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Swallowed foreign bodies

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A patient presenting to the accident department complaining of a swallowed foreign body is an almost daily occurrence in a district general hospital. The management of these patients is usually consigned to a junior member of the ENT department, who has to decide whether to admit the patient for endoscopy, or to reassure the patient and send him home. There are few established guidelines for the trainee to follow, but textbooks will usually suggest that if there is any doubt about the presence of a foreign body, then endoscopy must be performed. Such advice may be acceptable in a perfect world, but it must be remembered that rigid endoscopy is a potentially dangerous procedure—particularly when performed by the inexperienced. Additionally, in these days of medical audit, it is a waste of time and money to have any unnecessary procedures carried out. It is therefore important that one is as accurate as possible in making the diagnosis of whether there is a foreign body present or not. Whilst it may be quite easy to state confidently that a foreign body IS present, it is much more difficult to be sure that one is not. To try to establish what factors were important in making such a decision, a prospective survey was carried out on all patients who presented to the ENT department, complaining that they had swallowed something.

Methods

The survey was carried out at Southampton General Hospital and at Poole General Hospital. Patients were assessed initially by the senior house officer who then completed a questionnaire (Fig. 1). If there were any doubts about the management of the patient then advice would be sought from the registrar 'on call'. The results that follow are obtained from the completed questionnaires.

Results

Over a period of 18 months, information was collected

Name: Age Hospital No.

HISTORY:
Nature of suspected F.B.
Time from incident to assessment:
Able to continue meal?
Able to eat or drink since?
Any radiation of pain?
Any previous dysphagia?
Dental state.
Exact site where patient feels the F.B. →

EXAMINATION:
Mouth:
I.D.L. — Pooling saliva
— N.A.D.
— No view
Laryngeal/tracheal tenderness

INVESTIGATIONS:
Lateral X-ray neck — F.B.
— Air bubble
— Other
— N.A.D.

MANAGEMENT:
Reassure. See S.O.S.
Endoscopy
Other

OUTCOME:
Theatre findings

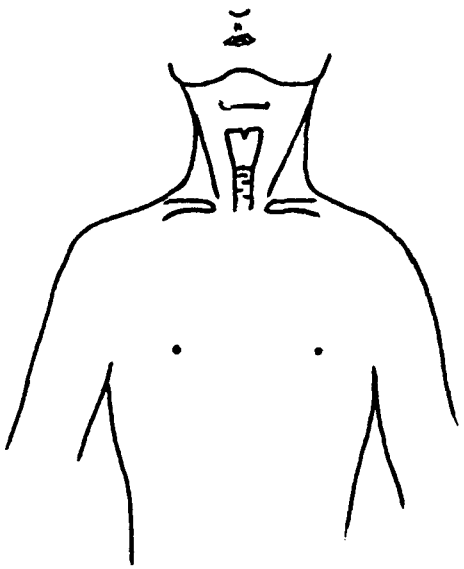


FIG. 1
Foreign body questionnaire

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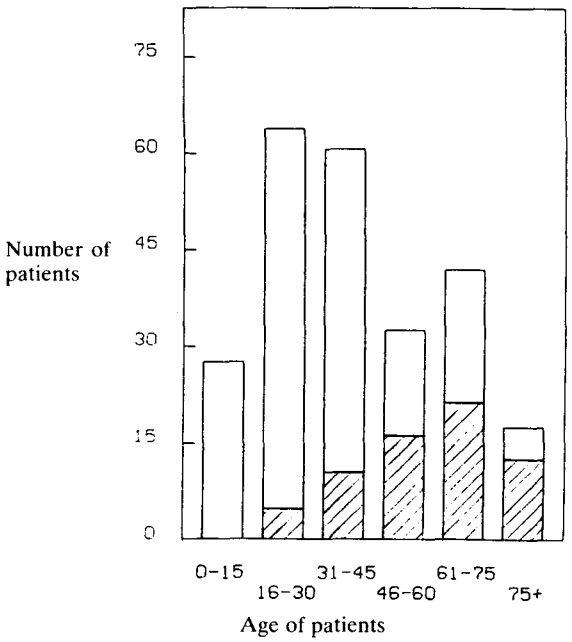


FIG. 2

Graph showing age distribution of patients presenting with suspected foreign body.

