

# MALFORMATIONS, INJURIES, AND DISEASES OF THE ŒSOPHAGUS.

BY PROF. DR. V. V. HACKER AND DR. G. LOTHEISSEN.

## CHAPTER I.

### METHODS OF EXAMINING THE ŒSOPHAGUS.

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#### ŒSOPHAGOSCOPY AND ITS TECHNIC.

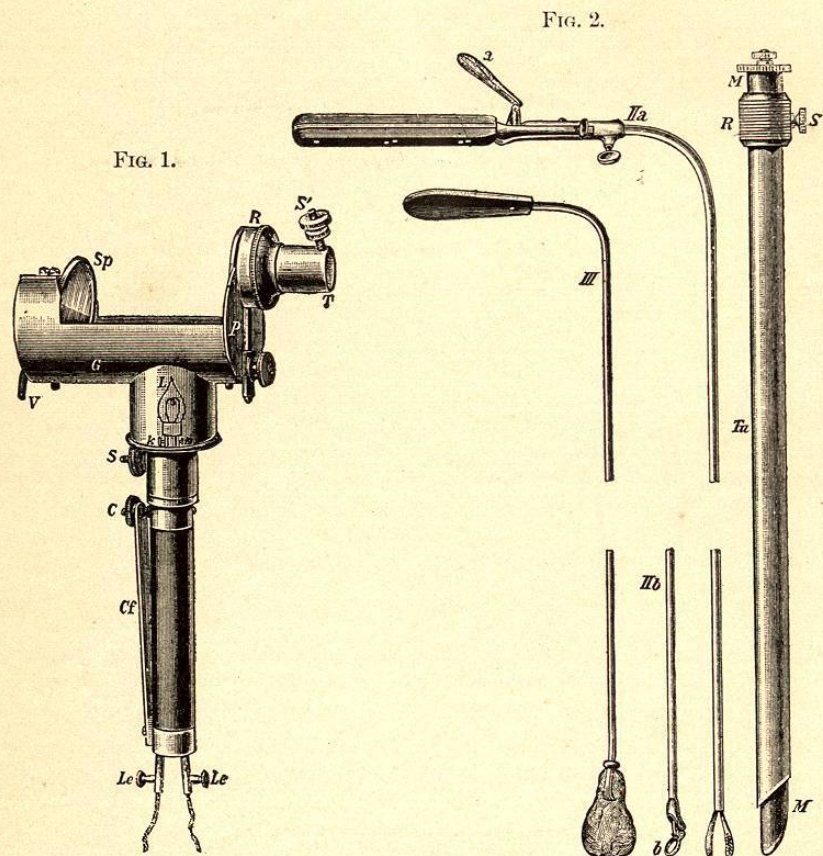
By the method now generally employed, which was devised by Mikulicz, the œsophagus is directly inspected by means of a straight tube. This is the simplest and safest form of œsophagoscope. Jointed tubes that can be subsequently straightened were first described for this purpose by Störk, Kelling, and others.<sup>1</sup> In order to direct the light from an electric lamp into the tube, either a panelectroscope (Leiter's) or Casper's electroscope is employed.<sup>2</sup> Either of them can be attached to any tube. For illumination, either a plunge or storage battery or the street or house current is employed. The œsophagus tubes are constructed of sections of metal tubing 10–15 cm. in diameter and 19, 30, 40, 45, or 50 cm. in length. The ends are cut either square or oblique, allowing for a few centimetres to project from the mouth for the purpose of more conveniently handling the tubes. These are the proper lengths for examining those portions of the œsophagus most frequently diseased; namely, the beginning of the œsophagus and its termination, situated respectively about 15 and 40 cm. from the teeth. The region of the bifurcation is about 26 cm. from the teeth. The point where the œsophagus passes through the diaphragm is 37 cm. from the teeth. If the panelectroscope is screwed to the tube and the patient is quiet, both hands will be free, though ordinarily a second person is necessary to prepare and hand the necessary instruments—cotton-carriers, extraction-forceps, etc. The tube is passed by means of a hard-rubber sound obliquely rounded at

<sup>1</sup> In Mikulicz's clinic, according to Göttstein, it was possible in several rare cases to insert Kelling's tube where the straight tube failed.

