

SPINA BIFIDA.*

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The object of this paper is to plead for a more extended use of operative means in the treatment of spina bifida, to add another case in which the patient was successfully operated on to those already on record, and to elucidate some points in the operative technic of this condition, simplifying the operation as well as rendering it more effective.

A child born with one or more vertebræ defective, and with the contents of the spinal canal protruding through that defect, is certainly a sorrowful object to thrust on a community. Left to its fate, such a child will either succumb early from rupture of the protrusion, or from an ulceration of the tumor and consequent septic spinal meningitis; or, if it survives, it is condemned to a miserable existence with paralyzed rectal and vesical sphincters and various trophic disturbances equally distressing.

The case I report is of the latter type, and the results obtained from the treatment instituted were so satisfac-

way and breaking open again. When she was 10 years old she had a severe attack of cystitis, from which she recovered. At 15 she suffered from a milder attack of the same trouble, and has had pus in the urine most of the time since, but not sufficient to cause any subjective symptoms. Since she was 1½ years old a defect was noticed in her left foot, and when she was 14 years of age her right foot commenced to show signs of progressive deformity.

Examination.—The patient was an unusually bright and intelligent girl and well developed. An offensive urinary odor emanated from her body. Abdominal and thoracic findings were negative. In the lumbar region a mass about the size of a medium-sized cocoanut was present, about 10 cm. in diameter. It had a broad base, was covered by normal skin, and had no erosions or discolorations. Over each of the nates was an ulcerated surface about the size of the palm of the hand, the outer border of each being surrounded by scar tissue (Fig. 1).

The left foot had a complete pes planus, the arch being completely sprung; the right foot was shorter and broader than the left and had an unusually high arch. The entire leg appeared somewhat atrophied compared to the left.

Reflexes: Both knee jerks were absent; no ankle clonus was present and there was no Babinski sign.

Tactile and pain sense as well as temperature sense were entirely absent over the area below the tumor growth, as well

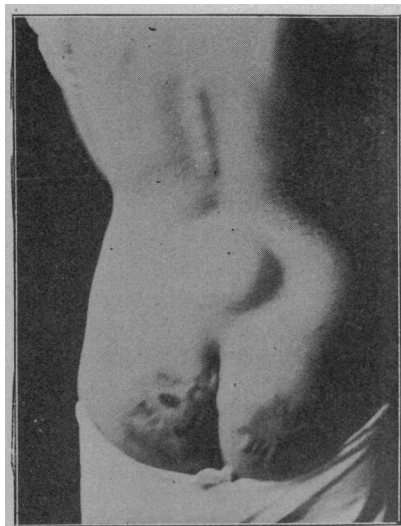


Fig. 1. Patient before operation.

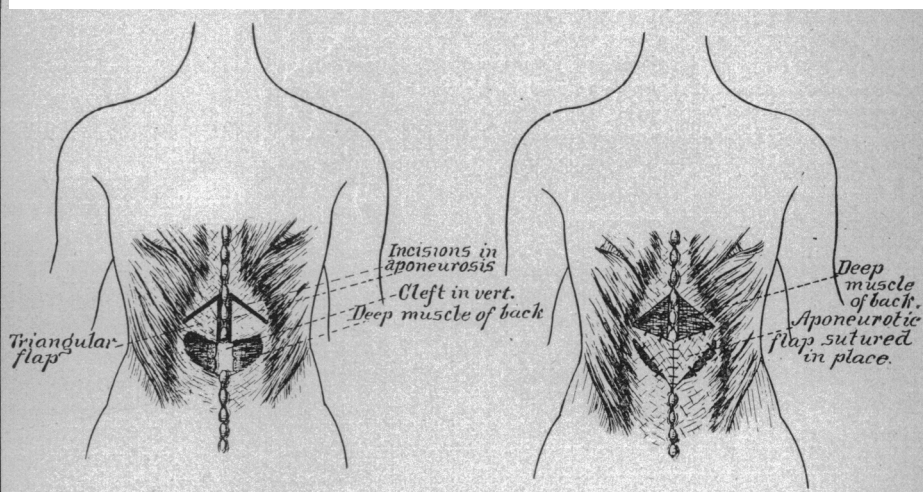


Fig. 2. Details of the method of operation.

tory that its presentation before the society was deemed justifiable.

