

DR. E. C. KENDALL, Rochester, Minn.: Dr. Rogers remarks concerning what should be called *an* active constituent and not *the* active constituent will probably not be answered for a number of years. I base my statement that it is the active constituent of the thyroid on the fact that it is the compound that contains iodine, and many workers have already shown that the activity of the gland is in proportion to the iodine content. I should like to point out the fact that the injection of the active constituent of the thyroid in pure crystalline form produces absolutely no apparent effect, immediately. I have never seen in any animal an immediate response; however, if several daily successive injections are given we can produce a most intense reaction. It is this long latent period which is misleading in thyroid investigations. Any result which is obtained immediately on the injection of preparations from the thyroid is not due to the action of the iodine-containing compound. The latent period after administration of the iodine compound has been one of the most puzzling things to clear up in the investigation I have been carrying on, and I think it has been adequately cleared up by showing that it is necessary to bring into response other endocrine glands, one of which is the suprarenal cortex. If the suprarenal cortex is not activated, a totally different chain of results is obtained than when it is activated.

DR. CHARLES N. DOWD, New York: We do not live in a goiter district. In this particular locality I think we do not see the same proportion of exophthalmic goiter among our goiter patients as is seen in some other localities. We are continually struggling with the problem of patients with enlarged thyroid glands and moderate constitutional symptoms. They are semi-invalids, unable to put normal effort into anything which they undertake. This study has been made in the effort to help these people. Those who have discussed the paper have aided materially in this effort.

## THE DIAGNOSIS OF TUBERCULOUS LARYNGITIS \*

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The importance of the early diagnosis of pulmonary tuberculosis has been fully established. The early detection of the pulmonary lesion has in the majority of instances enabled us either to cure the lesion or at least check its progress.

The early diagnosis of laryngeal tuberculosis, however, is still being neglected, and too often we meet the advanced laryngeal cases, in which conservative treatment is of no avail, while radical treatment is also useless because of the existing extensive destruction of tissue. Such involvement of the larynx could often be avoided if treatment were instituted in the early infiltrative stage. Thus it could safely be said that, as in pulmonary tuberculosis, the prognosis and the successful treatment of tuberculous laryngitis depends largely on early diagnosis.

In this paper, however, the discussion will not be limited to the diagnosis of the early lesion, but will include all stages and phases of laryngeal tuberculosis.

Since the diagnosis of laryngeal tuberculosis is made by the actual viewing of the larynx, it can readily be seen that the recognition of a lesion in the larynx is much easier than the detection of the pulmonary lesion. This would especially apply to the early cases. The diagnosis will also be helped materially if it is borne in mind that tuberculosis of the larynx is invariably secondary to pulmonary tuberculosis.

Through the cooperation and constant watchfulness on the part of the clinic or family physician, laryngologist and the sanatorium physician, tuberculosis of the larynx can be diagnosed early.

The clinic or family physician with a little practice can diagnose early cases of laryngeal tuberculosis if a routine laryngoscopic examination is made on every patient with pulmonary tuberculosis, even when laryngeal symptoms are entirely lacking. Thirty-five per cent. of the cases of tuberculous laryngitis studied had either no symptoms referable to the larynx or else they were very slight and could easily be attributed to other causes. It is therefore evident that unless a careful examination of the larynx is performed on every patient with pulmonary tuberculosis, a number of cases will escape attention.

The laryngologist may often be misled in the diagnosis of the early lesion because of the absence of a history of tuberculosis, and the excellent general condition of the patient. Such errors can be avoided by having a patient presenting a doubtful lesion in the larynx undergo a thorough chest examination, and by repeatedly examining the sputum. Only after persistently negative examinations may tuberculosis of the larynx be excluded.

The sanatorium physician is in a position to diagnose laryngeal tuberculosis in all stages and phases.

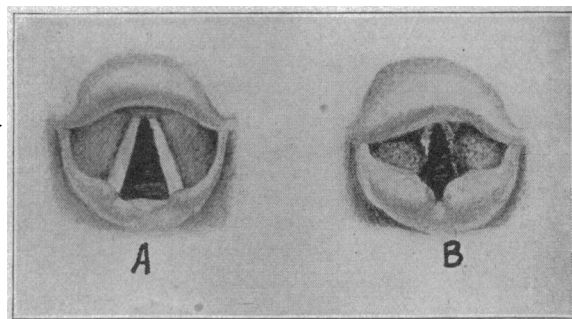


Fig. 1 (Case 1).—A, Acute tuberculosis of the larynx; B, condition of the larynx six weeks later.

He has the advantage of having the patient under his constant supervision, and of possessing accurate knowledge of the patient's pulmonary condition. Therefore, if every patient is examined on admission and subsequently at regular intervals, no case of tuberculosis of the larynx should ever escape the observation of the sanatorium physician.

As in most other diseases, these patients present subjective and objective symptoms. The subjective symptoms are those caused by the lesion in the larynx as well as those associated with the pulmonary lesion. The objective symptoms are those of pulmonary tuberculosis and the physical findings on laryngoscopic examination. In this paper laryngeal symptoms and signs only will be considered.

The present study included 150 cases of laryngeal tuberculosis, of which eighty-six were classified as early, and sixty-four as moderately advanced and advanced.

### SYMPTOMS

The symptoms of tuberculosis of the larynx can be conveniently divided into two groups: first, those of the early stage, and second, those of the moderately advanced and advanced stages.