Shaded area in each column shows the proportion with dentures.

on a total of 248 patients—99 male and 149 female. The age distribution was fairly even (Fig. 2). This figure also shows the proportion of cases in each age group who had a full or partial set of dentures. When these figures are compared with national surveys of the incidence of dentures in the population (Todd *et al.*, 1978), it can be seen that the frequency of dentures in the study group was even less than the national average and certainly did not seem to be a predisposing factor in causing a foreign body to be swallowed, an idea usually put forward in standard texts.

The nature of the foreign body swallowed was very varied, but there was a preponderance of fish and meat bones (Table I).

The site where the patient felt that the foreign body had stuck was a useful factor in determining eventual management, and it is useful to divide the study into two groups: those who felt a foreign body high in the neck, and/or well lateralized; and those who felt the foreign body lower in the neck and in the midline. The two groups are presented in turn.

High in the neck and/or well lateralized (Fig. 3)

This group consisted of 120 patients—51 of whom subsequently had a foreign body removed. All the foreign bodies were fish bones, 49 being removed in the Accidential Emergency department, and two under a general anaesthetic. The vast majority were located in the tonsil or the base of the tongue. Making the diagnosis in this group was not difficult—so long as an adequate view of the pharnx and larynx was obtained; removing the foreign body without resorting to a general anaesthetic was sometimes more difficult. In difficult patients in whom it was not possible to remove the foreign body using a mirror to guide one's instruments, it was usually possible to remove it using an anaesthetist's laryngoscope to give one direct visualation of the foreign body.

The remaining 69 patients in whom no foreign body was found were reassured on the following basis:

1. A normal examination with adequate visualization.
2. The presence of other pathology, especially the sight of a laceration of the mucosa.
3. A negative X-ray in the case of any radio-opaque foreign body.
4. Spontaneous improvement. Before being seen by a member of the ENT department, many patients will have been seen first by their general practitioner who will refer them to casualty, where they may have a long wait before being seen by the casualty officer, who then refers them to the ENT department. Several such patients felt that their symptoms were improving, and were reassured on this basis.

All patients who were reassured were instructed to return to the department if their symptoms were not improving within 24 hours, or immediately if there was any deterioration.

Low in the neck and in the midline (Fig. 3)

This group was much more difficult to assess, since it was clear that a normal examination would not conclusively exclude the presence of a foreign body. The group comprised a total of 123 patients, but included in the following results are a further five patients who felt a foreign body sensation retro-sternally.

Twenty-nine patients had endoscopy performed with the removal of a foreign body; all but one of these patients had had a pre-operative diagnosis made with complete confidence—either on the basis of complete dysphagia or positive findings on a lateral X-ray of the neck. The remaining case was an elderly lady who had presented with discomfort at the cricoid level, but who was still able to swallow well, and who had a normal examination and X-ray. She was reassured and instructed to return the next day if things were not settling. She returned seven days later, still just with mild discomfort, and had a small fish bone removed from her upper oesophagus. Figure 4 shows the range of foreign bodies and the sites from which they were removed.

A further 28 patients had a negative endoscopy; this group has been examined carefully to see if there were any cases where endoscopy might have been avoided.

TABLE I

LIST OF OBJECTS THAT PATIENTS SUSPECTED THAT THEY HAD SWALLOWED

Fish bone	123	Meat bone	36	Meat bolus	25
Coins	8	Pins	4	Tablets	3
Sweets	3	Plum stone	2	'Smartie' top	2
Potato	2	Cake	2	Chips	2
Toast	2	Wire	2	Hazelnut	1
Garlic clove	1	Cellophane	1	Matchstick	1
Hair	1	Chewing gum	1	Jam skin	1
Biscuit	1	Polystyrene	1	Apple	1
Carrot	1	Feather	1	Bay leaf	1
Tooth	1	Watch strap	1	Draught counter	1
Bread-bag clip	1	Ear ring	1	Denture	1
Unknown	13				

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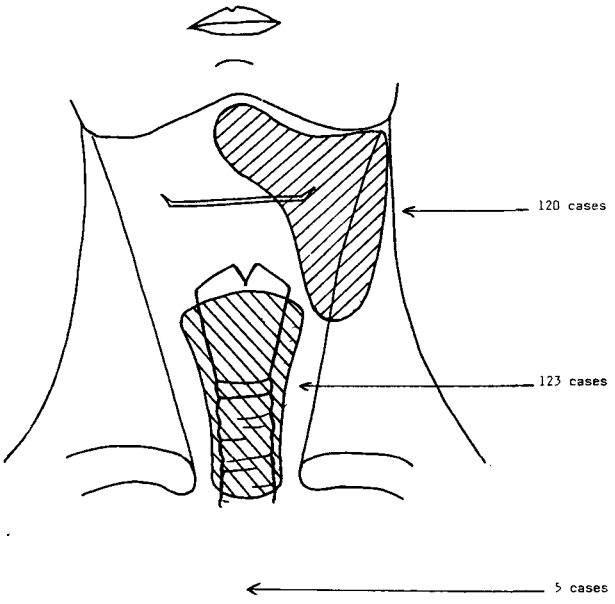