<sup>2</sup> The author described Leiter's panelectroscope, together with the most important instrumentarium, in his article, "The Technic of Œsophagoscopy." Casper's electroscope, together with the instrumentarium employed by Mikulicz, is described by v. Hacker, "Technik der Œsophagoskopie," *Wien. klin. Wochenschrift*, 1896; Göttstein, "Technik und klinik der Œsophagoskopie," *Mittheil. aus den Grenzgebieten der Med. u. Chir.*, 1900–1901, Bd. vi. u. viii.

its tip. Only in particularly difficult cases is the tube passed over an English woven bougie, which exactly fits the tube and is previously passed into the œsophagus. Drawing the larynx away from the vertebral column is only necessary in very exceptional cases. (Figs. 1 and 2.)

In the following paragraphs the method of œsophagoscopy examination as practised by the author will be described. The patient should be examined with the stomach entirely empty, or at least he should not have eaten anything for some time. If as a result of



Œsophagoscope. (Leiter.)

Tube, traction-forceps, cotton-carrier, jointed curette.

vomiting, particularly where the tube comes in contact with the cardia, the stomach contents flow into the tube, the latter is lowered (or the foot of the table occupied by the patient is carefully raised). The contents will then flow out; the portion remaining in the tube should be mopped out with cotton or removed by a pump (elyso-pompes). During the examination the upper part of the body of the patient should be clothed with only a shirt, and the clothes over the lower portion should be opened sufficiently to allow free respira-

tion. Exceptionally, œsophagoscopy may be performed under complete anaesthesia, carefully watching respiration, however. In ordinary cases it is sufficient to paint the pharynx (especially the region of the pyriform sinus) with a 20 per cent. solution of cocaine. The instrument should be lubricated only near its tip with a small quantity of vaselin, water, or egg-albumin. The patient is placed upon the examining-table in a sitting posture. The base of the tongue being gently drawn forward and downward with the left hand, the instrument is now passed, the oblique surface of the tip being directed posteriorly, and the tube made to glide along the posterior pharyngeal wall. If the tube overcomes the normal resistance caused by the larynx pressing against the vertebral column and the contraction of the inferior pharyngeal constrictor, it usually glides down unhindered. Having completed this step, the patient is carefully placed upon his back and inspection begun. In exceptional cases it is easier to pass the instrument with the patient placed upon his back, with head dependent.<sup>1</sup> As far as the cardia no marked muscular resistance is encountered, provided the instrument maintains the same direction. If the instrument becomes caught or if the tube refuses to advance farther, the author immediately employs the panelectroscope or Casper's electroscope in order to place the tube in the centre of the lumen of the œsophagus. In this way it can readily be determined in what direction the tube or the head of the patient must be moved in order to advance the former. This rule is particularly important in advanced carcinoma, ulcerative processes, and internal injuries, in order to avoid perforation with the tube. Such hindrances are explained by the anatomical course of the œsophagus. It should be noted particularly that in the lower portion of the thorax the œsophagus is situated toward the right and posteriorly, but that as soon as it passes through the diaphragm it turns forward and to the left.

Œsophagoscopy should always be preceded by careful examination with graduated bougies, or in case of foreign bodies with a bougie a boule, in order to discover the seat of the disease and to be able to choose the proper length of tube. If the examination is negative, the longest tube should be inserted in order to reach the cardia, and on withdrawing the tube every part of the œsophagus should be illuminated successively.

Œsophagoscopy examination is as a rule readily accomplished. In order to relieve the unpleasant sensation accompanying swallowing, which is occasionally perceived after examination, cracked ice and moist compresses about the throat may be employed.

