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SUBODH MITRA MEMORIAL LECTURE  
NOTABLE ADVANCES IN OBSTETRICS IN THE LAST FORTY YEARS\*\*

by

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I am indeed honoured by your invitation to deliver the fifth Subodh Mitra Memorial lecture. Dr. Subodh Mitra was well known for his surgical skill. As you all know he was also a clinician, research worker, teacher and writer, but he was specially famous for his radical vaginal hysterectomy with bilateral lymphadenectomy for early carcinoma of cervix. I had the privilege of watching him perform this operation at the Chittaranjan Seva Sadan Hospital.

I have taken the subject for my lecture "notable advances in Obstetrics in the last forty years" because I started my professional career 40 years ago and wanted to speak about some of the advances I have personally seen in the various

fields in obstetrics. During this time tremendous advances have taken place in all branches of medicine. In our speciality we have made great strides in our knowledge of physiology of pregnancy, diseases due to or associated with pregnancy and their treatment, immunological problems of pregnancy and complications arising during pregnancy, labour and puerperium and their management.

*Antenatal care*

It is only within the last 40 years that regular antenatal clinics have been organised even in the teaching hospitals. In 1933 when I was working in the Dufferin Hospital, Calcutta, pregnant women were seen at the Gynaecological out-patient clinic. Now antenatal clinics are conducted even in the villages in the maternity centres, because we are well aware that proper care of the expectant woman from early pregnancy is of vital importance if she is to go through pregnancy and labour safely, resulting in the birth of a healthy child with no untoward consequences to the mother.

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Until about the 4th decade in the present century it was generally assumed by obstetricians that what was good for the mother was also good for the foetus, maternal well being was the main theme of antenatal care. We do know now that ionizing irradiation in therapeutic doses to the pregnant women may lead to congenital malformation in the child and certain drugs well tolerated by the mother can damage the rapidly growing tissues of the foetus, specially if given in the first 3 months of pregnancy. The terrible tragedy of thalidomide (1961-62) has taught us that we should be careful to prescribe only well tested drugs to pregnant women.

#### *Diagnosis of pregnancy*

Biological tests for early pregnancy were developed by various workers after the discovery by Aschheim and Zondek that pregnant women excreted chorionic gonadotrophin in large quantity in the urine from about 7 to 10 days after implantation of the ovum. These tests required laboratory animals for their assay.

After synthetic estrogen and oral progestational substances became available a combination of the two hormones are being used as a pregnancy test. The test depends on the fact that administration of exogenous hormones do not significantly alter endogenous hormone level in pregnant women and, therefore, do not have any effect on the endometrium, their withdrawal is not accompanied by withdrawal bleeding. Tablets and injections are available and the test can be carried out even in the remote villages. One tablet daily for 2 or 3 days or one intramuscular injection is given; if bleeding occurs within 10 to 1 days after injection, the test is negative for pregnancy.

Immunologic test for pregnancy was

developed by Wide in 1962. Several investigators have found that this test is even more accurate than the biological tests. Positive results are obtained as early as 7 days after the missed period, while biological test become positive only after 11 to 12 days. Organon Laboratory (India) has made the reagent available in India (Pregnostcon "All-in") so that the test can be carried out in the wards.

Ultrasonography by which the gestation sac can be seen within the uterus as early as 37 to 39 days after the last menstrual period requires expensive apparatus and to my knowledge this is not available in India.

#### *Placenta praevia*

The prognosis for both the mother and the child has improved a great deal since expectant treatment advocated by Macafee (1945) has been generally adopted. He showed that by his method of treatment in cases of mild and moderate antepartum haemorrhage before the 36th to 37th week of pregnancy, maternal mortality can be reduced from 5 to 8% to almost nil and foetal mortality from 50 to 60 per cent to 8 to 10 per cent.

