

## Multidisciplinary management of dysphagia: the first 100 cases

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### Abstract

A report of the first 100 patients treated in the multidisciplinary Dysphagia Clinic in Salisbury District Hospital is presented. It was established in January 1992 and involves the Departments of ENT Surgery, Clinical Radiology and Speech and Language Therapy. In the first 18 months, 100 patients have been assessed and treated. These included 46 males and 54 females, between the ages of four and 93 years. Neurological problems accounted for 39 cases. The management comprised the assessment clinic, videofluoroscopy in 83 patients, and finally the appropriate treatment. Forty-four patients were treated primarily by swallowing therapy. Seventy-three patients showed complete recovery, resolution of their symptoms or did not require treatment. Two patients were still under treatment at the time of writing this paper.

**Key words:** Dysphagia; Patient Care Team

### Introduction

The multidisciplinary Dysphagia Clinic in Salisbury District Hospital was established in January 1992, involving the Departments of ENT Surgery, Clinical Radiology and Speech and Language Therapy. The purpose is to provide a safe and coordinated assessment, diagnosis and treatment for patients with a swallowing problem which makes feeding difficult or impossible.

### Methods and materials

One hundred patients were seen over an 18-month period (Table I). They included 46 males and 54 females with an age range of four to 93 years (Figure 1). The referral pattern was varied, though ENT clinics accounted for 44 cases (Table II). Eighty-three patients underwent videofluoroscopy. Of the 17 patients who did not have videofluoroscopy, 15 underwent routine barium swallow studies and two cases had earlier undergone a gastroscopy.

An initial evaluation and provisional diagnosis of the patient's swallowing disorder was made in the assessment clinic by an ENT surgeon and a speech and language therapist. Forms were designed for recording the relevant history and examination findings.

Information on the patient's history included questions that might help with the localization and nature of the disorder, nutritional status, respiratory

status and other factors influencing the dysphagia. Motor assessment of the lips, mandible, tongue and palate was made. Hyoid and laryngeal elevation on swallowing saliva was noted. Oral and facial sensation were tested. The presence or absence of the swallow, gag and cough reflexes was recorded.

Following the anatomical and physiological examination of the oral cavity, the pharynx and larynx were examined with a flexible fiberoptic nasendoscope (an Olympus ENF P3). A protocol for performing this procedure has been described earlier (Langmore *et al.*, 1988). The protocol in Salisbury, though differing in minor details, is based on the same principles and is described here.

### Protocol of nasendoscopy

The patients are examined in postures in which they normally eat. The anterior nares of the patient are anaesthetized with cocaine (five per cent) spray, and the endoscope is passed along the nasal floor into the post-nasal space and the nasopharynx. Evidence of post-nasal drip and elevation of the soft palate are noted at this stage. The scope is advanced into the oropharynx. Any pooling of saliva in the pyriform fossae and/or valleculae is noted, as is the general appearance of the pharynx and position of the epiglottis. The patient is then asked to protrude the tongue. This enables a clearer view of the valleculae. The next step is to pass the scope

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Accepted for publication: 4 December 1994.

TABLE I

Patients seen	Group	
	With videofluoroscopy	Without videofluoroscopy
Male	38	8
Female	45	9
Total	83	17

into the supraglottis. The appearance of the larynx is noted. The patient is asked to phonate and to cough, for assessment of vocal fold function.

The next step is to check the swallowing function. The scope is withdrawn into the nasopharynx. The patient is given five to 10 ml of milk and instructed to retain this in the oral cavity. Any pre-swallow escape, laryngeal penetration or aspiration is noted. The patient is then asked to swallow the milk. Any nasal regurgitation is noted. The scope is then advanced as earlier, to look for retention of milk in the valleculae or pyriform fossae, and for evidence of laryngeal penetration or aspiration. Patients with a significant pharyngeal residue of the milk are further observed for post-swallow laryngeal penetration or aspiration. Though not done so far, it is planned to repeat this procedure with thickened boluses. After the nasendoscopic examination, where relevant and safe, the patient is then asked to swallow 10 ml of milk. Any abnormality of lip function and obvious tongue or buccal function is noted, laryngeal and hyoid elevation is assessed, and the presence of cough during swallowing is recorded. After the swallow, the oral cavity is examined for any retention of milk in the sulci.

