

Editorial

Investigating the oesophagus

For many years barium swallow and oesophagoscopy were the only specific techniques available for the investigation of oesophageal disease. Since the 1950s, however, developments in oesophageal laboratories have yielded a number of tests which explore the physiology of the organ, rather than its anatomy. Despite this, clinical acceptance of the tests has been slow. While cardiac catheter and respiratory function laboratories multiply the oesophageal laboratory remains a rarity and a curiosity, and there is considerable confusion over its role. Is it a research toy, a clinical luxury, or a clinical necessity, and which cases, if any, require laboratory studies for their proper clinical management? In order to explore these questions it is necessary first to examine the merits and deficiencies of the two traditional methods of oesophageal study.

The liquid barium swallow is concerned primarily with demonstrating oesophago-gastric anatomy and its pathological variations, and for this purpose is certainly the most satisfactory technique currently available. Herniations, obstructions, and distortions can all be identified and their pathological nature often deduced. It is seriously inadequate, however, when it is used to assess oesophageal function. Gross disorders can be recognised but subtler disturbances of motility may be missed altogether. In certain types of dysphagia the transit of liquid barium may be completely normal even when a serious disorder exists. Such patients may be labelled as "neurotic" or suffering from globus hystericus unless they are screened while swallowing a solid bolus—for example, bread or marshmallow impregnated with barium. As regards the lower sphincter, its function can only be guessed at. Gastro-oesophageal reflux may or may not be observed but its assessment will be wholly subjective and varies with the vigour, experience, and even the mood of the radiologist. Moreover the examination is conducted over a very short period and the findings may bear no relation to what is happening during normal everyday life.

The other main investigation, oesophagoscopy, yields information principally about the lumen and the state of the mucosa. Ulcers, varices, tumours, and strictures can be seen and biopsies taken when appropriate, but again, it gives little information concerning function. We learn nothing about oesophageal peristalsis and cannot even determine whether it is present or absent, weak, normal, or excessive. Certainly we can observe directly the lower oesophageal sphincter and its movements, but what do they mean? The conditions under which oesophagoscopy is performed, whether with the rigid or flexible instrument, are so unphysiological that the observations cannot safely be used as a guide to therapy, and to date there is no proof that they correlate well with objective measurement of reflux. If oesophagitis is present in the distal third one can generally infer that reflux is occurring, but if it is not the endoscopic assessment of reflux and lower sphincter competence is virtually meaningless.

To point out these limitations is in no way to diminish the value of these studies in oesophageal diagnosis. Both are still essential and are usually all that is required for the management of tumours and strictures. But it is illusory to think that these alone can tell the clinician all that he needs to know about every oesophagus. Particularly when the disorder is one of function, additional information may be required which can only come from the laboratory, in the form of pH or pressure studies.

Direct recording of lower oesophageal pH (usually over 12 or 24 hours) provides the only objective and quantifiable index of gastro-oesophageal reflux currently available. It is simple to perform, causes minimal disturbance to the patient, and is essential to the complete assessment of many patients in whom reflux is suspected. In the management of these, two main errors are liable to occur. Firstly a hiatal hernia may be repaired unnecessarily, when it has nothing to do with the patient's symptoms, and secondly the need for operation may be overlooked in the patient who has gross reflux, but does not have a hernia or typical symptoms. In

the first case the patient will be no better off and may well be worse, while in the second he is being denied the relief of his symptoms *and* being exposed to the risk of stricture, which may be much more difficult and dangerous to treat. The use of pH studies will eliminate both of these errors, as it will determine objectively whether or not reflux is occurring and indicate its severity. There is then no need for therapeutic decisions to be based on the doubtful evidence of radiology or endoscopy. If there is no pH evidence of reflux and no other evidence, such as oesophagitis or stricture, operation will not be advised. The origin of that patient's symptoms, even if they sound like reflux, lies elsewhere. Conversely, evidence of gross reflux on pH testing can confirm the oesophageal origin of symptoms and will mean that operation, if required, can be undertaken with a much greater probability of success. If operation is performed, postoperative pH studies can be used to check the functional effects of the procedure, and are mandatory if any non-proven operative technique is being employed. Diagnostically, pH studies are also important in patients with disordered motility in the form of diffuse oesophageal spasm. Here they enable the critical distinction to be made between those in whom the disorder is triggered by reflux ("secondary spasm") and those in whom it is occurring as a "primary" dysfunction. The relevance of this is that treatment differs in important respects. The former will only require hiatal hernia repair, while the latter will require an extended longitudinal myotomy, assuming symptoms are sufficiently severe.

