

RETROGRADE FEMORAL AORTOGRAPHY FOR LOCALISATION OF PLACENTA

by

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Chassar Moir in 1953 while delivering the opening address in a symposium on placentography remarked that placenta praevia was responsible for nearly 5% of all maternal deaths and for a great many more of what may be called near deaths. Macafee (1962) commenting on 392 deaths due to placenta praevia from 1942 to 1949 believed that the maternal mortality associated with placenta praevia should be almost nil if properly managed. In 1971 Beynon stated emphatically that no woman to-day should die of blood loss alone in a well equipped hospital.

Their challenge has been accepted by the obstetricians in a very competent manner. In Tata Main Hospital, Jamshedpur, a survey of maternal mortality over a period of three years from 1968 onwards showed only one death due to antepartum haemorrhage and this patient, too, reached hospital very late in a gasping condition.

This achievement has been possible because of improvements in anaesthesia, liberal use of blood transfusions and frequent resort to caesarean section for patients with moderate or severe haemorrhage. But the management of a fairly large group of patients with mild haemorrhage early in third trimester still offers quite a few problems. In such cases requiring conservative management and continuation of pregnancy, at least upto 38 weeks in the interest of the baby, localisation of the placenta is of great

importance. This is because of two considerations. Firstly, without localisation of placenta, a patient cannot be safely discharged from the hospital in view of the risks of recurrence of haemorrhage if the placenta is a low lying one. This puts demands on hospital beds and personnel of an overcrowded and busy hospital. Secondly, a digital examination through the cervix can be avoided at 38 weeks if previous localisation shows the placenta praevia to be of a major degree, thereby eliminating the risks of a massive haemorrhage provoked by such examination before caesarean section is hurriedly undertaken.

In a hospital with no facilities for isotope localisation of placenta, radiological methods seem to be the only answer to the problem. Amongst the various radiological methods the soft tissue radiography is the most popular one. But, this method needs special technique and has its own limitations in cases of hydramnios, a small foetus, multiple pregnancies and abnormal presentations. Amniography is not very much favoured because of the risks of onset of premature labour. Contrast media in bladder and rectum can only give indirect evidence if the presentation is cephalic.

Retrograde femoral aortography seems to be very useful in most of the cases of antepartum haemorrhage selected for conservative management. This technique, performed by Seldinger method can be quickly mastered and the irradiation has been minimised by the single film method. The whole procedure can be

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completed in about forty-five minutes and the visualisation of placenta is fairly accurate.

Material and Methods

One hundred and eighteen patients were admitted to the obstetric unit of Tata Main Hospital during a period of two years 1970-71 with antepartum haemorrhage. Retrograde femoral aortography was done on 14 of these 118 patients for localisation of the placenta. Rest were managed on conventional lines.

Technique of Aortography

The femoral artery was catheterised by Seldinger technique through a stab incision made just below the inguinal ligament. The catheter was passed retrograde for a distance of 22.5 cm. reaching thereby a point just above the bifurcation of aorta. Forty millilitres of Conray were then injected under pressure through the Seldinger catheter and exposure was made at the point of completion of injection. Initially only antero-posterior view of the abdomen and pelvis was taken. While indicating the praevia or normal situation of placenta fairly accurately, A.P. view was found to be inadequate for discrimination between an anterior and a posterior placenta. Lately, we have been taking only one lateral view and the films are found to be highly accurate and helpful (Fig. I). Firm pressure was applied for about five minutes at the point of arterial puncture after removing the catheter from the artery to prevent formation of haematoma.

Identification of Placenta

The placental site could be recognised by the stellar shadows of the dye in the sinusoids. Sometimes, specially after injection of only 25 cc. of dye, there was

a delay in appearance of stellar shadows if the exposure was made too soon. In such cases, either the vascular shadows were to be relied upon to point indirectly to the placental site or further injections had to be made followed by more exposures. The vascular phase shadows are an unreliable guide and further exposures increase the radiation hazard. We have obviated this difficulty by increasing the amount of injected dye to 40 cc. and taking only one film at the completion of injection. This little modification has resulted in satisfactory stellar shadows of placenta in every film.

Results

Four patients in our series of 14 were found to have placenta praevia. The low implantation was diagnosed when the stellar shadows of the placenta extended below a line joining the symphysis pubis and sacral promontory. The placenta praevia in each case was confirmed either by digital examination or visualisation during caesarean section. In one case there was a doubtful encroachment of placental shadows into the lower segment (Fig. II); but, later, direct digital examination disproved the suspicion. In one patient a major degree of praevia was suspected (Fig. III). She was treated by caesarean section without digital examination and the diagnosis was confirmed during operation.

Side-effects

No untoward effect attributable to aortography was observed in any of the 14 patients. One patient had severe hypotension of supine position during insertion of the Seldinger catheter and was promptly relieved by changing her to lateral position. No patient had haematoma at the site of arterial puncture. Dislodging an atheromatous plaque by

the intra-arterial catheter is a theoretical possibility as all the patients who have placental arteriography are young. There was no case of onset of premature labour.

Discussion

Hartnett (1948) reported on trans lumbar aortography as a means for demonstrating placenta. But the technique is difficult and entails the risk of severe haemorrhage which cannot be controlled by pressure. Moreover, the injection may be inadvertently given into an important branch of the aorta, like renal artery. The danger of damage to surrounding viscera is also a possibility. Sutton (1952) injected the contrast medium into the femoral artery in a retrograde manner. But with his technique serial films were necessary, increasing radiation hazard to the foetus. After Seldinger (1953) reported his technique of arterial catheterisation the problem was greatly solved. Devilliers and Brink (1957) carried out aortography on 25 patients with antepartum haemorrhage by Seldinger technique and visualised the placenta successfully, claiming this method to be the safest means of placental localisation. They found out that about 9 inches of catheter pushed in a retrograde manner along the femoral artery usually reached a point above the bifurcation of the aorta. This observation eliminated the need for serial films for locating the tip of the catheter and the whole procedure of placentography could be completed with only one film.

Devilliers and Brink described two types of contrast shadows. First type is that of vascular phase showing the concentration of blood vessels in a particular area of the uterus, thereby indirectly pointing to the placental site (Fig. IV). This is less convincing and is obtained only when exposure is made within first

second of completion of injection of 25 cc. dye. The other pattern is the sinusoidal shadows showing the dye in the vascular spaces of the placenta. This is more reliable and helpful than the vascular phase. We, in Tata Main Hospital, inject 40 cc. of Conray instead of 25 cc. of Diagonal or Urograffin as used by other authors. Increasing the amount of dye injected enabled to ensure outlining of sinusoidal shadows with only one exposure made within one second of completion. The need for the second and third films as required by the other reported techniques has been totally eliminated.

In conclusion, we have found the arteriographic method of localisation of placenta a very useful and effective one, specially in a hospital without ultrasonic and isotope facilities for patients receiving conservative treatment in the hospital with mild antepartum haemorrhage.

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See Figs. on Art Paper II