The most common symptom among the eighty-six cases of early disease was hoarseness, occurring in

\* From the Municipal Sanatorium, Bureau of Hospitals, Department of Health, City of New York.

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seventy-one, or 82.6 per cent. It often began with slight huskiness of the voice in the morning, gradually disappearing during the course of the day. It varied from a slight change in the voice quality to a low pitched rasping sound. The onset of the hoarseness was, as a rule, insidious in the chronic cases, while it was more sudden in the acute and subacute cases. When the onset was insidious, the patient was often unaware of the development of this symptom, and only by careful questioning could the date of the onset

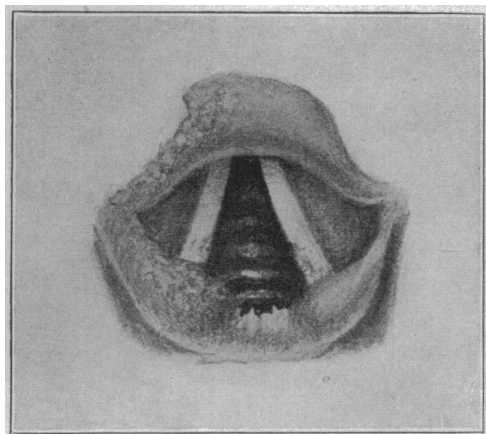


Fig. 2 (Case 2).—Acute tuberculosis of the larynx.

be established. In early cases the hoarseness is most commonly due to infiltration of the posterior commissure or of one or both cords, and often to a combination of both. Cases with marked papillomatous growths in the upper portion of the posterior commissure with no alteration in the quality of the voice were often seen. Thus the hoarseness depends largely on the location of the tumefaction. If it is above or below the cords, the voice may be quite normal.

The next most frequent symptom, or rather combination of symptoms, was the sense of discomfort in

TABLE 1.—SYMPTOMATOLOGY NOTED IN 150 CASES OF TUBERCULOSIS OF THE LARYNX \*

Symptoms	Early Cases or Stage 1		Advanced Cases or Stages 2 and 3	
	Number	Per Cent.	Number	Per Cent.
<b>Hoarseness:</b>				
Slight .....	32	37.2	4	6.3
Moderate .....	23	26.8	17	26.5
Marked .....	16	18.6	40	62.5
No hoarseness .....	15	17.4	3	4.7
<b>Total .....</b>	<b>86</b>	<b>100.0</b>	<b>64</b>	<b>100.0</b>
Dysphagia .....	2	2.3	11	17.2
Dysphonia .....	1	1.2	11	17.2
Aphonia .....	3	3.5	12	18.8

\* Sense of discomfort was present in 51, or 59.3 per cent., of the early cases and in 55, or 86 per cent., of the advanced cases. This was absent in 35, or 40.7 per cent., of the early cases and in 9, or 14 per cent., of the advanced cases.

the larynx. It was present in fifty-one, or 59.3 per cent., of the cases. This sensation was vaguely and variously described as a lump in the throat, desire to clear the throat before talking, consciousness of the throat irritation as if caused by a hair lodging in the throat, dryness, hypersecretion, burning, rawness, sticking pain, etc.

Dysphagia, dysphonia and aphonia are uncommon among early cases of tuberculous laryngitis. Dysphagia was found to exist in only 2.3 per cent. of the early cases; dysphonia in 1.2 per cent., and aphonia in 3.5 per cent.

Of the sixty-four cases with pronounced lesions, fifty-two were of Stage 2 and twelve were of Stage 3.

The symptomatology in this class is more definite and often pathognomonic. Hoarseness was present in sixty-one of the cases, or 95.3 per cent. Sense of discomfort was present in fifty-five, or 86 per cent. Dysphagia and dysphonia in eleven, or 17.2 per cent., and aphonia in twelve, or 18.8 per cent., of the cases.

From the foregoing, it appears that hoarseness is almost always present when the involvement is extensive, and the classic symptoms, such as dysphagia, aphonia and dysphonia, although more common than in the early cases, are far less common than generally supposed.

The physical findings in tuberculous laryngitis will depend, first, on the stage of the disease, whether early or advanced; second, on the type of the lesion, whether acute, subacute or chronic. The early or incipient cases are characterized by infiltrative changes; the advanced cases by extensive infiltration with ulceration. The acute cases are characterized by the presence of macroscopic tubercles, soft edema with rapid destruction of tissue; the subacute cases, by pseudo-edema due to proliferative changes and the formation of granulations; the chronic cases, by hyperplastic changes, marked fibrosis and slow course.

#### PATHOLOGIC MANIFESTATIONS

*Anemia of the Larynx.*—This is often spoken of as a sign of tuberculosis. This sign is present in acute cases in which we have formation of tubercles, marked edema and interference with circulation. The acute type of laryngeal tuberculosis, however, is not the most common type. Only thirteen out of 150 patients examined had an acute involvement of the larynx, and therefore anemia is rather an uncommon feature of tuberculosis of the larynx in general. When anemia is present in other than acute cases, it is usually due to a general anemic condition of the patient.

