

to be evacuated without injury to the lungs. On the right the place for operation in front would probably be by the removal of the fifth rib in the axillary line.

I have been lead to show these plates to-night because a hurried glance through the textbooks on x-rays and some of the more important x-ray journals has failed to show me reproductions of this condition.¹ This has surprised me, for by the men about this hospital who are in the habit of making a study of chest conditions by means of the x-ray, it is a well-recognized condition.

I. SPASMODIC TORTICOLLIS CURED BY OPERATION.

II. HEMORRHAGE IN JAUNDICE CONTROLLED BY BLOOD TRANSFUSION.*

BY FRED T. MURPHY, M.D.

It is the purpose of the report of this case to call attention to certain general features of spasmodic torticollis and to emphasize some of the essentials in the surgical treatment. An indefinite pathology and etiology in any condition lead of necessity to empirical treatment; hence the surgery of spasmodic wryneck is empirical.

Spasmodic torticollis falls into the general class of the tics. Surgical experience everywhere has been that operative interference in the true generalized tic is useless. Without attempting to differentiate too finely, there is a subdivision of these cases where the irritative lesion is sharply localized and where the condition of the neck muscles is one of spasm rather than the clonic more or less irregular contraction of true tic. This is the type in which operation may offer relief. Where there is evidence that the condition has involved, even slightly, other muscles than the rotators of the head, operation is contra-indicated.

Whatever may be the pathology, certainly in practice in nearly all cases two sets of muscles are concerned in the rotation of the head: anteriorly, the sternomastoid innervated by the spinal accessory, and posteriorly, on the other side, the posterior rotators, all of which are supplied by the posterior divisions of the upper four cervical nerves. Therefore, any surgical attack should be anterior and posterior.

Section of the spastic muscles as originally proposed by Kocher, if sufficiently radical, relieves the condition temporarily and apparently in some cases permanently, but at least on theoretical grounds the muscles with their new formed scar tissue are quite as capable of pulling the head as they were originally, and practically this is only too often the result.

Keen formulated an operation for section of the spinal accessory nerve and the posterior divisions of the upper cervicals in 1890. What

general results have followed that procedure it is impossible to judge accurately because the type of case and the technic have differed so widely with different men. It is this operation with certain technical modifications which is in favor at the National Hospital, in London, and there, certainly, the results have been most encouraging. With us here at the Massachusetts General Hospital this operation has not been systematically employed.

The spinal accessory nerve is readily found as it enters the muscle at the level of the angle of the jaw by turning the sternomastoid outward. Section of this not only paralyzes the sternomastoid, but gives a shoulder drop as well. Yet I think that as you look at this patient you are not impressed by the terrible deformity of the shoulder. The posterior cervical nerves are reached by turning back an angular flap with the cross incision running at the level of the mastoid process, and the longitudinal in the median line or slightly to the side. This flap includes the muscles down to the level of the suboccipital triangle and the semispinalis colli. At this level the posterior branches of the occipital nerves and the suboccipital are isolated and resected. The suboccipital is easily found as it comes up out of the suboccipital triangle. The great occipital acts as a convenient anatomical guide to the rest of the plexus, but anatomically a proper operation is hardly possible. The whole field must be gone over with electrodes, and only by careful electrical stimulation can each branch be found with certainty. The obliquus inferior is so apt to conceal nerve filaments that it should be resected *en bloc*.

The wounds are closed without drainage and the convalescence is usually uneventful. The operation is bloody and tedious. The effectiveness of the operation depends absolutely upon the thoroughness of the nerve resection. The operative risk is practically nil. The after-care consists in keeping the patient quiet and in bed, with the head supported by sand bags, for a period of four to six weeks. While in bed and after getting up the wearing of any supporting apparatus, such as a Thomas collar, is contra-indicated, as it has been found that these supposed supports simply tend to increase the spasm. Systematic movements of the head are to be practised along the same lines as recommended by the neurologists as treatment in the non-operated cases.

CASE I. P. A. F., twenty-seven, single, Massachusetts General Hospital No. 158,852, entered the West Surgical Service on June 15, 1908.

