

## DESCRIPTION OF A CASE OF TRUE HERMAPHRODITISM, WITH REMARKS.

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THE subject of this malformation was admitted as a female into the Royal Infirmary, under the care of Mr. Bickersteth, April 18th, 1867. She gave her name as Mary W., and stated that her age was 39, but she looked much older. She earned her livelihood as a street hawker. She was tolerably stout and thick set, and rather tall for a woman. The complaint for which she was admitted was that of dry gangrene of the right foot, the toes and part of the heel being in a state of sphacelus; there was also ulceration of the leg. As soon as her bonnet was removed, it was noticed that she had been in the habit of shaving, for about a day's growth of what would have made a tolerably thick beard was at once obvious. Her voice was deep-toned, and decidedly masculine in character.

Some suspicion being entertained as to her true sex, she was ordered into a bath, much against her will, and it was then discovered that she was a hermaphrodite. The gangrene of the foot and the ulceration of the leg seemed to be progressing favourably, till the night of the 21st, when, without any known cause, she was seized with a severe attack of purging, followed by obstinate bilious vomiting, which continued without any improvement until the morning of the 24th, when she died with symptoms of collapse. During her illness she never complained of any pain or tenderness over the abdominal region. It was accidentally discovered by the nurse that she had brought a razor in her pocket. While an inmate of the Hospital she was very quiet and taciturn, never speaking unless spoken to, and unfortunately, in consequence of

her unlooked-for death, no questions as to the sexual feelings were put to her, except as to the menstrual function, to which she replied that she had every month a slight coloured discharge. She was retired and solitary in her habits, always sleeping in a room by herself. For the foregoing particulars of her case, I am indebted to the courtesy of Mr. Puzey, the House Surgeon.

On the post-mortem examination several patches of ulceration were found, in the lower portion of the ileum and in the commencement of the colon; they seemed to be of recent origin, there being no cicatrices visible. One had passed on to perforation, which, by producing peritonitis, was the cause of death. The aorta and the arterial system was the subject of advanced calcareous degeneration. The accumulation of adipose tissue in the abdomen was excessive.

*Description of the Body.*—The body was covered by a thick layer of subcutaneous fat. The forehead was broad and smooth, and the eyebrows were not strongly marked. The hair of the head had been worn long like a woman's, and was somewhat grey. On the cheeks, upper lip, and chin, was a greyish stubble, and if the hair had been allowed to grow on these parts, a very fair moustache and beard would have resulted. The nose was small and well proportioned, the ears were also small, and pierced for ear-rings; the neck was short and thick; the shoulders were broad and square set; the chest was large, and the abdomen corpulent. The general contour of the trunk was decidedly masculine, and disproportionately large to the extremities, which were small and feminine in character. The pelvis appeared to be somewhat wider than in a well formed man. The mammary glands and nipples were entirely undeveloped. The skin of the trunk and extremities was fair and smooth, and singularly deficient in hairy growth.

*Description of the external parts of generation.*—The mons veneris was large and prominent, and but sparsely covered with hair. Below it, was a distinct penis measuring, without stretching, two inches in length, and upwards of two inches in circumference. The organ possessed a very perfect glans, except that it was imperforate; and it had also an ample prepuce, which was retracted

behind the glans. The dorsal aspect of the penis had a most natural appearance, but its under surface was very imperfectly developed, being only covered by mucous membrane. The corpus spongiosum was altogether absent, and in its place ran a groove, representing the normal urethra, from the glans for two-thirds of an inch backwards. The prepuce was attached on the under surface of the organ along the margins of the urethral groove, and then passed downwards, as a strong fold or frænum, to the orifice of the urethra, which was situated between the labia, very much as in the normal female parts. By this band the penis was tied down, so that erection, properly speaking, must have been impossible. The skin folded on each side of the root of the penis, to form labia majora. These labia in some respects resembled the ununited scrotum of the hypospadiac male, but far more the labia of the female, to which they were similar not only in shape and size, but in the way their inner surfaces lay in exact apposition, except at the upper part, where they were separated by the overlapping penis. Between the labia in the median line, two and a half inches from the anus, was the urethral opening, into which a No. 12 catheter could be readily introduced by directing it downwards and backwards. The posterior border of this orifice was formed by a crescentic fold of mucous membrane, while anteriorly the opening was continuous with the urethral groove of the penis. There were no traces of nymphæ, or of a vestibulum vaginæ. Posteriorly the labia blended with the skin of the perinæum, about an inch from the anus.