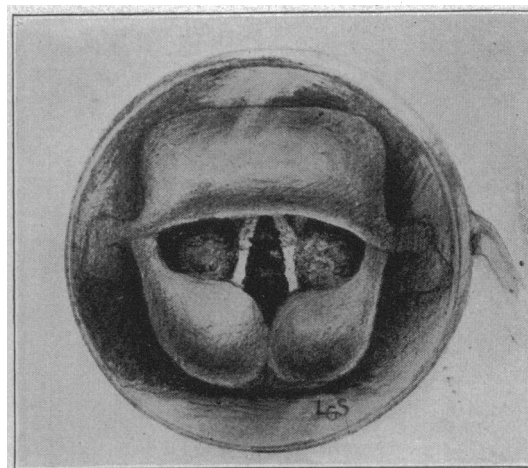


Fig. 3 (Case 3).—Acute tuberculosis of the larynx.

*Congestion.*—This condition is more common than anemia. It is present in the great majority of the subacute and chronic cases. The congestion may be due to a catarrhal condition preceding the tuberculous lesion, or may be caused by the tuberculous lesion itself.

*Infiltration.*—By this term is implied inflammatory changes caused primarily by the tubercle bacillus. The part affected is congested and increased in size. The edema may be either of the soft variety, such as seen in the acute case, or of the hard indurative kind,

as seen in the subacute and chronic cases. Soft edema occurring in the arytenoids usually produces the characteristic pear-shaped swelling. When the process is chronic, there is a marked proliferation of connective tissue, and the infiltration becomes hard. Infiltration is most common in the posterior segment of the larynx, but may be seen elsewhere.

**Ulceration or Necrosis.**—Degeneration of tissue usually occurs after tubercles coalesce and caseate. A typical recent ulcer has a grayish appearance, while

a chronic ulcer may be red, due to the formation of granulations. Ulcers are most commonly seen at the posterior portion of the vocal cords, the vocal process, the posterior commissure, and the rim of the epiglottis.

**Tumefaction.**

—This may appear before or after ulceration

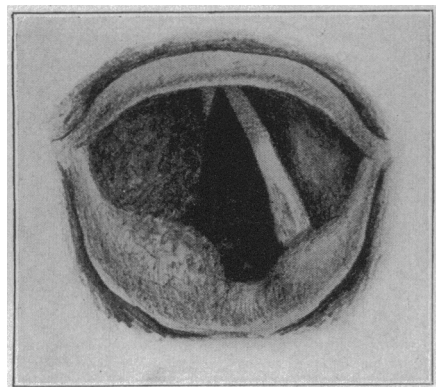


Fig. 4 (Case 4).—Acute tuberculosis of the larynx.

takes place. Tumefaction before ulceration is usually due to edema, and is most common in the arytenoids, the ventricular bands, the laryngeal surface of the epiglottis and the aryepiglottidean folds.

TABLE 2.—PHYSICAL SIGNS OBSERVED IN 150 CASES OF TUBERCULOSIS OF THE LARYNX \*

	Early Cases or Stage 1		Advanced Cases or Stages 2 and 3	
	Number	Per Cent.	Number	Per Cent.
Interarytenoid Space:				
Affected .....	78	90.7	63	98.4
Not affected .....	8	9.3	1	1.6
Total .....	86	100.0	64	100.0
Vocal Processes:				
Affected .....	41	47.7	57	89.0
Not affected .....	45	52.3	7	11.0
Total .....	86	100.0	64	100.0
Arytenoid cartilages:				
Affected .....	45	52.3	36	56.3
Not affected .....	41	47.7	28	43.7
Total .....	86	100.0	64	100.0
Vocal cords:				
Affected .....	17	19.8	46	71.9
Not affected .....	69	80.2	18	28.1
Total .....	86	100.0	64	100.0
Epiglottis:				
Affected .....	13	15.1	23	36.0
Not affected .....	73	84.9	41	64.0
Total .....	86	100.0	64	100.0
Ventricular bands:				
Affected .....	16	18.6	20	31.3
Not affected .....	70	81.4	44	68.7
Total .....	86	100.0	64	100.0
Aryepiglottidean folds:				
Affected .....	6	7.0	18	28.1
Not affected .....	80	93.0	46	71.9
Total .....	86	100.0	64	100.0

\* The cases were grouped into three clinical types: There were 13, or 8.7 per cent., of acute cases, 66, or 44 per cent., subacute, and 71, or 47.3 per cent., chronic cases.

When it follows ulceration, it usually takes the form of granulations, papillomas or tuberculoma. Granulations are most common when ulcerations are present. Papillomas and tuberculoma usually occur at the posterior commissure.

PHYSICAL SIGNS

The frequency with which a part of the larynx was found to be affected was in direct proportion to the amount of trauma that part received as a result of its functional activity and its location.

**Interarytenoid Space.**—The earliest and most frequent seat of disease was the posterior commissure. This was found to be involved in 141 out of 150 cases examined. Of the eighty-six cases of early disease seventy-eight, or 90.7 per cent., showed involvement of the posterior commissure, while in the sixty-four cases of advanced lesions it was involved in sixty-three, or 98.4 per cent.