FIG. 3
Diagram showing site where patient felt foreign body had impacted

Nine patients had a definite diagnosis made pre-operatively—again on the basis of either complete dysphagia or a positive finding on X-ray, but presumably the relaxation induced by the anaesthetic agents allowed the foreign body to pass into the stomach. Eight patients were endoscoped on the grounds of strong suspicion of a foreign body, e.g. having considerable difficulty swallowing, local laryngeal or tracheal tenderness, or a suspicious X-ray. Looking at these cases retrospectively, they were all quite likely to have had a foreign body, and the correct decision was made to carry out endoscopy. Nine patients were endoscoped because they returned to the department following previous reassurance, but without any improvement in their symptoms. In none of these cases did it seem very likely that a foreign body was present, but in the presence of persisting symptoms, one must be prepared to examine them under anaesthetic even when the likelihood of a foreign body is small—unless there are other reasons why endoscopy would be ill-advised. The final three patients to be endoscoped were never really thought to have a foreign body; two of these were classic cases of 'globus hystericus' who were endoscoped for their reassurance. The last patient was a man who complained of severe pain in the lower part of his throat just to the right of the midline, dating the onset of this pain from swallowing a herring bone. Endoscopy was normal and he was discharged home. He returned two days later with even worse pain, but this time the pain was associated with trigger stimuli and a provisional diagnosis of glossopharyngeal neuralgia was made. His symptoms disappeared overnight with carbamazepine.

This leaves 71 patients who were not endoscoped. Ten were admitted with complete dysphagia but cleared themselves spontaneously before theatre could be arranged. Three of these were patients with an impacted bolus of meat, who had been admitted late in the evening and who were sedated overnight with intra-muscular diazepam with the intention of operating in the morning if the bolus had not passed on. A further three were children aged between 4 and 7, who gave a vague history and were not possible to examine fully—their symptoms settled overnight. Two patients were treated conservatively as an initial policy in view of other medical problems—one having had a myocardial infarct two months previously, and the other a lady of 93 who had severe arthritic changes in her neck which would have made rigid endoscopy very difficult as well as hazardous. Both of these foreign bodies thankfully cleared spontaneously.

The remaining 61 patients were reassured that the foreign body had probably passed on to the stomach, and it was explained that the sensation that they could still feel was probably due to a scratch. Such reassurance was given on the following basis:

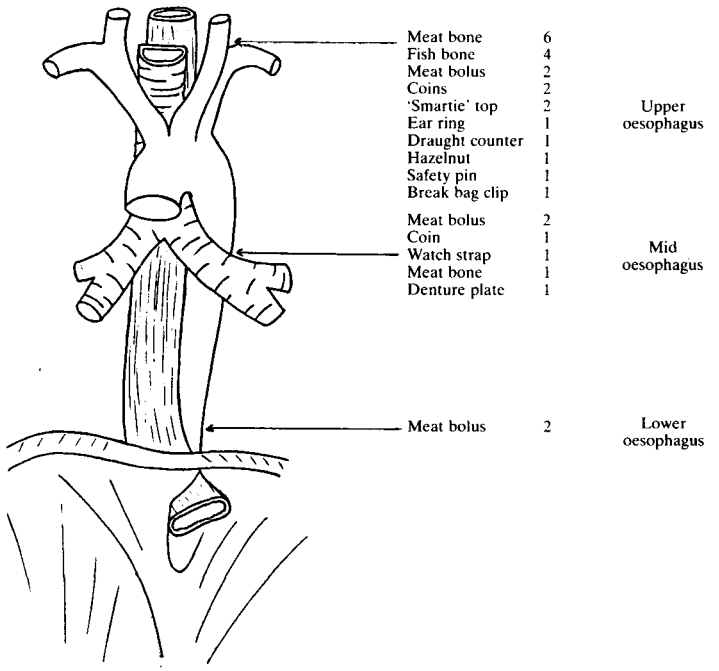


Fig. 4
List of objects removed at endoscopy and sites at which they were impacted

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1. An unlikely history: the patient being still able to swallow; the nature of the foreign body being unlikely to stick, e.g. a piece of chewing gum; and a negative examination.
2. A negative X-ray for a radio-opaque foreign body.
3. Spontaneous improvement as outlined above.

