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On some bases  
of  
Abnormal Development  
of the Fœtus.

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On some cases of  
Abnormal Development of  
the Foetus.

The prominence accorded to  
Oteratology in the section of  
Anatomy and Physiology  
at the Annual Meeting of  
the British Medical Associ-  
ation in Glasgow—led my  
thoughts anew to certain cases  
of congenital deformity which  
I had met with in practice  
and I now venture to  
transcribe from my notebook  
a brief account of some of  
these. I have not attempted  
to work out the physiology and  
pathology of these cases in  
detail, as the busy life of  
the country practitioner affords

but little time or opportunity  
for carrying out researches of  
that nature, but I have sought  
to describe as accurately as  
possible the actual condition  
of each case, merely indicating  
where necessary, my reasons for  
classifying it under one or  
other of the broader divisions  
recognized by pathologists.

Case I. Spontaneous amputation  
of the left hand of the foetus  
in utero.

Henry Roderick Bosslett, aged seven  
months. The left arm is quite normal  
above the wrist, and all the  
motions of the humerus, radius,  
and ulna are perfect. The first  
row of carpal bones is quite  
perfect, so far as can be discovered  
by manipulation, and all the  
bones of the second row seem to  
be represented, but are somewhat  
smaller in size than the correspond-  
ing bones of the right carpus. No  
evidence of the metacarpal bones  
is to be found. A well-marked  
cicatrix covers nearly two-thirds  
of the end of the stump; it is  
adherent to the second row of

carpal bones for rather more than half the breadth of the carpus just where their palmar and metacarpal surfaces meet, whilst the original skin seems to have been carried in much further on the dorsal aspect.

The cicatrix is also adherent to the adjacent surfaces of the unciform bone and os magnum, being here so much depressed as to present an umbilicated appearance, and there is another but much less extensive adhesion near the radial side. There is a fair amount of motion amongst the carpal bones and also between them and the forearm. There is no history of any similar deformity in the family of either parent.

That this is not a case of mere arrest of development is

quite certain from the fact that this would utterly fail to account for the presence of the well-marked cicatrix on the end of the stump. Nor is it a case arising from accident to the mother, as we have no account of such an occurrence; and, as to the long fondly cherished theory of maternal impressions and emotions we have not a shadow of evidence or even of suspicion in regard to it, in this particular case. Nor need we pause to consider the exploded theory of gangrene as the cause of the mutilation, as I believe no case has been recorded where gangrene was found in the stump or in the part of the limb removed. The only theory which will meet this case is that it is an example of spontaneous amputation of the left hand of the foetus in utero by the agency of

some band or bands formed of  
organised lymph in the manner  
described by Montgomery ("Encyclopaedia  
of Anatomy and Physiology" Vol II  
p. p. 324-329) and by Simpson  
("Obstetric Works" edited by Priestley  
and Storer, Vol II circa p. 358)

There is no appearance  
of any attempt at the restor-  
ation of lost parts, unless we  
regard in that light the presence  
of a papilla about  $\frac{1}{4}$  inch long,  
and about the same breadth, com-  
posed solely of skin and fat, situated  
near the radial side just at the  
junction of the cicatrix with the  
original skin.

The amputated portion  
of the limb was not observed, but  
this was no doubt simply due to  
carelessness, as the mother and  
the midwife who attended her



did not dream of searching  
for a part whose existence  
they never even suspected.

Case II. Complicated deformity  
of both hands and feet.

Mrs. Smith, aged 38 years.  
Right hand. The only perfect  
finger is the index — perfect  
in appearance, structure, and action.  
The thumb has two phalanges  
but the distal is very short and im-  
perfect with a very small nail; the  
joints, however, are quite moveable  
and under control.

The little finger is represented  
by only one phalanx; this is about  
the full size and fixed over the  
middle and ring fingers which also  
possess only one phalanx each and  
that of only half the normal size;  
these three fingers are all united together  
and there are two holes, large enough  
to admit a needle, seen one on

either side of the ring finger at the point where webbing would have ceased normally. These fingers are destitute of nails.

