COMMENTS ON THE USE OF RADIOGRAPHY IN DETERMINING THE PLACENTAL SITE

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The time-lag between a discovery or an innovation and its acceptance and application in medicine is generally considerable. It took Lister twenty years to convince the London surgeons of the efficacy of antiseptics. More than a hundred years elapsed between the recommendation by Lebas in 1769 that the uterine wound should be stitched after caesarean section (Fasbender, 1906) and the adoption of this detail by Kehrer in 1881 and Snger in 1882. Other instances in the obstetrical domain might be quoted: the tardy development of "ante-natal care"; the hesitant adoption of rubber gloves and face-masks as a protection against infection; the reluctance to admit the superiority of the "lower segment" incision in caesarean section; the slow acceptance of radiography for mensuration of the pelvis.

But the advance to which I would particularly direct attention here is the sudden enthusiasm which has sprung up for the employment of radiography in the diagnosis of placenta praevia, as evidenced by two most important discussions—one at a meeting of the Obstetrical and Gynaecological Section of the Royal Society of Medicine on October 20, 1950, and the other at a joint meeting of this section with the Radiological Section on February 16, 1951. Nothing has cheered me up more, as I,

"And like the vineyard worker take my way
Down the long shadows of declining day,"

than this evidence of mental virility on the part of a number of the younger specialists in obstetrics and gynaecology.

It is fully twenty years since this particular advance was introduced. In 1930 Menees, Miller, and Holly described their method, which came to be designated "amniography." It consisted in injecting an opaque solution into the amniotic sac so that the placental site shows up as a filling defect. W. G. Mackay (obstetric consultant, Thornhill Hospital, Johnstone, Renfrewshire, but at the time my obstetric tutor) and I published our results with "uroselectan B" (iodoxyl) in 1933. The method was abandoned, as it occasionally resulted in inducing premature labour.

One day, while we were carrying out our experiments, Mackay, very thrilled at his discovery, showed me a direct or what has come to be referred to as a "straight" radiograph of the placenta *in situ*. It is this method which has come to be perfected in the United States and by Frank Reid, of the Department of Radiology in the Radcliffe Infirmary, Oxford,* under the inspiration of J. Chassar Moir (Munro Kerr and Chassar Moir, 1949) and J. A. Stallworthy (1951). To-day, exact and well-defined pictures of the placenta *in situ* can be secured by radiography.

Avoidance of Vaginal Examination

The advantage of employing radiography if placenta praevia is suspected is that by this method of diagnosis one can dispense with a vaginal examination. To push a finger or two fingers (frequently it is necessary to use

both fore and middle fingers) through the cervix, even when great gentleness is employed, may result in further detachment of the placenta. On many occasions this examination has caused aggravation of haemorrhage to an alarming degree. Consequently, to-day the obstetric specialist carries out this vaginal examination only in the operating theatre and after he has made preparations for caesarean section or vaginal delivery in case that may be necessary.

It surprised me, however, in the recent discussions at the Royal Society of Medicine and in other debates in which radiography for diagnostic purposes has been under discussion—for example, pelvic formation—that a number of our obstetricians are timorous in advocating its free employment in obstetrics and give it rather half-hearted support. It is an advance of outstanding importance.

It is an extraordinary mentality, this reluctance on the part of many obstetricians to employ radiography freely to clarify diagnosis in obstetric complications. Physicians and surgeons take everything they can out of radiography; but a considerable number of obstetricians seem to imagine that by deprecating its free employment they place themselves on a higher platform of obstetrical intelligence. I read the other day a statement by a professor of obstetrics ("whole-timer") that "radiography was being much abused in obstetric practice." Of course it is, but not, I feel sure, by him and by other enlightened obstetricians. They possibly are not employing it freely enough.

I agree that from the clinical history and by abdominal palpation the experienced obstetrician can diagnose in many instances a placenta that is *praevia* and whether it is located on the anterior or posterior wall (an important detail, as Macafee and Stallworthy have stressed). But he cannot make certain which of the four degrees or types exists; and this also is of the highest importance when choice between vaginal and abdominal delivery has to be considered. I defy even the most skilled obstetricians to determine by palpation a placenta that is *praevia* in a stout multipara with pendulous abdomen. Vaginal examination excluded, only by radiography can one ensure the degree of exactness in diagnosis essential in making the choice of treatment most suitable for the particular patient under consideration.

This exactness in diagnosis should not result in an increase in the number of cases treated by caesarean section. In the hands of the expert obstetrician, well trained in both vaginal and abdominal methods of delivery, it should help him to balance the pros and cons for each route in cases in which one is not obviously indicated.

Other Advantages

But there is another advantage in employing radiography if the presence of placenta praevia is in question. Every now and again a malformed foetus will be recognized in the radiograph. Now, the proportion of malformed foetuses encountered in placenta praevia is roughly in the region of 4%. Of what profit is it to subject a patient in such circumstances to caesarean section when to-day, with blood transfusion, sulphonamide drugs, and penicillin, delivery by the vagina may be as safe for the mother—provided the obstetrician is equally well trained in both vaginal and abdominal techniques—as Sturrock (1947) pointed out in his important paper on placenta praevia?

