in case of complications. So, this that time there is chance of prematurity of the fetus as well as the complications associated with prematurity there is more chance of respiratory distress syndrome there is more chance of transient tachypnea of newborn in babies born by cesarean section.

Also during the cesarean section due to trauma by the surgical knife when we give an incision on the uterine wall there can be injury to the baby and now babies asphyxia birth asphyxia of the neonate can happen as a result of complication of anesthesia. So, that well regarding the complications related to cesarean section. Now coming to the steps very important steps of cesarean section I have taken you know I will tell you in a nutshell that when you enter the abdominal cavity by you know just making a nick on the peritoneum and you are in the abdominal cavity now you see the uterus. So, this is the uterus and see this is the lower uterine segment this is the bladder and this fold of peritoneum this is a loose fold of peritoneum and this loose fold of peritoneum is actually the vesico uterine fold of serosal layer of peritoneum and you lift up with this forceps and then you make a nick with the metzenbaum scissors right you make a nick on the parietal layer of the peritoneum which is nothing, but the vesico uterine fold of peritoneum. Next what happens you enter the you have made the nick in the parietal peritoneum and then you extend the incision on the parietal peritoneum right or the vesico uterine fold of peritoneum laterally say you are going laterally you are going laterally right and you make a space between the bladder and the uterus.

So, it is elevated and incised laterally then what happens? So, now see this is the vesico uterine fold this is the vesico uterine fold and here you have lifted it up just see here from this cross sectional picture just below the vesicouterine fold is your lower segment lower segment of the uterus and in the lower segment is the fetal head right. So, this is the lower uterine segment. So, dissection of the vesico uterine fold will expose the lower uterine segment. So, now you get the lower uterine you have a you have excise the vesico uterine fold you get the lower uterine segment and with the scalpel you make a nick you make shallow strokes on the lower uterine segment and now be very careful to avoid cutting of the fetal head with the scalpel and just after making the nick you can see the amniotic sac bulging out then you we go for now blunt extension of the wound by our fingers sometimes we use a bandage scissor, but before the use of bandage scissor you have to guard the fetal head with your left hand with the fingers of the left hand. So, that the scissor does not cause any injury to the fetal head and ultimately the after we entered the uterine cavity we delivered the fetal head how number one is by the right hand we get we go inside we enter our right hand in the in the uterine cavity and with the left hand we

hold the fundus and give somewhat downward pressure to hold the fetal head and now by movement by wrist movement up and down wrist movement we guide the fetal head up to the incision on the uterus and then slowly slowly the fetal head is delivered right.

So, that was number one number two sometimes the fetal head is floating you cannot grasp with your right hand and in that case we use forceps blade right with single forceps blade like ventis, ventis we also use the single forceps blade. So, this is your right hand you put the forceps blade by guiding through your left hand and with that forceps blade one single forceps blade you go for up and down movement two and also with the left hand or with your assistant giving a downward pressure downward fundal pressure right from above we try to negotiate the fetal head through the uterine wound right and sometimes say when the fetal head is fully floating or it is there is polyhydramnios in that case we go for forceps delivery right. So, after entering one blade we will again enter the other blade. So, that it fixes the fetal head in between and then by upward and outward direction pressure pulling the forceps upward and outward we will go for smooth delivery of the fetal head through the uterine wound. So, that was the delivery of the fetal head after the fetal head is delivered you keep the fetal head in lateral position.

So, that the bis acromial diameter of the shoulder are in the anteroposterior diameter and now with your two hands you hold the fetal head depress a little to deliver the anterior shoulder and then you know put the fetus above upward and above to deliver the posterior shoulder and ultimately the fetus is delivered ok. So, that was the delivery of the fetus after the fetus is delivered now the delivery of the placenta sometimes we wait for spontaneous delivery of the placenta by say we wait to note know how the placenta is bulging out from the uterine wound and we just place our one hand over the uterine fundus and just a little bit of squeezing will help the placenta to come out of the uterine wound. In some cases in some obstetricians like to go for manual removal of the placenta, but that is not so much recommended because that can lead to increased hemorrhage following the delivery of the baby. So, that was all regarding the steps of your caesarean section the very minute salient points related to the delivery of the head of the baby that is the most important I will say step of the caesarean section because after know the delivery of the baby if the baby is normal if the baby is healthy following the delivery of the baby we can go and repair the uterine wound at taking our time right and what suture is used? Suture used for caesarean section is number 1 vicryl this is delayed absorbable synthetic polygalactin suture that is number 1 vicryl with this we repair the uterine wound in single layer or in two layers. So, that was all regarding the caesarean section references mostly today the pictures have been taken from Williams obstetrics 26th edition and also your D.C Dutta book of the obstetrics and your James book on high risk pregnancy.

So, that was all for today. Thank you for your patient hearing and hope you I have given you know certain idea regarding the caesarean section. Thank you all.