

PLACENTAL CALCIFICATION IN LOCALISATION OF SITE OF PLACENTAL ATTACHMENT

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The possibility of developing a method of precision for the roentgenologic diagnosis of the site of placental attachment has been explored from several angles by a number of workers. Snow and Powell (1934) claimed to be able to localise the placental site correctly in 98% cases by means of soft tissue radiography. Dippel and Brown (1940), Bishop (1945), Reid (1949, 51 & 53), Stallworthy (1950 & 51), Murray (1953), Hartley (1954), Dawson and Mitchell (1954) and numerous others have reported favourably on its use.

Calcification of the placenta is well known clinically and histologically. It is now widely accepted that calcification occurs very commonly in the placenta and is a normal finding. If the calcification could be demonstrated radiologically its presence would localise the placenta even if its outlines are not clearly visualised.

Linsman and Chalek (1953) were the first to utilise placental calcification for localisation of placental site.

Since roentgenologic diagnosis is dependent upon the difference of tissue densities, the presence of calcium deposits in a soft tissue mass makes

the condition ideal for easy identification. Linsman and Chalek (1952), Dawson (1952), White Head (1953), Hartley (1954), have all stated that in the lateral view, placental calcification can nearly always be demonstrated, further enabling obstetrician and the radiologist alike to localise the placental site. Dippel and Brown reported only 10 instances in 262 cases, in which they could identify calcification. Thomas reported a single case of placental calcification and predicted that with improvement of technique and the use of the rotating anode tube it would be observed more frequently.

Calcium has been found to be distributed in either patchy or diffuse punctate deposits but occasionally it has a lace-like appearance. It has also been shown that patients in better walk of life, having a good diet or those who were being given supplemented diet, showed larger amount of calcium deposits than patients of the poor class with inadequate diet. Brehm demonstrated the same in patients by giving them calcium and vitamin D.

It has also been observed that term and post-term pregnancies exhibited greater amount of demonstrable calcium in the placenta. Albright and Rufenstein thought that an appreciable amount of maternal calcium was

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thus lost during the last two months of gestation.

To demonstrate calcification, the roentgenogram should be of the finest technical quality. Roentgenographic screens must be clean. A rotating anode tube with Potter Buky diaphragm and short exposure time is essential. The factors for the lateral view were 200 M.A., 68 to 75 K.U.P., and time exposure $1\frac{1}{2}$ seconds, for antero-posterior view 150 M.A., 68-75 K.U.P., and time exposure second, Target film distance being 10". Hartley (1954) and others have studied the placental calcification by an improved technique, recommending a rotating anode tube, with a small focal spot. Ten kilovoltage, high milli-ampereage and a short exposure time. Tight compression of the abdomen is an important feature of the technique.

A special viewing box which includes a bright spot light for the front of the abdomen, is essential for visualisation of the calcified areas. Others have recommended use of special coloured lights and viewing of the films, in a dark-room for better identification of placental identification.

Attempts have been made to classify the degrees of calcification. It is of no doubt that calcification is an important sign in placental localisation, and that it can well be seen on a soft tissue film.

In hydramnios, when the uterine wall merges with the shadow of the excess amniotic fluid about the foetus, calcification in the placenta is the only definite means of its identification. In marked obesity of the patient it has also been of some value, since such patients are often poor subjects

for direct placentography. Identification of the placenta in twins can be made with certainty if there are calcium deposits.

When there is a low implantation of the placenta one can be much more certain of the roentgenologic diagnosis of the placental tail if it contains calcium and lies along side of the foetal head.

The finding of calcium in the placenta, no matter how extensive, is in no way indicative of either placental diseases or foetal abnormality. J. Blain Hartley (54) confirmed the above statement.

The present study was mainly directed to localization of placenta in cases of antepartum haemorrhage. Localization was attempted by study of soft tissue x-ray and also of the displacement of the head. However, it was considered helpful to see how far one could be successful in localising the placenta by calcification spots alone.

In the present study, therefore, a total of 100 cases were examined radiologically for evidence of calcification in placenta along with soft tissue radiography which was studied separately. The distribution of the cases was as follows.

1. Normal pregnant women—51 cases.
2. Pregnancy + ante-partum haemorrhage—30 cases.
3. Miscellaneous group—which included abnormal presentation and hydramnios—19 cases.

All women, except one, in the above series were at or above 32 weeks of pregnancy. Before taking an x-ray, care was taken to evacuate the bladder and rectum. A single

lateral soft tissue skiagram was taken as a routine, wet films were examined and if needed an antero-posterior view was also taken. Films were examined in an ordinary viewing box, but the anterior part of the film was viewed in a direct spot light. All the films were examined in a dark room to facilitate identification of calcification spots.

Observation and Comments

Out of the 51 cases of normal pregnancy calcification was clearly observed in 23 cases (45.09%) while in another 8 cases it was noted with difficulty, thus giving a positive calcification figure of 60%. Linsman and Chalek (51) reported the presence of calcification in 53% of their initial study. Hartley (1954), however, reported an evidence of calcification in placenta in about 95% of cases. Hartley also believes that a lateral view is the best for identification of the calcified spots.

In group 2, thirty cases were examined. Among these calcification could be clearly observed in 21 cases giving a percentage figure of 70. In 30% of cases calcification could not be detected. However, these cases proved to be of placenta praevia of type III and type IV.

Out of the miscellaneous group there were 8 cases of breech presentation; four of these were associated with placenta praevia. It was difficult to visualize the site of placenta in these cases by study of tracing of placental outline. In 4 of these cases calcification was clearly found and placental site predicted which was later confirmed at the time of childbirth.

Only one case of twin pregnancy was seen in the present series. It was difficult again in this case to find placental tracing but calcified spots could be observed which helped us in localization of placenta which was later confirmed at the time of childbirth. In the remaining 10 cases placental localization by calcified spots could be done only in two cases.

It would be obvious from the above that out of 100 cases placenta could be located by the presence of calcification spots alone in 50 cases. There is no doubt that observation of calcified spots needs a trained eye and experience which we lacked, as this was the first series studied, though every precaution was taken.

From the results stated above one would conclude that calcification of placenta could not be of a great value simply in placental localization. At the same time it could be stated that this forms a useful adjunct in the localization of placenta by soft tissue and displacement radiography. It is of special value in cases of breech presentation and in cases of hydramnios.

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