Pre- and post-swallow aspiration can be diagnosed by this method, whereas aspiration during swallow can only be inferred. To retain the nasendoscope in the oropharynx during the act of swallowing has two disadvantages. Firstly, it interferes with velar elevation, which may in addition push the endoscope against the posterior pharyngeal wall causing a gag reflex and interference with the swallowing mechanism. Secondly, there is almost invariably a 'whiteout' as the milk passes via the oropharynx obscuring the view.

A provisional diagnosis is made and a videofluoroscopy arranged. Exceptions to this were those patients seen during the inception of the service, who had undergone a recent contrast study or gastro-

TABLE II

Referral pattern	No. of patients
ENT clinics	44
General practice	23
Speech therapy	9
General medicine/geriatrics	8
Oral surgery	6
Clinical radiology	4
General surgery	3
Plastic surgery	2
Spinal medicine	1
Total	100

No. of Patients

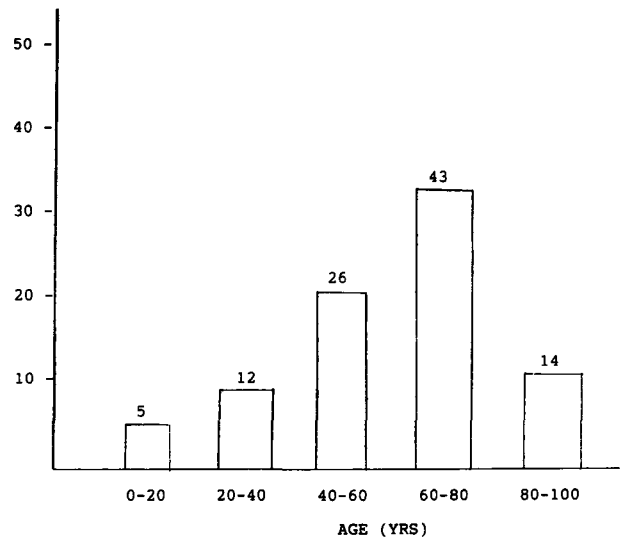


FIG. 1

One hundred patients (46 males and 54 females) with an age range of four to 93 years.

scopy. However, it was soon felt that a videofluoroscopy should be done in every case where feasible, as without this subtle swallowing disorders may be missed.

### Videofluoroscopy

Videofluoroscopy is a modified barium swallow procedure. It is conducted by a clinical radiologist, ENT surgeon and speech and language therapist. The aim is to examine the details of the oral, pharyngeal and oesophageal physiology and transit times during swallowing. It highlights mobility problems which may alter these timings, in addition to any laryngeal penetration/aspiration and the phase of swallowing in which this occurs.

Three consistencies of material are used in videofluoroscopy - liquid barium, barium paste and barium biscuit. The video cassette recorder is equipped with jog and shuttle and is therefore capable of frame by frame and slow motion replay, both forwards and backwards. On the basis of the findings, further investigations such as pharyngo-oesophagoscopy or an investigative surgical procedure may be required for the histological diagnosis where relevant.

### Treatment

Treatment of the swallowing disorder involves close interaction between the patient's physician, dietician and nursing staff (where relevant) to outline the appropriate programme, to maintain nutrition safely and adequately, and to improve the patient's swallowing function. Where relevant, the patient is referred for a specialist medical opinion.

