A gradually increasing degree of stenosis, arising without any known primary cause, may be due to an esophageal polyp. The esophageal bougie discovers nothing more distinctive than resistance to its progress; therefore the diagnosis of POLYP, in distinction from other neoplasms, must be made by signs characteristic of the condition. These distinctive symptoms are due to the site and the mobility of the growth. It develops behind the larynx; consequently hoarseness is often noticed at the beginning of the trouble, and at a later stage the laryngoscope may detect some change in the position of the structures inside the larynx. The polyp becomes more movable as it increases in size. In addition to obstruction in swallowing, it causes retching, not only during deglutition, but also at other times. Severe attacks of choking, which occur now and then when the polyp is forced up by the retching and comes to lie over the aditus ad laryngem, are characteristic of this condition. Death from asphyxia has been known to result. All doubt is removed if the polyp becomes visible, or if the bougie, as sometimes happens, detects the mobility of the tumour.

Just as a spasmodic stricture of the urethra is met with, a similar *spasmodic* narrowing of the esophagus without doubt occurs. Those cases in which there is a fissure in the mucous membrane of the tube are readily explained. When a particle of food passes the sensitive spot a reflex spasm may take place. Some surgeons state that in such cases they noticed the distinct sensation of the bougie being grasped by the esophagus. We are reminded by the symptoms of cases of fissura ani, in which likewise a reflex spasm of the sphincter is present; also of vaginismus, in which a reflex spasm

of the sphincter vaginæ is found. For this reason the disease has been called ESOPHAGISMUS.

If other spasms of the esophagus occur, it is evident that the stenosis caused by them must be characterized by *an alternation between complete permeability and complete stenosis.* When these symptoms are noticed no uncertainty should be entertained; but, as these strictures are found in hysterical and hypochondriacal patients, their symptomatology varies greatly. Of the utmost importance is the observation that hysterical patients give very *many symptoms.* Sometimes such a woman will be unable to swallow hot, at other times cold, food; sometimes solids, at other times fluids, at times nothing passes down. She is afraid that her gullet is "growing together," and that she will have to die of starvation; or she fears eating anything lest immediate strangulation result. The experienced surgeon will know, after a few minutes of listening, with what condition he has to deal. In all cases, examination with the bougie remains as a positive means of diagnosis. As a rule, however, any treatment directed against the hysteria (often psychical treatment) is sufficient to relieve the condition without examination.

Boyer mentions the case of a woman who swallowed solid food only with greatest fear and trembling. He cured her by taking his meals with her, twice daily, for a month, and convincing her of the idleness of her fears. Sauvages treated a similar case with a daily cold bath, combined with milk diet. *Alii aliter.* Older authors mention that some patients are able to swallow large quantities of fluids rapidly, and at one gulp, but never slowly and gradually. The same can be seen to-day, without the least suspicion of hypochondria, at the drinking-bouts of the so-called Foxes (a student society).

Next to carcinoma of the esophagus, no more pitiable condition is met with than RETRO-ESOPHAGEAL

Abscess. It may run a chronic course as the result of caries of the vertebræ. The primary trouble is then evident (the kyphotic prominence caused by one or more spinous processes), and can be readily demonstrated. The dysphagia increases gradually. When the bougie is introduced it reaches a sensitive spot, which is the seat of the obstruction. Such an abscess may also be due to perforation of a foreign body. The literature of the subject contains a number of sad cases, in which an insignificant foreign body penetrated into the retro-esophageal connective tissue, suppurated, and caused fatal mediastinitis, pleuritis, or pericarditis. Finally, such an abscess may arise idiopathically and run an acute course. Although the symptoms of stricture of the esophagus are indispensable in order to make the diagnosis, the above-mentioned severe complications occupy the foreground of the picture. They may occur in consequence of inflammatory stricture (analogous to periurethral abscess), or as a complication of carcinoma of the esophagus by spontaneous perforation, or as the result of accidents in probing, in spite of the greatest skill and care. The perforation may take place into the mediastinum, pleura, lung, bronchus, or into a large blood-vessel; in the latter case death results almost instantaneously. In the other cases the symptoms are always very grave. If perforation into the air-passages has taken place, we would expect subcutaneous emphysema as a direct result. But this is by no means necessary, for the tissues are usually so glued together, previous to perforation, that the air is unable to make its way into the connective-tissue planes. Rupture due to probing is more often followed by emphysema. Coughing and spitting up of substances just swallowed is

characteristic. If the coughing-fit occurs immediately upon swallowing, we must suspect a short and wide communication; if the cough appears somewhat later, the communicating passage is more apt to be long, tortuous, and narrow. If perforation into the lung has taken place, pneumonia will soon appear, while perforation into the pleura or mediastinum is rapidly followed by pleurisy or mediastinitis.

The highest grade of stenosis is complete closure of the passage. Cicatricial strictures and pressure from extraneous tumours cause a relatively impervious stricture—i. e., one which will not permit the passage of the smallest instruments.

There are cases in which water can pass only drop by drop. It is well to bear in mind that in such cases, by changing the position of the patient, we may at times succeed in passing a small bougie. In new-born infants attention must be fixed in another direction. There are cases of complete *congenital closure* of the esophagus—i. e., a blind termination. Examination with an elastic catheter will disclose at once that the child is sure to die unless a gastrostomy is performed.

