

VIII. *An Account of a particular Change of Structure in the human Ovarium. By Matthew Baillie, M. D.; communicated by John Hunter, Esq. F. R. S.*

Read February 26, 1789.

THE ovaria in women are subject to a great variety of changes from their natural structure. Many of these are exactly similar to what take place in other parts of the body; but there is one which seems peculiar to them, the nature of which has probably not been hitherto very well ascertained. The change of structure to which I allude, is a conversion of the natural substance of an ovarium into a fatty mass, intermixed with hair and teeth. This sort of change is rare, although it occurs sufficiently often to have been seen by most persons who are very conversant in the examination of dead bodies. There are many cases of it related in the different books of dissections, but, as far as I have discovered, most commonly without any remarks upon the mode of formation*; or they have been considered as very imperfect attempts at the

* It has been the opinion of some, that hair, teeth, nails, feathers, &c. are animal vegetables or plants; and, agreeably to this opinion, Dr. TYSON considers the growth of hair and teeth in the ovarium as a *lusus naturæ*, where nature endeavours to produce something, and being disappointed in forming an animal, produces a vegetable. Vide Hooke's Lectures and Collection, N^o II. p. 11. and 15.

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growth of a foetus in the ovarium, in consequence of connection between a male and a female. This conjecture rests no doubt on strong circumstances of probability, and yet there are many powerful reasons which seem to oppose its being well founded. Generation is a process always depending on the action of a certain cause, *viz.* the usual connection between a male and a female; and, when effects similar to those in generation are perceived, it becomes very natural to conclude, that this cause has been employed. The bias to such an opinion will become the stronger, from reflecting on the passions that are known to influence so powerfully mankind, by which the agency of this cause is frequently excited. When a change, therefore, was observed in an ovarium, by which it was converted into a fatty mass with hair and teeth, this should seem to correspond so much with a change taking place in consequence of generation, that the mind would scarcely entertain a doubt of its arising from the same cause, and would readily infer, that it had been preceded by a connection between the sexes. This doubt would still be the less, from the circumstance of a complete foetus being sometimes formed in the ovarium, where the usual means of generation had been employed. The following case, however, exhibits many reasons why we should be led to believe, that the ovaria in women have some power within themselves of taking on a process which is imitative of generation, without any previous connection with a male; and it is with this view that I proceed to relate it.

In a female child, about twelve or thirteen years old, which was lately brought to Windmill-street for dissection, I found the right ovarium converted into a substance, doughy to the touch, and about the size of a large hen's egg. Upon cutting into the substance, I found an apparently fatty mass, inter-
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mixed with hair and an excrescence of bones. This startled me very much, as I had always been led to believe, that such appearances were a sort of imperfect conception. The circumstances altogether being very singular, I was led to pay considerable attention to the change in the ovarium.

The fatty mass was of a yellowish white colour, in some places more yellow than in others, was very unctuous to the feeling, and consisted of shortened or separated particles, not having the same coalescence which the fat has generally in the body. It became very soft when exposed to the heat of a fire, and sunk into a portion of paper, on which it was spread, so as to make it more transparent. When the paper to which it was applied was exposed to the flame of a candle, it burnt with considerable crackling.

The hair with which the fatty substance was mixed grew out of the inner surface of the capsule containing it, in some places in solitary hairs, but chiefly in small fasciculi, at scattered irregular distances. Besides these, there were loose hairs involved in the fatty mass. The hairs were, some of them, of considerable length, even to three inches, were fine, and of a light-brown colour. They resembled much more the hairs of the head, than what are commonly found on the pubis, and corresponded very much in colour to the hair of the girl's head.

There arose also from the inner surface of the capsule some vestiges of human teeth. One appeared to be a canine tooth, another to be a small grinder, two others to be incisors, and there was also a very imperfect attempt at the formation of another tooth. These were not fully formed, the fangs being wanting; but in two of them the bodies were as complete as they are ever found in the common circumstances. They were each

of them inclosed in a proper capsule, which arose from the inner surface of the ovarium, and consisted of a white thick opaque membrane. Attached to the capsules of three of the teeth, there was a white spongy substance. The membrane of the ovarium itself was of some considerable thickness, but unequal in the different parts, was very smooth in its inner surface, and more irregular externally. The uterus was smaller than it is commonly at birth, was perfectly healthy in its structure, and upon opening into its cavity it exhibited the ordinary appearances of a child's uterus at that period. The left ovarium was very small, corresponding to the state of the uterus. It appears clearly from this, that the uterus had not yet received the increase of bulk, which is usual at the age of puberty. The hymen was entire, such as is commonly found in a child of the same age; and there was just beginning a *lanugo* upon the labia, not more than what is often found on the upper lip of a boy of fifteen years old. Such are the circumstances attending this singular case, and they present to the mind various grounds of consideration.

