

a young school teacher and gave a history of occasional gaseous disturbance of the bowels with frothy movements. No diarrhea, however, accompanied her tongue sprue. In fact, this oscillation from simple tongue sprue to intestinal sprue and back again is typical of sprue. Whether there is more than one species of *Monilia* that causes sprue remains to be seen, but the matter is one of vital importance, and every effort should be made to assist the Institute of Tropical Medicine in investigating all cases in which the diagnosis of sprue has or should be made, to determine the presence or absence of monilias.

I cannot close this paper without requesting that some systematic effort to examine the bread in this island for the presence of *Monilia* be made. I have found living *Monilia* in the center of a cooked loaf of bread, underbaked, of course. With my colleagues of the Institute, we examined 10,140 country people in the mountains of Porto Rico last year for clinical evidences of sprue and were only able to obtain nineteen cases, some of which were even doubtful, while in San Juan I have seen over 300 cases in six years, and I know you all have had many cases. When we consider this and think also that country people in Porto Rico, such as live in the mountains and in distant barrios—such, in short, as form our clinics in the mountains—rarely eat bread, and that out of the nineteen cases eleven were from the town of Utuado, there is another reason why we should fear *Monilia* infections of bread—if not fear, at least investigate—for the matter is becoming actually vital to the life and health of many people who are willing and able to spend the money to keep in good health.

INDICATIONS FOR OPERATIVE INTER-FERENCE IN GOITER

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If, in the present state of our knowledge of the clinical manifestations of goiter, we undertake to operate on others than those that are unquestionably causing immediately grave, evidently correlated detriment, a very nice discrimination must be exercised. In young people it is probable that most of the enlargements are more or less physiologic, an effort to meet an increased demand; here if any treatment is indicated it certainly should not be of a destructive kind.

The real or fancied presence of a goiter is rather common. Even more common are individuals who are out in their functional adjustment; the neurasthenic, the highly strung person suffering from mental or physical overstrain, the early phthisic, or the patient suffering from any one of a number of chronic intoxications; many of these give a picture that may more or less closely resemble thyroid intoxication or irritation, and these individuals may have a coincident goiter. If, on the other hand, we are content to deal surgically only with those that are unquestionably responsible for imminently dangerous conditions, then we shall miss the most opportune time for effectively treating many that are causing real, progressive damage, the seriousness of which will later have become much more evident: as a general rule, the more evident the damage the more danger in the operation and the less satis-

factory will be the result. The real degeneration caused by goiter can only be checked, not repaired, by the removal of the goiter.

For practical purposes, goiters may be considered to do damage in one or both of two ways, by mechanical pressure or by intoxication. In using the term "intoxication" I know I am somewhat begging a question, but I use it as a matter of convenience to avoid prolix discussion. Either the pressure or the intoxication may be very acute, or it may be very insidious but none the less detrimental in the end.

Goiters that seem to poison the patient have been grouped together under the terms of "toxic" or "exophthalmic" goiters, while goiters that do not produce toxic symptoms have, regardless of their histology, been classed as simple goiters. Kocher has pointed out that not all toxic goiters are of the same nature. H. S. Plummer,¹ seconded by Wilson's² histopathologic studies based on clinical and histologic analysis of a large series of operated goiters, have subdivided the toxic goiters into true exophthalmic and toxic simple goiters; the former show mental stimulation and sympathetic phenomena and histologically show true hyperplasia in some part of the gland, while 50 per cent. of them will show exophthalmos. According to their statistics the toxic, simple goiters never develop exophthalmos, and differ in other respects clinically from the true exophthalmic goiters and do not show hyperplasia. Since they have published these studies, we have been able to foretell whether the histologic examination will show the presence or absence of hyperplasia with sufficient constancy to lead me to accept this subdivision as a definite step forward in the unraveling of goiter pathology.

