The Journal of Laryngology and Otology
February 1988. Vol. **102.** pp. 152–158

Globus pharyngeus (Part I)

A. J. G. Batch, F.R.C.S. (London)

Introduction

Globus pharyngeus is a very common problem to confront the ENT surgeon, comprising some 3 per cent of all new clinic referrals (Moloy and Charter, 1982; Flores *et al.*, 1981).

It was recognised by Hippocrates, but was first well described in 1707 by John Purcell. Of the condition he said:

'These symptoms are not the vain imaginations and groundless fancies occasioned by the disturbance of the spirits of the brain, but are real sensations actually felt by the patient.'

Unfortunately many physicians still use the term globus hystericus, and this suffix has tended to stifle further consideration of the subject. We still do not understand the aetiology of globus, and since Purcell's time a great number of conditions have been implicated in the pathogenesis without really furthering our understanding (Flores *et al.*, 1981; Mohun, 1955).

Moreover, the symptom complex is not clearly defined and current thinking on the condition is nicely summed up by the Oxford University dictionary definition of 1794—'a choking sensation, as of a lump in the throat to which hysterical persons are subject'. Many patients present with vague pharyngeal symptoms somewhat akin to the globus symptom, and in a condition such as this with no diagnostic physical findings or investigations, a precise understanding of the limits of the condition is an essential prerequisite to rational management.

The treatment of globus is by and large unsatisfactory. Often a normal barium swallow and endoscopy will lead to the conclusion that there is 'nothing wrong', and that the symptoms will go away. For many, the reassurance that they do not have cancer in the throat is enough, but for some the sensation that there really is a lump in the throat is so vivid that no amount of reassurance will convince them otherwise, and they will repeatedly seek the advice of different physicians in the search for a cure.

In the past decade there has been an increasing acceptance that globus is not merely an hysterical manifestation, but is related to some underlying dysfunction of the pharyngo-oesophageal segment. Many regard cricopharyngeal spasm as the principal generator of the symptom, but the evidence to support this is scanty, and conflicting (Watson and Sullivan, 1974; Caldarelli *et al.*, 1970). There is now increasing evidence to link the globus symptom with gastro-oesophageal reflux (Malcolmson, 1960; Freeland *et al.*, 1975; Weisskopf, 1981, Delahunty and Ardran, 1970) and there are several reports of symptomatic response to antireflux therapy. Other reports, however, cast doubt on this link (Moloy and Charter, 1982; Mair *et al.*, 1974) and this situation is still far from clear. Many patients with a demonstrate hiatus hernia derive no benefit from medication, whilst others, with no clear evidence of reflux, improve dramatically. In addition to this, the definition of pathological reflux and its reliable identification on routine investigations may be difficult.

It was for these reasons that this study was set up. Its aims were: firstly, to define clearly the symptom complex; secondly, to investigate the theory that globus symptoms are related to gastro-oesophageal reflux; thirdly, to identify those tests of gastro-oesophageal function which would be clinically most useful; and finally, on the basis of the foregoing, to try and identify those patients who would respond to antireflux therapy, and to provide clear guidelines for the management of the condition.

Conduct of the study

All patients were interviewed and investigated by the author. The majority were primary referrals from their general practitioner with a lump in the throat, but some were referred from other surgeons in the hospital as 'problem' cases.

After initial assessment, all patients underwent routine blood tests, sinus and barium X-rays, and a psychological questionnaire.

At the next visit the results were reviewed and those whose investigations revealed other pathology were excluded. For the remainder, the diagnosis of globus was discussed in more detail, and the patient invited to undergo fibreoptic endoscopy and a Bernstein test.

Following this, if the diagnosis of reflux was in doubt or additional information was required, further investigation, either pharyngo-oesophageal manometry or 24 hr ambulatory oesophageal monitoring, was performed.

From The Royal National Throat, Nose and Ear Hospital, Gray's Inn Road, London WC1X 8DA.

https://doi.org/10.1017/S0022215100104384 Published online by Cambridge University Press

In those patients where reflux was felt to be a possible cause for symptoms, a trial of antireflux therapy was administered.