The formation of hair and teeth is a species of generation, for in fact it makes a part of it, and strikes the mind as being very different from any irregular substance which is formed by disease. This formation too takes place in a part of the body which is subservient to generation, and where a complete foetus is sometimes formed. The whole of this looks very much as if the production of hair and teeth in the ovarium was a sort of imperfect impregnation. But when we take another view of it, there are reasons at least equally strong for believing that such productions may arise from an action in the ovarium itself, without any stimulus from the application of the male semen.

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In the case before us, the uterus was as small as at birth, indeed more so, and the left ovary (which was perfectly healthy) corresponded to the state of the uterus. It had not been at all stimulated, nor did appear capable of being stimulated by the application of the male semen. This seems to be a strong circumstance; for in a case where there was an ovum formed in one of the Fallopian tubes, the uterus was enlarged to more than twice its unimpregnated size; and, upon opening into its cavity, the decidua was observed to be formed as completely as in the impregnated uterus. This preparation is still preserved in the collection of Windmill-street. Nothing can be a stronger proof, that when an impregnation takes place out of the cavity of the uterus, the uterus still takes a share in the action, and undergoes some of the changes of impregnation. In another preparation, which is preserved in the same collection, where there was a foetus formed in the ovary, the uterus was increased to more than twice its ordinary size, was very thick and spongy, and had its blood-vessels enlarged as in an impregnated uterus. This becomes another very strong proof of the action of the uterus in the formation of an extra-uterine foetus. In the case before us, however, the uterus had undergone no change, and does not seem to have arrived at that period, when it could be capable of undergoing such a change.

Besides, we are not to consider the formation of teeth in the ovary to be a quicker process than it is commonly in the head of a foetus; but in the present case the teeth having advanced fully as far as they are at some months after birth, this process must have begun at least more than a twelvemonth before the death of the child. If then we consider it as an impregnation, since the appearances of the child do not warrant us to believe her to have been more than twelve or thirteen years

old, this brings the date of the impregnation to an earlier period than can well be believed. From all these circumstances we might be led to suppose, that the formation of the hair and teeth was not in consequence of any connection with a male, but arose from some action of the ovarium itself, in which the uterus did not participate. The existence of the hymen, especially in so young a girl, becomes a collateral confirmation of the same opinion, although much is not to be rested on it, when taken singly.

It will, perhaps, have some influence in removing the prejudices against this opinion, to make the following remarks. Hair is occasionally formed in parts of the human body, which are absolutely unconnected with generation. Encysted tumours are sometimes found containing hair. Mr. HUNTER has a preparation of this sort in his collection, which he cut out from under the skin of the eyebrow. This tumour was perfectly complete, and unconnected with the skin, except by the common intervention of cellular membrane, so as to have no communication whatever with the hair of the eyebrow. In this instance there was certainly a species of generation taking place in the encysted tumour itself, forming hairs as completely and fully as in the common progress of the formation of a child. Such encysted tumours have been found in other parts of the human body, and still more frequently in quadrupeds. Mr. HUNTER has in his collection many specimens of encysted tumours from cows and sheep containing hair and wool. These were perfectly complete, so as to have possessed a power of production within themselves, and were many of them found deeply seated at a considerable distance from the skin, which is the common parent of hair. In these tumours there is often the appearance of layers of cuticle, which is
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probably a preparatory step to the formation of hair. All this shews most clearly, that hair may be formed without any species of generation as it is commonly understood.

But hair is in itself as distinct a consequence of generation as teeth, and as much a peculiar substance. If then the one be formed, there appears to be no reason why the other should not also be formed. The action producing the one is not better understood than that producing the other; nor does it appear to be really in itself less connected with that species of generation arising from the approach of a male, so that teeth may probably be formed by a peculiar action taking place in the ovary itself, as well as the hair.

It will tend to add further weight to this opinion, to consider that many of the adult teeth are formed in a child after birth; and therefore their formation depends on an action taking place in the jaws at a particular period, and not on original growth. The same circumstance strikes more strongly in the occasional formation of teeth at an advanced time of life. Both of these processes take place after the animal has been formed, in consequence of a certain action being excited in a particular part of the body, and therefore there is less difficulty in believing that the same sort of process may go on in another part of the body not commonly employed in it. It seems reasonable also to suppose, that the ovaria should have a greater aptitude of taking on a process somewhat similar to generation than the other indifferent parts of the body, as they constitute a part of the organs which are so materially concerned in the real process itself *. These circumstances, when taken collectively, would

* As the formation of teeth and hair involved in a fatty mass may be said to be peculiar to the ovaria, and as there are strong reasons for believing, that this formation

would seem to render it very probable, that the formation of hair and teeth in the ovarium does not necessarily depend on a connection between a male and a female (as has been the common opinion), but arises from some action within the ovarium itself, which is imitative of generation.

formation may take place without an intercourse between the sexes, it becomes difficult to account for this peculiarity in them, unless by supposing, that they have a greater aptitude of running into such a process than the other parts of the body.

