The loops can be held by an assistant and used to steady the head. If the strip of bandage in the occipital region is pulled down, the rubber bands are brought under the occipital protuberance and effectively control hemorrhage from the scalp in operations on the cerebellum.

This method enables one to perform the surgical operations about the scalp without the loss of any arterial blood and with the escape of but a trifling amount of venous blood, and as far as I know allows better control of hemorrhage than any of the more complicated methods now in use.

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DECOMPRESSION OPERATIONS FOR FRACTURES OF THE BASE OF THE SKULL*

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Fracture of the base of the skull has boasted of a mortality of 64 per cent., and only during the period of the past five years has this high fatality shown any decrease. The treatment up to 1906 was a tentative one, marked by such erratic measures as drugs, lumbar puncture, venesection and expectant measures, and only since the experimental researches of Leonard Hill, Cushing and Krause have we known the rationale of decompression in such lesions.

The understanding from these experiments of how blood at the base produces both a local and general increase of intracranial pressure and how this pressure causes death through anemia of the vital centers in the medulla, will readily explain the rationale of decompression operations for fracture of the base.

During a meeting of southern railway surgeons at Birmingham, in 1906, I took the stand that exploratory decompression for basal fracture was the only correct treatment, and before the same association, at Charlotte this year, in a paper on skull fractures I spoke of the basal type as follows:

Depending on the amount of extravasation present, we have more or less compression of the vital centers in the medulla, and when symptoms of this are present, operation is absolutely indicated. Given a case of suspected basal fracture with high blood-pressure, slow or very rapid heart, disturbed respiration of the Cheyne-Stokes type, and our procedure would at once be a subtemporal decompression. The brain should be elevated gently with a blunt spatula, and as much of the blood as possible be removed. If none is found, opening the opposite side is absolutely necessary. It is impossible to ligate bleeding points in this location, hence if clotting has not occurred, we must carry down to the bleeding area small, narrow strips of plain gauze, but if the hemorrhage has ceased, it is only necessary to prevent future compression of the medulla by draining with small rolls of rubber dam. Many a fatal case which is treated expectantly would be saved if this procedure were carried out.

Since this mode of treatment for basal fracture is comparatively a new procedure and only a small number of cases have been recorded, I submit the following case report:

Patient.—A. T., a sailor, while at sea was struck on the vault of his head by a falling yard-arm. Unconsciousness intervened immediately and three days later, when the vessel made port, he was brought to St. Vincent's Hospital under my care.

* Read before the Seaboard Medical Society, Virginia-Carolina, December, 1911.

Physical Examination.—Some ecchymosis around the mastoid process of the left side was revealed, but no evidence of injury on the vault at the point of the blow. There was complete paralysis of the lower right face, the right half of the tongue, the right arm and right leg. The patient was breathing stertorously; the pulse-rate was 44; there was a pronounced increase of blood-pressure; a moderate dilatation equally of both pupils and profound unconsciousness. With these symptoms, especially the facial and tongue paralysis, a diagnosis of basal fracture with medulla compression was made, and a left side decompression immediately undertaken.

Operation.—Under a very small amount of ether, a large osteoplastic flap was turned down. The dura was found to be very tense, and when this membrane was nicked to begin the dural flap the cerebrospinal fluid came up through the small opening in a short parabolic curve. There was no clot or blood found on the cortex and the motor area was not involved. A small flat retractor was then passed down toward the foramen magnum and as it glided downward the fracture could be distinctly felt in the petrous portion of the temporal bone. When the temporal lobe was gently elevated there was at once extruded about one ounce of dark liquid blood, some clots and a few small pieces of brain tissue. The bleeding had evidently stopped, so a small piece of rubber dam was passed down to the medulla to prevent further compression, the osteoplastic flap replaced and the wound closed.

Patient with right facial paralysis indicating lesion at the base six weeks after the performance of a left-side decompression.

At the end of six weeks, when the patient was discharged, this facial paralysis still persisted in spite of a complete recovery of tongue, arm and leg function.

As a diagnostic measure lumbar puncture is valuable when instituted a few hours after hemorrhage has occurred, but, when undertaken as a therapeutic measure for relief of intracranial pressure, often results seriously. This is due to the fact that we have no ready means of determining the amount of increased pressure, and when this is high a sudden withdrawal through the spinal route permits the medulla and pons to be sucked into the foramen magnum, producing a fatal result through pressure on the vital centers. Several such cases have been reported.

