

DESCRIPTION
OF A
MALFORMATION OF THE DUODENUM;
WITH NOTICES OF ANALOGOUS CASES.

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Received February 19th—Read April 22nd, 1845.

A MALE still-born infant from the lying-in ward of this Infirmary was examined by me on the 30th of April 1844. The body was eighteen inches long, and five pounds weight. There was dropsy of the abdomen and scrotum. The brain was natural, the cerebrum weighed twelve ounces, the cerebellum $\frac{3}{4}$ ounce, and the medulla oblongata 1 drachm. Chest:—both lungs sank in water, the right lung weighed 1 ounce, the left $\frac{3}{4}$ ounce; the heart weighed $\frac{3}{4}$ ounce, and the thymus body $2\frac{1}{2}$ drachms.

Abdomen :—the peritoneum contained an unusually large quantity of fluid; the stomach was natural, weight $1\frac{1}{2}$ drachm: the duodenum was much enlarged, and appeared like a bladder two thirds filled, and contained a greenish coloured fluid; the lower or most distant part from the stomach was imperforate, and of larger calibre than the upper part, so

that the malformed duodenum, as exhibited in the preparation, is somewhat of an oval shape, 6 inches long and 2 inches in diameter at the lowest and widest part.

The duodenum is completely closed by a transverse membrane at the lowest part ; $2\frac{1}{4}$ inches above this, a valve is seen to extend across, nearly half closing the gut, proceeding from its concave side, and the central attachment of the septum being opposite to the mesentery or reflection of the peritoneum externally.

Around the membrane which closes the duodenum, the small intestine is attached, and when dried and distended with air is only about the thickness of a writing-quill. The peritoneum is continuous from the enlarged duodenum to the contracted portion of intestine adjoining, presenting a smooth unbroken surface, without any appearance of constriction.

The great intestines were unusually small, not fully developed ; the colon contained some granular matter in round masses, like the dung of some rodents, of a light colour, in one or two places tinged with green. Part of it was sent to Dr. Lee.

The other abdominal organs were natural ; the liver weighed $3\frac{1}{2}$ oz., the kidneys $\frac{3}{4}$ oz., the supra renal capsules $1\frac{1}{2}$ drachm, the pancreas 1 drachm.

Divisions in the intestinal canal have been most frequently met with where there have been other malformations. In acephalous monsters, for instance, a deficiency in the upper portion of the intes-

tinal canal is not uncommon, and has been observed by Otto, Klein, and others.

The œsophagus has been found terminating in a cul de sac, by Brodie and others. Schaefer* states, that a division between the stomach and duodenum has been observed four times, between the small and great intestine four times; that Pied found the duodenum receiving the bile-duct, and terminating in a cul de sac—and that a division in the small intestine, most frequently near its origin, had been found by seven other persons.

In the same essay, Schaefer relates a case which came under his own notice, of a child living some days with a malformation of the duodenum, very similar to the one which I have here described.

Billard† has noticed Schaefer's case, and another in which the child also lived some days, at the Foundling Hospital, Paris, with a similar malformation of the duodenum, which he has figured in his Atlas.‡ These were both male infants. The symptoms during life were, vomiting of a liquid resembling meconium, as well as all the ingesta: neither alvine dejections, nor urine, were passed by either of the infants. The whole of their organs, with the exception of the intestinal tube, were found to be healthy: there was an enlargement of the duodenum, and termination of it in a cul de sac—the portion of

* Journ. Complément. du Dict. des Sciences Méd., t. xxiv. p. 63.

† Traité des Malad. des Enfants, p. 347.

‡ Atlas d'Anat. Pathol., Pl. VI.

the intestinal canal below was unusually small, and contained only mucous matter.

The *post-mortem* appearances of these two male live-born children described in Billard's book, correspond, in most particulars, with those of the male still-born child here described: there is, however, a peculiarity to be seen in the duodenum of this one, not noticed in the others, which is, the membrane extending more than half way across, like a valve, at a distance above the obstruction.