Throughout the study, the first consideration was to exclude serious pathology masquerading as globus, and to this end almost all patients had barium contrast studies and a fibreoptic endoscopy, the only exclusions being those patients who refused investigation, or whose symptoms had completely settled.

Thereafter the study ran along purely clinical lines, the severity or persistence of symptoms being the sole determinant of the need for further investigation or treatment.

Results were computerised and analysis performed looking for significant relationships between symptoms, investigation findings and results of treatment, using the Chi-square test, and where appropriate, application of Yates correction.

So far 136 patients are available for analysis: follow-up ranged from two to 20 months.

Results of Investigation

Clinical features

The general characteristics of the group as a whole are given in Table I.

TABLE I
PATIENT CHARACTERISTICS

Total No	136
Males	45 (33%)
Females	91 (67%)
Average age	45.2 years
(males and females)	(range 18–88)
Average length of history	20 months
	(range 1–144)

TABLE II
THE LUMP IN THE THROAT: CHARACTERISTICS:

(n = 136)	%
Symptom pattern:	
Occasional	4.4
Intermittent	28.7
Fluctuating	23.5
Continuous	43.4
Position:	
Suprahyoid	16
Thyroid cartilage	46
Root of neck	38
Right	15
Midline	77
Left	8
Onset:	
Sudden	45
Gradual	55
Precipitating event:	
None	57.5
Previous URTI	23.5
Previous lodging of foreign body	14
Associated throat symptoms:	
Pain	16.6
Soreness	40.4
Dryness	22.8
'Catarrh'	51.5

TABLE III
ASSOCIATED SYMPTOMS: (N = 136)

	%
Swallowing difficultes	60.2
Dietary change	11.0
Regurgitation	36.0
Heartburn	50.7
Hoarse voice	52.3
Nasal stuffiness	21.3

(a) The lump (Table II)

All patients complained of a lump in the throat, and in 58 per cent this was the major or only symptom. Its position was most commonly at thyroid level or the root of the neck, in the midline. Occasionally it was felt bilaterally in the suprahyoid region, and in 17 cases this had led to previous treatment such as tonsillectomy without relief of symptoms.

In nearly half the onset was sudden, and in 43 per cent was quite clearly related to some preceding event such as URTI, the swallowing of a foreign body, vomiting or endotracheal intubation, which the patient felt had precipitated the condition.

Pain was not a commonly associated symptom. A sore throat, the sensation of 'catarrh', or the constant desire to clear the throat, each occurred in about half the cases.

(b) Swallowing

Forty-eight per cent complained of some degree of hold-up, or the sensation of food sticking usually at the root of the neck, and 12.5 per cent admitted to coughing episodes on swallowing, but only 15 patients (11 per cent) reported having had to modify their diet. Characteristic was the description of the lump becoming more pronounced on swallowing saliva, and eased, for a few seconds, by the passage of food. This combination occurred in 60 per cent of cases.

(c) Other symptoms (Table III)

Half the patients noted symptoms suggestive of reflux, but these were rarely related to the globus symptom, usually of a minor nature, and frequently only mentioned on direct questioning. Slight hoarseness of voice, usually after excessive voice use or towards the end of the day, was a common accompaniment. Absolutely characteristic was the rather anxious introspective personality that these patients display, and the air of desperately wanting you to believe there is something wrong.

Statistical analysis using the Chi squared test showed a significant relationship between heartburn and regurgitation, and the overall results of investigation for reflux ($p = <0.05$) but no other symptom achieved significance as an indication of reflux. No symptom was of any value as a predictor of response to treatment.

The history therefore reveals a diagnostic symptom pattern, but provides no real clues for the subsequent management.

https://doi.org/10.1017/S0022215100104384 Published online by Cambridge University Press

(d) Physical signs

In the majority of patients routine ENT examination revealed no significant physical signs. The most common finding was a granular pharyngitis (28 per cent). Erythema of the arytenoids was found in 6.6 per cent, and laryngitis in 7.4 per cent. None of these signs achieved statistical significance as predictors either of the identification of reflux on subsequent investigation, or of a response to antireflux therapy.

Routine investigations

No patient was found to have abnormal thyroid function, positive syphilis serology or a significant growth of pathogenic organisms on throat swab.

Results of haematological investigations are shown in Table IV.