The earliest change in the posterior commissure consists of hyperplasia of the mucous membrane. On partial approximation of the cords, this hyperplastic mucous membrane takes on a wrinkled appearance. A streak of mucopus is often seen adhering to the space; but this merely signifies that there is a discharging focus in the lungs. It is often present without any demonstrable tuberculous lesion in the larynx. The usual color of the hyperplastic mucous membrane is gray, although occasionally it is red. As the lesion progresses, a median furrow is formed which is readily perceived on a partial approximation of the cords following a deep inspiration. At this stage a lateral furrow, as described by Casselberry,<sup>1</sup> is also frequently observed. The formation of these furrows is due to the constant creasing of the diseased mucous membrane during all expiratory acts. A little later, if the disease is not arrested, the process will go on to ulceration. Of 141 cases affected, thirty showed ulceration of the posterior commissure. The ulcers were usually shallow and of gray appearance. Often there is an exuberance of granulations with the formation of papillomas or tuberculoma. The papillomas vary in size and shape, but are usually of the broad base type. The amount of discomfort caused by a papilloma in the space depends on its location. If situated right be-

tween the true cords, the symptoms, such as hoarseness, aphonia and dysphonia, are marked while if situated above or below the cords, symptoms may be lacking. Patients with papillomatous growths in the space almost always clear the throat before talking. This is usually due to the presence of the growth or to the streaks of mucopus adhering to its rough surface. Conditions such as nasal stenosis, chronic pharyngitis, accessory sinusitis, bronchiectasis, lung abscess, syphilis and asthma will cause a hyperplasia of the posterior commissure simulating tuberculosis. When these conditions, however, are eliminated, interarytenoid hyperplasia with or

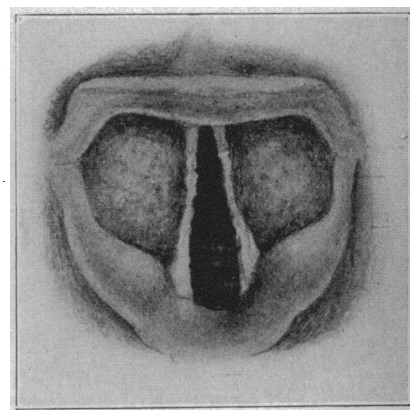


Fig. 5 (Case 5).—Subacute laryngeal tuberculosis.

1. Casselberry, W. E.: The Recognition of Early Changes in the Larynx in Tuberculosis, THE JOURNAL A. M. A., Nov. 15, 1913, p. 1789.

without ulceration is pathognomonic of tuberculosis of the larynx.

**Vocal Processes.**—The portion of the larynx next most frequently affected is the vocal process, or the anterior angle of the arytenoid cartilage, which gives attachment to the vocal cords. The vocal process was found frequently affected in early cases, and is there-

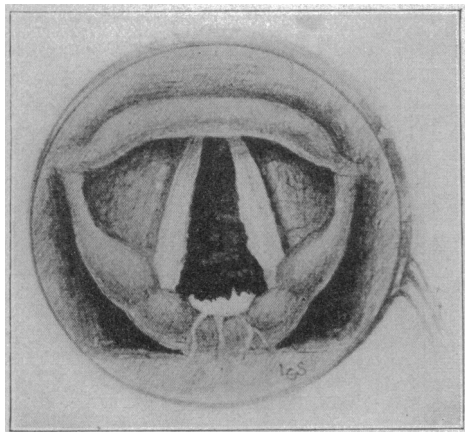


Fig. 6 (Case 6).—Subacute tuberculosis of the larynx.

fore considered separately. Of eighty-six cases in which early involvement occurred, the vocal process was affected in forty-one, or 47.7 per cent., while of sixty-four cases of advanced disease it was affected in fifty-seven, or 89 per cent. The proximity of the vocal processes to the arytenoids, true cords and interarytenoid space, with the consequent liability to trauma, renders them a favorable site for the development of the lesion.

**Arytenoid Cartilages.**—The arytenoids are next in frequency of involvement. Infiltration of the arytenoids varied from slight swelling, which appeared hard, or semiedematous, to large edematous masses, partially obstructing the opening into the larynx.

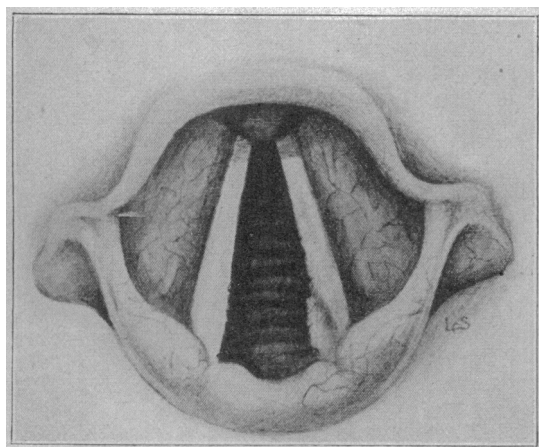


Fig. 7 (Case 7).—Subacute tuberculosis of the larynx.

Marked edema of the arytenoids with extension into the folds gives the characteristic pear-shaped appearance. Out of eighty-six cases of early disease, they were found affected in forty-five, or 52.3 per cent., while they were involved in thirty-six, or 56.3 per cent., of the sixty-four advanced cases. Thus it is seen that eighty-one of the series, or 54 per cent., showed infiltration of one or both arytenoid cartilages.

