ROENTGEN RAY DIAGNOSIS OF PLACENTA PRÆVIA*

(With Report of Two Cases)

By J. Friedman, M.D. and D. O. Macdonald, M.D.,

Montreal

RECENTLY, the placenta has been roentgenologically demonstrated, in animal experiments, by intravenous or intracardiac injection of thorotrast. Various investigators, such as Ehrhardt,[1] Gragert,[2] Heuser,[3] Vajano,[4] *et al.*, have shown that the placenta is capable of absorbing a large amount of the thorium circulating in the blood, of retaining it for hours and days, and of eliminating it. However, the placentography interfered with fetal nutrition and led frequently to abortion. For this reason, and because of the large quantity of thorium required for the visualization of the human placenta, and its slow elimination, this method is not yet suitable for clinical use.

Menees *et al.*[5] demonstrated the placenta by injecting into the amniotic sac about 10 c.c. of a 1:1 solution of U.S.P. strontium iodide through the anterior abdominal wall. The placenta appeared as a filling defect or a flattened area, best seen in profile or oblique view. In their 21 cases they saw no injurious or toxic effects, except in a case of placenta prævia, where probably the placenta had been entered. Kerr and MacKay[6] discontinued this method, as the fetus died in 3 of their 10 cases. They used instead a derivative of iopax, with no untoward effects in their 10 cases, though the injection had a great tendency to terminate the pregnancy.

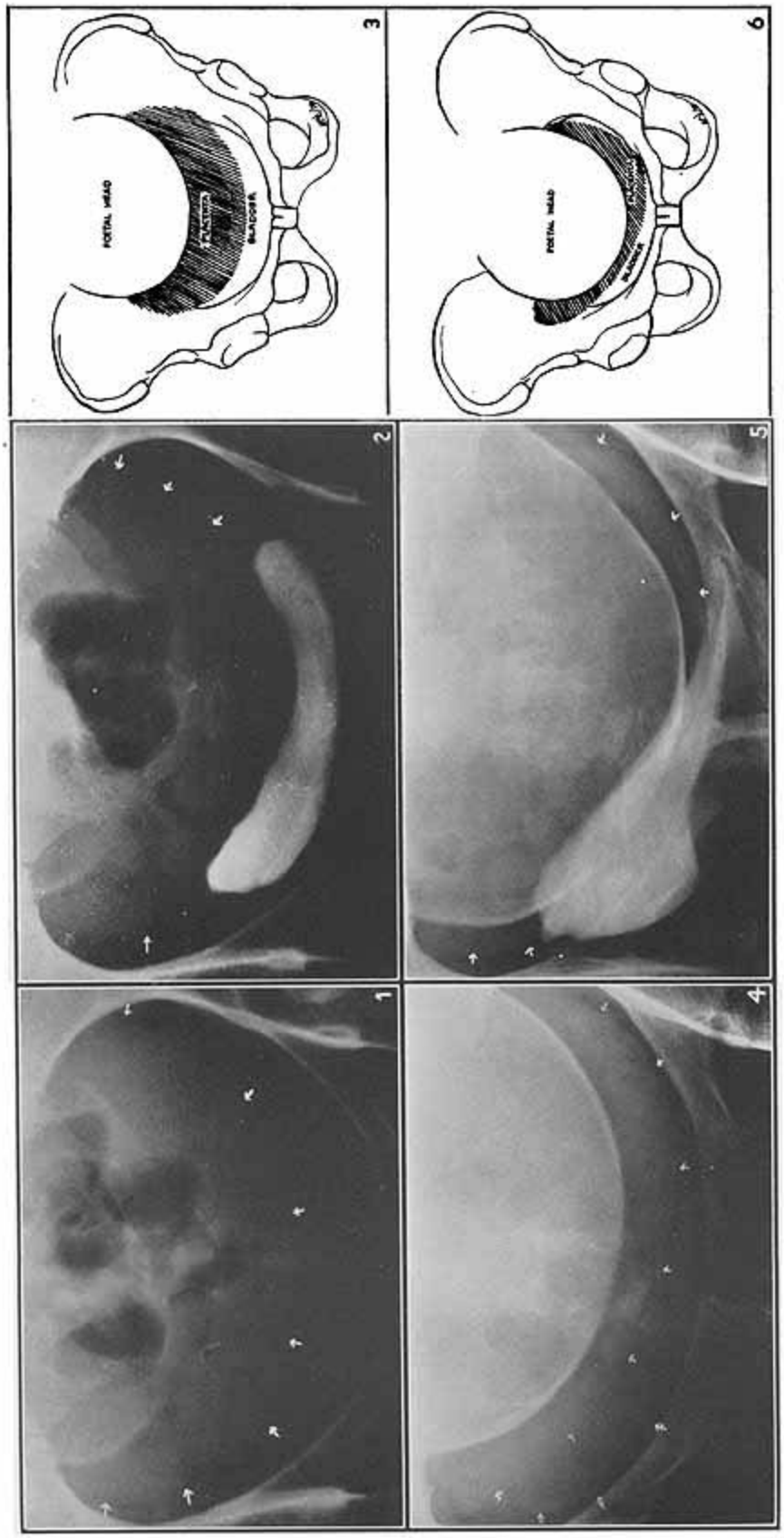
Snow[7] was able, without any special technique, to visualize the placenta in the routine roentgen examination of 60 pregnancies. Several of his cases were proved by operation. There was no case of placenta prævia in his group.

Ude[8] *et al.* published recently 3 verified cases of placenta prævia which were recognized roentgenologically without injecting any radiopaque substance into the uterine cavity. Since theirs is the only report of this method in the literature, we should like to add 2 similar cases from our own experience.