Before Macafee published his results, the teaching was that all cases of APH should be hospitalised without delay and if placenta was felt with the examining finger the patient was dealt with immediately as there was the danger of recurrence of bleeding without any warning symptoms. Trying to feel the placenta, at times, caused further separation of the placenta and severe bleeding. The methods used for stopping the bleeding were vaginal packing, pulling down a leg after doing a bipolar version or pulling down the head on to the placenta with Willett's forceps applied to the scalp. In central placenta praevia one had to bore

through the placenta to get at the membranes. In all the above mentioned methods rupture of the membranes is an essential preliminary procedure. These internal manipulations often produced severe bleeding in women with major degree of placenta praevia resulting in death of the mother and the child. Some of those who survived, died later of sepsis. Even in the minor types of placenta praevia the child often died of asphyxia due to long continued pressure exerted on the placenta.

Conservative method of treatment advocated by Macafee and the present day accepted method of low rupture of the membranes and vaginal delivery in placenta type I and II anterior and caesarean section in type II posterior and type III and IV has saved many lives.

Advance has also been made in the methods of diagnosing placenta praevia, such as soft tissue radiography, ultrasonic placentography, radio-isotopic localisation of the placenta, arteriography, etc. Soft tissue radiography is the method most commonly used as this can be carried out without any expensive and highly specialised apparatus or technical expertise.

#### *Operative Obstetrics*

The introduction of general anaesthesia and antiseptics in the 19th century made surgical procedures more acceptable and safe, but the discovery of sulphonamides and antibiotics, the easy availability of blood for transfusion and improved methods of anaesthesia have brought about a revolution in operative obstetrics. The ready availability of antibiotics in the last 25 years has brought about an amazing fall in the incidence of puerperal infection. Before this, many patients died of septicaemia and peritonitis after an operative delivery. Caesarean

section was carried out only when vaginal delivery was impossible, for fear of peritonitis. Destructive operations like craniotomy, decapitation or embryotomy were performed in preference to caesarean section. It was bad enough doing these destructive operations when the child was already dead, but it was revolting to do them on a living child as one had to occasionally to save the life of the mother.

Thanks to the discovery of new drugs for the control of infection, safer methods of anaesthesia and the availability of blood and the general adoption of the lower segment operation, caesarean section is now a fairly safe operation. The classical upper segment operation was being done as a routine when I started practice. If there was any suspicion of infection, the uterus was brought out of the abdomen and sterile wet towels were spread under it prior to making an incision in the uterine wall to prevent contamination of the peritoneal cavity. Even then maternal mortality due to peritonitis was very high. The lower segment caesarean section, devised in order to limit infection to the more resistant pelvic peritoneum is a definite improvement over the classical section. The low segment operation not only reduced the incidence of peritonitis but also brought down the incidence of postoperative ileus and scar rupture. General adoption of the lower segment operation has taken place in the last 30 years.

High and mid-cavity forceps application has been replaced by the lower segment caesarean operation, the latter operation for safety to both the mother and the foetus. The axis traction forceps, is hardly ever used now. The types of forceps in common use at present are Das's or Wrigley's, both of which are short cur-

ved forceps, ideal for low application and Kielland's forceps designed to obtain a correct cephalic grip when the head is in the occipitolateral position.

The ventous or vacuum extractor came into use only about 1955, even though the idea of delivering the child's head by suction was known much earlier. In the hospital where I am working now the vacuum extractor has more or less completely replaced the conventional forceps.

General anaesthesia is not necessary which is a great help as the patient can bear down when traction is applied synchronously with uterine contraction. In occipitoposterior position associated with poor uterine contractions and delay in cervical dilatation, vacuum extractor can be applied when the cervix is half dilated and traction brings the head into better contact with the cervix. This improves the quality of uterine contractions resulting in rapid completion of dilatation of cervix. The occiput turns anteriorly as the head descends and delivery is completed without any trouble. When there is prolongation of the second stage due to malrotation of the head, traction by the vacuum extractor usually turns the occiput to the anterior position as the head descends. If cases are properly selected and care is taken to see that no portion of the vagina or cervix is caught between the cup and the presenting part this is a very safe operation for the mother. There is no ill-effect on the child provided traction is not prolonged for more than 30 to 35 minutes. Usually delivery can be effected within half an hour.

