ON

CONGENITAL SACRAL TUMOUR;

ESPECIALLY WITH REFERENCE TO ITS
OPERATIVE TREATMENT.*

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REMARKS. The reader who wishes to obtain a comprehensive knowledge of the surgical literature of this rare disease, may consult the work of Dr. Braune, *Die Doppelbildungen und angeborenen Geschwülste der Kreuzbeingegend*, Leipzig: 1862. This author, to whom I make especial reference on account of the care and diligence with which he appears to have collected all the histories of cases which had been published up to that date, adopts a division of these sacral tumours which it is somewhat difficult to follow. Setting aside the cases of clearly parasitic origin, those, namely, in which foetal members are to be seen in the tumour (human tripods, etc.), he divides the congenital sacral and coccygeal tumours, as follows:

- i. Coccygeal tumours, in the proper sense.
- ii. Sacral hygromata.
- iii. Tail-like formations and lipomatous appendages.
- iv. Tumours in the adult, whose congenital nature is not clearly proved.

The definitions which he gives of the first two of these classes are as follows:

i. Coccygeal tumours he defines as "tumours of a pyriform or spherical shape, which hang down from the lower end of the vertebral column, displacing the anus forwards under the genitals, and bounded in front by the ischium and pubes, behind by the edge of the gluteal muscles. They are, for the most part, cystoid heteroplasties" (compound cystic tumours, Lotzbeck.) This class of tumours he subdivides into: A. Those in which connection with the spinal canal was proved. B. Those which were not in connection with the spinal canal, and were chiefly attached to the anterior surface of the sacrum or coccyx, these bones being usually displaced backwards. These growths, he suggests, may have originated in a body described by Luschka as "the coccygeal gland." c. Tumours of a similar nature to those under A and B, but whose relations to the spinal canal or to the gland of Luschka could not be proved.

ii. The sacral hygromata he defines thus: "Those forms of tumour, which correspond to Lotzbeck's 'purely cystic tumours', are distinguished from the former group of coccygeal tumours in this, that they are not of a malignant nature, and do not follow so regular a type in their form or attachment. They are formed by single or numerous cysts, with fibrous walls and epithelial lining, containing fluid, which is usually albuminous. They are usually attached to the posterior surface of the sacrum; but may occupy other positions in the coccygeal region." I confess that the distinction is to me a very obscure one; and the author proceeds to render it more puzzling still by adding, as an appendix to his "sacral hygromata", a class of cases in which the tumour proved to be an elongated spina bifida, whose communication with the canal was in some instances obstructed, which seems to me exactly the same kind of tumours as were arranged in the first class under the letter A.

In fact, the only difference which I am able to discover between the two classes is that, in a few of those in the first class the tumour proved to be cancerous, which does not seem to have been the case with any of those in the second; and that the cystic element predominated more in the second than in the first class. This latter character, however, seems accidental, and is a very weak point on which to base a classification. Yet, even if we hesitate to adopt Dr. Braune's divisions of these congenital cystic or cystoid tumours in the sacral and coccygeal region, his work remains as a most valuable collection of cases; and it is especially valuable with reference to the results of surgical treatment.

The cases referred to by this author, in which surgical treatment has been adopted, are as follows:

Extirpation. i. Proper Coccygeal Tumours. A. Connected with the Spinal Canal.

1. Athol Johnson, *Path. Soc. Trans.*, vol. viii, p. 16—Fatty tumour, successful.*
2. *Jahrb. f. Kinderheilkunde v. Mair*, Vienna 1859, band ii, p. 66; and *Wiener Med. Wochensch.*, 1858, No. 23—Fatty tumour, successful.
3. Middeldorpf (private letter)—Cystic swelling, partial excision, death from spinal meningitis.
4. Lotzbeck, *Die angeborenen Geschwülste d. hintern Kreuzbeingegend*, Munich 1858, p. 18—A fibroid tumour, with areolar spaces between the fibres; connected with the spinal membranes; partial extirpation; death from convulsions.