Patient.—B. A., aged 16, a Russian Pole, one and one-half years in this country, referred to me by Dr. M. M. Spitz, presented herself for treatment for a congenital swelling on her back and inability to control urination or defecation.

History.—There was no trace of nervous or mental derangement or of any congenital malformation on either parent's side, nor any evidence of syphilis. Immediately after birth a mass the size of a hen's egg was noticed in the lumbar region of the patient's spine. It increased in size in proportion to her growth. The patient was normal in all other respects. She was a bright, intelligent child and walked when she was 1 year old. She had at no time control of either rectum or bladder, and the urine dribbling from her continuously gave her an offensive odor, although her personal habits were cleanly. At times she had retained feces, her bowels remaining constipated for seven or eight days, after which she would have an involuntary movement. At all other times she had incontinence. When she was 7 years old trophic disturbances developed over both buttocks, manifested by two large ulcerated areas, which have remained open more or less, healing part

as over both buttocks, several inches beyond the ulcerated surfaces. Pain sense in the lower extremities appeared to be hypersensitive.

Urine: Appearance cloudy; sp. gr., 1011; reaction, alkaline; albumin and pus were present and large numbers of triple phosphates.

Treatment.—The patient had been under the care of various surgeons, both abroad and in this country. She also stayed several months in one of the large hospitals in Europe, and although ever willing to submit to any form of treatment offering any possibility of relief, operation was everywhere denied her. It appeared to me to be the only possible means of relief, and further, that operative interference in her case offered a fairly good prognosis, both as to immediate and remote results. The part of the cord affected in her case was that below the eleventh dorsal vertebra, the cauda zones, the axons of which are possessed of neurilemma and are capable of regeneration, if placed in a condition to do so. So, even if a degeneration of that portion of the cord had already existed, hopes might still be entertained for regeneration with improvement in the girl's condition in time.

Operation.—The girl was admitted to the hospital and was operated on the following day. The cleft was in the arches of the first and second lumbar vertebræ, the laminæ were wanting. The tumor proved to be a mixed lipoma and myelomen-

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ingocele. The meningeal sac was intimately adherent by fibrous bands to the lipomatous mass; and the terminal end of the cord and a network of nerve trunks were firmly adherent to the dorsal portion of the sac. These were replaced within the spinal column, the sac removed, as was also the mass of fat, the cleft in the bone covered and the skin over it united.

Postoperative History.—For the first six days after operation the patient had an even rise of temperature, ranging between 99.8 and 100.2 F., and kept the bed clothes constantly saturated with urine due to the continuous dribbling from the bladder. On the third day she had an involuntary movement of the bowels after previous administration of a cathartic. This happened several times afterward under similar conditions. On the seventh day she was able to retain urine for two hours at a time, and to control its passage, and she declared it was the first time in her life that she experienced the sensation of desire to urinate and control of the same. Her rectal trouble also began to improve after that time.

Unfortunately, three days later she developed an acute cystitis which delayed her convalescence somewhat. It is now a little over two months after the operation, too short a time to expect any regeneration of degenerated nerve tissue to have taken place, yet sufficient improvement is already manifest in her condition to justify fully the operative interference. This is probably due to the removal of the pressure on the cord.

She is now able to retain her urine from three to four hours at a time; has the sensation of the desire to urinate and has more than a moderate control over the vesical sphincter; only occasionally does desire to urinate and the relaxation of the vesical sphincter come on so precipitately that the urine is voided before she can betake herself to a suitable place. Her rectum fared even better, and she now has a daily evacuation of the bowels under full control and without any artificial aid; only twice did an involuntary evacuation take place during the night while asleep. The ulceration over the buttocks healed without any direct treatment a few days after the operation.

TECHNIC.