One patient was found to be anaemic (haemoglobin <11.0 gm/100 ml), but 11 per cent had a serum iron below normal and 14 per cent a high total iron binding capacity. These cases were treated with oral iron supplements, but in no instance did correction of serum iron levels lead to a significant improvement in symptoms.

Abnormalities were noted in sinus X-rays in 20 per cent of cases. In all but three, this amounted merely to some degree of mucosal thickening.

Barium swallow was performed on 132 patients. In 61 per cent there was no abnormality. Cricopharyngeal indentation suggestive of spasm was noted in 16 per cent and posterior indentation by cervical osteophytes in 23 per cent.

Psychological questionnaire

At the first interview all patients were asked to complete a psychological questionnaire—the Crown Crisp experiential index.

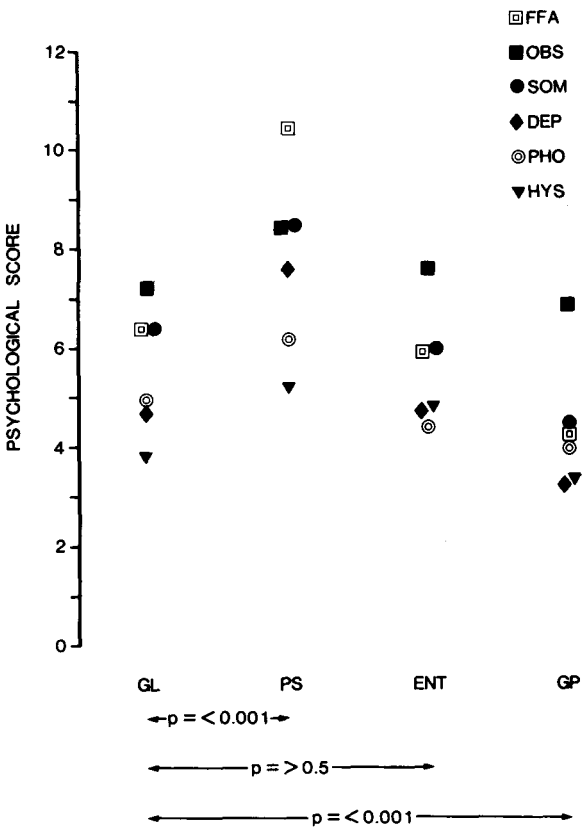
Research over the past 20 years has shown this to be a valid, reliable and repeatable measure of personality (Crown and Crisp, 1979). Large amounts of data are now available from normal individuals, and patients with a wide variety of medical and psychiatric disorders.

Essentially the questionnaire provides a score for the six categories of psychoneurotic or personality disorder, namely free floating anxiety, phobic anxiety, obsessionality, somatic anxiety, depression, and hysteria.

One hundred and five questionnaires were available for analysis. Table V gives the scores for each of the six personality categories. Fig. 1 shows these values compared with published scores for groups of psychoneurotic outpatients (Crown and Crisp, 1979), general ENT outpatients (Weir and Stephens, 1976) and a large group of the general population (Crown and Crisp, 1979).

TABLE IV
HAEMATOLOGICAL INDICES

	Mean	Range	Normal range	
Haemoglobin gm/100 ml	14.1	8.7–18.0	11.5–16.5	(n = 110)
White cell count cells × 10^9/L	7.0	3.6–13.3	4.0–11.0	(n = 110)
Erthrocyte sedimentation rate (mm in 1 hr)	11.1	1–65	1–11	(n = 103)
Serum iron (μmol/L)	18.1	5–37	13–32	(n = 91)
Total iron building capacity (μmol/L)	70.5	16–100	40–80	(n = 79)



GL - Globus patients n = 105
PS - Psychoneurotic out-patients n = 206
ENT - General ENT out-patients n = 170
GP - General practice patients n = 669

FIG. 1
Mean psychological scores in each of the six personality categories for globus patients compared to published figures for other groups.

The scores for globus patients were very significantly lower than those for the group of psychoneurotics, in all six personality categories, and were significantly higher than those for the general population. However, there was no statistically significant difference between the scores for globus patients and a group of ENT outpatients with a wide variety of complaints.

