

THE
GLASGOW MEDICAL JOURNAL.

No. VI. JUNE, 1893.

ORIGINAL ARTICLES.

A CASE OF MICROCEPHALUS IN WHICH THE OPERATION OF LINEAR CRANIOTOMY (CRANIECTOMY) WAS PERFORMED.*

By JOHN BARLOW, M.D., F.R.C.S.,

Surgeon, Glasgow Royal Infirmary, and Examiner in Surgery in Glasgow University.

THE case which I bring before you to-night is a girl, M. T., aged 2 years and 11 months, who first came under my notice in the Dispensary of the Glasgow Royal Infirmary nine months ago. Her father, an intelligent man, sought advice because the child could not walk or talk, and did not recognise any of the members of the household.

Her condition was noted on three occasions at intervals of a month, and as no improvement occurred, she was admitted into the Infirmary on the 23rd of November.

The histories of the father, aged 29, the mother, aged 26, a sister, aged 5 years, and a brother, aged 7 months, present nothing of interest. There is no history of syphilis. I was told that the mother never noticed the presence of the anterior fontanelle after birth in the girl. The mother thought that something must be wrong with the head of the patient's baby

* Read at a meeting of the Glasgow Medico-Chirurgical Society, 21st April, 1893.

brother because *it* had the open fontanelle. It was noticed that during the first year after birth the child was in a sleepy or drowsy condition.

When the girl was fifteen months old she burnt her fingers three times in the one day by placing her hand upon a hot teapot, but she did not cry much.

She has never shown any interest in, or recognised those about her. The father, who is evidently much attached to the girl, is quite sure that she does not recognise him. The parents naturally contrast the amount of intelligence manifested by the patient with that of her baby brother, who is two years younger, and who knows them quite well, and whose eyes follow a train and animals at rest or in motion.

She always passed her fæces without giving notice, and during the last three months she has on several occasions eaten fæces. When sleeping she cries out sometimes, and when awake she is often sitting up and the body swaying backwards and forwards. She has never had a "proper cry," but when she is restless the parents offer food, which is always taken. No preference for any particular kind of food has been noticed.

On looking at the child, attention is arrested by the small head and relatively large face. The body generally is fat, but flabby. Measurements of the head gave the following results:—

Circumference at 1 inch above orbits in front, and occipital protuberance behind,	17 inches.
Antero-posterior diameter,	6 "
Diameter between parietal eminences,	4½ "
Diameter of skull at points 1 inch behind ex- ternal angular process of frontal bones,	3¾ "

Similar measurements were made of the head of a delicate girl of the same age who was in hospital, and in all there was an increase. There was a difference of 1 inch in what I may call the bi-frontal diameter:—

Circumference,	18¾ inches.
Antero-posterior diameter,	6½ "
Bi-parietal,	5 "
Bi-frontal,	4¾ "

The child could not walk, and could not stand erect without support. All the special sensations were blunted, and this was especially marked in the cases of sight and hearing.

The reflexes—patellar, plantar, and pupillary—were appar-

ently normal. The skin of the limbs, and especially of the legs, was cold relatively to that of the uncovered head, and was of a dull red colour.

The girl was watched in hospital for four weeks, and during this time confirmation was obtained of the points to which I have referred.

On 21st December the operation of linear craniotomy was performed, with the assistance of Dr. Pringle. Chloroform having been administered, I made a curved incision 6 inches in length—the highest point of the convexity being near the median line—through the scalp upon the left side of the head. This incision extended to the pericranium. The flap thus marked out was raised from the skull. Two small arteries having been secured, a half-inch disc of bone was removed by means of the trephine at a point $1\frac{1}{4}$ inch from the middle line, corresponding to the centre of the skin incision (about midway between anterior and posterior borders of the parietal bone). Into the hole thus made I introduced Keen's bone-cutting forceps, and by them I removed a strip of bone a third of an inch in width, and extending from the trephine opening anteriorly and posteriorly for fully 2 inches, the portion removed corresponding to the skull from a little in front of the coronal suture to a point 1 inch above and 1 inch to the left of the external occipital protuberance. The pericranium was removed, and sub-dural space was not opened. The flap of the scalp was then put in position, and retained by a few silkworm gut sutures, and the wound dressed in the ordinary way. The operation occupied thirty-five minutes.