Regarding the operative technic of this condition, certain principles must be observed and special care exercised in the application of asepsis and in the emptying of the tumor of its cerebrospinal fluid. Directions for guidance in these particulars may be obtained from any text-book on the subject. It is in regard to the method of closing the defect in the bone that surgeons are still at variance. Merely uniting the skin over the defect by suture as practiced by some does not appear a rational procedure. The skin over the tumor is invariably very thin and even ulcerated and can hardly be deemed a sufficient protection. Flaps of bone and periosteum from the adjacent vertebrae and the crest of the ilium have been utilized by various surgeons with varied success. This procedure has since been abandoned as impracticable. It materially complicates the operation, inflicts considerable traumatism to tissues and thereby enhances a predisposition to infection that, above all things, must be avoided.

The muscle-flap method of Bayer is the one now commonly practiced and advocated. This is executed in the following manner: A longitudinal incision through the entire thickness of the muscle is made on either side of the spine at some distance below the cleft; the flaps are dissected off and reversed over the cleft so that the dorsal surface lies anteriorly. This necessitates cutting the muscle at right angles to the direction of its fibers, which is a disadvantage, and when a large defect is to be covered a considerable depression is left on either side of the back in consequence of the removal of so much muscle tissue. I improved on this method by utilizing the aponeurosis of the latissimus dorsi (Fig. 2). This muscle arises in part by a strong aponeurosis from the spinous processes of the six inferior dorsal, the lumbar and the

sacral vertebrae. A longitudinal incision of sufficient length to cover the defect was made over one side of the spinous processes above the cleft, thus freeing a section of the aponeurosis of the latissimus dorsi at its origin on that side. From the upper point of the longitudinal incision another longer oblique downward incision was made. As the aponeurosis is missing directly at the cleft we have here a free border extending horizontally from the lower point of the longitudinal incision close to the lower point of the oblique incision. Thus we have a triangular flap of aponeurosis free at all points except the apex. Using this apex as a center, the entire flap is rotated downward until it covers the defect in the vertebrae on that side. The same procedure is followed on the other side and the two adjacent borders of the flaps are united with chromicized catgut sutures directly over the defect (Fig. 2).

This method is very simple and easy of application, requires but a few minutes' time in its performance, does not seriously interfere with the anatomic relations of tissues, and, lastly, affords for the vertebral defect a covering that ranks next to bone in strength and consistency.

CONCLUSION.

From a study of this case the following facts may be noted:

1. Previous to the operation the girl was growing progressively worse.
2. Improvement in her condition set in within a few days after the operation and has continued to the present.
3. At present, a little over two months since the operation, she is almost entirely well.

The deductions to be made are:

1. Continuous pressure on the terminal portion of the spinal cord will entirely suspend the function of such portion, giving rise to a serious train of symptoms.
2. Such pressure, though extending over a period of years (16 years in this case), need not necessarily impair the nerve tissue of the cord beyond recovery.
3. A speedy restoration of function and alleviation of symptoms may follow the removal of the pressure.

Peerless Building.

CONJUGATE DEVIATION OF THE EYES AND HEAD AND DISORDERS OF THE ASSOCIATED OCULAR MOVEMENTS

IN TUMORS AND OTHER LESIONS OF THE CEREBRUM.

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PHILADELPHIA.

(Concluded from page 1009.)

AUTHOR'S CASES OF CONJUGATE DEVIATION OF THE EYE AND HEAD.

CASE 1.—McL., a woman, aged 60, was admitted to the Philadelphia General Hospital, March 13, 1905, to the service of Dr. Spiller from the out-wards, with a history of a stroke of one day's duration, in the left side.

Examination.—The tendon reflexes of the upper limbs seemed to be absent. In the lower limbs the patellar and Achilles jerks were increased, more on the left side, and the Babinski sign was present on this side. Sensation for touch and pin prick was normal. The patient was not wholly unconscious and could respond to questions and would obey commands. A sweetish, urinous odor which suggested a uremic condition was present. The pupils were equal and larger than normal, and the response