

custom in such cases to leave the sac in the thigh, but this procedure was abandoned after a somewhat unusual experience. I had left in the thigh a thick sac, which could be readily detected. The patient had an attack of vomiting some time after. This was really attributable to bad food, but she was sent up as an urgent case with a diagnosis of strangulated femoral hernia. The sac can be very quickly removed by undercutting the lower lip of the incision, and since then I have always removed it in this way.

Should the sac not be empty, the peritoneal cavity is opened immediately without any attempt at delivery of the sac, and in any doubtful case this is the easiest and safest course to pursue. The nature and condition of the contents is apparent at once. The most frequent content in an unstrangulated case is omentum and is in my experience the only content that becomes adherent to the sac. No attempt is made to separate these adhesions, but

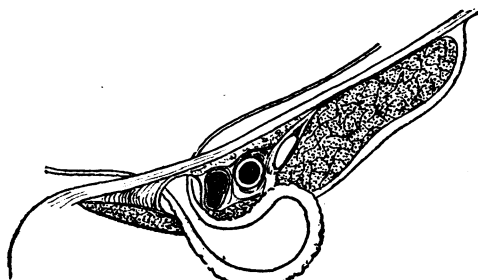


FIG. 7.

the omentum is ligatured and cut off in the peritoneal cavity. The neck of the sac is then cut across, the sac with its adherent omentum being removed at a later stage in the manner above described.

On one occasion the bladder was encountered not as a hernial content but forming the inner wall of the sac. From below it might well have been included in the ligation of the sac, from above the condition was obvious and readily dealt with.

It has been urged that the operation is complicated, and the only reference to it in Keen's *Surgery* dubs it as such and so dismisses it. That it can be made complicated there is no doubt. The operation is rather more difficult in the male owing to the presence of the cord, but in these circumstances I have completed the operation, without undue haste, in eighteen minutes.

Operation from above has even greater claims in strangulated than in simple cases. The general peritoneal cavity is opened as soon as the extraperitoneal fat has been exposed. The condition of the bowel at the site of and above the constriction can be immediately determined. An abnormal obturator artery can be seen and avoided—it has been encountered on three occasions. When the operation is undertaken from below and the gut is not viable, textbooks on operative surgery recommend, almost without exception, that resection should be performed through a second abdominal incision. By the inguinal route a secondary incision is unnecessary, sufficient exposure being easily obtained to permit of the performance of any procedure that may be deemed necessary. Invagination of a gangrenous patch, excision of a gangrenous area without division of the mesentery, and excision of bowel and mesentery with lateral anastomosis have been accomplished in comfort.

Opportunity has been afforded of noting the nature of the constricting agent. It has been observed that reduction by an upward pull is difficult before the constriction is relieved. In other words, the resistance of the constricting ring to distension is considerable. The anterior, posterior and internal boundaries of the femoral ring are dense resistant structures, but the same cannot be said of the slight fibrous partition of the femoral sheath that forms its other boundary, on the side of the femoral vein. The resistance to distension of any ring can only be that of its weakest segment, and it follows therefore that the rôle of the femoral ring as a constricting agent has been exaggerated.

This theoretical consideration was put to the test in the last strangulated case—a male patient aged 72. Gimbernat's ligament was carefully divided outside the sac to such an extent

that a finger could be introduced between these structures. The reduction of the sac contents—a Richter's hernia of small bowel—was in no degree facilitated. Not until the neck of the sac itself was divided could the bowel be drawn up.

In operating from below the constriction is usually relieved from inside the sac, thus dividing its neck and Gimbernat's ligament at the same time. No due assessment can be made in this way of the relative parts played by each. It is contended that the essential agent in strangulation is the thickened neck of the sac, and that Gimbernat's ligament is merely a reinforcing structure. Another striking feature is the frequent occurrence of a Richter's hernia in association with a hydrocele of a hernial sac. In many of the simple cases dealt with the hernia was irreducible, and in every such case a hydrocele was demonstrated. It was noted that the hydrocele did not involve the neck of the sac, but was terminated at a level distinctly below it, at a situation indeed corresponding to

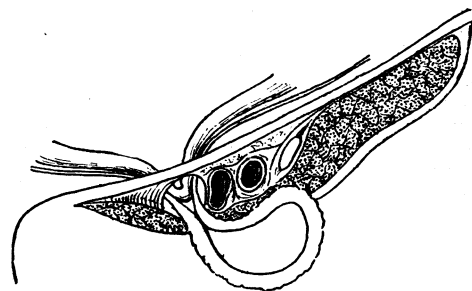


FIG. 8.

that at which the sac is twisted upward and outward, as it emerges from the saphenous opening (Fig. 7). It would appear that the combined effect of axial rotation and friction determines fusion of the sac walls at this site, and brings about the condition shown in Fig. 8, a condition readily complicated by the occurrence, as depicted, of a Richter's hernia. Irreducible femoral hernia of this type may easily escape notice, but the necessity for operation is obvious, and should be undertaken as soon as the diagnosis is made.