**Vocal Cords.**—Out of eighty-six cases of early involvement, the vocal cords were affected in seventeen, or 19.8 per cent., while of the sixty-four cases of advanced involvement, affection of the cords was noted in forty-six, or 71.9 per cent. The usual site of the lesion was at the posterior portion of the cords. The anterior portion was often involved together with the posterior portion, but very rarely was the lesion limited to the anterior portion. Lesions of the cords

TABLE 3.—THE ORDER OF FREQUENCY OF INVOLVEMENT OF THE DIFFERENT PARTS OF THE LARYNX

	Tuberculous		Nontuberculous	
	Number	Per Cent.	Number	Per Cent.
Interarytenoid space.....	141	94.0	9	6.0
Vocal processes.....	98	65.3	52	34.7
Arytenoid cartilages.....	81	54.0	69	46.0
Vocal cords.....	63	42.0	87	58.0
Epiglottis.....	36	24.0	114	76.0
Ventricular bands.....	36	24.0	114	76.0
Aryepiglottidean folds.....	24	16.0	126	84.0

do not differ in their appearance from a lesion located at any other part of the larynx. Descriptive terms, such as "mouse-eaten," "granular" and "cleft-like," are often used in speaking of these lesions. Thus sixty-three out of 150, or 42 per cent., of the cases studied showed involvement of the true cords.

**Epiglottis.**—The epiglottis was found affected in thirty-six out of 150 cases studied. Of the eighty-six cases of early involvement, the epiglottis was affected in thirteen, or 15.1 per cent., while in sixty-four cases of advanced disease it was affected in twenty-three, or 36 per cent. The epiglottis is the

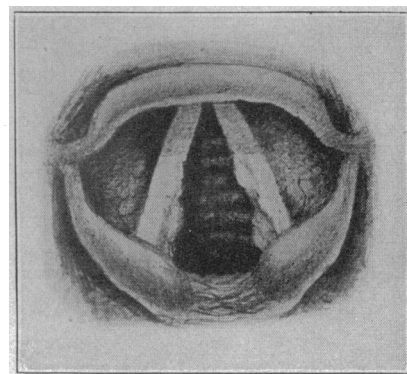


Fig. 8 (Case 8).—Subacute tuberculosis of the larynx.

first portion of the larynx that comes into view on laryngoscopic examination, and its lesions are therefore most easily detected. Infiltration is the most common lesion of the epiglottis. The site of the lesion was either at the rim or else at the cushion. All the lesions were bilateral and more or less diffuse. Only one case presented a lesion limited to the right side and the dorsal surface of the epiglottis.

**Ventricular Bands.**—The ventricular bands were diseased in thirty-six cases out of 150 examined. Of the eighty-six cases of early involvement, sixteen, or 18.6 per cent., were found affected, while of the sixty-four more advanced cases twenty, or 31.3 per cent., revealed lesions of these bands. The most common lesion of the false cords was infiltration. Only six cases out of the thirty-six showed erosions.

**Aryepiglottidean Folds.**—Of the 150 cases studied, twenty-four showed involvement of the folds. Of the eighty-six cases of early disease, the folds were affected in six cases, or 7 per cent., while of the sixty-four cases of advanced involvement, they were affected in eighteen, or 28.1 per cent. The usual manifestation of the disease was infiltration. Only two cases out of the twenty-four showed infiltration with erosion.



## DIFFERENTIAL DIAGNOSIS

In discussing the differential diagnosis, only those conditions that are not described at length in textbooks will be considered here.

**Bronchiectasis and Lung Abscess.**—A large majority of patients with bronchiectasis or lung abscess presented an appearance in the larynx typical of tuberculosis. The pulmonary condition of these patients being unknown at the time of the examination, the laryngeal lesion was classified as tuberculous. The diagnosis was changed only when it became established that they were suffering from a nontuberculous pulmonary infection, and the larynx would unlikely be tuberculous.

**Accessory Sinusitis.**—These cases often present an appearance in the larynx that may lead one to believe it tuberculous. In these patients there is usually a marked thickening at the posterior commissure and often at the posterior ends of both true cords. The thickening is undoubtedly due to the purulent discharge from the posterior nares, and to the improperly modified air breathed in through atrophic nasal chambers, a condition which usually accompanies chronic accessory sinusitis. In such cases, a thorough

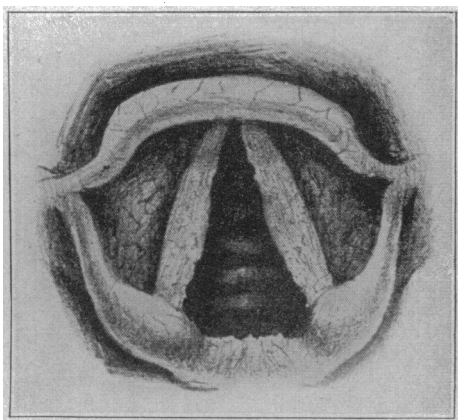


Fig. 9 (Case 9).—Chronic tuberculosis of the larynx.

examination of the nasal chambers and sinuses will help in establishing the diagnosis of the laryngeal lesion.

**Laryngitis Sicca.**—This condition often accompanies accessory sinusitis, atrophic rhinitis and nasal obstruction. The lesion in these cases is diffuse, and here, also, the diagnosis may be determined after a thorough examination of the upper portion of the respiratory tract.

TABLE 4.—THE ORDER OF FREQUENCY OF ULCERATION OF THE DIFFERENT PARTS OF THE LARYNX

	Number of Involvements	Number of Ulcerations	Per Cent.
Arytenoids .....	81	6	7.4
Aryepiglottidean folds .....	24	2	8.3
Ventricular bands .....	36	6	16.7
Epiglottis (rim) .....	36	7	19.4
Interarytenoid space .....	141	30	21.3
Vocal processes .....	98	39	39.8
Vocal cords .....	63	31	49.2

If, however, in addition to one or more of the three previously described conditions the patient also has a positive sputum, he should be carefully watched, for the resistance of the larynx having been lowered, it is readily subject to infection by the tubercle bacillus, and any signs of progress of the lesion should be regarded as evidence of clinical tuberculosis.

