PREMATURE RUPTURE OF THE AMNIOTIC MEMBRANES.

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PREMATURE rupture of the amniotic membranes is probably the most common accident occurring in pregnancy; occurring in about 13.5 per cent. of all pregnancies and seems to be a little more frequent in primiparae. In a great majority of cases premature rupture of the membranes is unattended with any grave complications. On the other hand, in a certain number of instances, especially in elderly primipara, we encounter, at times, serious dangers for both mother and baby.

In dry labor the duration is unquestionably prolonged, vaginal and cervical lacerations are much more likely to occur, puerperal infection is more frequently seen and in a certain number of cases, although infrequent, uterine rupture results from long continued labor. The child at once becomes a possible victim from intercranial hemorrhage or asphyxia. Dry labor carries with it an infant mortality of about 3 per cent.

The amniotic fluid is a clear fluid of albuminous consistency, alkaline in reaction, and has a specific gravity of about 1.008. It varies in amount in normal pregnancy from 2 to 2½ liters. It is enclosed in a thin, membranous sac, the amnion and chorion. As to its origin authorities differ. The most practical theory is that it is derived from the maternal fluids which have been modified by the amniotic epithelium. It is doubtful that the foetal kidneys play any part in its formation under normal conditions. Its function is to furnish fluids to the foetus during pregnancy and to maintain a constant temperature for it in utero. It serves to prevent the foetus from receiving external shocks and also prevents the formation of adhesions existing between the foetus and amniotic membranes. In labor the membranes with its enclosed fluid serve the important function of dilating the cervix.

Premature rupture of the amniotic sac may occur at any time during pregnancy but is more frequently seen in the latter period. It may result from the most trivial cause, and at times without any apparent cause, sometimes occurring in patients who are lying quietly in bed. Frequently seen in association with premature rupture of the membranes are pelvic deformities and abnormal presentations. Among the most common are contracted pelvis. It is frequently seen in breech and occipitoposterior positions, twin pregnancies and hydrannios. Among the causes for premature rupture of the membranes are violent coughing, vomiting, and straining at stool. Automobile riding and coitus in the latter months of pregnancy certainly play a part in causing early rupture.

When rupture occurs labor may begin within a short time. This is not, however, a gen-

eral rule. There may be an elapse of days or weeks after rupture before labor begins, much depending on the irritability of the uterus at that time and the period of pregnancy in which rupture takes place. Patients who rupture their membranes near term usually start in labor shortly following rupture.

SYMPTOMS OF PREMATURE RUPTURE OF THE MEMBRANES.

The most pronounced evidence that a pregnant woman has of ruptured membranes is a sudden gush of fluid escaping from the vagina. This may vary in amount from a teacupful to an ordinary hand basinful, or there may be a gradual dripping of fluid from the vagina. Patients sometimes notice that the abdomen feels much smaller. One patient whom the writer recalls who was having considerable pressure dyspnea ruptured her membranes early and felt positive of it as she could breathe with less difficulty. This is an inconstant sign, however, much depending upon the amount of fluid which has escaped. If the rupture is low and the head high a large amount of fluid will escape. If the rupture happens to be high up in the lower uterine segment a valve-like condition may result and only a small amount of fluid will escape. Any abnormal amount, however, of watery vaginal discharge should lead us to suspect that the membranes have ruptured until otherwise proved. Two conditions may simulate ruptured membranes, *i.e.*, an overfilled bladder and hydrorrhoea gravidarum. An overfilled bladder can usually be detected by careful examination of the bladder no change in the size of the abdomen, and the presence of intact membranes.

HYDRORRHOEA GRAVIDARUM.

Hydrorrhoea gravidarum is a disease of the decidual glands in which the glands become hypertrophied and their ducts remain open; as a result of chronic inflammation a fluid is poured out between the amnion and chorion where it makes its escape at the os iteri. This may simulate ruptured membranes and at times it is impossible to differentiate between them. There is no decrease in the size of the abdomen, labor does not come on, and there is no dilation of the cervix. Ballotment is obtainable on vaginal examination.

MATERNAL COMPLICATIONS FROM DRY LABOR.

Probably the most common complications resulting from premature rupture of the membranes are septicemia, vaginal and cervical lacerations, tetanic uterus, uterine rupture, and exhaustion of the patient may also occur. One or all of these may occur in the course of dry labor. As a result of a prolonged labor a tired uterus may develop which may not contract well after expulsion of the placenta. This may give rise to a post partum hemorrhage.