Left hand. The thumb is quite normal.

The index finger is of normal direction, and seems to possess the three phalanges, but there is no movement except at the metacarpo-phalangeal articulation; this finger is only two inches long and the nail is of very small size.

The middle, ring, and little fingers consist of three phalanges each, but the fingers are all-crouched together and joined as far as the articulation between the middle and terminal phalanges, being quite free beyond. The terminal phalanx of the little finger is very small, and the nails on the three fingers are very imperfectly

developed. There are two little openings at the root of the ring finger, as in the right hand.

Right foot. This is perfect except for one phalanx amissing from the great toe and the neighbouring one, which are consequently much shorter than the other three toes and have no nails.

Left foot. This is well formed till near the ends of the metatarsal bones, where we find a deep well-marked cicatricial sulcus extending round both the dorsal and plantar surfaces, and this sulcus is the more noticeable on account of the part in front of it being so much enlarged as to measure not less than two inches in thickness. This sulcus was caused by a band or cord which the mother long kept as a

curiosity. All the phalanges seem perfect, but buried in this doughy swelling, and nails are present on all the toes except the great one. Only a small portion of the toes, about  $\frac{1}{4}$  inch long, projects beyond the swelling, but the joints are perfectly flexible and under control. The direction of the bones is normal. Notwithstanding these numerous deformities, she can work wonderfully well with her hands, even in public works, and she walks without any apparent defect.

She has four children, all perfect in conformation, and <sup>no</sup> similar deformity can be discovered in her family history. She herself attributes the deformity to a fright which her mother re-

ceived during pregnancy through the invasion of the cow-shed by a great troop of rats whilst she was milking; the fright affected her so much that she fainted, and she was under medical treatment for a considerable period afterwards.

The deformity of the feet is tolerably easy to account for. The band which surrounded the left foot seems to have consisted of organised lymph, and the cicatricial sulcus indicates that the beginning of that process of "disjunctive atrophy" which leads to spontaneous amputation. The swelling in front of the sulcus is probably of the same nature so that ~~tumefaction~~ tumefaction which was described in Zagar's case (Simpson's "Obstetrics").

works" Vol II p. 358) as existing beyond the constricting ligature, with possibly partial webbing of the toes in addition. The absence of the terminal phalanx of the great and second toes of the right foot is doubtless the result of spontaneous amputation.

The state of the hands is more complicated, but the condition of the feet inclines one to believe that a somewhat similar process must have occurred here. The state of the middle, ring, and index fingers on either hand may fairly be considered due to an inflammatory process, causing them to cohere, the process going on in the case of the right hand to amputation of two phalanges on each finger and splitting of the portions left, whilst in

the case of the left hand, it only led to distortion of the fingers. The condition of the right thumb is probably due to defective development, whilst it is difficult to say what the cause of the stiffness of the left index finger may be.



Case III. Spontaneous  
Amputation(?) in the upper  
half of the left forearm with at-  
tempted restoration of lost parts.

Jane Davies, aged 23 years.

The upper arm and the upper  
third of the forearm are well  
developed, and the stump is on  
the whole well rounded and  
fleshy. There is no adhesion of  
the skin or subcutaneous tissue  
to the ends of the radius, and  
ulna, but midway between  
these bones there is a depression  
"to which the fissures of the skin  
run in converging lines", and  
from the bottom and sides of  
this depression arise two processes,  
composed of skin and ~~fat~~ fat, and  
bearing very small rudimentary  
nails. One of these processes (the

radial one) is slightly over  $\frac{1}{2}$  inch long and about  $\frac{3}{8}$  inch in diameter; the other is slightly less than  $\frac{1}{2}$  inch in length and about  $\frac{1}{4}$  inch in diameter. They are both strongly marked on their palmar surfaces by rather coarse ridges and furrows resembling those of the normal finger, whilst on their adjacent surfaces they are quite smooth, and on separating these surfaces we find three small bodies arranged antero-posteriorly in the furrow between; two of these are ~~conical~~ <sup>slender</sup> papillae about  $\frac{1}{8}$  inch long and bearing very minute nails; the third is a mere papule about  $\frac{1}{16}$  inch in elevation.