Before starting this study we had estimated that only 10–15 per cent of patients who presented with a suspected foreign body would actually have one. However, on looking at our figures a total of 80 foreign bodies were removed (25 per cent), and if one accepts the presence of a foreign body in those who had negative endoscopy with a confident pre-operative diagnosis (nine patients), and in those in whom it cleared before theatre could be arranged (10 patients), this amounts to a total of 99 patients who had a definite foreign body at presentation, representing 39 per cent of all the patients, a much higher number than expected. Therefore one must always be prepared to believe anyone who presents with such a complaint.

Discussion

During the past fifty years, there have been many accounts in the literature concerning the swallowed foreign body (Diggle, 1932; Jackson and Jackson, 1936; Flett, 1945; Matheson, 1949; Huizinga, 1961; Baraka and Bihazi, 1975; Nandi and Ong, 1978; Giordano *et al.*, 1981; Nayak *et al.*, 1984). These accounts take two forms: either individual case reports or a retrospecive assessment of patients who have actually been admitted to hospital and have undergone endoscopy.

In reviewing the literature, there seem to have been some changes in the overall picture over the years. Early reports tend to emphasise that the problem is one of the young and elderly, and the commonest type of foreign body would be coins. Later reports have tended to show a more even age distribution, and fish and meat bones have become much more common. In the pre-antibiotic era, the morbidity and mortality was considerably higher—often due to late referral, previous instrumentation by probangs, and a resulting perforation with mediastinitis. However, even in the more recent reports, serious complications with a definite mortality are still a problem.

Various underlying factors have been suggested as predisposing factors towards a swallowed foreign body, including the presence of dentures, and an alteration in the normal protective mechanisms as in drunkeness or following a cerebrovascular accident. Baraka and Bihazi (1975) found an assocation in eight of their nine adult patients. However, in our study we could find no such underlying problems—the incidence of dentures being as expected in an age-matched population, and no underlying pathology was found except in two patients who were endoscoped, and benign strictures found but no foreign body! Our impression is that the main reasons for people ingesting a foreign body are either sheer misfortune or sheer carelessness through people bolting their food.

As was outlined above, when the foreign body was felt high in the neck and/or was well lateralized then there was no real problem in deciding whether a foreign body was present or not; the following discussion concerns those patients who felt something low in the neck and usually in the midline, or lower down in the chest.

To establish the diagnosis of an inpacted foreign body, one is dependent, as ever, upon the triad of symptoms, signs and investigations.

History of ingestion is used as the most reliable diagnostic criterion by some authors (Giordano *et al.*, 1981; Nayak *et al.*, 1984). Others emphasise the inability to swallow saliva together with severity of the odynophagia (Matheson, 1949; Nandi and Ong, 1978). In our study, the commonst symptom in that group of patients who actually had a foreign body removed was of complete dysphagia (68 per cent); some others were able to swallow but only with great discomfort. Only one patient was able to continue to eat relatively normally, this being the lady mentioned above who had a persistent foreign body sensation, and failed to return for another seven days following reassurance.

Physical examination was generally of little help in reaching a diagnosis. Nayak *et al.* (1984) report almost 70 per cent of their cases with tracheal tenderness, and pooling of saliva in 38 per cent. However, in our own series, the presence of local laryngeal or tracheal tenderness was an unusual finding, although it was certainly more common in the group who ended up having a foreign body removed (20 per cent). Pooling of saliva was a poor indicator of the presence of a foreign body, often being absent in cases where it was quite obvious that a foreign body was impacted, and being present in other cases where there was no real suspicion of a foreign body.

A radiological examination with a good quality lateral X-ray of the neck should be performed in all cases, sometimes together with a chest X-ray. In dealing with radio-opaque objects it will tell one whether the foreign body is present or not, or whether it may have passed on to the stomach; and it will give additional information such as the state of the cervical spine. However, non-radio-opaque objects may also be identified, with air being trapped around the foreign body (Fig. 5), or with swelling of the prevertebral tissues (Fig. 6), especially in cases of an impacted foreign body which has set up a local inflammatory response. Even in the most unlikely cases it has been very useful:

Case report

An 80-year-old lady presented with a pricking sensation low in her throat, slightly to the left of the midline. She had been eating some broth when she felt something stick in her throat, although she was adamant that there were no bones in the soup. Indirect laryngoscopy was normal and there was some discomfort on moving her larynx. A lateral X-ray of the neck showed an open safety pin lodged in the cervical oesophagus blocked by a large osteophyte (Fig. 7). The pin was removed uneventfully.