The other main laboratory technique involves the measurement of oesophageal pressures (usually by means of perfused catheters) and thereby examines the contractile performance of the body of the oesophagus and its two sphincters. While radiological studies will often give a clue to the existence of motor abnormalities, detailed information is usually only obtained from pressure studies. In the less obvious forms of achalasia, for instance, the diagnosis may not be at all certain on the basis of radiology and endoscopy alone, but can be confirmed reliably by manometry. This will also distinguish those cases in which the activity of the body of the oesophagus is diminished from those in which it is increased. Similarly the oesophageal dysfunction in scleroderma can be identified—sometimes even before other manifestations of the disease. This is of considerable importance because, if this diagnosis is missed and the patient treated as though he had achalasia, surgery will be

disastrously inappropriate. Destruction of the lower oesophageal sphincter by myotomy will only aggravate reflux, when what is needed is its abolition. Studies are also particularly valuable in patients who have undergone unsuccessful oesophageal surgery previously. In this group the anatomy has often been distorted and radiological studies in particular are very difficult to interpret. By investigating the function of the various parts of the oesophagus, however, the clinician can determine the site and cause of the problem and is then in a position to make a rational decision as to its correct management.

Finally, both pH and pressure studies have an important negative role to play. Symptoms are not uncommonly attributed to the oesophagus when that organ is totally innocent of the charge. Globus hystericus is a good example. To state that a patient has no oesophageal disorder on the basis of liquid barium swallow and endoscopy alone is to assume a defiant rather than convincing posture. To know in addition that the patient has normal peristalsis, normal upper and lower sphincter function, and no reflux is to strengthen one's case immeasurably.

While it is not possible to list here all the laboratory tests and their clinical applications, in general it can be said that they will prevent people being operated on who have nothing seriously wrong with their oesophagus, and will greatly enhance the chances of success (by virtue of precise diagnosis) in those who must be submitted to surgery. Operations thus become specific rather than speculative. At this point, not before, there may be those who will say that in their current practice they are getting along perfectly well without such tests and therefore do not see the need for them. While this may be true, it usually stems from necessity (because of a total lack of facilities) rather than from the conviction of having used the tests and found them to be irrelevant. Furthermore, it is likely that such practices do not have the complicated functional problems referred to them. Where laboratory facilities do exist the usual experience is that the proportion of patients requiring surgery for clinical decisions rises steadily, while in a way diminishing the referral of routine problems. It is certainly possible to conduct an oesophageal practice on the "stretch it, mend it, or cut-it-out" principle, but one still has to assign one of the alternatives correctly to each case, and this is what the laboratory can do. The problem is that it rarely gets the chance.

Perhaps the main reason for this is that there is no clear understanding as to who should

responsible for investigating the oesophagus. By tradition the ENT surgeon, chest surgeon, and general surgeon all deal with various bits of the organ, but hardly any of them deal with all diseases at all levels and at all ages. The gastroenterologist ought to be involved, but as his name implies, his interest all too often begins at the stomach and progresses distally. One fact which cannot be denied is that most of the oesophagus lies in the chest. The thoracic surgeon, therefore, ought to be heavily involved in the management of oesophageal disorders. Admittedly he may decline to accept this responsibility, but if he does so then he will have to invent some good reasons, because territorially it is his problem. If he does accept this responsibility, however, he will need to become his own diagnostician—partly because nobody else is going to do it for him, but also because it is his job to make sure that he is operating for the right reasons.

There is thus a strong case for oesophageal laboratories being under the direction of, or at least closely integrated with, a thoracic surgeon. This is already the pattern in many successful units in North America but is much rarer in Britain. Where the laboratory should be located is less critical. Recently at the East Birmingham Hospital we have established a laboratory as part of the respiratory function laboratory which serves both the medical and surgical chest units.

This is a logical arrangement, as any patient who may come to thoracotomy will require respiratory function studies and many will have combined oesophageal and pulmonary disease, but it is only one of several alternatives which may be equally satisfactory.

Oesophageal investigations are not simply concerned with attaching a diagnostic label to any given patient, but with answering the question as to which particular treatment should be administered. The various tests that have been mentioned are not, therefore, in competition, but complement each other. Some patients will only require a few, while others will need the whole range of studies. But it is only when each patient gets the tests that he requires that the standard of care will approach that which is currently available to patients with cardiac or pulmonary disease.

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