B. More or less solid Tumours referred to Degeneration of "Luschka's Gland."

None of these have been the subjects of surgical treatment.

c. Other Coccygeal Tumours.

- Snell, *Nassauische Jahrb.*, 1853, p. 244—Description imperfect; successful.
- Bartscher, *Monatsch. f. Geburtskde.*, 1861, bd. xvii, 2, p. 121—"Cystosarcoma"; successful.
- Gruber, *Hamb. Zeitschrift f. gesammte Medizin*, 1840, bd. xiii, p. 514—A tumour of a consistence between brain and fatty matter; containing also placenta-like structure, calcareous deposits, and cysts (not minutely examined); death.
- Günther, *Walther u. Ammon's Journ.*, new series, 1847, bd. vii, p. 563—A fibrous tumour containing nerve-fibres; successful.
- Schwarz, quoted by Veling, *Essai sur les Tumeurs enkystées de l'Extremité Inférieure du Tronc fœtal*, Strasbourg 1846, p. 13—Partial extirpation after repeated puncture; a cystic tumour with solid walls; † death.

ii. Sacral Hygromata.

Veling, *Op. cit.*—A large and several smaller transparent cysts; the large cyst was tapped before extirpation; successful.

Simpson, *Medical Times and Gazette*, July 2, 1859, p. 6—Partial extirpation; successful.

Braune, p. 69—A tumour consisting of two separate cysts, removed at different operations; successful.

Trowbridge, *Boston Medical and Surgical Journal*, 1829—This was a large cyst, connected with the spinal column, and several spinous processes (probably of the sacral vertebrae) were deficient; it was, there-

* This case is certainly classed incorrectly as a coccygeal tumour. I assisted Mr. Johnson at the operation. The tumour protruded from the spinal canal through a congenital cleft in the sacrum. The coccyx was normal (vide *Path. Soc. Trans.*, viii, p. 28) where the dissection of the parts is given, the child having died of another disease.

† Braune says that he has classed this tumour among the "coccygeal tumours", and not among the "sacral hygromata", on account of its solid nature. It is clear, therefore, that the distinction he wishes to draw rests upon the proportion between the cystic and solid elements of the tumour—a distinction, as I have said above, too weak to constitute a basis of classification in my opinion.

fore, regarded by the author as a spina bifida which had become detached; successful.

Schindler, Virchow's *Archiv*, vol. xiii, p. 188—The cyst in this case was thought to communicate with the spinal canal, on account of a deep funnel-like process passing towards the vertebral column. It was first punctured; then injected with iodine, but without result; next a ligature was applied; and finally, a fortnight afterwards, the cyst was cut away. The child recovered.

III. Lipomata, or Caudal Excrescences.

Langenbeck, three cases, *Deutsche Klinik* 1850, p. 23—Successful.

Canton, *Lancet*, October 27th, 1860—Successful.

Middeldorp—Removed with the galvano-caustic apparatus; Lotzbeck, *op. cit.*, p. 59; also, a note from the author; successful.

I omit the references to cases in which the congenital nature of the tumour was not proved. Three such cases were operated on with success.

I now proceed to give the references to cases treated in other manners.

I. A. Coccygeal Tumour connected with the Spinal Canal.

Puncture and Incision. Heineken, quoted by Himly, *Geschichte der Fetus in fetu*, p. 77; *Göttinger gelehrte Anzeigen*, 1809, No. 193—A cystic tumour, with solid bodies connected to it; in connection with the spinal canal, and with a cyst in the false pelvis; death from spinal meningitis.

I. C. Coccygeal Tumours in general.

Incision followed by Ligature. Pitha, Lotzbeck, *op. cit.*, p. 55—The tumour seems to have been of a lipomatous (or fibro-fatty) nature, with cysts; it was laid open, a turbid fluid let out, and a ligature passed through its pedicle; death.