Advantages of Inguinal Route.

The advantages of the inguinal route operation may be summed up as follows:

1. It provides a certain means of cure.
2. It permits direct view of the essential structures.
3. Abnormal conditions can be recognized and dealt with.
4. Resection can be undertaken through the original incision.
5. It is neither difficult nor complicated.

OBSERVATIONS ON THE OPERATIVE TREATMENT OF TUBERCULOSIS OF THE LARYNX.

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DURING a period of six years I have treated at Davos 575 cases of laryngeal tuberculosis. On these 575 cases 1,548 operations were performed. In 61 cases curetting only was performed, in 168 both curetting and canterization, and in the remaining 1,319 the electro-cautery alone was employed. In every instance the laryngeal tuberculosis accompanied pulmonary tuberculosis, it being usually a case of stationary pulmonary tuberculosis (of the third degree, according to Turban-Gerhardt's classification) and of tuberculous laryngitis brought by the patient with him to Davos. In 39 cases the pulmonary tuberculosis was clinically demonstrable by the lung specialist as unilateral only (in 25 cases on the right and in 14 on the left). Of the 25 right-sided patients it was found that in 5 cases only the right side of the larynx, and in 4 cases only the left was affected. Of the 14 cases whose pulmonary tuberculosis was left-sided it was found that in 2 cases only the right and in one case only the left side of the larynx was affected. This agrees with the observations of Besold and Gidionsen and others, and argues against homolaterality of pulmonary and laryngeal tuberculosis.

In 259 cases the laryngitis was not serious—that is to say, it was limited to a simple and circumscribed focus, and was in a stationary condition; in 265 cases it was of medium gravity—that is to say, there were multiple but limited foci without tendency to rapid progression; in 59 cases it was grave—that is to say, with diffuse foci and rapid progression and caseation.

The tuberculous lesions were situated most usually on the vocal cords, less frequently on the arytenoids, and less often still on the epiglottis. The proportion of closed infiltrations to that of open lesions (ulcerated) was 1 to 5.

The patients were submitted to operation for their laryngeal lesions only after their general condition had been improved by fairly long fresh-air treatment. In the case of a certain number of them conservative treatment by means of painting with caustics or anaesthetics or by heliotherapy was employed beforehand. It was only after the non-success of these measures that resort was had to operation. This plan presented the advantage that the operative therapy was utilized only under good conditions and on tuberculous patients whose processes had become, so to speak, stationary.

The operation was now and then followed by a recrudescence of the pulmonary tuberculosis, especially in cases in which activity of the latter could be established beforehand. Accordingly the conclusion reached was that operation for tuberculous laryngitis should be undertaken only in the case of patients in whom the pulmonary tuberculosis is stationary, whose general condition is good, and who are free from fever, exception being made in the case of patients suffering from obstinate cough or from dysphagia. Several patients, however, were operated upon notwithstanding fever and progressive pulmonary tuberculosis, and that, too, with a rather favourable result not only on the laryngeal but also on the pulmonary lesion.

The operative method which gave the best results was that of electro-cauterization according to the method of Professors Mermod and Siebenmann with its abundantly destructive action. The sharp-pointed cautery, used deeply, was employed in cases of diffuse closed infiltration (oedematous perichondritis), but its moderate effect is far from being equal to that of the Mermod-Siebenmann method. Experience teaches how far the destructive action of cauterization may be carried at a sitting. Even after very thorough cauterization no serious oedema was observed. Tracheotomy for post-operation stenosis was never necessary. Haemorrhage following the operation was observed twice, in one of the cases ten days afterwards. On the other hand, it must be emphasized that frequently the laryngeal operation had to be postponed on account of haemorrhage which set in beforehand.