Individual statistical analysis for each of the six categories and for either sex revealed no significant association between psychological score and any feature of the history, results of investigations for reflux, or the response to antireflux therapy. Perhaps more significantly there was no association between the psychological scores and the likelihood that symptoms would settle without treatment.

Results of investigation for reflux

(a) Barium meal

All but four patients underwent barium contrast radiology of the upper gastro-intestinal tract. Barium swallow and meal were performed as one investigation. The results of the former have already been considered.

https://doi.org/10.1017/S0022215100104384 Published online by Cambridge University Press

TABLE V
PSYCHOLOGICAL QUESTIONNAIRE SCORES: (N = 105)

	Mean and Standard Deviation
Free field anxiety	6.34 ± 3.9
Phobic anxiety	5.0 ± 3.1
Obsessionality	7.1 ± 3.7
Somatic anxiety	6.5 ± 3.9
Depression	4.7 ± 3.3
Hysteria	3.6 ± 3.1

TABLE VI
BARIUM MEAL: (N = 132)

	%
Normal	54.5
Small hiatus hernia	41.7
Large hiatus hernia	3.8
Reflux	14.7

Barium meal findings are given in Table VI. A hiatus hernia was revealed in less than half the cases, and gastro-oesophageal reflux was noted in only 15 per cent, in contrast to endoscopic findings.

Using the Chi-squared test, evidence of reflux on barium meal showed an association with a history of heartburn ($p = <0.05$), the overall endoscopic findings ($p = <0.001$), and with a low sphincter pressure on manometry ($p = <0.05$). However, the barium meal had no statistically significant relationship with any other symptoms, or the results of Bernstein test or 24 hr oesophageal pH monitoring, and had no real value as an indicator of response to antireflux therapy.

(b) Fibreoptic endoscopy

One hundred and four patients (or 76.5 per cent of the total series) underwent fibreoptic pharyngo-oesophagogastroscopy under intravenous sedation and topical anaesthesia, using an Olympus GIFP3 endoscope.

The whole pharyngeal mucosal surface was inspected, including the post cricoid region, to exclude a neoplasm. Erythema was noted in 18 per cent of cases, and was the only significant abnormality on pharyngoscopy.

Thereafter the whole mucosal surface as far as the second part of the duodenum was visualised, paying particular attention to lower oesophagus for evidence of acid reflux. As noted by others (Blumgart, 1975; Thomas 1983), these signs may be quite subtle. The following features were noted: the level of the mucosal junction in relation to the diaphragmatic sling; the tone of the lower oesophageal spincter; the condition of the squamous mucosal lining. Biopsies were taken either from areas of overt oesophagitis or from just above the mucosal junction. The findings are summarised in Table VII. Of note is the unreliability of biopsy results, in part related to the technical difficulties of taking biopsies in the lower oesophagus, and party the small sample size. In general a positive biopsy in the absence of overt oesophagitis was nevertheless indicative of reflux, whereas negative biopsies in the presence of obvious inflammation were of no consequence. This observation, however, failed to achieve statistical significance.

Some patients exhibited only one or two abnormal features. Overall 73 per cent were considered to have endoscopic findings suggestive of acid reflux. The association between endoscopic findings and the eventual response to antireflux therapy was submitted to statistical analysis. The finding of an hiatus hernia, a patulous lower oesophageal sphincter and overt acid reflux were all shown to be strongly associated with therapeutic response ($p = <0.001$, <0.05 and <0.05 respectively). Interestingly, however, the degree of oesophagitis bore no significant relationship to the response to treatment, but this may have been obscured by the small number of the cases with grade III and IV changes.

The overall endoscopic conclusion was significantly related to response ($p = <0.01$), confirming the clinical opinion that endoscopy was the most useful investigation. In fact endoscopy and 24 hr pH monitoring were the only tests which proved to be of any value in indicating the need for or likely result of anti-reflux therapy.