The dangers of the old-time custom of venesection in cases of apoplexy, fracture of the skull and allied conditions having an increased intracranial pressure, are

manifold. The older idea of venesection was to stop further bleeding through relief of the high blood-pressure as manifested by the full bounding pulse. This is decidedly wrong; for if we understand the effect of increased intracranial pressure on the vital centers in the medulla we will see that this high blood-pressure is Nature's effort to keep the patient living. Since the brain is no more compressible than water, the effect of increased tension is to produce an anemia of the vital centers in the medulla. The anemia thus produced acts as a stimulant to the vasomotor centers and as a depressant to the respiratory center. Stimulation of the vasomotor centers produces a general constriction of the vascular system, especially the splanchnics, resulting in the increase of blood-pressure so commonly found in these conditions. This increase in blood-pressure is raised sufficiently to overbalance the increase of intracranial tension and thereby the local anemia in the medulla is overcome and the respiratory center again resumes function. This increase of blood-pressure and corresponding support of the respiration continues for hours or days until exhaustion of the vasomotor centers occurs, when death takes place through respiratory failure.

Thus we can understand the error of venesection in these cases of intracranial bleeding and also appreciate the importance of closely watching the blood-pressure. A pronounced rise of blood-pressure would indicate the necessity of immediate decompression, while a fall would probably mean a fatal outcome through respiratory failure.

300 Freemason Street.

MULTIPLE HEMANGIOPERITHELIOMA OF THE BRAIN *

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Endothelioma or perithelioma is not an uncommon tumor within the cranium and usually is solitary. Endothelioma may occur in the form of multiple tumors on the dura, and sometimes as miliary dural growths, as in a case reported by Dercum, Keen and Spiller.¹ Endothelioma within the cranium usually has its origin from the dura and causes atrophy of the underlying brain by pressure, without infiltrating it. In this form it is one of the most benign of intracranial tumors, and yet it may recur if removed, and become most malignant and may infiltrate the bone above it. It is rare to find numerous tumors of an endotheliomatous character within the brain substance; as L. Bruns says: "In the brain substance itself, endotheliomas are very rare." In the form of perithelioma with the rosette-like arrangement of columnar cells about the vessels, it is more common within the brain substance than in the form of chains or columns of cells or groups of concentrically arranged cells.

I have seen multiple perithelioma within the brain substance only in the case reported in this paper, and have found no similar case recorded. The tumors were very numerous in this case, and every tumor was the site of hemorrhage. These hemorrhages varied greatly in size. The largest measured 2 by 3.5 cm., and some were

the size of a pea or less. Most of the tumors had a connection with the cortex at one part, but some were entirely within the brain, one for example, the size of a pea, was within the right lenticular nucleus, and is shown in Figure 1. An old area of sclerosis was in the left upper temporal convolutions.

This case illustrates the malignancy that perithelioma may assume, as the tumors were found in the cerebellum and pons as well as in the cerebrum.

It is rare to find more than one recent hemorrhage in a brain, and yet I have at least three specimens in my laboratory in each of which two recent and separate hemorrhages occurred.

Souques² reports two remarkable cases of this kind. In one, twenty-eight recent hemorrhages were counted in the brain and cord, and in the other, eleven. Some

Fig. 1.—Transverse section of the brain in a case of multiple hemangioperithelioma of the brain, showing five tumors with hemorrhage.

hemorrhages probably escaped detection on account of the thickness of the sections, and those of the size of a pinhead were not regarded. The hemorrhages were small and mostly just beneath the cortex. Nothing in the clinical condition suggested multiple hemorrhage, any more than in my case. One patient certainly had nephritis, and the other probably had. I do not know of any description of multiple hemorrhage of the brain, each caused by tumor within the brain substance, and for this reason also the case reported here is interesting.

Patient.—C. H., male, aged 60, was referred by Dr. L. B. Heimer to Dr. Mills, who sent the patient to the University Hospital, Feb. 28, 1911, to be placed under my care. Dr. Heimer furnished the following notes:

* Read before the Pathological Society of Philadelphia, Dec. 14, 1911.

1. Dercum, Keen and Spiller: *THE JOURNAL A. M. A.*, April 28, 1900, p. 1026.

2. Souques: *Nouv. Iconog. de la Salpêtrière*, May-June, 1911, p. 193.