Incision followed by Ligature. Lotzbeck, *op. cit.*, p. 49—A tumour of malignant nature, reaching into the pelvis from the coccygeal region, so that it could not be removed; ligature and removal of the part beyond; death next day. The tumour was found to extend up the inner side of the pelvis to the bifurcation of the aorta; and there were deposits also in the lungs, liver, and mesenteric glands.

Ligature. Mombert in Hohl's *Geburten missgestalteter Kinder*, Halle 1850, p. 296—Aeolar cancer; death (account somewhat imperfect).

Puncture. Wertheim, *Monatssch. f. Geburtskde.*, February 1857, bd. ix, p. 127—This was a cystic tumour; and the puncture evacuated a thick, dark, bloody fluid; the child died eight days afterwards. The vertebral column was malformed, and the sacrum and coccyx deficient; but the tumour seems not to have been in communication with the vertebral canal. Description imperfect.

Puncture. Baum (private information)—A malignant tumour growing from the inner surface of the sacrum; puncture gave rise to a considerable bleeding, repressed by the twisted suture; this was followed by foul supuration, and death.

Puncture. Baum (private information)—A cystic tumour, which was twice punctured, evacuating an aluminous fluid; the child died after the second puncture.

II. Sacral Hygromata.

Ligature. Löffler and Verdier, in Veling, *op. cit.*, pp. 8, 16—Both successful.

Puncture. Keller and Gläser—Three cases related in Virchow's *Archiv*, vol. xiii, p. 187, in which death followed the puncture of sacral cysts.

Puncture and Injection of Iodine. Strassman, *Monatsschr. f. Geburtskde.*, 1861. The cyst was large enough to contain a pint. The injection was followed

by very severe symptoms, but seems to have been permanently successful.

Incision. Meinel, in Lotzbeck, *op. cit.*, p. 4—There was a hernia in close apposition to the cyst; death, sixteen days after incision, with acute febrile symptoms.

Incision. Krieger (private information)—In this case, an incision was made into what was thought to be an independent cyst, but which turned out to be connected with the spinal canal; death from spinal meningitis.

The above statement shows the results of surgical treatment. In seven of the published cases, no surgical treatment was adopted. In all the other cases referred to by Dr. Braune, the child was either still-born or died in very early infancy, so that there was no opportunity for treatment.

The total, then, of this collection of cases, including all forms of sacral and coccygeal tumour known to be congenital, but not showing satisfactory traces of fetal inclusion, gives us the following as the results of surgical treatment.

Extirpation was carried out in nineteen cases, although in some of them it seems not to have been complete.

Four of these tumours communicated with the spinal canal. In the two cases where the surgeon succeeded in removing the whole tumour, the operation succeeded; the tumour being in both cases fatty. In the two other cases, the tumour (more or less cystic) was only partially removed, and death followed.

In five cases, where the tumour was pendulous and more or less solid (caudal lipomata), extirpation was complete and successful in all.

This leaves ten cases of tumours, chiefly cystic, unconnected with the spinal canal, and attached to the sacrum or coccyx. Extirpation was only partial in two cases; in one of which the result was fatal, in the other doubtful. In the other eight cases, the removal seems to have been complete, and all the patients recovered except one.

To these cases, I may add one recently operated on by Mr. Jollye, of Donington, near Spalding. The tumour is described in the *Lancet* for Aug. 4th, 1866. It was removed by the *écraseur* and knife, and turned out to be chiefly fatty and attached to the coccyx. The case did well.

The other methods of treatment, less radical, and in appearance less formidable, show, nevertheless, a result in striking contrast to the great success of removal. Under the head of simple "incision," or "puncture," are contained the records of four cases of "coccygeal tumour," and five of "sacral hygromata." All were fatal. But in another case (Strassman's) of sacral hygroma, puncture followed by iodine injection was effectual in curing the disease. The ligature was used in three cases of "coccygeal tumour" and in two of sacral hygroma; the two latter cases were cured, the three former were all fatal; but it is fair to note that in two of them it seems as if the complete extirpation of the tumour was contemplated, but was found impossible, owing to its extensive connections, the disease being of a malignant nature. Here the ligature seems to have been employed only as a last resource, probably to save the patient from bleeding to death.