In dealing with them clinically, we divide goiters into five groups:

1. True exophthalmic goiters.
2. Toxic, simple goiters.
3. Nontoxic, simple goiters that are not causing demonstrable damage and are apparently not liable to.
4. Simple goiters that from their size, location or growth tendencies are liable to cause obstruction or might be malignant, and those that are actually causing obstruction.
5. Inflamed goiters.

To these five groups might be added a sixth, malignant goiters, were it not so very difficult to distinguish them clinically, while they are still operable, from simple nodular goiters in which operation is definitely indicated on account of some peculiar growth characteristic.

Kocher long ago came out flat footed with the contention that excision of one half of the thyroid was the proper treatment for an exophthalmic goiter, and advanced medical thought has slowly swung around to accepting, tentatively, the correctness of this principle. There are those who treat certain exophthalmic goiters medically and successfully, as they treat certain cases of appendicitis in the same way; but this does not gain-say the propriety of the operative plan of treatment.

The premise on which exophthalmic goiters are subjected to operation is that in some way the goiter mass is related to the clinical symptoms and that reduction in the amount of the mass will reduce the intensity

1. Plummer, H. S.: *Am. Jour. Med. Sc.*, 1913, cxlvi, 790.
2. Wilson, L. B.: *Am. Jour. Med. Sc.*, 1914, cxlvii, 344; *Relation of the Pathology and the Clinical Symptoms of Simple and Exophthalmic Goiter*, *THE JOURNAL A. M. A.*, Jan. 10, 1914, p. 111; *Journal-Lancet*, Feb. 15, 1914.

of the symptoms. This does not mean that the intensity of the symptoms bears a direct relation to the size of the goiter, for a large goiter in one individual may be much less toxic than a small one in another person, and the toxicity or the susceptibility of the individual may vary from time to time without material change in the size of the gland. What I do mean is, if in a given exophthalmic or even in a simple, toxic goiter at a given time a certain amount of the gland is removed or put out of commission, there will be a proportionate reduction of the toxicity. For reasons to be given later, the clinical evidence of this reduction of toxicity is not always perfectly plain.

Along with our ability to reduce the intoxication by the removal of part of the goiter, we should not lose sight of the other equally important clinical fact that the toxic stage of an exophthalmic goiter has a distinct tendency to crisis and self limitation. If this is so, why operate on them? For the same clinical reason that we will operate on a diseased appendix; to reduce the direct death rate which under any treatment is not very large in either of these diseases, and also, which is more important, to reduce the period of chronic disability and to prevent the permanent damage which may result when the disease is not completely cured. That the general results of operating for exophthalmic goiter are not so brilliant or so evident as those for appendicitis may be due wholly or partially to one of the following three causes:

First, a certain percentage of cases have been operated on a mistaken diagnosis and never were cases of goiter intoxication.

Second, a case presenting goiter, exophthalmos, tremor, rapid heart and nervous derangement is not necessarily a case of present goiter intoxication; these may all be evidences, more or less, of permanent damage in a goiter that has run its toxic course, and has ceased to be active. It is reasonable to suppose that in such a case no amount of thyroid reduction will repair the damage. An old Pennsylvania mountain practitioner once designated them as "burnt out goiters," and whenever I observe one of them, I am reimpressed with the aptitude of the simile.

Third, a common cause of only partial success is the removal of an insufficient amount of goiter tissue, and yet in the very case that is apparently so disappointing, you may have accomplished your chief object, namely, the saving of the patient's life. This point has been aptly illustrated by comparing a goiter toxemia to alcoholic intoxication. We will grant that in two certain individuals a quart of whisky would be lethal, and that a pint would not be. Then if those individuals were to swallow a quart of whisky each, and one of them vomited half of his dose, for a time both might be apparently equally drunk, but in the end one would recover and the other would die.

This point, ingeniously expounded by Plummer, is illustrated in the following hypothesis: Suppose if in a certain case of exophthalmic goiter it were left unoperated, a fatal crisis would have occurred in the ninth month of the disease, yet in the fourth month the patient shows only a moderate amount of intoxication. If in the fourth month half of the thyroid is removed, it is perfectly conceivable that the intoxication may be greater at the ninth month, the height of the crisis, than it was at the time of operation, and still this patient's life may have been saved by operation.

