complexus of symptoms pointing to chronic obstruction, and in either case involvement of the mesenteric and retroperitoneal lymphatic glands is sure to occur sooner or later. Tubercular strictures are found most frequently in persons below middle age, while carcinoma is more likely to occur in persons of advanced age. The reverse may, however, be the case, as intestinal tuberculosis may attack the aged and intestinal carcinoma may occur in young adults. The detection of a tubercular focus in another organ, and the discovery of tubercle bacilli in the stools will furnish evidences of the tubercular nature of the obstructive lesion and will exclude the probability of the existence of malignant disease.

ORIGINAL ARTICLES.

PATHOLOGY OF TUBERCULOUS GLANDS OF THE NECK; THEIR EARLY AND COMPLETE REMOVAL.

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That form of adenitis so frequent during adolescence and middle age, wherein tubercle bacilli invade the lymphatic glands of the neck, is one of the most important pathologic conditions which come to the observation of the surgeon. The infection of tuberculosis, and its local development in the lymphatic glands of the neck, naturally presents the strongest grounds for fearing the dissemination of the infection to other and more important structures in the body. These enlarged glands may retain their hyperplasia a varying length of time, but during this time the toxins generated on the spot are absorbed to the detriment and weakening of various structures in the body. The subsequent acute infection, due to streptococci, invades the tuberculous gland, transforming it into an acute abscess, which sometimes brings a spontaneous termination of the tuberculous development. This lymph-adenitis may be limited to some of the superficial or may exist in the deeper lymphatic glands of the neck. The glands grow to the size of a walnut, a group of which would produce a tumor of varying dimensions, but sufficient, by size and compression of surrounding structures, to give through mechanical, aside from its pathologic effects, excessive trouble to the patient.

The superficial as well as the deep lymphatic glands are affected; of the superficial set the most frequently affected are the sub-maxillary lymphatic glands that are situated in the digastric triangle, beneath the body of the lower jaw, also the vertical set of superficial glands of the neck, four to six in number, known as a superficial cervical chain, which are situated chiefly in the posterior triangle of the neck, along the course of the external jugular vein, between the platysma and the deep fascia. The small superficial glands in front of the neck between the hyoid bone and the sternum, and posteriorly from the trapezius muscle are also affected. Among the deeper lymphatic glands of the neck invaded by tuberculosis, we find both the upper and lower set involved. The upper set extends along the course of the internal jugular vein from the base of the skull to the level of the thyroid cartilage. When

these are involved adhesions join these glands to the surrounding structures, and considerable risk is involved in their separation from the deep jugular vein. The lower deep cervical glands follow the course of the internal jugular vein, from the thyroid cartilage to near the clavicle. These receive the lymphatics from the lower portion of the neck, and also from the esophagus and superficial cervical glands. Both the upper and lower set receive the efferent vessels from the lingual, internal maxillary and post pharyngeal glands, being deep lymphatic glands of the head; these receive their lymphatics from the tongue, mouth and nose. We here have direct anatomic reason for tracing these infections of the lymphatic glands of the neck, to the invasion of the lymphatic system by tubercle bacilli through the nose and mouth.

Granted the initial infection, it is easy to understand the resulting hyperplasia. The bacilli are found in the lymph channels between the acini of the glands and, developing there, they generate a toxin, which by its irritation causes a proliferation of the endothelial cells. There is likewise a proliferation of fibrous tissue in the stroma, but not commensurate with the growth of epithelial cells. This process generally starts about the center of the gland, and during the first stage presents a hyaline appearance; subsequently as the infected cells die away, these undergo caseation, or fatty degeneration. It is at this stage that the secondary infection of the streptococci may take place and result in the suppuration of the glands. If we analyze this process, we find a great analogy with the tuberculous process in the lungs, where a cheesy tubercle may occupy one or many trabeculae, and subsequently suppurate under the infection of the germs of the atmosphere, producing an abscess cavity. Such an abscess about the neck often leads to further infection, and certainly lowers the vitality of the patient, predisposing him to other infections of deeper structures. Our modern views of infection of any kind points to the necessity of destroying foci of infection, and leads us to the conclusion that the tuberculous glands should be removed at as early a date as possible, provided they have not shown a tendency to subside under the ordinary treatment.

That a tuberculous process should be removed we have no doubt, and the manner of its destruction or removal is what we now propose to discuss.

Two great methods are in vogue to-day; one consists in exciting violent inflammation within the gland whereby the tuberculous process may be checked. This consists in the injection of an emulsion of iodoform in glycerin, or a solution of iodoform and ether. There is no doubt that in certain cases of inflammation of the superficial glands of the neck this treatment will conquer the disease, but cases are rare, and cure at best can never be gauged from the first. The inflammatory reaction may be very severe, and on subsiding may leave a further tuberculous condition. Again, the application of this treatment to the deeper lymphatic glands is fraught with danger from the possibility of injuring the deep jugular vein, the carotid artery, and other structures. At best, even if the process of tuberculosis stopped, a fibrous mass would be the result, retaining in a measure the appearance of a fibrous growth, and not constituting at any time a perfect cure. We do not mean to condemn the treatment, but do believe that it is not a direct means of fulfilling the indications in the case.