*Description of the internal genito-urinary organs.*—On looking into the pelvis the bladder was seen lying in its normal position, and behind, and adherent to it, was felt a solid body, evidently the uterus, the fundus of which projected slightly above the level of the bladder. The peritoneum was reflected directly from one organ to the other without forming any vesico-uterine pouch, and it extended laterally from the sides of the uterus and bladder to the brim of the pelvis, forming two distinct broad ligaments. From the fact that the uterus was not fairly in the middle line,

but lay considerably to the left side, the left broad ligament was necessarily shorter and smaller than the right.

*Dissection of the parts.*—On laying open the bladder, it was found to be normal in size and shape. The urethra, which measured one inch in length, joined the vagina about half-an-inch from the common external orifice, and presented no unusual features. The vagina was about two and a half inches long, and devoid of rugæ; its calibre was sufficiently large to admit the little finger, except near the external orifice, where it was very constricted. Tracing it upwards, it was found to be continuous with the cavity of the uterus, which has been described as connected with the posterior wall of the bladder. The uterus was provided with a distinct os externum, the lips of which were clearly recognisable. On slitting up the organ itself, the arbor vitæ of the cervix was found to be well developed, and the cavity of the uterus was large in proportion to its bulk; the walls, on the other hand, being only the eighth of an inch in thickness. Passing to the structures found in the broad ligaments on the left side, there was a fallopian tube, perfectly developed, and of a size proportionate to that of the uterus; it terminated in an open fimbriated extremity, from which a very fine probe could be passed into the cavity of the uterus. On this, the left side, an imperfect round ligament could be traced, but no vestige of a genital gland, whether testis or ovary. Very singularly, however, in the immediate neighbourhood of where the genital gland might have been expected to lie, and within a short distance from the fimbriated extremity of the fallopian tube, there was a somewhat ill-defined body, which looked like a lobule of fat, projecting, so as to be almost pendulous, from the surface of the ligament. When the peritoneum and fat were removed from it, it was found to contain a series of tubules, which in their arrangement corresponded exactly to those which form the parovarium or organ of Rosenmüller in the normal broad ligament; in fact, it might be considered as a tolerably well-marked specimen of a parovarium. Turning to the right broad ligament, there was seen, as upon the left side, a distinct fallopian

tube, only not so large or so well developed as the left one. Its canal was also continuous with the uterine cavity, but its fimbriated extremity was very feebly marked and was not patulous. This fimbriated extremity was adherent to a body which represented the right genital gland. On examining carefully the genital gland, which was about the size of a half grown acorn, it was found to be distinctly of the nature of a testicle. A section of it presented the characteristic lobular appearance of that organ, and portions of it, when placed under the microscope, were found to consist of convoluted tubes  $\frac{1}{16}$ th of an inch in diameter. At a short distance from the testicle was a small firm mass, which was found to be the globus major or caput epididymis, the coni vasculosi of which were clearly traceable. From the caput epididymis an exceedingly tortuous duct, which must be considered as the representative of the body and globus minor of the epididymis passed between the layers of the broad ligament towards the body of the uterus, in a direction nearly parallel with that of the fallopian tube. As it approached the uterus, it became less and less tortuous, and finally almost straight. It could be traced with great ease, running down the side of that organ, very closely connected to it, to a point nearly on a level with the os uteri, where it abruptly terminated in a caecal extremity. The greater part of that portion of the tube which ran down the side of the uterus was very much dilated and presented, when laid open, a number of imperfect septa stretching across it, which gave it an appearance not unlike the duct of the gall bladder. The existence of any distinct connection between the testicle itself and globus major of the epididymis was very difficult to determine, as a careful examination only showed one or two delicate uniting filaments, which might be considered as representing the vasa efferentia, and whether these were permeable or no, it was impossible to ascertain.

Briefly, then, to recapitulate: there were present in this subject a tolerably developed vagina and uterus, in the left broad ligament were found a fallopian tube, a round ligament, and what was considered to be a parovarium, but no trace of either testicle or ovary; while in the right broad ligament there existed

a fallopian tube and a distinct testicle with an epididymis and a vas deferens, which was traceable on the side of the uterus as far as the cervix, the junction, however, between the testicle and the epididymis being very feebly, if at all, developed. The conformation of the pelvic cavity may be regarded as intermediate between the male and female types. The following are the measurements of the diameters of the inlet:—

	Inches.
Antero-posterior . . . . .	3 $\frac{2}{3}$
Transverse . . . . .	5
Oblique . . . . .	5 $\frac{1}{8}$

There is one point in connection with our case which requires a passing comment, namely, the alleged partial occurrence of the menstrual function, although, as was afterwards ascertained, no ovaria existed. I do not think we ought to doubt altogether the truth of this statement, as the interior of the uterus represented a large surface, the lining membrane of which had a most natural appearance, and, moreover, the person herself could hardly be supposed to have any object in deceiving.

