THREE ESOPHAGEAL CASES.*

BY HARRIS PEYTON MOSHER, M. D., BOSTON.

I wish to present three cases, two cases of stricture of the esophagus with dilation and one case of diverticulum. Then I wish to discuss briefly the treatment of strictures and in so doing to dwell somewhat on instruments and instrumentation and to demonstrate on preparations and models the major facts of the applied anatomy of the esophagus.

Case 1. A boy two years old drank a caustic solution and three months later developed marked difficulty in swallowing. Milk became his only food. One day a part of the milk which he took would stay down, the next day the greater part would be regurgitated soon after it was swallowed.

Under ether a stricture was found at the cardiac end of the esophagus and a moderate dilatation above it. The stricture proved to be about an inch long. It dilated readily with soft bougies to 20 F. From this point the dilatation was carried to 32 F. with the mechanical dilator. It was impossible to pass even a small bougie into the boy's stomach before etherization, but afterwards a number 32 bougie could be passed readily. Since the dilatation which occurred about a year ago the 32 F. bougie has been passed once a week by the family physician. To-day the boy is as well nourished and rosy as one could wish. He still has trouble in swallowing meat.

Case 2. Through the kindness of Dr. Horace D. Arnold and Dr. R. C. Larrabee about two months ago a young woman of thirty, was referred to me for difficulty in swallowing of fifteen years duration. She gave a rather doubtful history of having swallowed a fish bone during her childhood.

At the time of this accident the father pushed his finger down the child's throat and was supposed to have removed the bone. During the past fifteen years the patient has had numerous consultations with physicians and at least once during this time has had bougies passed at regular intervals for a month, and has been fed by stomach tube for an equal period. The chief symptom always has been regurgitation of food within an hour after it was taken. Associated with this was great evidence of malnutrition. The normal weight of the patient is 130 pounds. When I saw her she

*Read before the American Laryngological Association, Boston, Mass., May 31, 1909.

weighed 75 pounds, and was fast becoming a walking skeleton. There never has been any pain, only a sensation of fullness after eating, the feeling of fullness and distention starting in the epigastrium and extending into the neck as far as the larynx. The regurgitation of food was associated with no nausea and seemed to be in a great measure under the patient's control. Whenever she felt discomfort and wished to do so she could bring up the food she had taken. As Dr. Arnold put it, "On request she would bow politely and present you with her last meal." The essential points in the physical examination were as follows: The patient was much emaciated. Over the full width and the entire length of the sternum there was a tympanitic area. No stomach tympany could be made out. A test meal was returned undigested.

I have never had the pleasure of working for a more willing or a braver patient. She submitted without a murmur to a two hour fluoroscopic examination, during which she was fed bismuth and finally had an X-ray plate taken. The conclusions drawn from these two methods of examination were that there was a stricture at the cardiac end of the esophagus with an elongated dilatation of the esophagus above it. The dilatation swung to the right of the median line so that the tip of a bougie struck the bottom of the dilatation but did not enter the stomach.

The Ether Examination. Under ether, the esophagus was easily entered with a large oval tube. The lumen of the esophagus was found to be dilated all the way down, the dilatation increasing and reaching its maximum at the lower part behind the heart. (There were no scars). Everywhere the esophagus appeared to be normal. The posterior wall of the heart could be seen for its full length pulsating strongly into the dilated esophagus from the front and from the left. The opening into the stomach was found readily. It lay to the extreme left of the bottom of the pouch and on a somewhat higher level. When the esophagus was ballooned the dilatation appeared as a large black cavern which the light of the tube failed to illuminate. The opening into the stomach readily took a good sized bougie. The bougie was followed by the mechanical dilator and the opening spread to 45 F. before the resistance became marked. At this point the dilatation was discontinued and a small metal bullet was wound with flax thread and carried with forceps into the stomach and left there. The upper end of the thread was brought out of the patient's mouth and fixed to the cheek with adhesive plaster.

The After Treatment. The after treatment was as simple and as satisfactory as the examination. For twenty-four hours the patient was nourished by rectum, then small quantities of milk were allowed by mouth. The greater part of this was retained. All that was given and all that was returned were measured and compared. A food chart showed the nutritive value of the food taken so that we had the satisfaction of knowing accurately at any given moment how much the patient really took and how nearly this amount approximated the normal amount of food reckoned in calories which this patient's normal weight called for. Needless to say this scientific sureness of feeding was not due to me but was the result of work previously done in this line by Dr. Arnold. It was throughout a great comfort to me. I had the feeling which a surgical man seldom has now-a-days, that the medical part of my case was thoroughly up-to-date and scientific.

On the second day the olive bougies were passed on the thread, starting with the small one and then using the two largest. All the bougies passed easily. After the third and fourth day the patient ceased to regurgitate and at the end of a week was gaining weight. At ten days the patient was eating everything, her meat being minced. She no longer had the feeling of fullness after eating. She was conscious at times that food entered the stomach slowly but the former distress did not come back.

I saw the patient about ten days ago. She is putting on weight all the time, and now weighs ninety pounds instead of seventy-five, her weight when she entered the hospital.

