both eyes bandaged is really the most uncomfortable part of the treatment. On the third day the eye is inspected and if the wound has healed, the unoperated eye is left unbandaged and the patient allowed to be up. A night nurse is always in attendance when both eyes are bandaged, but there is no restraint of the hands, as the operated eye is protected by an aluminum shield.

The statistics given by Knapp,¹ whose observations were based on a large number of cases at home and abroad, give the results as follows: "In all cases as they come, failures, 5%; moderate results, 10%; good results, 85%." It is, therefore, evident that a good prognosis is justified in the cases which advance so as to require operation. If one is losing his sight the most hopeful diagnosis is cataract. If the eye be normal in other respects, sight is usually restored.

The principal causes of failures are:

A diseased eye behind the cataract.

Infection, usually auto-infection, may occur, as it is impossible to secure perfect asepsis. Vision is usually lost, but fortunately this is extremely rare, perhaps 1 or 2%.

Post-operative hemorrhage from the retina is extremely rare but fatal to success.

Iritis, traumatic and from rheumatic diathesis, may leave a closed pupil but this can usually be remedied by a skillful Ziegler iridotomy.

Patients with incurable diabetes and nephritis are undesirable risks, but most surgeons feel it a duty to give them the chance. Naturally the statistics of a given operator will be greatly affected by the percentage of unfavorables.

CONCLUSION.

Most incipient senile cataracts never advance enough to need operation; therefore, we should avoid the term "cataract" and give the most hopeful prognosis until it is evident that it is progressive. Then, if it does mature, operation offers a good prognosis. If the sight of the better eye is insufficient for reading, the immature cataract of the more advanced eye can be safely removed, so there need be no years of partial blindness waiting for ripening. Certainly the patient is entitled to the most optimistic opinion which clinical history and experience warrant.

¹ Norris & Oliver System of Eye Diseases, p. 818.

THE RADICAL TREATMENT OF PERITONSILLAR ABSCESS BY TONSILLECTOMY DURING THE ACUTE STAGE OF THE DISEASE.*

By HARRY A. BARNES, M. D., BOSTON.

PERITONSILLAR abscess is a suppurative inflammation of the walls of the sinus tonsillaris. As the tonsil itself is in reality only a complicated mucous membrane containing a large amount of lymphoid tissue and covering the walls of the sinus, quinsy may be considered a submucous abscess of the sinus. The pus, therefore, usually is confined between the fibrous mucosa of the sinus (the tonsillar capsule) and the muscular walls of the fauces immediately subjacent to it,—the superior constrictor of the pharynx externally, and the palato-glossus and palatopharyngeus anteriorly and posteriorly respectively. The pus may be confined by inflammatory adhesions to a small area anywhere within this comparatively wide field; or it may dissect the capsule away from the muscles over a large portion of the sinus. As the sinus extends high into the palate, the latter type of abscess appears to be palatal in position, and may be opened and drained either through an incision in the palate, or one extending upward and outward through the superior wall of the supratonsillar fossa. Anterior and posterior abscesses, when their situation can readily be determined, are usually easily accessible by incision through the anterior pillar or between the posterior pillar and the tonsil. When, however, the pus is confined to the space between the body of the tonsil and the superior constrictor muscle, the task of reaching it by incision is not always an easy one. Every surgeon has probably had the experience of repeated failures to locate the pus in this class of case, which of all surgical affections is one of the most uncomfortable to the patient with which we have to deal. Some years ago Ballanger suggested a method by which such abscesses might readily and surely be drained with a minimum of suffering to the patient,—a capsular dissection of the tonsil backward until the abscess cavity is reached. Provided ankylosis of the jaw, nearly always present in quinsy, is not so great as to make access to the fauces difficult, this method is easily carried out and is practically sure of success. I had been using it for some time with satisfactory results, under a general ether anesthesia, when Dr. A. Coolidge, chief of the throat department of the Massachusetts General Hospital, suggested that the operation might be carried a step farther, and the tonsil then and there be dissected out completely. I confess that I was at first somewhat startled by the idea, having the old preconceived notions of the dangers of creating so large a wound in the presence of an acute streptococcus infection. On second

* Candidate's thesis for admission to the American Laryngological Association.

thought, however, I concluded that our fears on this score were not only groundless, but were without a good theoretical basis. Subsequent experience has, I think, confirmed this.