We have now to consider the subject of hermaphroditism, and the best way to obtain a clear comprehension of these malformations is to make ourselves acquainted with the natural development of the genital organism in intra-uterine life; for the investigations of modern embryologists have been of the greatest assistance in enabling us to understand the possibility of their occurrence. I have thought proper, therefore, here to introduce a short summary of the foetal development of the internal generative organs.

In early embryonic life, situated below the kidneys, on either side, are two conical-shaped organs named the Wolffian bodies. These structures act as the primordial kidneys, and as the latter become developed they disappear. Each Wolffian body possesses an excretory duct, which runs down from its summit along its outer side, and opens into the allantois, or rather into that part of it which is known as the uro-genital sinus. Upon the inner side of these bodies there soon appears a genital

gland, which is the future testis or ovary. About the same period of embryonic existence a whitish band, which afterwards becomes hollowed out into a tube under the name of Müller's duct, is developed on the inner surface of each Wolffian body, opening below into the uro-genital sinus close beside the excretory duct. So far as development has yet proceeded, the rudimentary structures necessary to the organism of either sex are present, and according to the type or innate sexual impress of the new being will depend the development of some of the structures and the atrophy of others. Thus, in the male the excretory ducts of the Wolffian bodies are developed into the vasa deferentia, and the genital glands assume the characters of the testis, while Müller's ducts cease to grow. In the female, on the contrary, Müller's ducts are developed into fallopian tubes, uterus, and vagina, and the genital glands assume the character of ovaries, while the excretory ducts cease to grow. The upper ends of the Müllerian ducts form the fallopian tubes, and in animals the cornua or horns of the uterus; while their lower ends become fused together into a single tube, which at a later period is differentiated into the body of the uterus, the cervix, and the vagina. Where the fusion is not complete, a double uterus or vagina is the result. The Wolffian bodies themselves, as the above-mentioned parts become developed, gradually dwindle away, and upon their summits is developed a new formation, dissimilar to the Wolffian body proper, which, in the male, ultimately forms the globus major of the epididymis; and in the female, the series of tubules situated between the layers of the broad ligament close to the ovary, which is known as the parovarium or organ of Rosenmüller.

In the adult female, the remains of the primitive excretory ducts are ordinarily to be found under the name of Gaertner's ducts, on the anterior aspect of the vagina in the lower animals, especially the ruminantia, and they may be considered to represent the vasa deferentia of the male.

In the adult male, the remains of the primitive Müllerian ducts are represented by the sinus-pocularis or utriculus in the

prostate gland, which is the analogue of the uterus and vagina of the female.

The following table will make this brief account more easily understood:—

*Table illustrative of the development of the common primary fœtal genital system, according to the sexual type.*

	IN THE MALE.	IN THE FEMALE.
GENITAL GLANDS .	Testes. . . .	Ovaria.
MULLERIAN DUCTS .	{ Disappear (except as the sinus pocularis) . }	Fallopian tubes, uterus, and vagina.
EXCRETORY DUCTS OF WOLFFIAN BODIES .	{ Vasa deferentia . }	{ Disappear in the human subject, (remains, if in the lower animals, under the name of Gaertner's ducts.) }
NEW FORMATION ON THE SUMMITS OF THE WOLFFIAN BODIES . . . .	{ Globus major of epididymis . }	{ Parovarium or organ of Rosenmüller. }

With respect to the development of the external organs of generation, it is quite sufficient for me to state that the scrotum corresponds to the labia majora and the penis to the clitoris.

I would observe, in anticipation of the subject we are about to consider, that as we have seen only one genital gland, whether testis or ovary, appears on each side in connection with its Wolffian body, we ought to be exceedingly cautious in believing that both organs have ever been found on the same side, and indeed we may be sure that, in cases where such an anomaly was supposed to exist, there was a fallacy somewhere. The subject we have before us, which is one of great interest, has been very fully worked out by Sir James Simpson, in the *Cyclopædia of Anatomy and Physiology*, and I have liberally availed myself of his valuable researches.