Septicemia occurs quite frequently, probably in proportion to the amount of vaginal interference which becomes necessary, either instrumental or from examination. As to the length of time following rupture and the onset of labor having any bearing on the frequency of infection, authorities differ from their own personal experiences. Demelin, in a study of 513 cases, found that there was an increase of .8 per cent. where labor began within twelve hours after rupture of the membranes; to 11.26 per cent. where five days had elapsed. Dorman and Lyon, in a study of 270 cases, did not find that there was a proportionate increase of infection after the membranes had ruptured some days prior to the onset of labor. Unquestionably any interference from below, either by vaginal examination or operative delivery, increases the risk of infection—a strong point in favor of rectal examinations in all dry labors. Probably about 25 per cent. of dry labors which terminate in forceps delivery will show some evidence of sepsis, running a temperature ranging from 101 to 103 for a week or ten days, then gradually returning to normal. Phlebitis is not uncommon. Sepsis may be of the sapremic, pyogenic or streptococcic variety. The acute fulminating fatal sepsis is not often seen. Lacerations of the cervix and vaginal tissues are prone to occur, owing to the necessity of operative interference. About 33 per cent. of all dry labors terminate in operative delivery. Cervical tears are frequent as dilatation is not complete, and because of the disproportionate head trying to overcome the resistance in the absence of the bag of waters. Any degree of tearing may result from the slightest laceration to those extending up to or beyond the vaginal junction. In some instances they extend into the lower uterine segment opening the base of the broad ligament, causing a profuse hemorrhage or fatal peritonitis.

TETANIC UTERUS.

As a result of prolonged labor especially where we encounter a rigid cervix which does not dilate readily the uterus fails to relax between contractions as a result of fatigue, and a tetanic condition of the uterine muscles results. Similar to this condition is a form of dystocia where a constriction occurs between the upper and lower uterine segments. This constriction results from a contraction of a ring of muscle fibers which exist here. This muscular ring was extensively studied by Dr. Bandl and called after his name, *i. e.*, Bandl's Contraction Ring. The force necessary to overcome the resistance of this ring may result in uterine rupture, either spontaneously or as a result of operative delivery or an attempt at dilatation.

Exhaustion is commonly seen in patients who have had a long tedious dry labor. It is evident by the blanched expression of the patient, the long, drawn features, weakness of the voice

and gradual elevation of the pulse. Now in modern obstetric practice we seldom see patients dying from exhaustive labors as delivery is performed before this unhappy occurrence.

DANGERS TO THE BABY.

Intrauterine asphyxia and intercranial hemorrhage are by far the most common accidents occurring in the baby in the course of dry labor. This is attended with a mortality of about 3 per cent. Intrauterine asphyxia may result from any cause which interferes with the normal circulation existing between mother and baby, a common cause being a prolonged first-stage labor with intense uterine contractions or a uterus which has undergone tetanic contraction. Asphyxia results in this way: after rupture of the membranes the uterine interior is diminished in area and with it the placenta site. As a result the child received less oxygen and more carbon dioxide, stimulating the respiratory centers in the medulla, causing inspiratory movements in the baby which results in the aspiration of fluids or mucus and fluid into the bronchi, thus causing asphyxia at that time or a secondary broncho-pneumonia. Asphyxia may result from a prolapsed cord, or as a result of cerebral compression from a prolonged first-stage labor, the uterus constantly contracting against the foetus, driving its head against the undilated resistant cervix or pelvic wall, cerebral hemorrhage occurring causing vagus irritation, thus slowing of the heart whereby the oxygen supplied to the unborn foetus is diminished or abolished. Asphyxia may also result from compression of the cord by the descending head against the pelvic wall or from compression of the head in forceps extraction. This is more likely to occur from too long traction on the forceps without relaxation of the blades or from an improper application.

DIAGNOSIS.