(c) Bernstein test

Following endoscopy a fine bore naso-oesophageal tube was passed to within 5 cm. of the gastro-oesophageal junction. After a two-hour wait, and check X-ray for position of the tube tip, patients were then perfused with 100 ml. each of normal saline, 0.1N hydrochloric acid, and 0.9N sodium bicarbonate sequentially, at a rate of 10 ml. per minute. The test was regarded as

TABLE VII
BARIUM MEAL: (N = 104)

		%
Hernia:	No hiatus hernia	45.2
	Small hernia (mucosal junction 2 cm above diaphragm)	24.0
	Large hernia sac (>4 cm)	30.8
Sphincter:	Normal lower oesophageal sphincer	41.3
	Lax or patulous	51.9
	Upward prolapse of gastric wall	6.7
Reflux:	No reflux seen	37.9
	Moderate reflux	13.6
	Severe reflux	48.5
Oesophagitis:	No oesophagitis	36.9
	Grade I (erythema)	27.2
	Grade II (linear streaks)	26.2
	Grade III (ulceration)	7.8
	Grade IV (stricture)	1.9
Biopsy:	Normal	69.0
	Inflammatory infiltrate	31.0
Overall conclusion:	Normal endoscopy	27.2
	Signs of reflux	72.8

TABLE VIII
BERNSTEIN TEST: (N = 89)

	negative %	positive %
Normal saline	63.3	36.7
.1N Hydrochloric acid	39.3	60.7
.9N Sodium bicarbonate	45.5	54.6

https://doi.org/10.1017/S0022215100104384 Published online by Cambridge University Press



FIG. 2

Composite trace to show the character of the pressure recordings. (Traced from actual measurements).

positive when any of the three solutions exactly reproduced the globus symptoms of which they complained. (Heartburn in the absence of a lump in the throat was regarded as a negative result). Results are shown in Table VIII. Not surprisingly the acid infusion provoked a positive response most often. Nevertheless, in over one-third saline produced an equally strong response, suggesting that failure of oesophageal clearance may be as much responsible for the globus symptom as a fall in pH. Statistically the Bernstein test did not prove to be a reliable indicator of response to treatment, and did not correlate well with other tests for reflux.

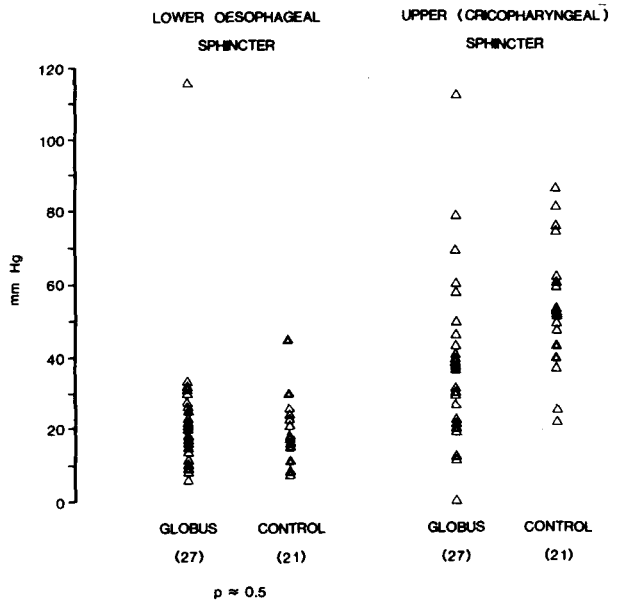


FIG. 3

Plot of lower and upper oesophageal sphincter pressures in globus patients and controls.

(d) Manometry

In the early part of the study patients then went on to oesophageal manometry. These investigations were kindly performed by Dr. Ivan Trottmann (Consultant Gastro-enterologist, Mount Vernon and Central Middlesex hospitals). A six-lumen open tip catheter was used, with distilled water perfused at a rate of 0.1 mls. per minute *via* a pneumo-hydraulic pump. (The compliance of the equipment on end-occlusion of the port being greater than 250 mm. mercury per second). Recordings were made with Statham P51 transducers connected to a Graff model 7 polygraph. The technique is described in detail by Meyrick-Thomas *et al.* (1983). Twenty-eight patients underwent this investigation. Control data was supplied by a group of 21 non-ulcer dyspeptic patients, also investigated by Dr. Trottman, none of whom complained of globus symptoms.

Recordings were made of lower oesophageal spincter pressure, peristaltic waves in the body of the oesophagus, and from the cricopharyngeal or upper oesophageal sphincter.