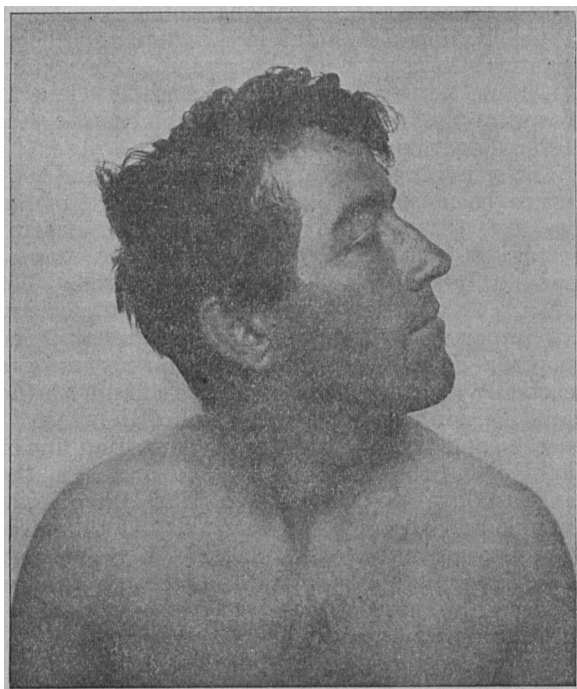
The family history and patient's history are unimportant. As a watchmaker in the Waltham factories the man had to turn his head regularly to the left. He had been employed at this work for years. Suddenly in March, 1908, a spasmodic turning of the head to the left appeared. The intensity of the spasm gradually increased until at the time of entrance the head was held sharply turned toward the left most of the time and it was not possible for the patient with his hands to hold the chin in the middle line. The spasm of the sternomastoid and posterior rotators was

¹ Bécélère's L'examen radioscopique des plevres interlobaires et le diagnostic de la sclérose de l'interlobe. Bull. et mém. Soc. Méd. d. hôp. de Paris, 1902, 3. s., xix, 157.

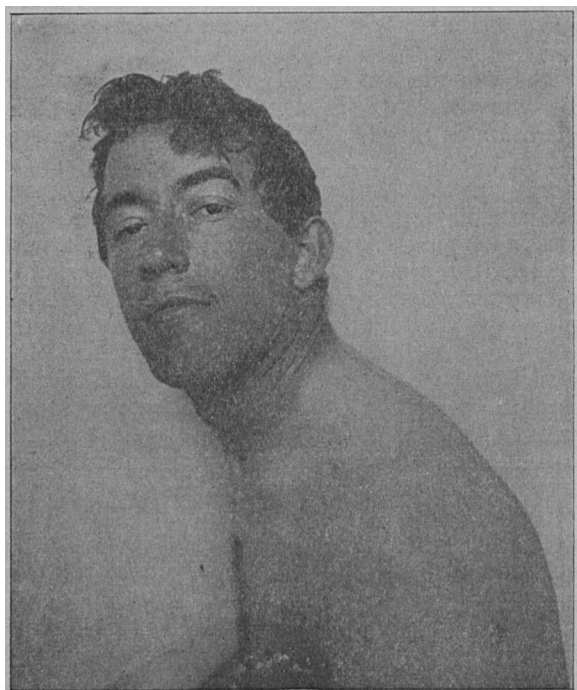
This paper reports a case of interlobar sclerosis, giving interesting technic as to the method of taking the plates. He has, however, seen no cases of interlobar exudate.

* For the privilege of operating and reporting these cases I am indebted to Dr. F. G. Balch.

marked. There was no spasm of muscles other than the rotators of the head. He had been treated in the Neurological Out-Patient Department and had been



Before operation. To show the position in which the head was held.



Before operation. To show the position in which the head was held.

in the neurological ward, where he had been treated without relief.

At the first operation on June 21, 1908, the spinal accessory nerve was resected and an attempt made to

resect the posterior divisions of the upper four cervical nerves. This operation failed because of poor technic. Before the patient came out of the ether there was definite spasm of the posterior rotators, demonstrating conclusively that the nerves had not been resected. After a period of rest and attempted re-education of the muscles, without success, the second operation was done on July 14. At this time the approach was through solid scar tissue, which greatly increased the operative difficulties. A more careful and systematic search was made with the electrodes, and it was found that only the superficial branches of the posterior cervical plexus had been cut at the previous operation. Even at this time, on account of the scar tissue, it was questionable whether the suboccipital had been resected at the upper level.



After operation. To show extent of rotation to the right.

The convalescence was uneventful. The chin could be held voluntarily in the middle line, but in extreme rotation there was some slight spasm of the posterior rotators which disappeared completely on passive motion of the neck. As you see, the man is completely relieved of his spasmodic torticollis. There is no limitation of the movements of the head. The shoulder drop on the right side is an insignificant deformity and does not interfere with his work.