**Lupus.**—When occurring in the larynx, this disease is characterized by a warty growth, very little ulceration and marked fibrosis. While tuberculosis of the larynx is usually secondary to tuberculosis of the lungs, lupus of the larynx is supposedly secondary to lupus of the skin. In the author's case, however, the lupoid lesion in the larynx was apparently primary.

We must also differentiate tuberculous laryngitis from hypertrophic laryngitis, syphilis and carcinoma, conditions familiar to all.

## REPORT OF CASES

**CASE 1.**—I. T., aged 20, had a moderately advanced type of pulmonary tuberculosis. The larynx showed uniform infiltration of the epiglottis with no ulceration and interarytenoid hyperplasia (Fig. 1 A). Discomfort in the throat was the only subjective symptom present.

The condition in the same patient six weeks later is shown in Figure 1 B. There is acute edema with ulceration of epiglottis, both arytenoids, aryepiglottidean folds and ventricular bands; infiltration and erosion of both cords; negative Wassermann test. There were marked dysphagia and dysphonia and regurgitation of food, especially liquids, through the nose, which latter symptom is caused by the tuberculous involvement of the oropharynx and soft palate, which the patient developed soon after admission. The diagnosis was acute tuberculosis of the larynx with very grave prognosis.

**CASE 2.**—E. McH., aged 19, was in the moderately advanced pulmonary stage. There was infiltration of the entire epiglottis with erosion of the right half; infiltration and erosion of the right aryepiglottidean fold and arytenoid, and hyperplasia of the posterior commissure. Occasional dysphagia, occurred, but no hoarseness. The diagnosis was acute tuberculosis of the larynx.

**CASE 3.**—J. N., aged 43, in whom pulmonary tuberculosis was moderately advanced, had a marked infiltration of the epiglottis (turban-shaped), pear-shaped arytenoids, and infiltration and erosions of both false and true cords. The Wassermann test was negative. Occasional dysphagia, marked hoarseness and dysphonia occurred. The diagnosis was acute tuberculosis of the larynx.

**CASE 4.**—P. V., aged 38, had moderately advanced pulmonary tuberculosis. On examination, edema and ulceration of the right ventricular band and the right arytenoid were found, also slight edema of the left arytenoid with infiltration of the vocal process. The Wassermann test was negative. Discomfort in the larynx was the principal subjective symptom. The diagnosis was acute tuberculosis of the larynx.

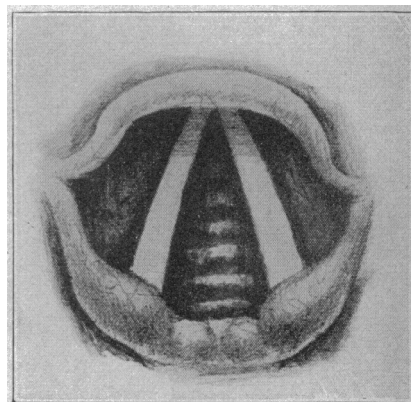


Fig. 10 (Case 10).—Chronic tuberculosis of the larynx.

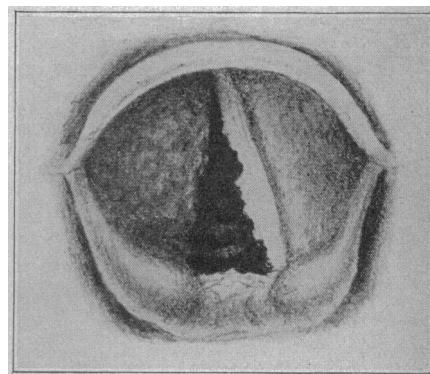


Fig. 11 (Case 11).—Chronic tuberculosis of the larynx.

CASE 5.—P. S., aged 22, was in an advanced stage of phthisis, and examination of the larynx revealed infiltration with superficial ulceration of both ventricular bands, erosions of both cords and swelling of both arytenoids. One year ago the patient had an acute involvement of the entire larynx with pronounced dysphagia. Amputation of the upper two-thirds of the epiglottis was followed by marked local and general improvement. The diagnosis was subacute tuberculosis of the larynx following the acute type.

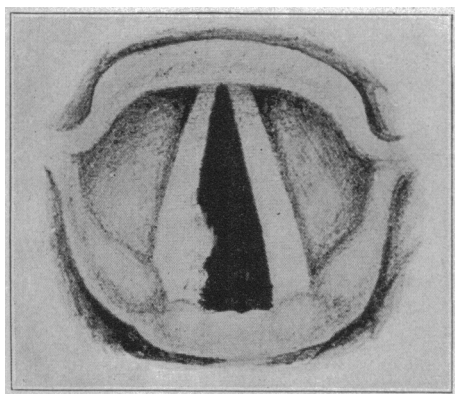


Fig. 12 (Case 12).—Chronic tuberculosis of the larynx.

CASE 6.—P. F., aged 21, complained of hoarseness. A broad-based papillomatous growth was found in the posterior commissure of the larynx. It represented the characteristic rugged appearance with adhering streaks of mucopus, and there was infiltration and slight ulceration of the free edges of both true vocal cords. This patient was in an advanced stage of pulmonary tuberculosis. The diagnosis was subacute tuberculosis of the larynx.