We have always advocated the complete dissection and removal of these tuberculous glands, believing that the sooner such foci of disease are removed the better. The patient can convalesce and regain health under the influence of general tonic and hygienic treatment.

In every case which presents itself we try to locate the anatomic relation of the glands to the surrounding tissue, and direct our efforts accordingly toward dissecting out all of the infected glands. It would be useless to describe the care with which dissection should be made in view of the liability to wound the jugular vein; suffice it to say that throughout this delicate work great care should always be taken to see the work as it progresses. Adhesions are such, at times, that it is impossible to distinguish the outlines of the gland from the surrounding tissue, which might have gathered within itself some important deep structure. Of material help for the safe dissection of these growths is the use of curved scissors, which, by keeping their concavity upon the growth, gives us the greatest safeguard against cutting outside of the growth. Should, unfortunately, the jugular vein be wounded, it is our practice to clamp it, and to allow the clamp to remain *in situ* twenty-four hours. In every instance we packed the wound with iodoform gauze until granulations covered the wound. Patients always stand the operation well and seem to improve in general health rapidly.

The main contra-indication to the operation is the presence of tubercular disease in the lungs. I believe it not good practice to remove tuberculous glands of the neck under these circumstances, for it seems that after the operation the lung trouble takes on redoubled activity in its development. It would seem that the removal of one would concentrate the whole development of the trouble in the remaining focus. With this exception we advise the complete eradication of tuberculous glands. Having followed this practice for many years and having observed in various hospitals, and in private work, over 200 cases, submitted to operation, we believe that this treatment is most in accord with the modern development of bacteriology and surgery.

It is not easy to make a differential diagnosis of tuberculous adenitis from the various growths that invade this locality. For a long time tuberculous lymph-adenitis was known as scrofula. To Koch belongs the credit of establishing these growths as a mere form of tuberculosis.

The conditions likely to be mistaken for tuberculous adenitis would be, malignant lymphoma, known as Hodgkin's disease. In this condition there is a general enlargement of the glands around the neck, and possibly in other portions of the body also, for it is a local manifestation of a pseudo-leukemia. The patient is extremely pale and other structures may be involved. Tuberculous adenitis should be differentiated from a lympho-sarcoma, and secondary metastatic lymphoma, both of which are malignant and can be recognized as such from the rapidity of their development and invasion of surrounding tissues. Syphilis also manifests itself in the glands of the neck, but the process is slow and would involve a greater number of glands of both sides at the same time. Tuberculous glands on the contrary are likely to be limited in number, although they sometimes appear on both sides of the neck simultaneously. The growth is rather slow. At first the gland seems movable, but

as it develops it appears more and more fixed. It is not necessarily accompanied by great pallor, nor does it cause much pain. In fact, in the history of many cases, these tumors retain a certain size for months, without showing any change, and without appearing to give the patient much trouble, except in the gradual weakening effect which they bring on to the general system.

The prognosis in uncomplicated cases of tuberculous adenitis is favorable. Patients improve rapidly in general health and maintain this improvement. In but a small proportion of cases do we see a new development of tuberculosis in the glands of the neck after the operation.

As far as deformity incident to the operation is concerned, should the surgeon exercise an ordinary amount of care the result will not be ungainly. We can often apply a subcutaneous suture which will bring the surface epithelium in absolute apposition, and leave but a very small trace of the operation. When this is compared with the ugly and distorted scars which result from only having allowed these glands to suppurate, there is no doubt that, considering the cosmetic result, the advantage lies altogether in the clean excision of the gland, with an accurate approximation of the lips of the wound. As a rule the wound can be maintained in an aseptic condition, and no pain is experienced at any time after the operation—an element which should commend itself to all those afflicted with this condition. I have no hesitation in advising the operation under all circumstances to young or old, believing it to be the safest way to remove this tendency to further tubercular infection, supplementing this procedure by the ordinary hygienic and tonic measures.

DISPOSAL OF THE STUMP IN APPENDICITIS OPERATIONS.

Read at the Tenth Annual Meeting of the Southern Surgical and Gynecological Association held in St. Louis, Nov. 10-13, 1897.

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No achievement so fittingly typifies the triumphs of the last decade as does the mastery of the most important surgical lesion in the abdomen—inflammation of the vermiform appendix. In 1886-7 Fitz, Sands and Weir made the epoch-making contributions to the diseases of the right iliac fossa that lifted them from the doubt of misconceived pathology and placed them in the pale of surgical resource. In 1889, McBurney completed the last link in the chain of its natural history by recognizing the necessity for prompt surgical interference and advocating its more general practice. Since then every shade of opinion in the spectrum of logic has been entertained. No subject has ever so engrossed the energy of surgeons whose individual experiences have been so keenly scrutinized, and yet whose results have been so positive and convincing. This subject can not be trite on account of its great seriousness. The contributions to its literature make a niche in surgical history replete with continuous endeavor and adorned with unprecedented success. I preface the consideration of one practical phase of the subject by the recapitulation of some facts which