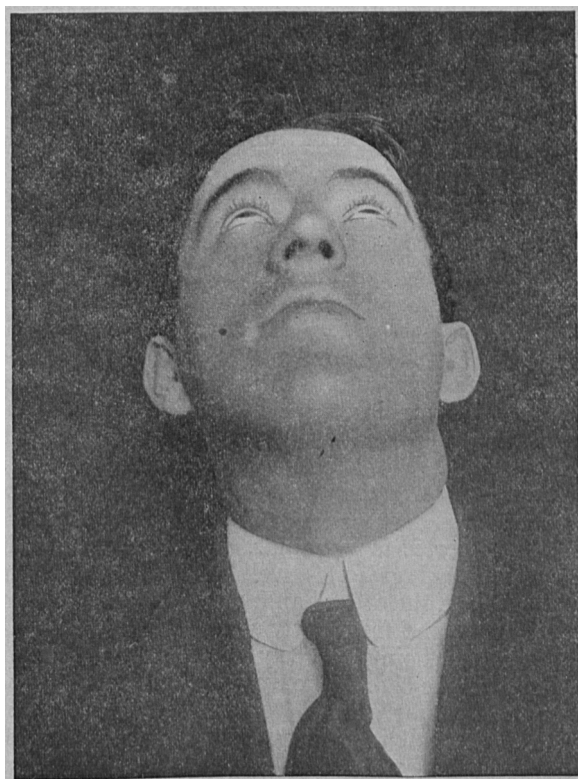
CASE II. Mrs. D. D., forty-eight, married, Massachusetts General Hospital No. 159,568, demonstrates certain clinical and laboratory features which are of interest. The abstracted history is as follows:

She entered the Massachusetts General Hospital in the West Surgical Service, Aug. 2, 1908. For seventeen years she had had periodical attacks of severe abdominal pain with jaundice and clay-colored stools. Three weeks before entrance she was seized with sharp abdominal pain and vomiting, and soon afterward became jaundiced. The pain has continued and was

typical of gall stones. The jaundice increased in degree. The stools have been clay-colored since the



After operation. To show extent of rotation to the left.



After operation. To show chin held in the middle line and head thrown back.

beginning of the attack. There has been the last day or two slight vaginal hemorrhage, but this was attributed to an old endometritis.

Examination showed a poorly-nourished, deeply jaundiced woman with pulse of 160; temperature 102.6°. The white count was 36,000. There was spasm in the right upper quadrant of the abdomen, and in the region of the gall bladder a tender mass, deep-seated, was palpable. The character of the pulse contra-indicated operative interference and the patient was sent to the ward.

A subpectoral infusion of normal salt solution was ordered every six hours and rectal enemata. During the night following admission there was some slight bleeding from the vagina. The general condition remained about the same. On Aug. 4, the second day after admission, there was severe nasal hemorrhage requiring packing. Later there was severe hemorrhage from the rectum and vagina. In the morning, 30 cem. of horse serum was given. This serum was over eight days old. Twelve hours after giving the serum there was very severe hemorrhage from the vagina. In the packing both dry gauze and adrenalin gauze were used.



After operation. To show chin held in the middle line.

The salts of calcium were also given. On Aug. 5, the patient received 30 cem. of fresh rabbit serum.¹ It seemed to control the hemorrhage in a degree, but the bleeding still persisted at an alarming rate, and the patient's general condition was poorer. On Aug. 6, the patient sank into a condition of stupor. Hemorrhages from all the mucous surfaces continued. Thirty centimeters of fresh rabbit serum was again given. In the evening of this day, the condition was all but hopeless. Constant ooze from the packed mucous membranes continued. The coagulation time measured by the modified Brodie-Russell apparatus was 13+ minutes.

¹ For this fresh serum I am indebted to Dr. Lawrence Strong.

On the evening of Aug. 6 the patient was transfused, the husband acting as donor. The ordinary technic was employed, that is, the radial artery of the donor was united to the superficial vein of the recipient with the Crile canula. On Aug. 7, twelve hours after the transfusion, the coagulation time of the blood was between three and four minutes. The general condition of the patient was markedly improved. On Aug. 7, the gall bladder was opened as rapidly as possible, a large number of stones were removed and a drainage tube tied in. No attempt was made to reach the stone in the common duct.