CASE 7.—A. P., aged 30, in whom pulmonary tuberculosis was moderately advanced, showed a slight thickening at the posterior commissure of the larynx, with infiltration and ulceration of posterior portion of both true cords especially the left. There was also slight hoarseness. The diagnosis was subacute tuberculosis of the larynx.

CASE 8.—O. B., aged 26, complained of hoarseness and occasional discomfort in his throat. Examination revealed infiltration of the posterior commissure with mammilated appearance of the mucous membrane, and infiltration and erosion of the posterior two thirds of both true cords. The patient had a moderately advanced type of pulmonary tuberculosis. The diagnosis was subacute tuberculosis of the larynx.

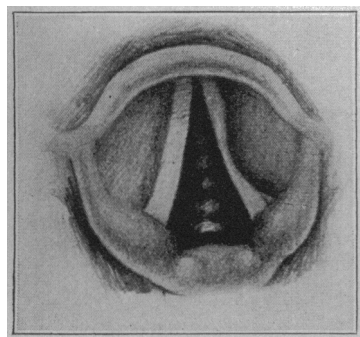


Fig. 13 (Case 13).—Chronic tuberculosis of the larynx.

CASE 10.—O. H., aged 24, was not troubled with any irritation of the throat, but examination of the larynx showed infiltration of the posterior commissure with slight thickening of the arytenoids. These signs are generally the earliest manifestation of laryngeal tuberculosis. Diagnosis was chronic tuberculosis of the larynx.

CASE 11.—F. G., aged 28, had an advanced type of pulmonary tuberculosis. The entire right vocal cord was eroded, with infiltration and erosion of the right ventricular band.

Also partial erosion ("mouse-eaten" appearance) of the left cord and hyperplasia at the posterior commissure with chronic infiltration of both arytenoids. There was marked hoarseness and partial aphonia. The diagnosis was chronic tuberculosis of the larynx.

CASE 12.—M. K., aged 30, complained of slight hoarseness and, on examination of the throat, papillomatous infiltration of the posterior half of the right cord with slight thickening at the interarytenoid space was found. Pulmonary tuberculosis in this patient was far advanced. The diagnosis was chronic tuberculosis of the larynx.

CASE 13.—A. W., aged 24, was in an early stage of pulmonary tuberculosis. Infiltration of left ventricular band was to be seen, also a chronic hyperplasia of the posterior commissure but no subjective symptoms of throat irritation had been noticed. The diagnosis was chronic tuberculosis of the larynx.

CASE 14.—E. C., aged 24, had a warty growth on all parts of the larynx. Physical examination of the lungs was practically negative; sputum examination and the Wassermann test were negative. Hoarseness, dysphonia and discomfort in the larynx were the troublesome subjective symptoms. The diagnosis was lupus of the larynx.

#### CONCLUSIONS

1. The early diagnosis of laryngeal tuberculosis is of considerable importance.

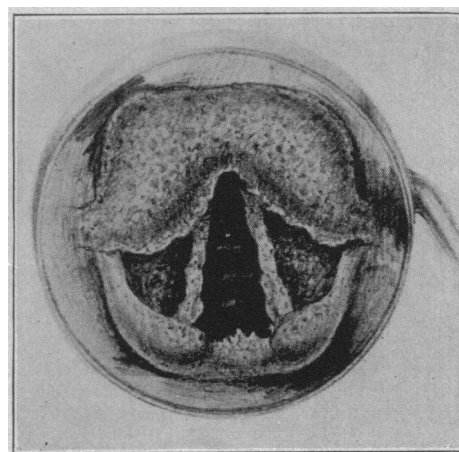


Fig. 14 (Case 14).—Lupus of the larynx.

2. Since tuberculosis of the larynx is almost always secondary to pulmonary tuberculosis, the determination of pulmonary tuberculosis is of value in the diagnosis of laryngeal tuberculosis.

3. Dysphagia, dysphonia and aphonia are rare in early cases, and much less common in late cases than generally supposed.

4. The frequency with which a part of the larynx was found to be affected was in direct proportion to the amount of trauma that part received as a result of its location and functional activity. The parts were affected in the following order of frequency: interarytenoid space, vocal processes, arytenoids, vocal cords, epiglottis, ventricular bands and aryepiglottic folds.

5. Many cases of bronchiectasis, lung abscess and accessory sinusitis present a laryngeal picture similar to tuberculosis, and to avoid confusion a thorough study of each case is essential.

6. Through the cooperation of the family or clinic physician, the laryngologist and the sanatorium physician, no case of laryngeal tuberculosis should ever escape our attention.

## ABSTRACT OF DISCUSSION

DR. WOLFF FREUDENTHAL, New York: Dr. Dworetzky has brought out several points which are not quite in accord with my experience. When, for instance, he says that tuberculosis of the larynx is similar to pulmonary tuberculosis, I cannot quite agree with him. If we have plain laryngitis which does not respond to treatment, we ought to examine the lungs in every case. That anemia of the larynx is rare is contrary to my experience. I have observed a marked anemia beginning at the border of the uvula and going down, which occurs frequently. The congestion which is seen in many instances is often due either to a cough or the previous occupation of the patient, as, for instance, in cigarmakers.