The inference from this is inevitable, that in all those cases of congenital sacral or coccygeal tumour, in which it appears desirable to interfere at all, the complete removal of the tumour, either by the knife or the ligature, should be the aim of the surgeon, and that it is in reality far more safe to dissect out the tumour than to pass a ligature beneath it. In a case where the tumour spreads so far into

the pelvis that it cannot be followed with the knife, the ligature perhaps must be used, but it can hardly succeed in curing or even checking the progress of the disease. Punctures, (except for purposes of exploration) incisions, and setons, ought to be absolutely rejected, nor would I advocate the employment of iodine injection in any case that seemed at all suitable for removal.

A point of very great importance in deciding whether such a tumour is within the reach of the knife, is to make out whether or no it communicates with the vertebral canal. If it does so, although the cases above referred to show that its successful removal is not absolutely impossible, yet no prudent surgeon would venture to anticipate success, nor to counsel the operation except as a *pis aller*. Unfortunately we do not seem to be in possession of any means of accurately diagnosing the spinal origin of these tumours. In a case, related in Mr. Stanley's well-known paper on this subject, in the 24th vol. of *Mé.-Chir. Trans.*, and which was under his own care, he says (p. 233) "when the child cried loudly, the tumour became tense: this showed its communication with the interior of the body, and it was thought by some to indicate the probability of its communication with the spinal canal;" but this was proved after death to be an error. In fact, as my case shows, such tension proves nothing, being due to the mere contact of the rectum with the tumour. The presence of sugar, or some substance having analogous reactions, in the fluid would perhaps be a better reason for suspecting spinal origin for the tumour, though its absence would be no valid ground for asserting the reverse. On the whole, it seems that in a doubtful case we must ground our decision on the general symptoms; the danger of spinal communication being one of the numerous considerations which have to be taken into account. In many of these tumours, however, as in my patient, the communication with the pelvis can be plainly traced through the great sciatic foramen, and the swelling is confined to one buttock, so that in them no question of a spinal origin can occur. In such cases, as far as we can judge by published records, the attachment of the tumour inside the pelvis is seldom so high as to be beyond the operator's reach; nor, if a portion of the pedicle of the tumour has to be left in the pelvis, does it seem at all likely to endanger the success of the operation. The impulse, which was so striking in my patient, seems not to be a common symptom; at least, beyond the above quoted mention of a similar phenomenon in Mr. Stanley's case, I do not remember to have found it noticed. My case shows that it need not deter a surgeon from operating, though it points to a very intimate connection between the tumour and the rectum.

I think then, that we may conclude from the evidence furnished by the cases cited by Braune, as well as from the history of the rather formidable tumour which my patient presented, that the majority at any rate of these congenital tumours, which do not exhibit traces of foetal structure, are within reach of operative interference; that their attachment in the pelvis is not usually so high as to be inaccessible, nor their connexion to the rectum so intimate as not to admit of separation by careful dissection. From this statement the cancerous tumours are to be excepted. Admitting this, I think we shall also agree that complete removal with the knife, though a severe, and sometimes a very difficult, operation, is really far less dangerous than any other operative procedure.

I will now add something, though it must necessarily be still more imperfect than the preceding

part of this paper, on those congenital tumours which do present foetal structures. In some instances this is unequivocal, as in the case above quoted from Senftleben, where the tumour had a hand attached to it. The next stage to this is where a whole limb, sometimes more or less cleft, so as to show the rudiments of a double formation, depends from the sacral region; the unnatural limb is usually turned in the opposite direction to that of the body to which it is attached. These human tripods, as they are called, form a sort of transition stage to the double monsters of which the Hungarian sisters, (joined in the sacral region) and the Siamese twins (joined laterally) are the best known examples, but a few other instances of which are also on record. Braune gives seven cases of twins joined in the sacral region. There are also several published instances in which more than one extremity has depended from the sacral region, or where the accessory limb or portion of the body has projected from some other part. I will not here detain the reader by considering the treatment of cases so exceedingly rare as those of attached foetus; but I wish to direct attention to the fact that supernumerary limbs have been removed with success, and that in such tumours as the one referred to above, under Sir Benjamin Brodie's care, the mere fact of the tumour being presumably the result of foetal inclusion, does not preclude successful operation. On this subject, Dr. Braune gives the following as the result of his careful collection of all the cases which he could find in his reading.*