The girl is able to do a good deal of work in the shape of sewing, washing, knitting etc, fixing the material or the needle in the bend of the elbow, but she has

no power in the end of the stump.

The mother attributes the deformity to her having been knocked down by a drunken man during the fifth month of pregnancy.

It seems rather doubtful whether we should regard this case as an example of arrest of development, or as one of spontaneous amputation with attempted restoration of lost parts, but from the well developed state of the upper arm and of the portion of the forearm that exists, from the presence of the depression at the end of the stump, and from the total absence of any trace of the bones of the wrist and hand, I am inclined to believe that it comes under the second category.

## Case IV. Hypospadias.

On August 22<sup>nd</sup>, 1888, I was called to examine an infant a few hours old, whose sex the parents found themselves unable to determine. A little examination soon revealed the fact that it was a case of hypospadias. The penis was imperforate and ~~was~~ measured about  $\frac{5}{8}$  inch from the os pubis to the point of the glans; the corpora cavernosa were well developed and the glans was of large size, but the urethra opened on the under surface of the penis a little on the perineal side of the pubes. From this urinary meatus a groove lined with mucous membrane extended forwards to the glans

whilst a well marked papillæ  
extended backwards to the  
anus. The prepuce was well  
developed above, but the in-  
teguments were deficient beneath  
in the neighbourhood of the  
groove. The scrotum resembled  
two exaggerated labial folds  
and as the skin covering  
these was continuous with  
the red mucous membrane  
of the groove before mention-  
ed, the resemblance to a  
female was considerable on  
a hasty inspection. There was  
no trace of the female vagina  
No testicles were found in the  
scrotum; but this is what was  
to have been expected as the  
child was born in the eighth  
month of pregnancy, and  
<sup>according to</sup> according to Simpson (Cyclopaedia

of Anatomy & Physiology," Vol II  
p. 692) "the testicles are seldom  
found in the divided scrotum  
at birth, but commonly they de-  
scend into it through the inguinal  
rings towards the period of puberty."

This infant was very  
weakly and died two days  
later in convulsions. The mother  
is a most emotional member of  
a highly nervous family and  
has been prematurely delivered many  
times, only once reaching the full  
period of gestation, but there was  
no congenital deformity observed  
in any of the other children.

## Case V. Hypospadias.

David Young, aged 17 months.  
The general features of this case are very similar to those of the preceding one, but there are a few points of difference. Either half of the divided scrotum contained a testicle at birth. A cul-de-sac of somewhat larger diameter than a goose-quill and lined with red mucous membrane is found in the perineum, and in the roof of this cul-de-sac is situated the orifice of the urethra. Several orifices are to be seen in the split urethra just at the mouth of the cul-de-sac and these I believe to be the openings of Cowper's glands and of the seminal ducts.

Case VI. Abnormal  
rectum.

On 14<sup>th</sup> January, 1888, I was summoned to an infant, aged four days, who was stated to have passed no faeces since birth, and whom I found, on my arrival, in a moribund state. The abdomen was enormously distended, and the superficial veins of the region fully dilated and well marked on the skin, and vomiting had been going on for several hours. I employed an enema but the fluid returned unchanged as soon as injected. I then passed my little finger through the anal aperture, which was of large



size, and found that my finger  
travelled through a rectal  
canal about  $\frac{3}{4}$  inch long into a  
large chamber almost as extensive  
as the pelvic cavity and closed  
above by a strong membrane  
through which no passage  
could be discovered either by  
the finger or by bougies, etc.  
No trace of faeces was to  
be found. Seeing the child  
moribund, I declined to incur  
the risk of being accused of  
hastening the child's death by  
operation, but I offered to as-  
sist any surgeon, if the parents  
could find one willing to per-  
form the operation as a forlorn  
hope. The nearest surgeon  
was then sent for, but be-  
fore he arrived, the child

expired.