DR. EMIL MAYER, New York: The last picture shown by the speaker is to my mind one of the most interesting things I have seen, in that it shows the condition of what we might call chronic tuberculosis or lupus. If you have never seen a case of lupus, bear that picture in mind; it will save you a great deal of trouble, because if you saw an epiglottitis, or even the anterior part of the larynx, in that condition, you would immediately say that is tuberculosis and get into trouble, for the reason that your patient would have very few, if any, of the symptoms. The most important differentiation between a chronic tuberculosis, that is, a lupus of the larynx, and tuberculosis is in the question of prognosis. I know a business man who is doing fine work, whose voice is not affected, and yet he has a ragged epiglottitis; he has no cough, but he knows that he has tuberculosis of the larynx. It really is a lupus, and that is the most important differentiating sign, namely, ulceration and destruction without any corresponding symptoms.

## A NEW OPERATION FOR MOVABLE KIDNEY \*

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Garre<sup>1</sup> tells us that movable or floating kidney is mentioned in the literature of early Arabian medicine. Landau<sup>2</sup> states that the anatomists of an early date knew of the congenital form of this malady but that the acquired variety was first mentioned in 1581 by François Pedemontanus. The first surgical effort in the treatment of the condition was a nephrectomy performed by Martini in 1878. It was not until 1881 that the rational method of restoring the organ to its normal location and fastening it in position was proposed by Hahn.<sup>3</sup>

Since his time there have been the greatest variety of operative procedures advocated, all of them intended in one way or another to suspend the kidney by sutures either through its substance, through the tunica propria or through the fatty capsule. Some have thrown loops around it of fascia, catgut, nonabsorbable sutures, or gauze, designed to hold it in place for the formation of adhesions, while others have utilized the fibrous capsule by carrying it over a rib or over some other component structure of the abdominal wall. Gauze packs and envelopes have been used in a great variety of ways, both to hold it up temporarily and to induce the formation of adhesions.

Zondek<sup>4</sup> reminds us that the diagnosis of abnormal kidney position and mobility is by no means easy,

since various students of anatomy who have made special contributions to this subject fail to agree on the amount of kidney structure that is normally uncovered by the ribs as well as on the normal range of motion imparted to it by respiration or by change of position.

It is obvious, then, that no surgical operation is justified by the mere considerations that a kidney is abnormally palpable or movable. The intrinsic symptoms produced by this condition are frequently so elusive and so difficult in some instances to identify when they appear in a highly nervous person that I am not convinced that it is very good surgery to operate, as Mills<sup>5</sup> says, "for subjective symptoms alone."

It must be admitted that a highly movable kidney is often accompanied by a renal type of pain which is

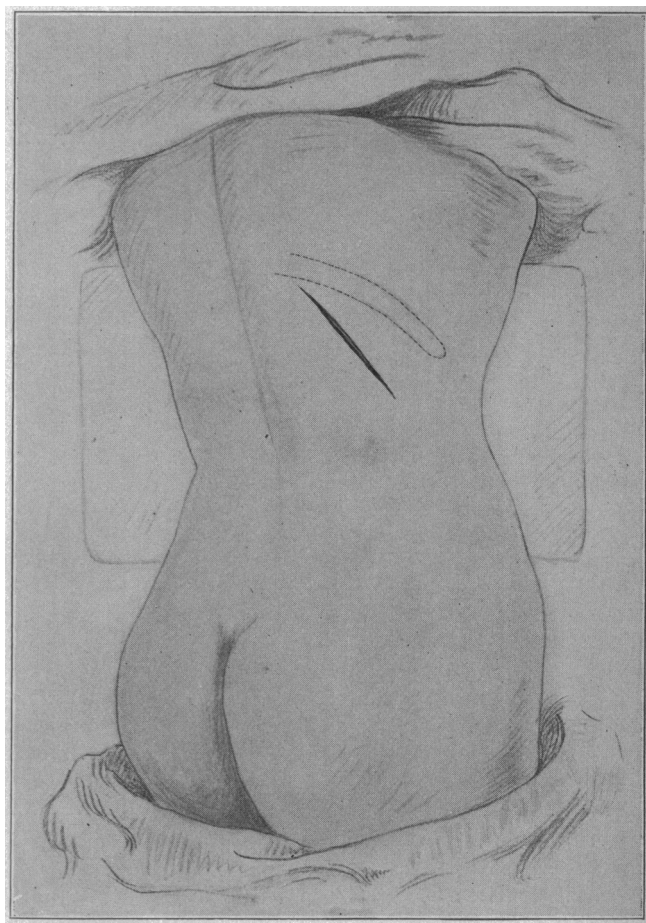


Fig. 1.—The incision.

instantly relieved by lying down. Then, too, there is Dietl's crisis, which some observers seem to think characteristic of this condition; however, one must be sure of the absence of kidneystone, stricture of the ureter, gallstone disease, etc., before making those symptoms his sole guide to an operation for movable kidney.

It would seem in the light of present knowledge that the one definite and invariable indication for operation must be of an anatomic nature, namely, intermittent hydronephrosis. This is expressed by a roentgenographic demonstration of a dilated kidney pelvis, atrophy of the apexes, and a kink in the ureter.

\* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

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2. Landau: *Movable Kidney in Women*, Selected Monographs, London, New Sydenham Society, 1884.

3. Hahn: *Zentralbl. f. Chir.*, 1881.

4. Zondek: *Die Topographie der Niere und ihre Bedeutung für die Nieren Chirurgie*, Berlin, August Hirschwald, 1903.

5. Mills, G. P.: *Discussion on Nephropexy and Its Results*, Tr. Roy. Soc. Med., 1913-1914, 7, Part 3.