The diagnosis of premature rupture of the membranes is usually made from the history of a sudden gush of fluid escaping from the vagina in the course of pregnancy with the more or less constant dripping of fluid from the vagina afterwards. Palpation of the abdomen will reveal the absence of fluid in the uterus if a large amount has escaped and the foetal small-parts are much more evident. If a vaginal examination is made, which should be done under the most rigid asepsis, the examining finger when introduced into the cervix will detect the absence of the usual amount of fluid which precedes the head and will come into direct contact with the foetus, and in vertex presentations the hair may be felt rather than the thin slippery membrane which we note with intact membranes. It is always well to inspect the bladder to detect any escape of watery fluid, as many patients in the latter months of preg-

nancy are alarmed that their membranes might have ruptured prematurely when in reality it is only the escape of urine from the bladder. Patients are much more likely to imagine that this has happened when it has not rather than have a real rupture of the membrane occur and escape notice.

TREATMENT OF DRY LABOR.

Before entering into the treatment of dry labor it seems well to mention the necessity of warning patients in the latter months of pregnancy of the possibility of premature rupture occurring and for them to avoid, as far as possible, the causes which may bring this about. Constipation, vomiting and violent coughing may be an exciting cause, and pregnant women should certainly avoid overexertion in any form. Riding in automobiles should be forbidden. This is carefully gone over by the writer to all his patients in the latter months of pregnancy. Regardless of the extreme care a pregnant woman may use to avoid this accident a certain number of patients will rupture their membranes early, and despite the watchfulness of the obstetrician and the use of extreme care, he will have to cope with one or more of the complications which are manifested in a certain number of dry labors.

To outline any precise method of care in a given case of dry labor is absolutely impossible, for each case may take on a different aspect as labor progresses and often those cases in which we are most apprehensive will terminate most favorably, and *vice versa*, those in which we feel the least concerned will suddenly give us cause for alarm. We may, however, mention a few facts which may seem in the minds of some to be overconservative, but will in a series of cases bring about equally as good results in both mother and baby. The writer feels that unless some imperative complication exists which endangers either mother or baby or both, a patient either primipara or multipara should be allowed to fall into natural labor, regardless of the length of time elapsing following rupture before the onset of labor. At one time when the Voorhee Bag first came into use most patients with premature ruptured membranes were induced. Admitting that the Voorhee Bag is the best artificial means we have at our disposal today for dilating the cervix, it is not without risk of infection and does not seem to lessen maternal mortality, but seems to increase fetal mortality. It does not always accomplish its purpose but when once introduced into the cervix subjects the patient to the added risk of infection. There is this to be said, however, that when we encounter a rigid cervix the introduction of the Voorhee Bag certainly accomplishes the purpose of softening the cervix, making it more readily dilatable. In some cases the induction of labor is

absolutely necessary to safeguard both mother and baby and no other means at hand serve the purpose as well as does the Voorhee Bag. This is a conical shaped bag made of rubber which can be readily rolled upon itself and introduced into the cervical canal. Usually, in primiparae, gas-oxygen or primary ether anesthesia is necessary, but in multipara, unless the patient is extremely apprehensive it may be introduced without much discomfort. The patient should be placed in the lithotomy position and the index and second fingers introduced into the cervix. The bag is rolled upon itself and grasped with a long clamp and passed into the cervix beyond the internal os, so that the apex of the bag protrudes at the external os. It is then filled with sterile water by the use of a syringe and forms a V-shaped bag. This acts as a foreign body in the uterus, stimulating uterine contractions. The use of the Volcillum forceps on the cervix is not necessary for the introduction of the bag. The writer firmly believes that labor should not be induced unless some complication arises which endangers either the mother or the baby. Infections in the absence of vaginal examinations are not frequent following rupture of the membranes but are certainly increased following the introduction of the dilating bags. My plan is to allow all patients to fall into natural labor and if after eight or ten hours of good hard pains the cervix is not dilated completely, the patient is anesthetized and dilatation is completed manually. After eight or ten hours of uterine contractions, as is usually seen in dry labors, patients become exhausted and make poor risks for subsequent forceps delivery. Babies also are poor risks for forceps delivery after long exhaustive pains. Much better results will be obtained if forceps are resorted to early rather than late in these cases. We have the ever-present danger of a contraction ring developing in a fatigued uteri which is avoided if delivery is accomplished before the uterus becomes tired out. The cervix should be completely dilated and if a contraction ring is present, this also should be dilated as much as possible before an attempt to apply forceps is made. One should always bear in mind the frequency of posterior positions and if present, the head should be rotated to an anterior position. This may be accomplished in one of three ways. Manual rotation with the head high to an anterior position may be tried, or forceps may be applied with the head high and rotated to the front with the blades of the forceps, or the forceps may be applied to a posterior head and drawn down to the pelvic floor where it will rotate spontaneously after the method of Scansoni. An assistant is necessary to perform a satisfactory forceps extraction. He should stand to the right of the operator with the index and second fingers of the left hand introduced into the cervix above