Halstead³ reported thirty-nine cases with successful results, in which the greater part of both lobes of the thyroid were removed at two or more operations, in patients who had not been cured by the excision of a single lobe, and in some of them three arteries had been tied. My own experience with secondary excisions has been equally satisfactory, but I now try to avoid them, whenever practicable, by excision of one and one-half lobes at the first operation. Much is supposed to depend on the postoperative care which the patient receives, and in practice this phase should never be neglected; but I feel rather satisfied that if sufficient gland has been removed, the postoperative care will be of less importance.

The most valid objection that can be raised against radical operation for exophthalmic goiter is that the operative mortality which is almost inseparable from operations in these patients in inexperienced hands, which is the early part of any series, unless the operator has been fortunate in his training, is apt to be most discouraging. Most exophthalmic goiter cases come to, or are referred to, the surgeon in or near the height of a crisis, and at this period a radical operation is only too apt to be fatal. However, these patients can usually be nursed along and the crisis bridged over by rest, the use of galvanic current, and one or more ligations, to a stage when the operation can be performed with sufficient safety to be good surgery. Some patients will die after a single ligation, but these deaths are to be charged to the disease, and not to the surgery. Plummer has told me that he has seen more people die of exophthalmic goiter within the first three days after their arrival at Rochester, than have died there postoperatively from goiter excisions. In doubtful cases, preliminary ligations give a very good index to the patient's ability to withstand the radical operation.

The thymus gland is apparently always enlarged in exophthalmic goiter. For a long time, especially in Germany and France, numerous men have contended that in a certain proportion of cases the thymus, and not the thyroid, is the chief factor, and some partial thymectomies have to be done. There has not been sufficient clinical experience to prove or disprove this contention, but rather a definite picture has been described as belonging to thymic cases. Lately Halstead⁴ has come out in support of this view. In the hope of obtaining more light on this particular phase of the subject, in relation to certain of our own cases, I recently made a visit to Rochester, Minn., to learn the views at the Mayo Clinic. Plummer said that he had not seen sufficient evidence to warrant the distinction. Judd, after talking to some French visitors, said that he had been tempted to resect the thymus in a certain few cases but had not done so. As far as I know, Kocher has not conceded a major rôle to the thymus in exophthalmic goiter, but has regarded excessive enlargement of the thyroid with glycosuria and nephritis as an advanced and inoperable stage of the disease. I believe that at present this phase must be regarded as an open question. Of my own patients, referred to above, who in some way resembled the pictures described by those who believe the thymus to be a possible major factor, two had thyroidectomies done last summer, and one a double ligation. The late reports from these thyroidectomies would indicate that,

3. Halstead: Excision of Both Lobes of the Thyroid Gland for Graves' Disease, *Ann. Surg.*, 1913, lviii, 178.

4. Halstead: *Bull. Johns Hopkins Hosp.*, August, 1914.

for the present at least, they are in need of no further surgery. The ligation case is now ready for a thyroidectomy.

Toxic simple goiters are to be treated by excision or enucleation of the more evidently diseased part of the gland. In these, there is apparently no danger of postoperative hyperthyroidism, but these patients may die postoperatively on account of the advanced degenerative changes that have developed during the period of intoxication. Results of radical operation in these cases are usually excellent, but often great care must be exercised in the diagnosis. That a patient has a goiter is not in itself sufficient reason for assigning accompanying nervous or cardiac symptoms to the goiter as a cause.

Whether or not we accept the hypothetic distinction between exophthalmic and simple goiters cited above, it has no real bearing on the question of the operative treatment of toxic or exophthalmic goiters as a class; but I believe it does give the surgeon some further guidance in the prognosis and in the selection of a particular mode of procedure in a particular case.