From this time on the course of the case was that of any sick cholecystostomy. Several times there was slight bleeding from the mucous surfaces, but nothing of consequence, and the coagulation time remained at three minutes and a fraction. The jaundice cleared up rapidly. The wound healed by first intention. The patient went home on Sept. 12, and recently has been reported as being in good condition.

To summarize. — The condition of stone in the common duct was unquestionable. The continued bleeding from the throat, nose, mouth, vagina and rectum was unusual. The use of the ordinary methods of controlling hemorrhage was without effect. The rabbit serum, while not given an extended trial, seemed to have but little influence on the coagulation time of the blood or the hemorrhage, the coagulation time remaining at 13+ minutes after two injections of 30 ccm. of fresh rabbit serum and one injection of horse serum. Leaving out of consideration any discussion of the active factor in the coagulation of the blood in these jaundice cases, it is evident that something contained within the transfused blood did influence the coagulation time in a most remarkable manner. Examination with the modified Brodie-Russell instrument showed a drop of from 13+ minutes to less than four minutes within twelve hours after the transfusion. The effect of transfusion was absolutely typical, that is, the skin changed from the dry, scaly skin of extreme jaundice to the soft, oily skin of an infant. A rosy flush appeared on either cheek; the flesh felt plump and soft; the character of the pulse became good.

The transfusion itself illustrated one technical point, mention of which may save some one else from a like calamity. Without giving any thought whatsoever to the question, I used in the first arm a solution of cocaine plus an unnecessarily large amount of adrenalin. When the anastomosis had been made, it was found that no blood came through the artery; in fact, with the sharp cut across the radial there was no bleeding. As the trauma had not been excessive, it must have been that the adrenalin had some influence on the contraction of the vessel. On the other arm without the adrenalin the result was immediately satisfactory.

In this case, as it has seemed easier to me doing the operation on animals, I threaded the artery through the canula and drew the vein over the artery, rather than the usual procedure as demonstrated by Crile of threading the vein through the canula.

A DIFFERENTIAL STAIN FOR NUCLEATED RED CELLS.*

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ALL those who have studied blood smears from pernicious or secondary anemia must have found it difficult at times to distinguish between the large nucleated red cell (the so-called megaloblast) and the lymphocyte. While it is not necessary for diagnostic purposes to know the percentage of nucleated red cells in a given case, it is, nevertheless, interesting and satisfying to be able to pick out with certainty every nucleated red cell in a preparation.

The method to be described below is offered as a means of settling this point.

Cover glass smears of blood are made in the usual way and allowed to dry in the air. They are then fixed by covering them with a saturated solution of corrosive sublimate. This is prepared by placing about 15 gm. of corrosive sublimate crystals and 5 gm. of sodium chloride in an Erlenmeyer flask and adding about 30 ccm. of water. The flask is heated over a Bunsen flame to boiling and then cooled in running water. The solution is either poured over the cover slip in a holder or the cover glass is placed in a dish containing some of the fluid. The preparation is allowed to remain in the corrosive sublimate for one minute. It is then washed in running water and placed in a dish containing a 1% alcoholic solution of eosin (alcohol soluble) and allowed to stain for one-half hour. At the end of this time it is removed, washed in running water and covered with Loeffler's methylene blue. After fifteen minutes the blue is washed off and the smear is then decolorized with 95% alcohol until no more blue color comes out. This takes about one minute and should be thoroughly done. The cover glass is then washed, dried between sheets of filter paper and mounted in balsam.

In such a preparation, all the red corpuscles are stained red. The nucleated red corpuscles, whether so-called megaloblasts or normoblasts, have a red cytoplasm as well as the non-nucleated ones. Occasionally one sees a nucleated red cell which is so richly stippled that the cytoplasm at first sight looks purple, but on closer inspection the appearance is resolved into a deep red homogeneous background, very thickly set with blue granules. The nuclei are of two varieties, depending on whether the cell is a "normoblast" or a "megaloblast." In the former the nucleus appears as a homogeneous blue-black mass, while in the latter it is vesicular, with the chromatin filaments and granules well defined. The lymphocytes, on the other hand, are always a rich blue throughout and frequently show very little detail, the nucleus being scarcely distinguishable from the rest of the cell. The nuclei of the polynuclear leucocytes show a good deal of detail, while the rest of the cell is either stained a pale pink or appears merely as a halo around the nucleus. There is no granulation. The nuclei of the

*This paper was read by title.