Hermaphroditism has been divided into two classes, the true and the spurious. The spurious is that in which the imperfection is confined to the external organs. In the male it is commonly due to arrest of development; in the female, to excess of development, but with this class we are not now concerned. The true, which is again subdivided into two varieties, the "lateral" and the "transverse," has to do with the internal organs. In the lateral we find a strange admixture of the sexual types, while the genital organism on each side is antagonistic, male on one, female on the other. In the transverse, the female sexual type is found associated with the distinctive genital glands of the opposite sex. Our case belongs to the "lateral" sub-division, and Professor Simpson, in addition to many in the lower animals, has collected two or three very similar instances in the human subject.

In one, a young person about fourteen years of age, fallopian tubes, uterus and vagina existed, while on the right side there was a testis, on the left an ovary. The vagina and urethra terminated in a common constricted opening in the perinæum. The external organs were those of a hypospadiac male. Strange to say, during life this case had always been looked upon as belonging to the male sex. Another, and still more remarkable case, is that of Marie Derrier, or Charles Doerge. This person was registered as a female, but at forty was persuaded to change his name and dress to those of a man. After death, however, fallopian tubes, uterus and vagina were discovered, with a testis on one side and an ovary on the other. From the description of the general configuration of the body, and of the disposition of both the external and internal generative parts, I am led to believe this case was exactly parallel to the present one.

Simpson has given us a full account of this malformation in a domestic fowl that he himself had an opportunity of examining, and I adduce it, simply because it assists us to take a correct view of lateral hermaphroditism. The fowl had all the appearance of being a cock, and until it commenced to lay eggs was considered to be so. On the right side, although no testis could be discovered, a well-developed vas deferens was found; on the left was a normal ovary and oviduct. The bird was never

known, however, to incubate; but, on the other hand, crowed regularly, and often attempted to imitate the functions of the cock.

The present example of lateral hermaphroditism may be considered, then, to occupy a neutral position, as possessing in combination some of the characteristic attributes of both sexual types, although probably the feelings, if any existed, were slightly more in common with women than men. I think that the absent genital gland on the left side is an ovary and not a testis: the fact of the uterus lying much over to that side, and the presence of the parovarium in the broad ligament, tends to support this opinion; for there can be no doubt but that in very early fœtal life a rudimentary genital gland appeared, but, development failing, it dwindled away.

Recollecting the natural development of the primitive embryonic structures, we can readily comprehend the several anatomical deviations in malformations of the sexual apparatus. We have, however, another element in true hermaphroditism to consider—an unseen, vital element—I mean that of the sexual types, which, as I shall point out, exist independently of the existence of distinctive genital glands, whether testes or ovaries. Let us, therefore, ascertain the normal relation of the sexual types to the individual. In the first place, it does not seem too hypothetical to infer that both sexual types co-exist in man and in every vertebrate animal, and that the evident sex is merely the prevailing type, the individual being born with the latent element or type of the opposite sex. We cannot suppose that it is a matter of chance or accident in the development of the embryo which type is to predominate, for we know that the genital system of the fœtus is at first of such a double character that it is as capable of being developed into the male as into the female organs; it is, therefore, more reasonable to think that naturally one or other sexual type is destined to distinguish the life of the new being from the moment of fertilisation of the ovum, for no one can deny that the sex of the future bird is predetermined in the egg before incubation commences. From the well known fact of the dove tribe ordinarily laying but two

eggs, which almost invariably hatch a cock and hen bird, a "pigeon pair" has become a proverbial expression.

We will now see what evidence we can find in support of our theoretical inference that both sexual types co-exist in man, and in all vertebrate animals. It is found that some of the peculiarities of the latent or opposite type are sometimes evolved, while at the same time many of the attributes of the individual's proper sex to a great extent disappear. We find this to be the case when the influence of the ovaria upon the system is lost, whether as the natural result of age, or from their removal by operation. Thus the effect upon a young woman,\* whose ovaria formed hernial tumours at the inguinal rings, and in consequence of their incapacitating her from work were removed, was to cause suppression of the catamenia and atrophy of the mammary glands, while the body assumed a decidedly masculine type. So also in women who have passed the "change of life," that is to say, in whom the functional activity of the ovaria has ceased, we constantly remark a tendency towards the assumption of the attributes of the male type, as there is often an increase of hair upon the face, the voice becomes stronger and deeper toned, while the elegance of the female form is lost, and not unfrequently the mind exhibits a more determined and masculine cast. A like change has been noticed after the cessation of reproductive life in the female deer, in which horns similar to those of the stag are then developed. But it is in birds, after they have ceased to lay, that the alteration of the type is most remarkable, for not only may the female acquire the variety of colour and the brilliancy of the male plumage, but even, as in the case of domestic fowls, the spurs, comb, and wattles of the cock, besides which she may even imitate the function of the male bird.