The ability to apply the cautery in all the nooks and crannies, of destroying the tuberculous foci deeply and thoroughly, and of obtaining on the burn a thick slough as protection against secondary infections, is an enormous advantage over the curette method. The latter shows itself superior to cauterization only in cases of resection and amputation.

In summarizing the post-operation results, 154 cases, which could be traced only for a month at most, must be eliminated as doubtful, as also 34 very serious cases which were operated upon solely to relieve their sufferings.

The 387 cases whose progress could be followed, may be classified as follows:

Laryngeal Tuberculosis.	Not Improved, or Little Improved.	Moderately Improved.	On the Way to Cure.	Cured.*
First stage	8	46	37	89
Second stage	42	89	13	48
Third stage	13	0	0	2
Total	63	135	50	139

* That is, three months to five years after operation.

Often enough the affection, in particular tuberculosis of the vocal cords, could be said to be cured four to five weeks after operation, but only those cases have been counted as cured in which clean cicatrization devoid of all reaction was to be observed three months after the last interference. Those in whom the last interference took place less than

three months before writing, have been classed under the heading "on the way to cure." A complete cure could be thus established 139 times, that is, in 35.9 per cent. of all the cases observed and followed. Several of them have settled permanently at Davos.

To summarize, for the cases traced, cure of laryngeal tuberculosis was obtained 139 times, as follows:

First stage:	In 180 cases, cure was obtained 89 times=49.4 per cent.
Second stage:	In 192 cases, cure was obtained 48 times=25.0 per cent.
Third stage:	In 15 cases, cure was obtained in 2 cases=13.3 per cent.

Comparison of the percentages in the first and second classes illustrates the importance of operative therapy in the stage of simple circumscribed tuberculosis of the larynx. The length of time after the last interference that the cure could be verified was as follows:

3 to 6 months in	59 cases
6 months to 1 year in	26 "
1 to 2 years in	26 "
2 to 3 years in	12 "
3 to 4 years in	10 "
4 to 5 years in	5 "
More than 5 years in	1 case

In these cases the lesions were 81 times of the vocal cords and 53 times of the interarytenoid region; 55 cases showed tuberculous lesions of the cords on one or both sides, and 20 cases simple circumscribed tuberculosis of the arytenoids. Thus, in 105 cases of isolated lesions of the cords, followed and checked, cure ensued in 52 per cent., and in 74 cases of isolated circumscribed lesions of the interarytenoid region in 27 per cent. The percentage of cures obtained by interference is thus in the cases of isolated lesions of the cords almost double that in the cases of isolated interarytenoid lesions. The latter are characterized by a strong tendency to relapse, not only after curetting but also after treatment by very thorough electro-cauterization.

Conclusions.

These results of my endolaryngeal operations for tuberculosis of the larynx lead me to the following conclusions:

1. Tuberculosis of the larynx is curable.
2. Spontaneous improvement as well as cure can be repeatedly observed in Davos under the influence of general treatment, but it must be denied that improvement in the pulmonary condition has a favourable effect on the laryngeal lesion. In several cases the fresh air cure, as also the usual local conservative treatment, in particular heliotherapy, were insufficient or ineffectual, notwithstanding improvement in the pulmonary condition. A considerable proportion of these cases could be cured by operation.
3. Operative treatment of tuberculosis of the larynx should be undertaken only in cases in which there is no fever and the pulmonary condition is stationary, exception being made for cases in which urgent symptoms demand interference.
4. The best method is electro-cauterization (Mermod-Siebenmann's method) with its broad and deeply destructive radical effect. Only in cases of tuberculosis of the epiglottis did curetting prove itself better than resection or amputation.
5. Operative treatment resulted in cure in a little more than a third of the number of cases followed and checked. The best results (52 per cent. of cures) were obtained in the electro-cauterization of the cords.
6. Operative treatment exercised in several cases a very favourable influence on the lungs and on the general condition.
7. The contention that a stay at a high altitude is contra-indicated for tuberculosis of the larynx is wrong. Even in cases of pulmonary tuberculosis complicated by laryngeal tuberculosis a stay in the high mountains is indicated in accordance with modern experience of both. When the altitude has a favourable influence on the pulmonary, without being able to ameliorate the laryngeal lesions, one must employ local treatment by electro-cauterization according to Mermod-Siebenmann's method which can bring about a particularly rapid cure under the favourable influence which the climate of the high mountains exerts on the vitality of the organism.