The after history is very brief. The wound was dressed upon the 27th, and was found united by first intention. The highest temperature registered was 99.2° F., and there was little or no shock. On the 2nd January she was removed to her home at Coatbridge, arrangements being made for her return in three weeks.

The only change noticed since the operation was the increase in the temperature of the legs, and, on one occasion, the exercise of choice by the girl in the matter of food—she pushed away a cup of milk, but seized and ate a biscuit.

On the 18th January I heard that the girl was keeping well, and that some improvement could be noticed in her mental condition, but she could not be brought to hospital, as her sister had measles, and she herself was sickening. On the 6th February her father wrote me that she was better of the measles, but was very weak, and took almost no food. He says, "I am very sorry she has come home to get this

backset, for I think she was getting on well before she took the measles.”

On the 7th February I went out to Coatbridge, and found the girl in the languid condition common after measles, and heard that during the previous night she had got out of her crib, and had aroused the father by going to his bed and putting her arms around him.

On the 30th March I heard that the girl had recovered from her illness, and arrangements were made for her return to hospital, so that her condition could be noted.

Present Condition (four months after operation).—In certain respects there is evident improvement. She can now walk without support, but with some uncertainty. The sensation of hearing is more acute, and she takes more notice of her surroundings. She cannot talk, but she can indicate by sound that she wants food. It is less difficult to prevent soiling of bed linen by her excreta. She recognises certain people, and will sometimes hold out her hand to me when I go near her bed. She still occasionally, when sitting in bed, sways the body backwards and forwards, but these rhythmic movements are not observed so frequently. She is quieter, and much more easily managed.

The bi-frontal diameter is now $4\frac{1}{8}$ inches instead of $3\frac{3}{4}$ —an increase of $\frac{3}{8}$ ths of an inch.

It is not my intention to deal to-night with the question of the relationship of the defective development of the brain to the early obliteration of fontanelles and of the sutures. There are those who, like Broca, regard the arrested developments and growth of the brain as the primary lesion, and the changes in the cranial bones as secondary; and others, as Virchow and Russell Reynolds, are of opinion that, owing to some defective nutrition, there is a premature obliteration of the cranial sutures, and, as a result of this, interference with the growth of the brain.

If the former be correct, such an operation as I have described would be justifiable only to relieve pressure symptoms, such as perhaps the rhythmic involuntary movements of body or a portion of the body. If the latter—considering the life history of microcephalics, even when living under special conditions, as in institutions, where we have living beings whom it is necessary to feed and clothe, who cannot speak, and who are simply restless or unquiet if their appetites are not satisfied, and who thus live on unchanged—the operation of linear craniotomy might be performed with the object of lessening the pressure on the brain, giving the brain, as has

been said, "elbow room," and allowing of its growth and development.

Up to the present time the operation—or some operation by which portions of the cranial bones have been removed or divided—has been performed 38 times, with 4 deaths. In two, death occurred within three hours after the operation, probably from shock; and in one, death occurred on the third day after operation with hyperpyrexia. It is yet too soon to speak positively as to the results of the operation in those who recovered. By the operation there is lessened one obstacle to brain development, and education, systematic and thorough, is necessary to bring about the slow development of mental power.

In the case which I now show you, no obvious increase, except in the bi-frontal diameter, has occurred in the diameters of the skull. Such increase could not occur from removal of a strip from one side. It is my intention, however, at an early date, to remove a strip from the right side of the skull, and to connect the two furrows by removing a strip extending across the middle line from one to the other. There will then be a means of expansion laterally and from before backwards. It was my intention to do this second operation at the end of last January, but the illness from measles has caused delay. I hope to have an opportunity of showing you the girl at some future meeting.

[6th May, 1893.—The second operation was performed on 25th April, the wound was dressed five days later and was completely healed, and the child was sent home to-day.]

TWO CASES OF OPTIC NEURITIS OF INTRACRANIAL ORIGIN.*

By T. SPENCE MEIGHAN, M.D.,

Surgeon, Glasgow Eye Infirmary; Lecturer on Ophthalmic Surgery,
Anderson's College Medical School.

THESE cases illustrate the fact that optic neuritis arising from intracranial disease may run not only its early, but its entire course without obvious affection of vision. This fact, important both as regards diagnosis and treatment, was sufficiently emphasised in the discussion ten years ago on the subject

* Shown at a meeting of the Glasgow Pathological and Clinical Society, 13th February, 1893.