I will speak of the third case and then give what I have to say on the treatment of the three cases.

Case 3. A woman of middle age was sent to me because she had had for a few years symptoms suggesting a pouch and because the attempt to pass a stomach tube, which was necessary on account of a fermentative condition, had failed at the last attempt, although it had passed easily at a number of previous trials. The tube seemed to halt just below the cricoid cartilage. The patient was examined under ether. The object of the examination being, of course, to find out whether or not there was a diverticulum, but especially to determine the presence or the absence of beginning cancer.

The Ether Examination. The large oval tube halted about an inch and a half below the cricoid cartilage, and no lumen could be seen ahead. A tube the size of the gastroscope passed readily into the stomach. The esophagus was apparently normal. Remember-

ing how easy it is to miss pathology with the small tube I went back to the large oval one. Again the tube halted in a blind pocket about an inch and a half below the cricoid cartilage. At this point the window plug was put in place and the lumen of the esophagus dilated. At once it was seen that the end of the tube was in a pouch. With each contraction of the hand bulb which controlled the air pressure the walls of the pouch expanded so that the whole of the pouch could be distinctly seen. On withdrawing the tube slowly, and at the same time forcing air into the esophagus, at a point about an inch below the level of the cricoid cartilage, suddenly two openings were seen. Both openings dilated with each pressure on the bulb. One opening was in the lower left quadrant of the field of vision and the other in the upper right hand quadrant. A probe passed into the lower opening entered a pouch about three quarters of an inch long and a bougie passed into the upper one slipped easily into the stomach. Once the openings were found it was easy to pass the end of the large oval tube at will into either, to go to the bottom of the pouch or to go into the stomach. Before the esophagus was ballooned, however, the large tube missed the opening of the esophagus and the small tube missed the opening of the pouch. Both openings were found only after the esophagus was distended with air. In this case, therefore, the practice of ballooning the esophagus demonstrated its usefulness and its possibilities.

Instrumentation and Methods of Examination. In a paper soon to be published I have gone at some length into the methods of making esophageal examinations, so that I will refer at this time, only to a few points which I wish to bring before you because some of them I am convinced will be of service. It is a great convenience in esophageal examinations to have the examining table placed upon a platform while the examiner stands on the floor. In this way the old sprawling method of conducting the examination is done away with and the procedure assumes a more surgical aspect. Whatever instrument is used, occasionally strong pressure is put upon the teeth. This is especially true if the operator uses the open speculum. Indeed, for a time I exposed myself to the good natured ridicule of my associates at the hospital by loosening and occasionally extracting teeth. Now I use in all cases, a thin dental impression tray and the teeth, good or bad give me no farther trouble. In my opinion it is essential to use as large a tube as the esophagus under examination can be made to take. The lateral po-

sition, the dental tray and the open speculum make it possible to start the introduction of very large tubes and such tubes once beyond the obstacle offered by the cricoid cartilage proceed downward with ease.

The lumen of the esophagus is very much larger than we are accustomed to think it is, both in the infant and in the adult. At one year the esophagus will pass a flat mother of pearl button one inch in diameter. Between two and three years of age the upper part of the esophagus will easily take the end of the Jackson tube spatula. In the adult the general surgeons have for years passed bougies in old stricture cases where the stricture has been dilated and is being kept at its maximum dilatation, which are at least an inch in both diameters. It is repeatedly stated that three quarters of an inch is the safe limit for dilatation in stricture cases. This measurement is manifestly too small.

The objection usually made to the use of large tubes in the esophagus is that they cannot be used without ether. To me this is not an objection. It is only the exceptional case which I wish to examine without ether. A negative examination under cocaine with a small tube amounts to nothing. Whereas a negative examination under ether with large tubes affords data upon which some reliance can be placed.

I consider it settled that strictures of the esophagus are best diagnosed and best treated by means of the esophagoscope and instruments used through it. Nothing could be more satisfactory than the finding of a stricture by this means, and determining its location, nature and extent. Opening the stomach for the relief of non-malignant strictures ought to become a rare operation. Opening the esophagus from the side of the neck for the removal of smooth foreign bodies is already obsolete surgery. The ballooning of the esophagus promises to be a help in locating the lumen of tight strictures, and the direct method of carrying a gelatine capsule filled with thread through the stricture into the stomach is much better than feeding the thread to the patient. The perforated metal olive bougies of Mixter which run down a thread as a guide are of great service in pouch cases and in cases of tortuous or tight strictures. The thread keeps the bougie from going wrong. After a while the small guide can be used without the thread and the olives passed on the guide. The small metal guide often finds the way better than the larger elastic bougie. When the metal guide is in place the large olives can be run down on it with the greatest confidence.

