

A CASE OF HETEROPLASTIC OVARIAN GRAFTING,  
FOLLOWED BY PREGNANCY AND A LIVING CHILD.  
QUERY—WHO IS THE MOTHER?

Communicated by Professor Sir J. HALLIDAY CROOM.

Mrs H. W. was sent to hospital by her physician on 1st Feb. 1902. She was 21 years of age; began menstruating at 15, and stopped menstruating at 19. Previous to its cessation, the

function had been of average character. She was married at the age of 18, became pregnant soon after, and had a miscarriage at the third month. During the two years previous to her admission to hospital she had suffered from the common menopausal symptoms of pelvic pain, headache, and hot and cold "flushes." These symptoms had steadily increased in intensity, and were most marked at the times when the monthly flow should have appeared.

A diagnosis of cirrhotic ovaritis was made, and the patient asked to stay in hospital until an opportunity occurred of obtaining grafts from the ovaries of some other patient to replace her own ovaries, which were to be removed.

On 11th February, Dr B. operated upon Mrs P. for prolapse of the uterus. Mrs P. was 33 years of age, and the mother of three children. Her ovaries were normal except for the slight congestion common to prolapse cases.

While Dr B. was operating there was removed from Mrs P. ovarian tissue in the form of a wedge-shaped ribbon—enough to be incidentally beneficial for the congestion of Mrs P., while at the same time grafts were obtained for Mrs W. The grafts were placed in physiological saline solution isotonic with human blood, and maintained at the temperature of 100° F.

Mrs W.'s abdomen was then at once opened by a short median incision and the ovaries removed by Tuffier's angiotribe. This method of removal was chosen in order to ensure the complete removal of all ovarian tissue.

After the removal of each ovary of Mrs P., a slit was made through the peritoneum of the broad ligament on either side, parallel with the oviduct, and dorsal to the original seat of the ovary. Into each slit was placed a segment of ovary from Mrs P., about one-half inch long, and one-fourth inch wide. A single catgut suture was placed in such a way as to hold each graft in place. Each graft was placed with its cut surface

in contact with the cut surface of the broad ligament, in order that nutrition might be maintained through the lymph circulation pending the formation of new capillaries. The uncut surface of the ovarian tissue was allowed to project into the free peritoneal cavity, to facilitate the free escape of ova.

The uterus and tubes of Mrs W. appeared quite normal. The ovaries removed from Mrs W. were examined by a pathologist, who reported that they were cirrhotic, distended by many small cysts, and containing no formed Graafian follicles.

Mrs W. and Mrs P. made uninterrupted recoveries from their operations.

Four months after the grafting Mrs W. menstruated, the period lasting for five days. She did not again menstruate until five months later, November 1902, when she was unwell for one day. In the following month she again menstruated for four days, and thereafter the flow became regular, lasting four or five days at each period.

In March 1906, Mrs W. was delivered of a female child, weighing seven and a half pounds. Both mother and child did well, and the mother had a good supply of milk.

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*Dr Freeland Barbour* said that such a question could not be answered off-hand, though it raised many points of interest. He asked whether it was the desire of the second patient to have children, and whether the operation was done with her consent. From the medico-legal point of view, he thought a lawyer would require an exploratory incision to satisfy himself that all the original ovarian tissue had been removed, before giving an opinion.

*Dr Keppie Paterson* considered the woman who bore the child acted only as an incubator for the ovum of the other woman. It had been fertilised in the body of the second

woman, but the life in the ovum was given to it by the first woman; so that the first woman was the mother of the life of the child. This seemed the biological aspect; but if the portion of ovary had been purchased by the second woman, the question would probably have quite a different aspect in law.