#### *Induction of labour*

There is as yet no known method of induction which is both safe and certain. During the last 40 years there have been

considerable advances, as regard the indications for induction and the methods used. Before caesarean section became a safe operation induction of labour was carried out as a routine by some obstetricians in moderate cases of cephalopelvic disproportion, about 3 to 5 weeks before term, in order to avoid difficult operative vaginal delivery ending in a still birth. This is no longer done as it is impossible to predict in any individual patient what nature will accomplish, as moulding of the head, give of the pelvis and strength of uterine contractions are unpredictable factors.

Most of the inductions are now carried out for severe degree of pre-eclampsia, diabetes, postmaturity and certain cases of rhesus incompatibility. In the second half of this century surgical induction of labour by insertion of bougies or stomach tube into the uterine cavity, between the membranes and the presenting part, was in vogue. Even though it was known from the middle of the 18th century that rupture of the membranes usually brings on labour, amniotomy was not done because it was considered advantageous to preserve the membranes to prevent infection. The danger of using bougies or stomach tube is that it can occasionally produce severe bleeding from separation of the placenta. This happened in one of my cases, a second grvida with history of previous stillbirth due to a difficult labour. As the stomach tube was being introduced there was slight resistance followed by severe bleeding through the tube. Fortunately the bleeding stopped with coiling the rest of the tube into the vagina and packing the vagina tight. She delivered in about 9 hours and there was no ill-effect to the mother or the child. Various other surgical methods, such as introduction of de Rib's bag, small

balloons etc. were also in use. The method now adopted is low rupture of the membranes as this has been found to be the safest.

As for medical induction we have passed through the stages of castor oil, enema, hot bath and the potentially dangerous methods of large doses of quinine and the repeated I.M. injections of 1 to 2 units of pitocin. The oxytocic drip popularised by Theobald and his colleagues is the method of medical induction most commonly used now. There is still controversy about the strength of the solution to be employed. I personally use one unit of pitocin or syntocinon in 500 ml of 5% glucose. Transbuccal administration may be a safer method. Intramuscular injections of sparteine sulphate 150 mg every hour for 3 to 4 doses is another method advocated.

#### *Iso-immunization in pregnancy*

Before the discovery of Rh factor by Landsteiner and Wiener in 1940 and the observation of Levine, of the relationship of Rh-antibody to still birth in a Rh-negative woman, we did not know anything about iso-immunization. From then on the advance in this problem in pregnancy has been rapid. Fisher's CDE classification and the knowledge that only D is likely to cause iso-immunization established the cause of haemolytic disease of the new born. Once the mother is sensitised, either by blood transfusion or by entry of foetal red cells into the maternal circulation during placental separation after the delivery of a Rh. positive child, stimulate antibody production in the next pregnancy. It is the quantity of bilirubin in the amniotic fluid that gives an indication of the degree of haemolysis in the foetus and not the maternal antibody titre. Premature induction of labour be-

fore the bilirubin in the liquor amnii reaches dangerous level and exchange transfusion of the affected babies has brought down foetal mortality to a great extent. Intrauterine transfusion given before the 34th week of pregnancy to avoid induction before 36th week is a notable advance. ABO incompatibility between the mother and the foetus provides almost complete protection against iso-immunization. To prevent iso-immunization anti-D gamma globulin is given within 36 hours of delivery.

I came across my first case of haemolytic disease of the new born in 1942. I was at the time ignorant about this problem. A 4th gravida with a history of previous two early neonatal deaths following deep jaundice was delivered by me. Her first child, a girl, was alive. The child looked normal at birth but developed deep jaundice within a few hours and died the next day. Some years later I came to know from a relation of hers, a doctor, that she lost two more children from deep jaundice within 24 to 36 hours of birth. During her last pregnancy her blood was examined and was found to be Rh-negative. Exchange transfusion could not be given due to lack of facility.

I have touched only on a few of the many advances made in the different aspects of obstetrics during the last 40 years. Even though maternal mortality has been reduced considerably there has been no spectacular reduction in perinatal mortality. Let us hope that some advances will be made to reduce perinatal mortality in the near future. Many diagnostic aids have been developed but we must remember that a careful clinical examination and the experience gained by practice still remain the most important aids in diagnosis.