The theoretical dangers of the operation are two: First, that a general anesthesia is not safe on account of the possibility of subsequent pulmonary infection from inspired pus; second, that it is always dangerous to operate on an acute inflammation of the tonsil, at least to do so extensive an operation as a tonsillectomy, because of the fresh field opened up for infection. On the first head I can say only that I do not believe that the danger exists, beyond that which may be present in the dissection of any tonsil, provided due care is taken when the abscess cavity is reached, to prevent with gauze sponges any escape of pus below the fauces. Very large peritonsillar abscesses are not suitable for this method of treatment, both because they may easily be drained by simple incision, and because their size makes a general anesthetic inadvisable. In these the large amount of pus might be difficult to manage in such a manner as to be sure that a considerable amount did not get below the fauces. In the smaller deep-seated abscesses a sponge on the end of a holder absorbs the pus perfectly as fast as it is evacuated. I have now operated on ten cases by this method, and in none have I had reason to believe at the time of operation that any pus was inhaled, nor has there been anything in the subsequent history of these cases that would suggest it.

Of the second danger, that of infecting a large fresh wound with the streptococcus, it may be said that both theory and observation show that this method is much safer than the usual treatment by simple incision. This incision through the palate or the anterior pillar *does* open a fresh field for infection, in that in some of its course at least it goes through more or less normal tissue, where inflammatory exudate has had no chance to place a protective barrier between the streptococcus and the general system. To this also may be added the possibility of opening one of the large veins of the sinus walls by a blind incision. A fatal case of general streptococcus infection, following such an incision, occurred at the Massachusetts General Hospital last year, which I have always felt might have been due to this cause. Moreover, a fresh cut immediately closes more or less completely, so that drainage is poor, not only from the abscess cavity itself, but from the newly infected area of the incision. When the tonsil is dissected out, however, the conditions are in every way more favorable. The sinus walls are everywhere protected from absorption of the streptococcus by marked inflammatory infiltration, and the only fresh wounds made by the dissection are those through the plica anteriorly and posteriorly. It may be argued that the sinus walls everywhere are liable to injury; but if the dissection is carried out according to the description given later in this paper, there is but slight danger of this.

Add to these theoretical considerations the fact that after dissection we have, instead of a closed abscess sac and a poorly drained fresh incision, a simple open ulcer the walls of which are everywhere rendered practically impervious to absorption, and it will be appreciated that this radical treatment is far less dangerous from the standpoint of streptococcus infection than the older method of simple incision.

One other point makes this method of particular value,—the abscess may be treated with success much earlier than in any other way. Peritonsillar abscess has been said not to become suppurative until the fourth or fifth day of the disease. That this is not so, anyone may convince himself by dissecting out the tonsil on the third or even the second day. He will then find that the disease becomes suppurative early, and that the reason that pus is seldom found before the fourth day is that it is too deeply seated and too small in amount to be found with any degree of certainty by the method of incision. Tonsillectomy offers a practical way of safely cutting short these most distressing inflammations early in their course. It is advisable that it be done not earlier than the third day, however, as before that time the walls of the sinus are not sufficiently infiltrated to offer a suitable defence against streptococcus infection.

The operation of tonsillectomy in these cases differs only slightly from the usual procedure by the dissection method. It is essential that the dissection be a clean one, and that the muscular walls of the sinus be as little injured as possible. If one of the larger veins is opened, it seems to me that the chances of general streptococcus infection may be distinctly increased. To avoid this, it is necessary that the field of dissection should be seen at every step. Now these tonsils are always tightly adherent to the walls of the sinus, except over the area occupied by the abscess itself. It is difficult, therefore, to find the line of demarkation between the two after the first incision in the plica has been made. The usual more or less blind evulsion of the superior lobe by blunt instruments or by probe pointed knives is dangerous, as the sinus walls are almost sure to be injured. To insure against this, I have found a pillar retractor essential. The one I have used is not unlike Killian's retractor for the lacrimal sac, except that the handle is longer, the blade broader and thinner and the curve somewhat greater. After the first incision in the plica has been made, the retractor is inserted by an assistant under the free edge, and the plica and pillar gently pulled outward and forward. At the same time the tenaculum holding the tonsil is pulled inward, so that the line of demarkation between the capsule and the sinus wall is easily discerned at the apex of the resultant V-shaped cleft between the two tissues. The lightest touch of a sharp knife serves to deepen and widen this cleft, which is in this manner extended backward until the abscess cavity is

reached. A gauze sponge on a holder is then inserted against the incision and the abscess cavity allowed gradually to empty itself. If there is a large amount of pus, several sponges may be required to absorb it. This, however, causes no embarrassment, as the stream may be cut off or turned on at will by the valve-like action of the plica and anterior pillar controlled by the retractor. When the pus has been completely evacuated, the dissection is again carried on as before until the tonsil is sufficiently freed to allow of the easy application of the snare.