In our series, of the 29 patients who actually had a foreign body removed, 18 (62 per cent) had an abnormal X-ray, although it was diagnostic in only three cases. One area where the value of radiology is in doubt concerns contrast studies. Haglund *et al.* (1978), in a study of 264 patients with regular use of contrast media and the

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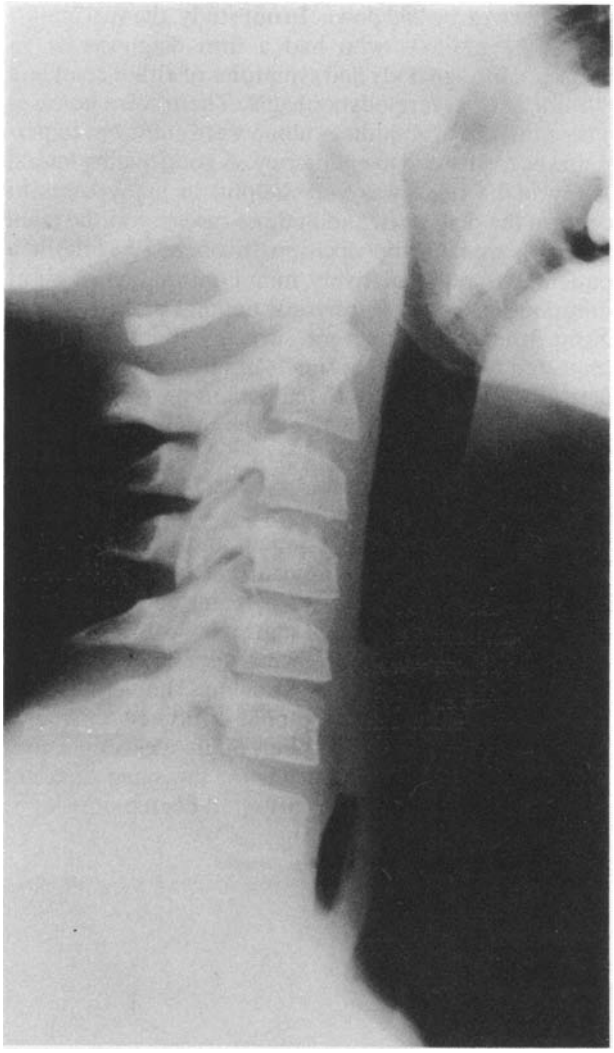


FIG. 5
Lateral X-ray of the neck showing air entrapped around 'Smartie' top.

experience of a consultant radiologist, had only one false negative result in 243 patients. However, others fell that contrast studies rarely influence the decision whether to operate or not, feeling that if one has sufficient suspicion to consider a barium swallow then even if it gives a negative result one will still have to proceed to endoscopy.

As we outlined in the introduction, rigid oesophagoscopy is a potentially dangerous procedure, especially when performed in less than ideal circumstances. The incidence of oesophageal perforation following oesophagoscopy ranges between 0.1 per cent and 2 per cent (Smith and Tanner, 1956; Froggat and Gunning, 1966; Craddock *et al.*, 1968; Triggiani and Belsey, 1977; Sandrasagra *et al.*, 1978), and of these about a quarter will be in the region of the cervical oesophagus as a result of pressure from the oesophagoscope against the cervical vertebrae. The series quoted above come mainly from thoracic surgery departments with many of the procedures carried out by very experienced surgeons. It would be likely that the incidence of perforation would be higher in the hands of those less experienced. More and more diagnostic work is now performed with the fibre-optic endoscope, thereby limiting the opportunity to develop expertise with the rigid oesophagoscope. For many ENT surgeons the only time they will pass a rigid endoscope to 40 cms will be when they are struggling to remove a foreign body!

With this in mind we have tried to draw up some guidelines to help in making the decision whether to endoscope or reassess. Before doing so there are two groups in whom such guidelines will not apply.