TABLE III

Diagnosis	Group	
	With videofluoroscopy	Without videofluoroscopy
Neurological	34	5
Crico-pharyngeal spasm/hypertrophy, hiatus hernia	11	2
Pharyngeal pouch	5	0
Neoplastic	7	2
Presbypharynx/presbyoesophagus	4	1
Other cases (see Text)	8	1
Normal cases	14	6
Total	83	17

## Results

On the basis of the findings, the patients were divided into different diagnostic groups (Table III).

### Neurological

This single largest group comprised 39 patients of which 25 had suffered a cerebrovascular accident (CVA). Five patients had Parkinson's disease, five had multiple sclerosis (MS), two had dysphagia following trauma to the nervous system, and one had motor neurone disease. A provisional diagnosis of oculopharyngeal dystrophy was made in a 35-year-old female with primary hypoparathyroidism.

Amongst the patients with CVA, the oral phase of swallowing, the swallow reflex and the pharyngeal phase were all affected in seven patients. In nine patients, the oral phase and the swallow reflex were both involved. The oral phase, swallow reflex and pharyngeal phase were each alone involved in a further three patients making a total of nine.

Of the patients with Parkinson's disease, two had involvement of the oral phase alone, one had involvement of the pharyngeal phase alone and two had involvement of both phases.

In the five patients with MS, one presented with reduced palatal sensation, two presented with a prolonged oral phase and two with involvement of all phases of swallowing.

Trauma accounted for two patients in this group. In both, the pharyngeal phase was affected. All phases of swallowing were affected in the patient with motor neurone disease. The patient with oculopharyngeal dystrophy showed uncoordinated tongue movements, delayed swallow reflex and decreased pharyngeal motility.

Sixteen of these patients with neurological problems had laryngeal penetration/aspiration on swallowing.

### Crico-pharyngeal spasm/hypertrophy, hiatus hernia

Three patients had a crico-pharyngeal spasm/hypertrophy as the only finding. In two cases, food was momentarily held up in the throat and in one case, the only complaint was sensation of a lump in the throat.

Five patients were diagnosed as having a hiatus hernia. Two cases had retrosternal discomfort and three had sensation of a lump in the throat. Acid reflux into the oesophagus was demonstrated in all five cases.

Four patients had a crico-pharyngeal spasm/hypertrophy associated with hiatus hernia. In three patients, food was held up in the throat with no associated regurgitation; one patient had sensation of a lump in the throat; one patient had crico-pharyngeal spasm associated with Barrett's ulcers in the lower oesophagus.

### Pharyngeal pouch

Five patients had a pharyngeal pouch. In four cases, there was a history of regurgitation of food, accompanied in three cases by food sticking in the throat, and in one case by coughing on swallowing food. One patient presented with sensation of a lump in the throat as the only symptom. All five cases had associated crico-pharyngeal hypertrophy.

### Neoplastic

This group comprised nine cases; five cases of carcinoma of the tongue (post-operative), two of carcinoma of the oesophagus, one of anaplastic carcinoma of the thyroid gland and one with total laryngectomy for carcinoma of the larynx who had an upper oesophageal narrowing. Two patients with carcinoma of the tongue and one patient with carcinoma of the thyroid gland and one with carcinoma of the oesophagus presented with laryngeal penetration/aspiration.

### Presbypharynx and/or presbyoesophagus

Five patients presented with a slowing of pharyngeal and/or oesophageal peristalsis related to ageing. Laryngeal penetration was noted in one case.

### Other cases

This group of nine cases included two cases of repaired cleft palate and two of polymyalgia rheumatica. Thyroid goitre (multinodular), recurrent tonsillitis, behavioural problems and injuries following a road traffic accident accounted for the other cases.

The two cases with repaired cleft palate had intermittent nasal regurgitation of food: one had a small fistula at the junction of the hard and soft palate.