*Mr Scott Carmichael* said he had been carrying out some work on the subject in the laboratory of the College of Physicians. So far, he had devoted his attention to autoplasmic grafts, removing the ovary and grafting it in some other place of the same animal. Work had been done by many investigators as to the changes that occur in the grafts. The results practically proved that the ovary degenerated to a certain extent, but not entirely, however. A fair amount of tissue remained which appeared to be normal, but it was difficult to say whether or not it could functionate. In his own work he had found that after ten months the ovarian tissue in the grafts was distinctly normal in parts. There were evidences of Graafian follicles. Drs F. H. A. Marshall and Jolly had also done work on the subject. They exhibited specimens at the Physiological Society showing healthy Graafian follicles in ovarian grafts. It was doubtful whether the ovarian tissue in the graft could exert its ordinary influence on the body and on the uterus. The uterus usually atrophied, though Dr Marshall claimed that the uterus did not atrophy in one case. His work was shortly to be published. With regard to the question of pregnancy after grafting, one case had been described and severely criticised. The crux of the whole matter was whether the ovaries had been completely excised. It was not always easy to be certain of its complete removal, as one might get ovarian tissue in the ligament of the ovary, as shown by Dauber, and unless it was removed one could not be certain all the ovarian tissue was excised. In regard to heteroplasmic grafts, an Italian observer had shown that the age of the host had a distinct influence on the transplanted ovary. Young ovaries grafted in young

rabbits retained their embryonic characters. In rabbits about the menopause, they took on the characters of ovaries at that age. When transplanted into rabbits after the menopause, they underwent atrophy. These results pointed to the fact that, if the ovary lived, it had little influence on the host on which it was grafted. It was difficult to offer an opinion on the present case. He was inclined to think there must have been some ovarian tissue left somewhere. From experimental evidence he was doubtful of Mrs P. being the mother of Mrs W.'s child.

*Dr Malcolm Campbell* said that in the heteroplastic grafts done in the rat by Marshall and Jolly there was distinct evidence of fibroid degeneration. They had failed with heteroplastic grafts, but with autoplastic grafts they had been successful.

*Dr Brown Darling* said if Mrs P. were white and Mrs W. black, the question would be easier to answer.

*Dr Michael Dewar* considered the question difficult to answer. If all the ovarian tissue had been removed from the first woman, the ovum certainly came from the second woman, and consequently the child was hers. It was the result of her ovum. But if it was a question of inheriting money, the child being presumably the offspring of the father, but not of the mother (his wife), it was illegitimate.

*Dr James Ritchie* said that in view of the recorded cases in which pregnancy had occurred after both ovaries had been believed to have been entirely removed, it would be difficult to say whether the ovum in the case under discussion was from the grafted tissue. Supposing, however, that the ovum had proceeded from the grafted tissue, as it no longer belonged to the woman who supplied the graft, but had become an integral part of the woman who bore the child, therefore in the opinion of the speaker the child belonged to the woman who bore it.

*Dr Church* was of opinion that probably the whole of the ovarian tissue had not been removed at the time of the opera-

tion from the original patient, and that therefore she was more likely to be the real mother. It would, however, be interesting to watch the development of the child, and see what light any moral or physical traits of character might reflect on the child's maternity.

*Dr Angus Macdonald* inquired if the distinctive menstrual types of the two women were known. Dr Croom had mentioned that the second woman menstruated for five days some time after the operation. He thought it would help them if they had details as to their respective menstrual types previous to the transplantation, in order to decide whether the ovarian grafts had taken and continued functional or not.

*Dr Barbour Simpson* asked why the angiotribe was used specially? He considered it to be an instrument for crushing a pedicle.

*Dr Macrae Taylor*, referring to the medico-legal aspect, asked if it was not the case that a child was not recognised in law as existing until after the occurrence of quickening? That would affect the question of inheritance, because, if this were so, there could be no legal recognition of any mother but the one who gave birth to the child.

*Professor Sir Halliday Croom* said the question was, Who was the mother of the child—the woman who provided the ovum, or the one who gave the blood-supply? They must take it for granted that all the ovarian tissue was removed. No third ovary was found. His opinion was that the woman who supplied the ovary was the mother, and the child was a bastard. He held that when a man married a woman her ovaries belonged to him; and even after they were transferred to another woman they were still his. So the offspring of the second woman must be a bastard. He did not see how it could be otherwise. The second woman acted as a foster-mother. If the second had bought and paid for a piece of ovarian tissue which was then grafted, the legal question would be of a different nature.

That was the only recorded case. It would be very interesting to trace the characteristics and the features of the child. Great care was taken in the operation to remove all the ovarian tissue. The angiotribe was used.