Fig. 2 is a diagrammatic composition (traced from actual recordings) of the character of the pressure tracing. Fig. 3 shows the mean pressures for the upper and lower oesophageal sphincters [taken as the mean of three consecutive recordings from the four traces (= 12 values) through the sphincter]. There is no significant difference in the mean pressures at either upper or lower sphincter between globus patients and the control group. This lack of discrimination, and the limited clinical application of the technique, led us to discontinue

https://doi.org/10.1017/S0022215100104384 Published online by Cambridge University Press

manometry as a routine investigation. Likewise, the recordings of peristalis from the body of the oesophagus produce little clinically useful information. However, three patients showed evidence of oesophageal dysmotility, with low-amplitude non-propagated pressure waves, felt to be responsible for their globus symptoms. The author is still performing manometric investigations in those patients with definite reflux, non-response to antireflux therapy, or where the suspicion of a motility disorder arises.

(e) 24 hr. pH monitoring

When equipment became available, selected patients underwent ambulatory 24 hr. oesophageal pH monitoring. The indications were inconclusive evidence of reflux on previous investigations; non-response to antireflux therapy in the presence of presumed reflux; and more detailed investigation of those patients with grade III or IV oesophagitis.

A monocrystalline antimony electrode was passed to within 5 cm. of the gastro-oesophageal junction. Data were stored in a Synetics Digitrapper 6002 recorder, and subsequently retrieved and analysed on an Apple IIe computer. During the 24 hr. test period patients were sent home, encouraged to lead as normal a life as possible, and asked to keep a detailed record of their activities, and any globus symptoms that they experienced.

Reflux episodes were counted if the pH fell below 4. Further refluxes were not counted until the pH had risen again to above 5.

In general more than 15 reflux episodes in 24 hrs., a total reflux time of more than 20 minutes and a longest reflux episode of more than 5 minutes were considered abnormal. However, one or two patients with definite reflux did not fall within these criteria. In every case this coincided with a lack of symptom during the test period. The overall assessment of 24 hr. pH measurements therefore included a comparison of the measured reflux episodes with the occurrence of symptoms.

A total of 32 patients were studied. The results are given in Table IX. A total of 84 per cent of the 32 patients monitored were considered to have significant reflux on the basis of their other investigations. Oesophageal pH monitoring confirmed this in 65 per cent. Statistically, results of 24 hr. pH monitoring did not correlate well with those of other investigations of reflux, but did show a significant association with the results of antireflux treatment ($p = <0.05$). There was a strong impression that the coincidence of recorded reflux episodes and the occurrence of globus symptoms was an effective predictor of response, though this could not be demonstrated statistically.

Summary of investigations

On the basis of the accumulated results of these investigations, a clinical decision was made on whether the globus symptoms were related to acid reflux in all patients who underwent two or more of these tests.

Of the 104 cases fulfilling this criterion, 64 per cent had definite reflux, 30 per cent did not reflux, and in the remaining 6 per cent evidence was inconclusive and no decision could be reached.

Results: Treatment

Thirteen patients (9.6 per cent) failed to attend for either investigations or follow-up. For the remainder results were discussed in some detail and a plan of treatment was offered. Eighteen per cent of patients reported that their symptoms had settled spontaneously, and a further 7 per cent decided that the reassurance that they did not have cancer was sufficient to make their symptoms tolerable. Eighty-nine patients (65.4 per cent) required treatment.

Anti-reflux treatment

Eighty-three patients underwent a course of antireflux therapy comprising Alginic acid/alkali suspension ('Gaviscon') after meals and at night; Metoclopramide ('Maxolon') 10 mg. before meals and at night; and Cimetidine ('Tagamet') 400 mg. twice daily, for six weeks. In patients over 65, Domperidone 10 mg. ('Motilium') was substituted for Metoclopramide to obviate the risk of extra pyramidal reactions, and occasionally Ranitidine 150 mg. ('Zantac') was substituted for cimetidine. In a sense treatment was regarded as the final investigation of reflux. The results are shown in Table X.