A 93-year-old female presented with coughing and choking on swallowing food. Videofluoroscopy showed a tight narrowing of the upper oesophagus caused by an extrinsic compression. A CT scan of the neck showed a mass at the level of the thyroid gland which appeared to surround the oesophagus extending anteriorly on the right to compress the medial lobe of the thyroid gland. An exploration of the neck revealed a multinodular goitre of the right lobe of

the thyroid gland. A right hemithyroidectomy relieved the patient's symptoms and she made a complete recovery. Histology confirmed a multinodular goitre.

One case with polymyalgia rheumatica had a dilated hypopharynx with an upper oesophageal stricture and the other had oral uncoordination with poor contractions of the hypopharyngeal musculature.

The behavioural cases were both aged five years. No physical abnormality was detected.

#### Normal cases

This group comprised 20 cases. Globus pharyngeus was the principal symptom in 17 patients (eight males and nine females).

The group also included two children with speech problems who underwent a palatal screen and one patient whose symptoms had resolved by the time of his assessment.

#### Treatment

The results of the treatment are summarized in Table IV. Forty-four patients underwent swallowing therapy as the principal treatment. They included 38 patients with neurological disorders, four with carcinoma of the tongue (post-operative), one with repaired cleft palate, and one with polymyalgia rheumatica.

Swallowing therapy is summarized in Table V. Two patients who underwent swallowing therapy made a complete recovery; 23 had a resolution or marked improvement of their symptoms; 11 had no improvement; and two failed to attend. The patient with a provisional diagnosis of oculopharyngeal dystrophy was referred for a neurological opinion and is being treated.

Fifteen patients underwent dilatation of the crico-pharynx and/or oesophagus. The dilatation was preceded by fiberoptic endoscopy and the introduction of a guide wire. Rigid thermoplastic dilators were then introduced over the guide wire usually up to 54 F, though in some cases the dilatation was done up to 60F (F = French grade). They included seven patients with a crico-pharyngeal disorder and/or hiatus hernia, three with a pharyngeal pouch, two with presbypharynx and/or presbyoesophagus, one with polymyalgia rheumatica affecting the pharyngeal musculature, one with total laryngectomy for carcinoma of the larynx with upper oesophageal narrowing, and one with crico-pharyngeal spasm

TABLE IV

Treatment	No. of patients
Swallowing therapy	44
Crico-pharyngeal/oesophageal dilatation	15
Medical	7
Surgery	6
Reassurance/no treatment	28
Total	100

with associated Barrett's ulcers in the lower oesophagus. Eight patients required dilatation more than once.

Two patients made a complete recovery: 11 patients, including three cases with a pharyngeal pouch and two with presbyoesophagus, showed resolution of their symptoms.

Medication was the principal treatment in seven cases: six showed resolution of their symptoms. These included three cases of crico-pharyngeal spasm/hypertrophy, one of hiatus hernia, one of globus pharyngeus, and one of presbyoesophagus. Medication included ranitidine, omeprazole (proton pump inhibitor), and antacids. The case of presbyoesophagus was, in addition, recommended fizzy drinks with meals. In the five cases who underwent dilatation medication was prescribed in addition; this included ranitidine, omeprazole and nystatin suspension.

Six patients underwent or were listed for surgical treatment. Two cases with a pharyngeal pouch underwent excision with crico-pharyngeal myotomy; one patient underwent a right hemithyroidectomy for a multinodular goitre compressing the upper oesophagus; and one patient had a tonsillectomy. These four cases made a complete recovery. A 38-year-old male with severe facial injuries following a road traffic accident will undergo a pharyngoplasty for palatal incompetence. The operation has been deferred at present due to an indication of spontaneous recovery. He remains under review. A 76-year-old female with carcinoma of the oesophagus underwent oesophagoscopy and insertion of an Atkinson tube. She died one week later.