Œsophagoscopy is contraindicated in acute inflammation of the œsophagus (unless the indication for the removal of a foreign body is more urgent), as well as in all general or local diseases which are associated with serious respiratory disturbances (empyema, certain cardiac diseases, aneurism, tracheal stenosis, etc.) or which furnish any contraindications for the passage of instruments in general.

<sup>1</sup>Mikulicz conducts his examinations in the right lateral position. At his clinic cocaine is carried out under control of the laryngeal mirror.

### RADIOSCOPY, PERCUSSION, AND AUSCULTATION OF THE ŒSOPHAGUS.

*Radioscopy*, either the examination with the fluoroscope or *x*-ray photography, may in certain cases be of diagnostic value and an aid to treatment. Its employment will be considered when treating of foreign bodies, strictures, dilatation, and diverticula of the œsophagus.

*Percussion*, as well as auscultation, is of subsidiary importance in the diagnosis of diseases of the œsophagus. In case of diverticulum in the neck, if the latter is filled with gas, percussion will produce a tympanitic note; if filled with food, a dull note. Moreover, dilatation of the lower thoracic portion of the œsophagus above the hiatus, if filled with food, and also extensive tumors of this portion, will produce a dull note, sharply demarcated from the clear pulmonary resonance. This is obtained on the left side, at the side of the vertebral column, between the seventh and ninth ribs. (Rosenheim.)

By means of *auscultation* two swallowing-sounds can be perceived: The first, at the beginning of swallowing, which is rarely audible, the so-called *Durchspritzgeräusch*, possesses no diagnostic value. It is caused by the fact that during the normal act of swallowing the air within the closed space of the pharynx is compressed, and thus drives the fluid and soft portions of food through the œsophageal tract, forcing them at the same time as far as the region of the cardia, the latter being under normal circumstances closed. At the moment when the contents are propelled forward by peristalsis and the cardia opens, the second sound is produced (by the accompanying compressed air). This second sound, which can generally be heard, is the so-called *Durchpressgeräusch*. (Meltzer.) It can be heard as a distant gurgling in the upper portion of the left costal border, usually about seven seconds after swallowing. The *Durchpressgeräusch* is absent in those rare cases in which the first sound is audible. It is absent also when there is marked narrowing near or at the cardia. In the latter cases it is of diagnostic importance even if the *Durchspritzgeräusch* is not present.

### EXAMINATION OF THE ŒSOPHAGUS WITH BOUGIES.

In sounding the œsophagus it is important to note that even under normal conditions the œsophagus possesses three constrictions (v. Hacker): the superior isthmus is situated at the commencement of the œsophagus; the inferior, in the region of the hiatus œsophageus (œsophageal opening in the diaphragm) (frequently 1 or 2 cm. above); the middle one corresponds to the region of the bifurcation of the trachea or the transition of the cervical into the thoracic portion. Between the middle portion and the inferior extremity is situated the widest portion of the organ, which is usually spindle-shaped. It is important to know the total length of the œsophagus, as well as the distance of its most important portions from the teeth, particularly in determining the site of strictures and foreign bodies.

Examination of the œsophagus with bougies frequently takes the place of inspection and manual palpation. Both of the latter measures are only valuable in the cervical portion, in cases of pulsating diverticula and carcinoma, in so far as during the swallowing of food diverticula occasionally produce a diffuse swelling above the clavicle, which may disappear again as soon as the former are emptied by pressure with the hand, and in so far as a carcinoma or secondary glandular enlargement due to the latter may cause a prominence of the neck at the side of the larynx.

Examination with the bougie or stomach-tube should be slowly and carefully conducted. Only in this way is it possible, particularly where disease is present, to follow the irregular course of the œsophagus without producing injury. For the purpose of sounding the œsophagus the English bougies or stomach-tubes are generally employed. They are constructed of a woven tissue impregnated with a gummy material, and can be softened or hardened by dipping them into warm or cold water, respectively. In this way they can be bent into any desired shape. The stomach-tubes are also employed for feeding the patients. Portions of tumors may be caught by the openings situated near their tip.