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There's the rub. With the present swing-over to surgical methods many of the younger specialists have been starved of a training in the manipulations called for in complicated vaginal deliveries. Possibly this applies more in the smaller maternity units than in the larger maternity hospitals or maternity units of general hospitals; but we possess no information exact enough to justify a pronouncement on this point.

For many years the value of radiography as an aid to exactness in determining plural pregnancy, foetal malformations, intrauterine death, and pelvic formation has been recognized. Now we are witnessing its value in the diagnosis of placenta praevia. So let us be exceeding glad that this wonderful method of examination is now available in most large maternity units of general hospitals and in many large maternity hospitals throughout the country; and let us encourage other institutions to afford like facilities.

The dramatic drop in maternal mortality—a feature of the last two decades—can be maintained but not increased to a like degree in the future. The best one can hope for is that a small additional number of mothers may be saved by still more efficient antenatal and intranatal supervision.

Scope for Improvement

There is, however, scope for effecting a pronounced decrease in intrauterine, intranatal, and neonatal deaths, and in the incidence of premature births. All are much higher than need be. Recent results for placenta praevia are a specific illustration of what can be accomplished. Already the employment of radiography with the object of determining the degree or type of placenta praevia, the judicious use of expectant treatment, and the careful choice of mode of delivery (vaginal or abdominal) by a number of enlightened obstetricians have demonstrated what can be done to save the child—and, incidentally, to lower still further the maternal death rate.

I have pointed out the value of radiography in determining the placental site in cases in which placenta praevia is suspected, and also its value in determining pelvic formation. Now I put the question, "Is there any other condition in which a radiograph of the placenta *in situ* might be of advantage?"

One occurs to me. Should any difficulty be experienced in effecting version (external cephalic) in a breech presentation it might be advisable before proceeding further, and using force, to have a radiograph taken with the object of determining the placental site. A considerable number of obstetricians have this done as a matter of routine in breech presentations in order to exclude the possibility of any pelvic malformation. Here, however, I suggest it for the purpose of determining the placental site. Probably all of us have had the experience of an odd foetal death from detachment of the placenta following external version where it was effected with difficulty. It is just possible that this accident occurs almost exclusively in cases in which the placenta is situated on the anterior or antero-lateral wall of the uterus. In my earlier years in practice, when I was employing a classical incision in caesarean section, I came across the placenta in some 30% of cases.

Conclusion

I can hear readers of this article exclaim: "Really, when are these refinements in obstetrics going to end?" They are never going to end, for there is no finality in

Medicine. That refinements in diagnosis and in treatment cannot be carried out in some outlying areas of the country is no argument against employing them where this is possible.

Permit me to finish this brief communication with a paragraph from the W. Fletcher Shaw Lecture ("The Investigation and Treatment of 'Borderline' Cases of Contracted Pelvis") I delivered in 1948 at the Royal College of Obstetricians and Gynaecologists (Munro Kerr, 1948). It rather pleased me at the time it was penned:

"I can hear some critics muttering that this investigation" [radiography of pelvis was the topic] "is too great a refinement. Don't listen to them. Look upon it as an example of the struggle which has gone on down through the ages to attain perfection. Emulate rather the anaesthetists, who seem never to be satisfied with their drugs, equipment, and contraptions, but are always striving after something better. And I admire their keenness and that they are not ashamed of showing it. Possibly this is because they have the exuberance of youth on their side, for their speciality is of yesterday, whilst ours had its beginnings in the primeval forests, jungles, and swamps millions of years ago and we may have grown weary in the long struggle."

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SECOND INTERNATIONAL POLIOMYELITIS CONFERENCE

II. THE VIRUS AND ITS FELLOW TRAVELLERS

Some of those present at the first Congress, held in New York three years ago, felt that despite a vast expenditure of moneys and monkeys research was bogged down and that the future was not too hopeful. This year at Copenhagen, on the contrary, there was an atmosphere of optimism: useful leads were opening up in several directions.

Culture in Human Tissues

The most exciting was the work of Enders, Robbins, and Weller, described by Dr. J. ENDERS. They had succeeded in growing poliomyelitis virus in human embryo tissue-cultures, and, contrary to all expectation, had found that it would grow in all sorts of embryonic tissues, skin with muscle, and intestine, being as good as brain. Various adult human tissues, including foreskin, were also used with success. The Boston workers used essentially standard methods—suspensions of minced tissues (Maitland cultures) and roller-tube cultures. The new trick was to carry them on much longer, changing the fluids bathing the cells every two or three days, but making subcultures only after 16 to 25 days.

Three things make this propagation of virus in tissue culture of real importance. First, the myth of the strict neurotropism of poliomyelitis virus is now exploded. Many things, however, still need explaining. Why, for instance, will the virus grow in tissue cultures of adult monkey testis but not in the testis within a living monkey? Secondly, cells failed to migrate from infected roller-tube cultures as they