Four patients, three with MS and one with an

TABLE V

Swallowing disturbance	Therapy
Reduction in lip closure	Lip exercises
Reduction in cheek tension	Posture (tilt towards stronger side) Pressure on weaker side
Reduction in range of tongue movements	Tongue exercises Position food posteriorly Posture (tilt head backwards)
Delayed or absent reflex	Thermal stimulation Posture (tilt head forwards)
Reduced pharyngeal peristalsis	Double swallow Alternate liquid/solid swallows
Pharyngeal hemiparesis	Posture (tilt towards stronger side, turn towards weaker side)
Reduced laryngeal elevation	Supraglottic swallow
Reduced laryngeal closure	Adduction exercises Supraglottic swallow



unresolving stroke, had a gastrostomy. One patient with a stroke who also complained of excessive salivation had radiotherapy to both parotid glands in addition to swallowing therapy.

Twenty-five patients were treated with reassurance. They included 16 cases of globus pharyngeus, two with speech problems, two with presbyoesophagus, two with behavioural problems, one with a cerebrovascular accident and one with a repaired cleft palate. One patient's symptoms had resolved by the time of his assessment.

One patient with advanced carcinoma of the tongue, one with advanced carcinoma of the thyroid gland and one with advanced carcinoma of the upper oesophagus, died before any palliative treatment could be initiated.

### Outcome

The results are summarized in Table VI. Forty-eight patients showed complete recovery, resolution of their symptoms or improvement; 25 patients were reassured; two patients were under treatment or review; 13 patients showed no improvement and included five with cerebrovascular accidents, two with Parkinson's disease, two with multiple sclerosis and two operated on for carcinoma of the tongue, one case of polymyalgia rheumatica with involvement of the hypopharynx, and one of total laryngectomy with upper oesophageal narrowing.

The 10 patients who died included four cases with neoplasms (one with carcinoma of the tongue, one with anaplastic carcinoma of the thyroid gland and two cases with oesophageal carcinoma). One case with crico-pharyngeal spasm, one with Parkinson's disease and one with polymyalgia rheumatica died of causes unrelated to their dysphagia. Three patients with MS died from progression of the disease.

### Discussion

The multidisciplinary management of patients with swallowing disorders helps to achieve an early diagnosis through a systematic approach. This involves different specialities that complement each others' expertise.

Prior to setting up the clinic, a meeting involving all three departments was arranged to draw up a protocol concerning referral of patients, the evaluation of their disorder and the appropriate treatment. Assessment forms concerning history, examination and videofluoroscopy findings were designed. Once

the protocol was finalized, letters were sent to all Heads of departments in the hospital and GPs in the area informing them of the service and referral procedure.

The initial difficulty in setting up a multidisciplinary clinic involved coordination of timing between the different specialities and the possible disruption of other clinical duties. Fortunately as all three departments involved were enthusiastic about the clinic, this did not prove too difficult in our case, although it did involve rescheduling some other clinics.

The second problem was coordination of secretarial support between the departments. The principal responsibility for this was assigned to a secretary in the Speech and Language Therapy Department who liaises with named secretaries in the other two departments. Referrals are directed to the Speech and Language Therapy Department and all patient records are kept there.

The third problem, in a District General Hospital, may be the lack of expertise and equipment for setting up a special clinic. Specialists from all three departments had previously undergone additional training in swallowing disorders. At Salisbury we use in Olympus ENF P3 flexible fibreoptic nasendoscope. This is attached to a video recorder equipped with jog and shuttle. Videofluoroscopy is used for the radiological examination. We have as yet not used ultrasonography, radionuclide scans or manometry (Blitzer, 1990) for clinical evaluation.

The flexible fibreoptic nasendoscope is an invaluable tool in a swallowing clinic. A direct view of the larynx and pharynx can identify any defect in the larynx, pooling in the hypopharynx, any mass lesions and evidence of laryngeal penetration/aspiration. In addition, hypopharyngeal, supraglottic and glottic sensation may be tested. It may be used in isolation in the following groups of patients (Langmore *et al.*, 1991):

- (1) Patients who are in the intensive care unit and cannot be moved to the fluoroscopy suite.
- (2) Patients who are unable to be positioned adequately on the fluoroscopy platform or table because of severe weakness, limited mobility, contractures or spinal injuries.
- (3) Patients who are very ill and unable to tolerate the risk of aspirating even very small quantities of food.
- (4) Patients who need an immediate examination.