Case 1

Mrs. H.H.D., aged 34, para-iii, was admitted to the outdoor department of the Woman's General Hospital on March 15, 1934. Her last menstrual period had occurred in July 15, 1933. About one month before admission, she developed slight vaginal bleeding, which cleared up under bed rest. Physical examination revealed a pregnancy of about 7½ months' duration. The head of the fetus was located in the left lower quadrant, with the back directed to the left. The placental bruit was heard most distinctly in the right lower quadrant. On vaginal examination the cervix was soft and œdematous. A pulsation could be distinguished in the right lower pelvis from a boggy mass continuous with the uterine wall. There was no bleeding from the cervix. The clinical findings therefore indicated the presence of placenta prævia. The patient was referred for roentgenological examination the same day.

* From the Departments of Roentgenology and Obstetrics of the Woman's General Hospital, Montreal.



A single fetus in the left occipito-anterior position, the head above the pelvic inlet, corresponding in size to an age between 7 and 8 months was found. In Fig. 1 a faint semilunar opacity is distinctly outlined in the true pelvis along the fetal occiput, 3 cm. in thickness, (marked by arrows) bulging in the centre and becoming thinner towards the periphery. Fig. 3 is a diagrammatic representation. The placenta is interposed between the fetal head and the bladder, which shows in Fig. 2, after injection of 25 c.c. of 5 per cent sodium iodide, a crescentic indentation of its upper border. These findings suggested a placenta prævia centralis.

The patient was admitted to the hospital for a selected Cæsarean section. She remained for a month and no further bleeding occurred. Then she became discontented and left, and later entered another hospital, where she was delivered by version and extraction of a dead fetus. The diagnosis at delivery was a placenta prævia centralis.

CASE 2

Mrs. M.P., aged 36, para-ii, was admitted to the outdoor department of the Woman's General Hospital on April 16, 1934. Her last menstrual period had occurred on October 9, 1933. She reported regularly every fortnight and on July 14th noticed slight vaginal bleeding, which cleared up under a few days' bed rest.

Physical examination revealed a pregnancy of about 8 months' duration. The head of the fetus was located in the left lower quadrant, not engaged, with the back to the left. The placental bruit was heard best in the right lower quadrant. Pelvic examination revealed a soft closed cervix and no bleeding. The head could only be pushed down in the pelvis with difficulty; no pulsating mass could be felt. However, as the history suggested a possible placenta prævia, she was admitted, and a roentgenological examination made on August 17, 1934.

A single fetus at term, in the left occipito-anterior position was found, with the head not engaged. Fig. 4 reversed shows a distinctly outlined soft shadow, 1 cm. thick, accompanying the fetal skull from the glabella to the occiput and marked by arrows. Another opacity on the left, also outlined by arrows, proved to be the filled bladder, and disappeared after emptying of the bladder. Fig. 6 is a diagram of the arrangement. After injection of 100 c.c. of 5 per cent sodium iodide the bladder is seen to be displaced to the left and downwards, with a concave upper border and the placenta at the right distinctly outlined (Fig. 5). These findings were suggestive of a placenta prævia marginalis.

On the strength of the history and the roentgenological findings and as the patient was at term, a classical Cæsarean section was performed. When the uterus was opened, a low implantation of the placenta was found on the right side, with the margin covering the lower uterine segment. A healthy, full term child was delivered and the mother made an uneventful recovery.

SUMMARY

A short review of the roentgenological visualization of the placenta is given.

Two verified cases of placenta prævia, with the x-ray findings, are presented.

The diagnosis of the variety of placenta prævia present, and also the differentiation between placenta prævia and accidental hæmorrhage are well known difficulties in obstetrics. Therefore any means of assuring a more correct diagnosis which is harmless to the mother and fetus is of great value.

NOTE: We would like to thank Dr. Wm. Burnett, of the Department of Obstetrics, for permission to publish these two cases.

REFERENCES

1. EBERHARDT, K.: Die roentgenologische Darstellung der Placenta im Tierexperiment, *Klin. Wchnschr.*, 1932, 11: 332; Zur Biologie der intravenoesen Placentographie, *Fortschr. a. d. Geb. d. Roentgenstrahlen.*, 1933, 48: 405.
2. GRAGERT, O.: Zur roentgenologischen Kontrastdarstellung der Plazenta, *Med. Klin.*, 1932, 35: 1222.
3. HEUSER, C.: Radiographie du placenta, *Bull. et mém. Soc. de radiol. méd. de France*, 1932, 20: 646.
4. VAJANO, D.: Della placentografia e sue possibilità di applicazione clinica. (Ricerche sperimentali), *Arch. di radiol.*, 1932, 8: 773.
5. MENEES, T. O., MILLER, J. D., HOLLY, L. E.: Amniography: preliminary report, *Am. J. Roentgenol. & Rad. Therapy*, 1930, 24: 363.
6. KERR, J. M. AND MACKAY, W. G.: Diagnosis of placenta prævia, with special reference to employment of x-rays for this purpose, *Tr. Edinburgh Obst. Soc.*, 1932-1933, pp. 21-32; in *Edinburgh M. J.*, March, 1933.
7. SNOW, W. AND POWELL, B. C.: Roentgen visualization of the placenta, *Am. J. Roentgenol. & Rad. Therapy*, 1934, 31: 37.
8. UDE, W. M., WEUM, T. W. AND URNER, J. A.: Roentgenologic diagnosis of placenta prævia: report of a case, *Am. J. Roentgenol. & Rad. Therapy*, 1934, 31: 230.