This case is interesting, not by reason of the deformity, which is common enough, but as affording another example of the danger arising from the employment of midwives to the exclusion of properly trained medical men. Had a medical man been in attendance at the confinement, he would doubtless have been informed at his first visit on the following day that no faeces had been passed, and would probably have soon ascertained the cause of the retention, & taken steps, possibly with success, to rectify matters, whereas in this case the midwife contented herself with

ordering large doses of castor  
oil for four days, and only  
at the last moment, when  
the infant was already beyond  
the aid of the surgical art, was  
a medical man called in.  
Unfortunately in this part of  
Wales untrained ~~midwives~~  
midwives attend all cases  
of confinement, and only  
when operative interference  
is deemed necessary is a  
professional accoucheur  
summoned.

Case VII. Webbed fingers.

John Williams, aged 3 years.  
The middle and ring fingers  
of the left hand are connected  
together loosely by means of  
the skin right to the tips;  
this condition is due to the  
absence of fission — to the  
persistence of the interdigital  
membrane which is found  
in ordinary cases in the  
early months of intrauterine  
life. All the other fingers and  
all the toes of this child are  
perfect. There seems to be an  
hereditary tendency in this  
case, for though I can discover  
no other <sup>example</sup> ~~case~~ of webbed fingers  
in the family, yet his mother's  
only brother has his the second

and third toes of each foot  
similarly webbed to the tips.

## Case VIII. Extensive arrest of development.

In June, 1883, when a student at the Glasgow Maternity Hospital, I was called to attend an outdoor midwifery case. The patient was a multipara and after a short first stage, extending only over a period of about fifty minutes, a few very powerful contractions brought the child into the world, the placenta being expelled almost immediately afterwards. The mother believed herself to have reached the full period of gestation, and the size and weight of the child seemed only to a slight extent less than those of an average child born at full time. The limbs and vertebral column

were perfect, and the head and face were normal except that the right side was possibly a little larger than the left. The thorax and abdomen, however, presented rather a singular appearance. The sternum was totally absent, and the ribs, whilst quite normal behind, only came forward to what should have been the vertical line of the nipple. The integuments of the thorax also stopped short at that line, so that the thoracic cavity was quite open in front. The lungs were collapsed, and occupied the back part of the chest. A serous membrane resembling the pleura covered the lungs, and lined the walls of the thorax, but there was no complete pleural sac. The

heart was in the usual foetal position and beating vigorously but it was quite bare and devoid of pericardium and unconnected in any way except by its vessels. The diaphragm was incomplete in front in the neighbourhood of the middle line. The abdomen was even more patent than the thorax, its integuments coming forward only to the ends of the false ribs above and to the anterior superior spinous process of the ilia below. The abdominal viscera were well developed with the exception of the bladder and the internal generative organs which were either entirely absent or so rudimentary as to escape detection. The liver which was of large size had its "ligaments"



so much lengthened that it rested between the thighs of the child. The anus was absent, the rectum ending blindly in the pelvis, and there was no trace of any external genital urinary organs.

The most interesting feature of this case was the length of time during which the heart continued to beat after separation of the placenta from the uterus and without the pulmonary circulation being established. I placed the body (with the placenta attached) close to the fire and watched the body carefully for about  $\frac{3}{4}$  of an hour during which the heart and umbilical cord pulsed ~~vigorously~~ strongly, and the parents told me subsequently

that the heart continued to beat for nearly half an hour after my departure.

It is much to be regretted that it was found impossible to obtain the body for purposes of more exact examination.