Of the nontoxic simple goiters, probably only the ordinary adolescent and certain nondegenerating colloid goiters are amenable to medical treatment; but unless one took the extreme view that because a certain proportion of simple goiters will later show toxicity or cause obstruction, or become malignant, all should therefore be removed; this does not mean that all simple ones require surgical treatment. A very few during adolescence will require operation; a few of them will be of the exophthalmic type, and even here conservative operation may suffice. There is no evidence to show that adolescent, simple goiters are in any way related to the simple ones of later life; and until such evidence is forthcoming they will not be operated on except in special individual cases. Occasionally they are resected on account of their size, but this is a rare occurrence, though Kocher states that goiters of pronounced irregular growth should be removed regardless of age. Many adults carry simple goiters through life without inconvenience or symptoms. Simple goiters causing no symptoms may demand removal on account of their size. The ease with which a single nodule or cyst can be enucleated may decide the removal of those of but moderate size. Goiters causing pressure symptoms, including those interfering with the recurrent nerve, rapidly growing goiters, those situated in the chest or behind the pharynx or trachea, tender goiters and those causing spontaneous pain should receive surgical treatment, which usually consists in the removal of the more evidently diseased part of the gland with the preservation of sufficient functioning tissue. As a general rule, nodular goiters are more apt to require thyroidectomy enucleation or resection than the smooth homogenous ones.

Simple thyroiditis is seldom, but suppurative thyroiditis and acute and chronic strumitis are usually helped by proper operation. This may consist in simple drainage, excision of a lobe or enucleation of a calcified nodule or suppurating cyst.

Malignant goiters, if movable, should be removed; but the diagnosis of malignancy in operable goiters is usually made after their removal.

Before undertaking any goiter operation, it should be determined that the general condition warrants the surgical risk. Even in simple goiters of long standing,

this may require nice discrimination on account of the extent of the secondary degeneration present in vital organs.

Judd has made some interesting observations in regard to goiter in pregnancy. If exophthalmic goiter develops during pregnancy, either death in crisis or spontaneous recovery is apt to occur toward the end of the pregnancy. Patients operated on during pregnancy, other than by simple ligations, are apt to miscarry a month after operation, and to be extremely ill or die. This has happened when it was not known that the patient was pregnant at the time of operation.

In the presence of real hyperthyroidism, none but absolutely necessary excisions for relief of pressure are indicated.

SUMMARY

Toxic simple goiters and exophthalmic goiters that are still active are entitled to some sort of operation that tends to lessen the bulk or activity of the gland.

Adolescent goiters, with rare exceptions require no operation.

Simple goiters are to be dealt with according to the indications of the individual case.

Pregnancy greatly increases the risk of radical goiter surgery.

Metropolitan Building.

THE PRESENT STATUS OF THE ABDERHALDEN TEST*

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Much has been written in the last two years on the Abderhalden test. The workers in this field may be divided into three groups:

1. Those who support Abderhalden's contentions entirely and believe that a diagnosis of pregnancy, carcinoma and various other conditions can be absolutely made by exposing the serum from a case to the specific substrate against which these ferments are mobilized by the body.

2. Those who believe that the method is of no possible value in diagnosing pregnancy or any other condition.

3. Those who believe that, while the ferment content of the blood is undoubtedly increased in pregnancy and various other conditions, the specificity of the ferments as maintained by Abderhalden and his supporters is not proved as yet; and in the light of the most recent work is highly improbable.

To the individual not engaged in the work, the many papers appearing, some of which contain contradictory statements, must be very confusing. It is in the hope of clearing up some of this confusion by a statement of what has been found recently by other authors as well as by the writer, that this paper is offered.

In the first place, Abderhalden's present position must be of paramount importance. Since the first descriptions of his technic appeared, various slight modifications have been advised by him. For example, he advises a longer period (from twenty to twenty-four hours) for dialyzation.¹ Why, may we ask, if, as

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1. Abderhalden, E.: *München. med. Wehnschr.*, 1914, lxi, No. 8.