the head, his right hand should grasp the handle of the forceps while the operator makes traction. A steady pull should first be made by the operator to see if the blades hold, assuming they are applied properly. Successive gentle tractions should be made, and after each traction the handles of the blades should be separated to avoid continued pressure against the head. The traction rods should not be dispensed with until the head appears at the perineum. In breach presentations the same rule as holds true in vertex presentations regarding lengthy first stage labor, complete dilatation of the cervix manually and deliver rather than trust to the patient to accomplish this. In breach presentations we have, in addition to the loss of the dilating bag of waters, the disproportionate breach to serve as a dilating wedge, which in primiparae is almost a mechanical impossibility.

After delivery and expulsion of the placenta a thorough search should be made for cervical and vaginal lacerations. They are almost invariably present and should be repaired. A ribbon retractor in the hands of an assistant works admirably well in exposing the cervix so that it can be properly repaired. Versions should not be attempted if possible to avoid, as there is always a possibility of causing a uterine rupture. It seems to the writer that in those cases where version has to be resorted to as in elderly primipara, deformed pelvis, or an unengaged head, providing no vaginal examinations are made and in the hands of a competent person Caesarean section does not increase the risk of the mother, all things considered, any more than does internal podalic version and certainly offers a better outlook for the baby. The writer feels that although this remark is contrary to the practice and teaching of competent obstetricians, still there is weight of evidence in its favor. My collection of cases where it has been performed is not great, but those where it has been performed made an uneventful convalescence. Dorman and Lyon, in a series of 270 cases performed this operation 8 times with no maternal deaths. Vaginal examinations frequently and improperly made or made at all under the most rigid asepsis are a menace to Caesarean section. In 29 cases studied by Dorman and Lyon there was an increase in maternal morbidity of 52 per cent. where more than 4 vaginal examinations were made, as contrasted with 25 per cent. where there were no recorded vaginal examinations.

Pituitin should not be given at any time in the presence of dry labor even after the expulsion of the placenta for when it is given unless followed by ergot there is always a possibility of a secondary postpartum hemorrhage. If bleeding occurs from forceps delivery after the closure of all cervical lacerations and does not cease with the ordinary agents used, a pack-

ing firmly placed in the uterus and allowed to remain for fifteen or twenty minutes will usually cause the uterus to contract sufficiently to stop the bleeding. No packing should be allowed to remain in a postpartum uterus over twelve hours, and when removed after this time should be followed by an intrauterine douche.

In all dry labors one should be always mindful of the possibility of an asphyxiated baby. Plenty of hot water should be at hand either in the private home or hospital to use to immerse the baby in. The water should be warm enough to cause a distinct erythema on the child's body after being immersed. If the baby does not readily gasp for breath, mouth to mouth breathing should be done. Much better results are obtained from this method than are ever obtained by the use of cold water, the pulmotor, or the violent methods of resuscitation as laid down in the textbooks after Schultz, Byrd and Dew. These methods simply serve to increase the muscular exertion on the already shocked and asphyxiated baby. The writer personally never seeing any benefit derived from their use, and at best will never equal the success that is obtained from warm water and mouth to mouth breathing. This method properly performed has saved and will continue to save the lives of many asphyxiated babies.

SOME ASPECTS OF CANCER OF THE PROSTATE.*

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IN going over the last 200 cases upon whom I have done a prostatectomy I have found that in 35 of these cases, or 17.5% of the whole, the prostate was malignant. I have taken these 200 cases as they seemed to fall rather naturally into a group by themselves, likewise because of the fact that during this time neither my technique nor my views regarding the indications for operation have changed materially.

While in this group of 200 cases I have recognized 17.5% as malignant, I think it is more than probable that this figure underestimates the relative frequency of cancer of the prostate since some of the beginning cases show very little that is particularly suggestive of the condition, especially those in which the disease is associated with hypertrophy. I think it is more than likely that I have overlooked some cases in this series and that the actual incidence of malignancy may have been somewhat higher than 17.5%. As these operations were carried out upon both hospital and private patients, taken in order, I believe the figures represent pretty well the relative frequency with which

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