Before passing a bougie artificial teeth should be removed from the mouth and the patient examined for aneurism of the aorta. In cases of the latter, examination with bougies has frequently caused death from hemorrhage.

Flexible bougies are passed with the patient in a sitting posture, the head being held erect, or even a little bent forward, as in this way the entrance to the pharynx is somewhat widened. For the latter reason the passage of bougies is usually easy in cases with kyphosis of the spine. (v. Hacker.) While with the index finger of the left hand the back of the tongue is gently pressed downward and forward, the bougie, after having been slightly bent, is passed with the right hand over the tongue as far as the posterior pharyngeal wall.

Patients who are being examined for the first time are liable to gag and to stop breathing; they should be urged to breathe deeply and slowly. By holding the head in the above-mentioned position, the thyroid cartilage is not pressed backward, as it is when the head is extended; and if this obstruction is removed, the entrance of the bougie into the larynx can safely be avoided. The last-mentioned occurrence, which need not be apprehended under normal conditions, is observed particularly in cases in which there is constriction of the entrance to the œsophagus, and is favored by a bulging forward of the posterior pharyngeal wall, defects of the epiglottis, and anæsthesia of the larynx. (Chiari.) If the passage of the bougie meets with obstruction, it is sufficient under normal conditions to withdraw the bougie a little, and then again carefully advance it, or direct the patient to swallow, or to bend the head farther forward, or to grasp the larynx with the left hand and draw it away from the vertebral column. The head should not be bent backward except when straight, rigid instruments

(œsophagoscopes, etc.) are passed. This position is useful, however, after the bougie has entered the upper portion of the œsophagus by rendering it possible to advance and palpate in a straight line. If a stomach-tube is to be passed through the nose, the former should be slowly forced downward as soon as it has reached the posterior pharyngeal wall. A finger passed through the mouth or a blunt hook may serve as a guide. (König.)

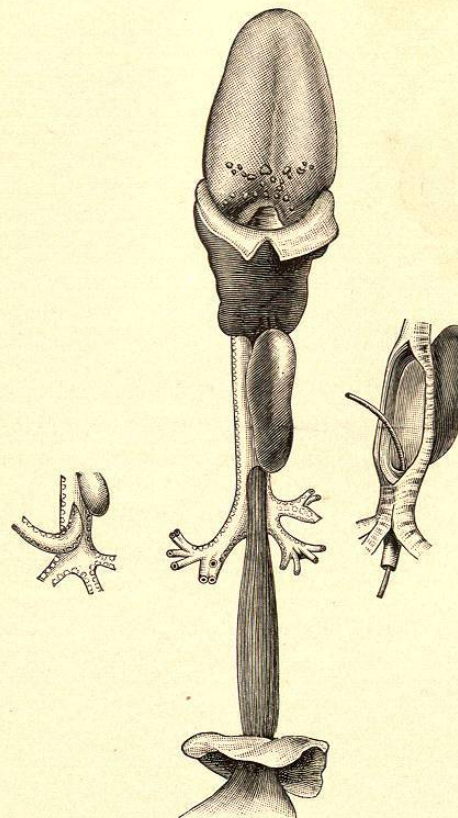
## CHAPTER II.

## MALFORMATIONS OF THE ŒSOPHAGUS.

BY DR. G. LOTHEISSEN.

VERY few of the congenital deformities of the œsophagus possess practical significance. They will therefore be only briefly mentioned. There are usually other deformities presented at the same time, as a

FIG. 3.



Congenital division of the œsophagus and œsophageal tracheal fistula.

result of which children are born dead (35 per cent.) or die within the first week (about 88 per cent. of those born alive). Furthermore, such