Videofluoroscopy provides useful information about bolus flow through the oral cavity, oropharynx, hypopharynx and oesophagus. It also enables precise measurements of oral, pharyngeal and oesophageal transit times. The swallowing effort can be analysed for adynamic areas, relative or true obstructions and lack of synchrony. The patient's position can also be changed to find the optimal position for satisfactory swallowing (Blitzer, 1990). Pooling in the hypopharynx and laryngeal penetration/aspiration can be assessed pre-swallow, during

TABLE VI

Outcome	No. of patients
Recovery	8
Resolved	40
Reassured	25
Under treatment	2
No improvement	13
Death	10
Failure to attend (review)	2
Total	100

swallow or post-swallow. The patient's swallowing ability in relation to different consistencies of the bolus can also be evaluated.

It has been our experience that for a satisfactory and complete clinical evaluation of a swallowing disorder, both flexible fiberoptic nasendoscopy and videofluoroscopy are required. Where one is unable to perform a videofluoroscopy or a contrast study, it is not possible to evaluate the oesophageal phase, and one also runs the risk of missing an early mass lesion in the crico-pharyngeal or upper oesophageal area. To suggest that dysfunction of the crico-pharyngeus may be inferred when pooling is observed in the pyriform fossae in the absence of loss of bolus in the oral phase, delay in triggering of the swallow reflex or lack of laryngeal elevation (Wilson *et al.*, 1992), without conducting a videofluoroscopy or ordinary barium swallow would not constitute a satisfactory and complete clinical evaluation.

Research has shown that even the most experienced clinicians fail to identify approximately 40 per cent of patients who aspirate during a clinical examination (Logemann *et al.*, 1982; Splaingard *et al.*, 1988). The clinical parameters used to identify laryngeal penetration/aspiration include assessment of voice quality, pharyngeal gag, sensation and cough. There is a high incidence of impaired pharyngeal gag and wet-hoarse voice quality in this group. Cough is an unreliable indicator (Linden and Siebens, 1983). With the use of the flexible fiberoptic nasendoscope, pre-swallow and post-swallow aspiration can be assessed accurately. Aspiration during swallow is difficult to assess. However, the presence of milk in the larynx will indicate laryngeal penetration or aspiration regardless of the phase in which it occurred. Twenty-three of our patients had laryngeal penetration or aspiration shown on videofluoroscopy; 20 of them (87 per cent) were detected during the initial evaluation. One patient was noted to have laryngeal penetration during the initial nasendoscopic examination but this was not demonstrated during videofluoroscopy.

Thirty-nine patients presented with a neurological disorder, comprising the single largest group. Thirty-eight of these had swallowing therapy as the principal treatment. The aim of therapy in these cases is to achieve safe and normal swallowing in cases with neurological lesions from which recovery can be anticipated. In patients with degenerative neuromuscular disease, one aims to achieve safe swallowing for as long as is practicable before resorting to other forms of feeding such as gastrostomy.

Improvements in patient assessment and management in the dysphagia clinic have been made as experience has been gained. The special forms for recording the history, examination details and videofluoroscopy findings have undergone changes accordingly.

It is anticipated that referrals from other specialities and GPs (Table II) will constitute a greater proportion of the total as there is a greater awareness of this service. It is hoped to arrange meetings with these professionals and others involved to highlight the problems of dysphagia, share their views and inform them of the advantages of a multidisciplinary dysphagia clinic.

### Acknowledgements

We wish to thank Mrs Amanda Mulliner for her secretarial assistance and infinite patience during the initial stages of establishing this service. We also wish to thank Mrs Jennifer Sword, Superintendent Radiographer, for ensuring that the videofluoroscopy sessions ran smoothly.

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