On the other hand, in the male sex, when the testes have been removed early in life, not only are the special characters of that sex not evolved, but, on the contrary, the peculiarities of the latent female type come out. Thus, in the human species, if

\* Pott's Surgical Works, quoted by Simpson.

this loss has been sustained before puberty, the beard does not grow, the voice remains unchanged, and the mammary glands are so modified that they assume a resemblance to those of the opposite sex. Again, the assimilation to the female type is exemplified in the ox, and the approach to the female configuration under similar circumstances in our domestic animals is so well recognised as to require no further comment.

I think that these facts, taken collectively, are sufficient proof of the normal duality of the sexual types in the individual; and we may safely infer that when the natural ascendancy that one type should assume over the other fails to take place, lateral hermaphroditism is the consequence. Although the genital glands by their presence no doubt exercise an extraordinary influence on the sexual character, yet, strange to say, as we stated at page 47, the apparent sexual type is sometimes found at variance with the existing genital glands, so generally regarded as distinctive. Examples of these anomalous malformations belong to the "transverse" subdivision of hermaphroditism. The subjects of the "transverse" variety possess the female configuration and sexual type, while internally the ovaries are replaced by testes. The most common example of this irregularity is that of the free-martin cow, where we have, to all appearance, a heifer—that is to say, the female type—while internally an imperfect vagina and bicornuated uterus are found associated with testes and vasa deferentia.

In the human subject the case of Maria Arsano\* is probably a perfect analogue to the free-martin cow. This person died at the age of eighty, after having passed through life as a female, and having been married as such; yet after her death, although "the external organs of generation were those of a female in their natural or normal state," it was found that the vagina was short, and terminated in a *cul-de-sac*, and that the uterus was absent, while testes and vasa deferentia replaced the ovaria and fallopian tubes. Two other instances in the human female have come to my knowledge, in which the female sexual type was obvious, notwith-

\* Vide Simpson, in Todd's *Cyclopædia of Anatomy and Physiology*.

standing that true testes supplied the place of ovaries; in both these cases the vagina and uterus were imperfectly developed.\*

I would observe that the converse of this anomaly, namely, the male type associated with the female genital glands, most probably has never been met with; for it would assuredly have been discovered in the lower animals if it were liable to occur.

But there yet remains for me to mention, although not included among genuine hermaphrodites, (meaning by such, cases where either both sexual types co-exist, or cases in which the general female type is found in conjunction with male genital glands,) a form of malformation which may happen in the male subject, where, in addition to the proper organism of that sex, a more or less perfectly developed vagina, uterus and fallopian tubes may be found. When we remember that in early intra-uterine life, the Müllerian ducts only attain their full development in the female, while in the male they cease to grow and are lost, except at the sinus pocularis, which represents the lower extremity of the conjoined ducts, and corresponds to the vagina and uterus of the female, we have no difficulty in understanding the possibility of this anomaly occurring. It is probable that such cases have their origin in some faulty innervation of the sexual organism at an early period of foetal life, whereby these ducts, instead of ceasing to grow, have gone on developing. Examples are recorded of the superaddition of a more or less perfect vagina and uterus, in several of the male lower animals. In the human subject we have an instance in the case of a soldier,\* twenty-two years of age, who died of his wounds, in whom the male genital organs were complete, except that the testes were undescended, while fallopian tubes, uterus and vagina were also present. The man Valmont,† is most probably another example of this malformation; he was married as a man, but on examination after death it was found that the testes (?) were retained in the abdominal cavity, and that fallopian tubes, uterus and vagina, which latter opened into the membranous portion of the urethra,

\* One of the instances had been a prostitute.

† Quoted by Simpson, in the article referred to.

existed. In both these instances of this malformation in the human subject, one circumstance is present, which seems to justify our referring the origin of the anomaly to faulty innervation of the sexual system in the foetal state, namely, that the male genital organs were more or less defective in development, seeing that the testes were undescended.

I trust that these remarks will help to clear away some of the difficulties connected with a subject of so much interest as the development of the genital system. The specimen that has suggested this paper may be seen in the Museum of the School of Medicine, together with photographs of the external generative organs, taken shortly after death.