All strictures cannot be dilated. Some will need to be cut. This is now being done. The instruments for accomplishing this are much the same as those used in the urethra. Certain strictures are ideal for the treatment by cutting. I remember one case which I saw with Dr. Coolidge. The patient was a child. In this case there were three or four falciform folds partially encircling the lumen of the esophagus at different levels. The folds gradually became smaller until the main stricture was reached. These partial strictures could be readily slit outward to the esophageal wall. When there is a firm ring-like stricture, cutting still can be done, but, of course, it must be employed with the greatest caution. There are too many major relationships about the esophagus to permit the slightest slip up in this matter of cutting the stricture. The esophageal wall must never be cut through. Look at these specimens for a moment and see for yourselves. For perhaps two inches in the upper part of the esophagus it is safe to cut backward and risk perforating the esophageal wall. Everywhere else the esophagus is surrounded with the most important structures. Take the relationships in order. From behind there are the thoracic branches of the aorta, the thoracic duct, the azygos vein, and the descending aorta. Anteriorly, first the posterior membranous wall of the trachea, then the arch of the aorta, then the heart itself. On the right side, in the neck, the recurrent laryngeal nerve, then the right innominate vein, the right azygos vein, and finally the inferior vena cava. On the left side, again in the neck, the recurrent laryngeal nerve in the thorax, the arch of the aorta once more, and finally the whole of the thoracic course of the descending aorta. This is surely a discouraging outlook for cutting. The case is not hopeless, however, because, although it may not be anatomically permissible to cut through the walls of the esophagus on any side, the clinical fact remains that in the majority of cases so much cutting is probably not necessary. We can cut the stricture and nothing else. And this we shall learn to do. I believe that the cases are few where it will again be necessary to open the stomach and saw through the stricture with a string. This method has done good service, but we now have a better one.

What are the lessons which these three cases teach? The first case illustrates the most modern and so far the best treatment for strictures of the esophagus. The stricture was found with the tube and dilated through the tube. This case needs to be dilated again. Perhaps the stricture may come to cutting.

The third case, to take the last case next and out of order, was a pretty example of the help which ballooning the lumen of the esophagus affords in finding a diverticulum. This procedure should be resorted to whenever the lumen of the esophagus does not stand out clearly ahead of the advancing tube.

The second case is the most recent, and the one which still in a measure surprises me. Here was a history of trouble with swallowing for fifteen years. For one month during this time bougies were passed and for an equal period the patient was fed by the stomach tube. The fluoroscope and the X-ray taken after bismuth was swallowed showed a marked dilatation of the esophagus, the dilatation being especially prominent in the lower part, near the opening into the stomach. From the X-ray it seemed probable that the opening into the stomach from the pouch-like dilatation was to be found on the left. I expected a hard examination and a long after treatment. All my expectations, happily, were disappointed. The examination was most easy, the dilatation pouch was readily made out, and the opening from it into the stomach was found at once and proved to be easily dilatable. Within a week, with daily passing of the metal olives, all regurgitation stopped; in a week and a half the patient was eating practically everything and eating it in the natural way, with the exception that the meat was minced. It is now about two months since the examination, and the patient eats everything, only taking the precaution in chewing her food to out-Fletcher Fletcher. Meat she feels goes into the stomach slowly, but a swallow of fluid at once sends it along. The esophagus which was stretched for fifteen years has retained its elasticity sufficiently to contract. This was a surprise to me. In fact the whole case from the beginning to the end has surprised me from its extreme ease and simplicity. If such cases can be duplicated, and I believe that they can, a certain number of esophageal cases which hitherto, have been sent from pillar to post, which one day have been put down as due to nervousness, and the next, subjected to repeated attempts at the blind passing of bougies, and all the time have remained half starved, will be relieved as other surgical cases are now relieved, in a reasonable time by direct examination and by direct treatment.

At the risk of making an anti-climax, I cannot refrain from mentioning two other happenings in this case. One was somewhat ludicrous, the other anything but amusing. I will take the disagreeable happening first. I saw the patient last, one week ago. Since

she has been out of the hospital, perhaps a little over two weeks, her family physician has been passing the metal olives on the metal guide. The last two or three times the olives were passed, they stuck behind the larynx on the return so that the physician told the patient that he thought there was narrowing in this place. The stricture at the cardiac opening gave no trouble either to the passage or to the return of the olives. I found on passing the olives that there was no resistance anywhere on going down but when the olives reached the region of the larynx they stuck firmly. After trying a few times and failing completely to get the olives up, I used almost enough force to lift the patient from the chair, but still the bougie failed to come. He was caught like a fish on a hook. I had visions of giving him ether in order to release the olives. Just as I was beginning to get a little excited, I thought of the probable explanation of the trouble. The olives were caught below the larynx and were tipping it out of line. As soon as I thought of this I pushed the larynx downward and forward with my finger in the mouth and up came the olives. Needless to say I shall not soon forget this maneuver.

This happening distressed both the patient and me. The other happening distressed only the patient. The day before she left the hospital, she asked like a true New Englander, if she could eat beans when she went home. She said her mother told her she couldn't and asked for my decision in the matter. I told her that she could and she did. Her stomach had not been used to beans in quantity for fifteen years and they true to their usual custom liberated a great quantity of gas so that she became acutely distended. She tried to get the beans up but failed. Had they been in the esophagus she could have accomplished this easily by her old habit of regurgitation. Now, however, she could not get them again as she had lost the power to vomit. For an hour or two, therefore, she prayed to go back to the old order of things, until finally the distressing meal passed onward.

828 Beacon St.