The bleeding during this operation is surprisingly slight,—no greater, indeed, than that which occurs in the usual operation on the non-adherent tonsil.

The question of the disposition of the other tonsil is a delicate one. I have always removed it; and though cogent reasons undoubtedly might be advanced against it, I have yet to see any untoward results that would lead me to change my belief in its safety.

The results of the operation are particularly gratifying, especially to the patient. All the local symptoms subside with surprising rapidity, so that on the day following operation, the sore throat of tonsillectomy alone remains. Strangely enough, this last symptom is always quite mild on the side of the abscess, and patients invariably remark upon the fact. The lessened sensibility of the wound is probably due to the infiltrated condition of the tissues.

NOTES OF A CONFERENCE ON THE MEDICAL AND SOCIAL ASPECTS OF SYPHILIS OF THE NERVOUS SYSTEM.

HELD AT THE PSYCHOPATHIC HOSPITAL,
MAY 27, 1915.

(Continued from page 960.)

VII.

THE SIGNIFICANCE OF CHANGES IN CELLULAR CONTENT OF CEREBROSPINAL FLUID IN NEURO-SYPHILIS.*

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THE cell count of the spinal fluid has been used to a great extent in studying cases of syphilis of the central nervous system, especially in

the matters of differential diagnosis and in estimating the results of antisyphilitic therapy. Prognostic importance has been assigned to the count by many investigators when subjecting patients to treatment by mercury, salvarsan or salvarsanized serum, that is, in general it has seemed a hopeful sign when the cell count has dropped. For this reason it seems well to consider the variation in the count in untreated as well as in treated cases. Mitchell, Darling and Newcomb published a study of the cell count in a group of parietic patients in the *Journal of Nervous and Mental Diseases* (November, 1914), showing that there was a general, though not absolute, tendency for the cell count to fall toward the termination of the disease in death.

The present study consists in interval cell counts in cases diagnosed as general paresis or cerebrospinal syphilis (assuming that it is not always possible to make the differential diagnosis) in a series of 46 cases. Treatment consisting of mercury, salvarsan intravenously and potassium iodide was given in 19, the other 27 cases receiving no treatment. The counts were made at varying intervals, some short and some longer. The counts were made in the cell chamber of Fuchs-Rosenthal, staining with Unna's polychrome methylene blue in the pipette. Other tests were also performed on these fluids, to wit: Nonne-Apelt test for globulin, Mestrezat test for albumin, Lange's gold sol test, and the Wassermann reaction.

Before considering the actual findings it may be well to speak of the meaning of a pleocytosis. It seems safe to state that the cells in the spinal fluid came from either the meninges, the perivascular or perilymphatic spaces (the probabilities being that it is chiefly from the former). It does not behoove us to consider whether these cells are derived originally from the blood stream entirely or from the vessel wall or meninges; it is sufficient to know that their presence in the fluid speaks for their presence in these places. It is not known what causes them to be cast off into the fluid. As a general rule the exudation of cells is greater in cerebrospinal syphilis than in general paresis, as is seen histologically, but this does not necessarily mean that they are to be found in greater number in the fluid, for there are undoubted cases of paresis showing high counts, and cases of cerebrospinal syphilis showing comparatively low counts. Thus in one case of cerebrospinal syphilis confirmed histopathologically, the count was 109 per c.mm., while in a case of general paresis at one time the count was 310 (Case 3), and in another case diagnosed cerebrospinal syphilis on account of the clearing up of the fluid under mercurial therapy the highest count before and during treatment was 92 per c.mm. It is seen also that the number of cells may jump from 92 to 261 and again fall without treatment (M. M., No. I, 23), and from 80 to 332 (T. F., No. II, 7). From these facts it is seen that the cell count has

* Being S. I. B. Contribution whole number 128 (1915, 31). (Bibliographical Note.—The previous contribution was by Harry C. Solomon, H. O. Koefod and E. S. Welles, entitled "Diagnostic Value of Lange's Gold Sol Test," BOSTON MEDICAL AND SURGICAL JOURNAL, Dec. 23, 1915, Vol. clxxiii, No. 26, p. 959.