After laying down the natural division of these foetal tumours into "supernumerary limbs" and "parasite-tumours" (*geschwulstförmigen Parasiten*), and calling attention to the insufficiency of minor operations, he proceeds (p. 107): "Either amputation, or extirpation, whether with the knife, ligature, or *écraseur*, must always be the operation undertaken. In the case of supernumerary limbs, flaps are formed, and the proceeding more resembles an amputation, while in the parasite-tumours it is more of the character of extirpation. In the latter case, where the tumour is pedunculated, pendulous, or with a bony attachment and very vascular, the *écraseur* may be used with advantage, or Middeldorp's galvanico-caustic, which more than replaces the old ligature and annular application of the cautery.

"Incision into the fluctuating swelling was practised twice, and was followed in both cases by death. In one, injury of the spinal membranes was the cause, the tumour being of the nature of spina bifida.

"The bony stalk was sawn through, and its upper part left in the pelvis in three cases, and in all with success.

"Extirpation was practised twelve times, eleven times with success†, in the other with a fatal result, spina bifida being also present.

"The ligature was used three times, twice successfully, once it had to be taken off again on account of convulsions."

The three amputations referred to above, were

* None of these collections of cases are ever, I suppose, quite complete. Thus Dr. Braune, though he has searched the Pathological Society's *Transactions*, and found there Mr. Athol Johnson's case, seems to have overlooked Sir B. Brodie's, related by Mr. Charles Hawkins in the same *Transactions*.

† This seems to be a mistake. Dr. Braune has omitted Oslander's case, and has reckoned two out of three cases in which the stalk was sawn through (*viz.*, Geller's and Schuh's) in both classes. Whether the two latter cases should be classed as supernumerary limbs or parasitic tumours, seems doubtful. Their appearance seems to have been rather that of the latter; but the operation for their removal more resembled those for the former. At any rate, it only induces confusion to reckon them among both. I therefore have put the number at eleven—ten successful and one fatal.

—1. By Pitha (*Prag. Vierteljahrssch.*, 1850, vol. xxv, p. 74), a most interesting case, in which a young woman, aged 20 years, submitted to the removal of a supernumerary limb, presenting the rudiments of two legs and feet, and hanging down as low as the popliteal space. 2. By Geller. (*Virchow's Arch.*, vi, 520) of a tumour terminating in a finger, and of very large size, which was removed at the age of 8 weeks. 3. By Schuh (*Wien. Med. Wochens.*, 1855, No. 51) of a large tumour containing portions of intestine, nerves, and numerous pieces of bone, and attached to the sacrum by a bony pedicle.

To these instances of amputation of supernumerary limbs, I may add a very interesting case reported by Dr. Corradi, in the 195th volume of the *Annali Universali di Medicina*, p. 423, 1866, in which he amputated with success the supernumerary limb of a female infant, at the age of one month. The limb in this case reached nearly to the ground, and had a bony stalk passing up into the pelvis, where it terminated by a free end, so that it was removable with the knife. A more full account of this remarkable case will be found in the forthcoming *Biennial Retrospect of Surgery*, published by the New Sydenham Society.

The successful cases of extirpation of a sacral tumour with fetal remains belong to the following surgeons; Jacob of Dublin, Otto, Middeldorpf, T. Blizard, Schwartz, Langier, Porta, Lotzbeck, Emmerich, and Oslander. For the references, I must refer to Dr. Braune's work.

To these instances of successful extirpation, Senftleben's case, above quoted, is to be added, making the number of successful operations eleven, against one failure.