Thirty per cent reported no improvement in their globus symptoms, but the remaining 70 per cent were either significantly improved or rendered completely symptom-free. One quarter of patients underwent a second course either because it was felt that the diagnosis of reflux was secure and treatment should persist, or because of recurrent symptoms after cessation of

TABLE IX

24 HR OESOPHAGEAL PH MONITORING: (N = 32)

		%
Total number of reflux episodes:	less than 15	41.9 (mean 24.4)
	more than 15	58.1 (range 0–78)
Total time pH below 4 (mins)	less than 20	46.9 (mean 37.2)
	more than 20	53.1 (range 0–162)
Longest reflux episode (mins)	less than 5	56.3 (mean 9.5)
	more than 5	43.7 (range 1–68)
Patients with nocturnal reflux episodes		18.8
Patients with definite relationship of globus symptoms	no:	46.9
to reflux episodes:	yes:	53.1
Patients thought to be refluxers prior to 24 hr pH monitoring:		84.4
Patients confirmed as refluxers by 24 hr pH monitoring:		65.5

https://doi.org/10.1017/S0022215100104384 Published online by Cambridge University Press

TABLE X
RESULTS OF ANTIREFLUX TREATMENT

	1st course (n = 83)	2nd course (n = 20)	overall (n = 83)
No better	30%	20%	28.5%
Much improved	44%	50%	42%
Cured	26%	30%	28.5%

treatment. After a second course results were somewhat better.

Forty-two per cent remain on intermittent maintenance therapy with a single drug for symptomatic control.

Treatment for nasal symptoms

Twenty-four patients presenting with globus symptoms also complained of a post nasal drip. Some believed that their globus symptoms were due to a nasal condition. Six of these patients underwent antroscopy under local anaesthesia which excluded sinus infection in every case.

In 10 patients these symptoms and negative or inconclusive investigations for reflux led to a trial of topical nasal decongestant (aqueous Beclamethasone Dipropronate—'Beconase'). Five patients reported significant improvement in their globus symptoms, the remainder deriving no benefit. In one patient sinus infection was found, and washouts repeatedly revealed a purulent return. On each occasion the globus symptoms settled for a period, and the patient eventually underwent a Caldwell-Luc procedure with a complete relief of symptoms.

Surgical treatment

(a) *For Hiatus Hernia:*

One patient with severe globus and associated reflux symptoms completely failed to respond to antireflux therapy. Investigations had revealed a large hiatus hernia with definite reflux. He was referred to a general surgical colleague and eventually underwent Nissen fundoplication, with complete relief of all his symptoms. Two other patients who failed to respond to treatment are currently under consideration for surgical repair of their hiatus hernia. In all three cases, the globus symptoms far outweighed the heartburn and regurgitation.

(b) *Cricopharyngeal Myotomy:*

Four patients have so far been subjected to cricopharyngeal myotomy. They were carefully selected on the following criteria:

(i) Persistent symptoms for more than two years,
(ii) Normal scores on psychological questionnaire,
(iii) No objective evidence of acid reflux (including normal results from oesophageal manometry and pH monitoring).

The operation was performed through an oblique left neck incision. A 3 mm. ribbon of muscle was excised from the lower 1 cm. of thyropharyngeus, cricopharyngeus, and the upper 4 cm. of the oesophagus.

One patient has experienced complete relief of symptoms for the nine months since surgery, her first relief after 10 years. Two patients have reported no significant change in symptoms after six months. One patient initially was much improved, but has recently experienced a gradual return of his globus symptoms after seven months. Two of these three failures have undergone further endoscopy under general anaesthetic which revealed no stricture or narrowing at cricopharyngeus. All four cases underwent pre- and post-operative manometry. There was no significant difference in the cricopharyngeal pressures before and after in any of them.

Other treatment

One lady of 56 who had derived only partial benefit from antireflux therapy was found to have marked submucosal lymphoid aggregates in both pyriform fossae. These were ablated with cryosurgery under general anaesthetic and her symptoms settled completely.

A man of 22 with typical globus symptoms but no evidence of reflux was found to have a well-defined area of tenderness at the hyoid bone, which seemed to be provoking his symptoms. After two injections using a local anaesthetic depot steroid mixture at this site, his symptoms abated.

Address for correspondence:
A. J. G. Batch, F.R.C.S.,
Senior Registrar,
Royal Sussex County Hospital,
Eastern Road,
Brighton BN2 5RE.

https://doi.org/10.1017/S0022215100104384 Published online by Cambridge University Press