From this circumstance, it would appear that there was a tendency to an increased development of the mucous membrane, and that the division and imperforation of the intestine below might be owing to a production of that membrane at an early period of foetal life, extending across the intestine, and uniting with the mucous membrane of the opposite side. The obstruction so caused, by preventing the passage of the bile and pancreatic juices, would render unnecessary the full development of the intestines below the obstruction.

Simple enlargement of one of the *valvulae conniventes*, without any surrounding disease, has been described by Baillie;* it was in the form of a projecting ring in the cavity of the jejunum, from which the canal of the gut was much narrowed: a similar case is mentioned by Houston.†

* *Morbid Anatomy*, 8th ed., p. 119.

† *Descriptive Catalogue of Museum of College of Surgeons, Ireland*, vol. ii., p. 44.

Meckel* states, that diminution in diameter “exists in several degrees; in the greatest degree it constitutes imperforation. It is always attended with the absence of a part, since on account of this defect, the part existing terminates in a cul de sac.”

The œsophagus, duodenum and colon have been found divided into two canals.

There are numerous instances on record of varieties in the large intestines; the cæcum may be deficient, and also the vermiform appendix, and the rectum: the termination of the rectum in a cul de sac is by no means uncommon.

There have been monsters with only a more or less perfect abdomen, like the zoophytes. The intestines have never been wholly deficient, although it has happened that not the least rudiment of the cerebro-spinal axis, or heart, could be found. There never has been an instance of the head or thorax being formed separately.

The stomach has been found (according to Elben) while there was very little appearance of any other part of the intestinal canal. An instance is related by Andral,† in which the gastro-intestinal canal was reduced to the smallest dimensions, forming a straight tube which terminated in the rectum.

Among mammals, the great bat (*vespertilio noctula*, Linn.) has about the shortest intestines, which scarcely exceed the length of the animal's body.

* Manual of Descrip. and Pathol. Anat. (Eng. Trans.), vol. ii., p. 384.

† Pathol. Anat. (Eng. Trans.), vol. ii., p. 157.

The alimentary canal is partly formed, before there is any visible sign of spinal cord, brain, or heart : of the different parts of the alimentary canal, the one that is never deficient, is that which is first formed. According to Meckel and others, this canal is formed by the extension of the umbilical vesicle, which may be found outside the abdomen (the abdominal parietes are not formed till the second month), or along the cord in the form of a small tube, or else in the abdominal cavity forming a duct, and terminating at each end in a cul de sac.

The situation of the umbilical vesicle is about the lower third of the ileum, and according to the extension of the duct upwards or downwards will depend the extension of the small or great intestine. On the other hand, Wolff, one of the earliest observers, and Dœllinger, hold that the stomach and rectum are first formed, and that the canal proceeds from the two extremities, and unites at the ileum.

Tiedeman, Fleischmann, and others, are of opinion that the intestinal canal is divided into many parts, during the early periods of its evolution, and that these parts afterwards unite.

These opinions seem to be favoured in turns, some by the one and some by the other, of the various malformations.

More numerous and various malformations arise from an increase of the dimensions of the intestines than from the opposite state. Diverticula or appendices are frequent in the jejunum and ileum.

Monro* has divided these into two kinds—original malformations, and those formed consequent upon the protrusion of the intestines. Andral states that excrescences from the mucous membrane have been found in every part of the alimentary canal. An increase of thickness and density of the submucous tissue, giving rise to obstructions, &c., has been described by the same writer, and also by Houston, in the ileum, in his work before alluded to. Billard found in a child six days old, in a state of marasmus when born, a considerable thickening of the submucous cellular tissue at the end of the ileum and colon.

The comparative length of the alimentary canal, which is greatest in the mammalia, diminishes successively in birds, reptiles, and fishes, and, with certain modifications, is longer in graminivorous than in carnivorous animals.

It has been very much the practice to endeavour to find out something in the organization of the lower classes of animals analogous to the malformations in the human foetus, but that this train of inquiry has thrown any light upon the subject is very doubtful. The present case, however, is not one where such assistance could be well called in, as it appears to me to be rather dependent on a pathological change *in utero*, and a stoppage of growth, than owing to any other remote cause.

* Morbid Anatomy of the Stomach, 2nd ed., p. 93.