The total result of this series of operations would be, that we have two instances of successful amputation of well marked and large sized supernumerary limbs, two of amputation of tumours of fetal character, and attached to the pelvis by a stalk, and twelve of extirpation of tumours of a fetal nature, apparently not so attached, and that in all the cases, except one of the last named, the operation succeeded; while in the fatal case the disease was complicated with spina bifida.

Nor ought we to forget that in Mr. Stanley's case, above referred to, Mr. Thomas Blizard, who saw the patient "was impressed with the idea of the removal of the tumour being practicable and safe, from the recollection of a similar case upon which he had operated with success," and, after the child's death from measles, the correctness of this opinion was verified by *post mortem* examination. At least Mr. Stanley says "the information derived from the examination of the extent and connections of the tumour, appeared to confirm the opinion that its removal might have been safely undertaken in an early stage." Mr. Stanley seems, however, to imply that at the time of death the tumour had extended too far into the pelvis to be extricated. If this is so, it furnishes an additional motive for not temporising with such growths.

In Sir B. Brodie's case, also, the tumour appears to have been really within the reach of operation. The following is Mr. Charles Hawkins's account of its connexions:—"It was attached above to the inner surface of the lower part of the sacrum, projecting considerably below the apex of the os coccygis, and the anus; it pressed on the rectum anteriorly, while it caused a distinct displacement of the sacrum, which projected preternaturally behind." Communications had formed in this case between the rectum and some of the cysts, but the history shows that this was a late phenomenon in the course of the disease, and was due to the inflammation excited by an incision which had been made into the tumour.

There is nothing in this description inconsistent with the idea that the tumour might have been removed in early life, for an attachment to the lower part of the anterior surface of the sacrum is not, under ordinary circumstances, very inaccessible, and when the sacrum is displaced backwards, the space to act in is of course proportionally enlarged.

I have purposely confined myself to the question of the operative treatment of this rare and curious affection. To treat adequately of the diagnosis, and still more of the pathological origin of its various forms, would have led me to too great length. I hope, however, that I have succeeded in showing that the prospects of operative interference are in many instances at any rate very good, and that, although we may fairly enough concede that there are cases in which a judicious surgeon would abstain, and where, in fact, surgeons so judicious as Sir B. Brodie and Mr. Stanley actually did abstain, from an attempt at removing a growth of this kind, there are very many others, and probably by far the majority, where such an attempt will succeed in permanently delivering the patient from a very disgusting and disabling malformation.

CASE OF METASTATIC ABSCESES OF THE LIVER.

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IDIOPATHIC inflammation of the substance of the liver, proceeding to suppuration, is comparatively uncommon in this country, hepatic abscess being much more frequently consecutive, secondary, or metastatic; the purulent collection being the result of phlebitis or pyæmia. The term metastasis is employed upon the supposition that puriform matter, or some extrinsic virus, is transferred from a distant part into the portal circulation, which is either deposited, or reproduces a change in the minute capillaries of the secreting structure, similar to that in the original seat.

Of this latter variety, the following typical example occurred in the Newcastle Fever Hospital.

J. C., a labouring man, aged 25, was admitted under my care on October 12th, 1866. He complained of pain in the right hypochondrium, and great weakness; he stated that he had been ill for three weeks, but was very torpid and unable to give any clear account of his previous condition. The skin was hot, jaundiced, and free from any eruption; the tunica conjunctiva deep yellow; the tongue was thickly covered with white fur, and dry in the centre; the bowels were constipated, and the urine deeply tinged with bile. The pulse was feeble, 104. The pain in the right hypochondrium was augmented by pressure and a deep inspiration; the liver-dulness was considerably increased, extending upwards within half an inch of the nipple, and downwards, in the same line, three inches beyond the chest wall.

The case was viewed as one of chronic inflammation of the substance of the liver, and but for the patient's extreme weakness, he would have been removed to the Infirmary. Saline diaphoretics and gentle mercurial aperients were given internally, and a blister was applied over the region of the liver.

On October 15th, the patient was suddenly seized with a severe rigor, followed by profuse perspiration;