In the first months of infancy only one form of interference with transglutition is met with, and even that is very exceptional. For that very reason I desire to draw it to your attention, because we are not likely to be on the lookout for it. The trouble referred to is Retropharyngeal Abscess, which has been mentioned in a previous chapter. The child holds its head rigid and immovable. Nasal catarrh is present, the palate is swollen, and a tender mass appears on the side of the neck posterior to the ramus of the jaw. In addition, difficulty in deglutition is met with, sometimes

to such a degree that all food which the child attempts to swallow immediately regurgitates through the mouth and nose. Laboured breathing and attacks of suffocation also occur. If these symptoms are noticed, examination of the posterior pharyngeal wall by the finger is called for. To omit this would be an act of grossest carelessness. In larger children, more careful examination will show whether the cervical vertebræ have undergone any change which would indicate caries of the vertebral bodies, or at least permit us to determine whether some part of the cervical spine is sensitive to pressure.

A disturbance of transglutition, confined almost entirely to childhood, occurs as a sequel to DIPHTHERITIA. The case may have been one of simple diphtheria, or a diphtheria complicating scarlatina. Nasal speech, appearing in the first to the fourth week, is often so marked after the healing of the ulcers, that speech grows unintelligible. Fluids, especially, are violently coughed out through the nose. More rarely total inability to swallow is found. As the disease is confined to the palate, the lips and tongue suffer no disturbance of function. But the soft palate hangs immovable, and shows no reflex when irritated. The soft palate does not participate in the enunciation of vowels, nor does it take part in the act of swallowing. A knowledge of this is sufficient to make the diagnosis.

GLOSSO-LABIO PHARYNGEAL PARALYSIS (laryngeal) must be distinguished from the foregoing. It was first brought to our knowledge by Duchenne's investigation in 1860, and is known also as bulbar paralysis, because the seat of the disease is in the bulbus medullæ. The first-mentioned name indicates sufficiently the extent of the palsy. As the palate is paralyzed, swallowing is as much interfered with as in the diphtheritic variety, but long before this stage is reached other symptoms gradually appear. The tongue shows marked impairment of function in chewing and speaking, so that the food can no longer be turned about in the mouth. Linguals can no longer be pronounced, consequently, some time before difficulty in swallowing is noticed, the patient's speech assumes a peculiar character, which may be imitated by pressing down upon the tongue with one finger, and attempting to speak with the finger still in the mouth. Frequent expectoration of saliva indicates the beginning of difficulty in swallowing. Inability to bring the lips into the position assumed in whistling, and a peculiar rigid physiognomy, are apparent. Paralysis of the glottis precedes death, which occurs in the first to the third year of the disease.

FOREIGN BODIES lodged in the esophagus form a chapter full of difficulties to the surgeon.

Therapy should be guided by diagnosis. But even if the diagnosis is assured, the therapeutic problems may still be insurmountable. It is readily seen how much greater they will be if, as often happens, the diagnosis is imperfect. In the cases collected by Professor Adelmann, four are mentioned in which no suspicion of a foreign body was entertained; in fifteen no positive diagnosis could be made, although all possible means were employed. In most instances we are obliged to rest content with the discovery of some obstruction in the esophagus which is proved to be a foreign body by the history elicited. In many cases the impact of the bougie will betray the nature of the obstruction, for it will show that no abnormal structure has been encountered. Foreign bodies, as a rule, are arrested in one of three spots: at the isthmus (level of third dorsal vertebræ), at the esophageal opening in the diaphragm, and at the cardia. Thin, pointed bodies frequently stick in the pharynx, and therefore this must always be carefully examined. Exploration of the esophagus proper is carried out by means of an ivory-tipped whalebone bougie. Duploy has suggested a flexible metallic bougie, provided with a silver olive at the anterior end and with metallic tambour at the other, which is to increase the sound produced by the

impact against the foreign body. Esophagoscopy is a true blessing, especially in cases of impacted foreign bodies. Much information, and that of a positive nature, can be expected from it. Foreign bodies may not only obstruct the esophagus, but also *perforate* it. Perforation may be caused by the instruments used in searching for the foreign body. In addition, perforation may be due to the breaking down of a carcinoma, or to ulceration. How is perforation recognised? No general answer can be given to this query. Subcutaneous emphysema may signal the occurrence of rupture—another symptom being hemorrhage—not only bleeding from the mouth, but also the rapid formation of a false aneurism in the neck. Anadale found an aneurism of the inferior thyroid caused by a perforating foreign body. Perforation may also show itself by producing an acute mediastinitis or pleuritis.

A few cases of *spontaneous rupture* of the esophagus have been placed on record. As a rule, it occurred in strong men habitually addicted to alcohol, the accident taking place soon after a meal, and proving rapidly fatal. The esophagus was probably previously diseased. The symptoms were: retching and vomiting; then pain localized at the point of rupture (the cardia); premonition of impending death, collapse, grave respiratory disturbances, and subcutaneous emphysema, starting in the clavicular region and rapidly extending over the entire body.

CHAPTER XI

STENOSIS OF THE AIR-PASSAGES AND OTHER DISTURBANCES OF RESPIRATION

Fabricius ab Aquapendente, the successor of Fallopias, teacher of anatomy and surgery at Padua, said in praise of the operation of bronchotomy, that the physician who performed this operation was like the god Æsculapius. The operation is undertaken to furnish an artificial means of entry for the atmospheric air in cases of stenosis of the larynx or trachea which endanger life. The success of the operation naturally depends upon creating a passage *below* the point at which the stenosis is situated. This applies to all cases of laryngeal stenosis and to stenosis of the upper part of the trachea. Occasionally a tracheotomy opening is made *above* the stenosis, but only when dealing with a compression of the trachea, which may be relieved by passing an elastic or inflexible tube downward, in order to again distend the air-passage.

Tracheal stenosis may be divided into three groups:

1. Obstruction of the lumen from within—*Obturation.*

2. *Compression* from without.

3. Pathological changes in the walls of the tube which produce a marked narrowing of the lumen—*Stricture*, in the narrower sense of the word.