Firstly children, particularly infants and toddlers who cannot give a proper history:

Case report

A nine-month-old child was admitted under the care of the paediatricians with a history consistent with tracheobronchitis. A chest X-ray (Fig. 8) was taken which showed a foreign body stuck at the thoracic inlet. On reviewing the history, it turned out that the child had been playing with some half-pence coins (1 cm diam) about seven days previously, and in fact since that time his feeds had been associated with bouts of coughing—presumably due to inhalation. At operation a half-pence coin wrapped in silver paper was removed. The coin was



FIG. 6
Lateral X-ray of the neck showing swelling of the pre-vertebral tissues.

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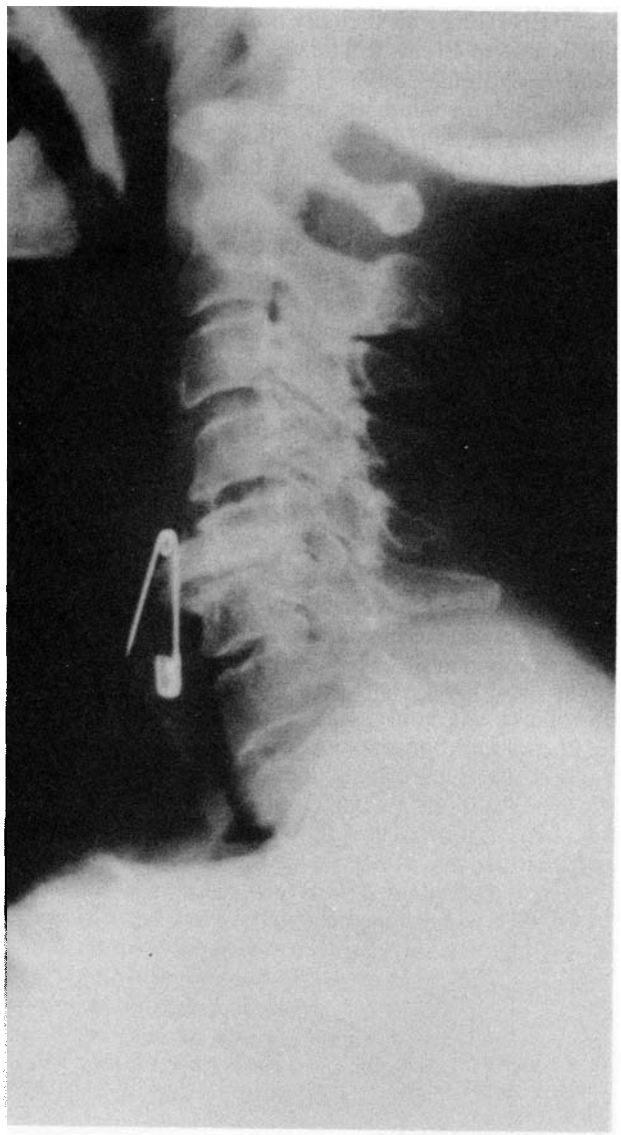


FIG. 7
Lateral X-ray of the neck showing safety pin stuck at prominent cervical osteophyte.

tarnished—suggesting that it had been present for the week that the history suggested.

With children one must have an especially low threshold of suspicion, and always be prepared to admit for observation, and if there is any doubt to carry out endoscopy.

Secondly, in the mentally deranged or subnormal, a group in whom one cannot obtain a reliable history:

Case report

A 34-year-old chronic schizophrenic was referred from the local psychiatric hospital. He complained of discomfort in his chest and of difficulty in swallowing. On closer questioning it was clear that he may have swallowed something, although it was not clear what it was. A chest X-ray was carried out which showed a watchstrap stuck at the level of the mid-oesophagus (Fig. 9). The watchstrap was removed uneventfully. As with the children, a high index of suspicion is required.

For the remainder of the population some general guidelines can be laid down. In our study, the vast majority of the patients who had a firm diagnosis of an impacted foreign body had symptoms of either complete dysphagia or severe odynophagia. There were no cases where the physical findings alone were sufficient to persuade us to proceed to endoscopy. A good quality lateral X-ray of he neck was very helpful in many cases to confirm the diagnosis, and in three cases it was the main factor in making the decision to operate. Thus, if a patient has only relatively minor symptoms of short duration, has negative physical findings and a negative X-ray, then the chance of such a patient having an impacted foreign body is small. In such circumstances it is reasonable to explain to the patient the problem—he may have a foreign body but it is more likely that he is just feeling the sensation of a scratch. The only way to be 100 per cent certain would be to carry out an examination under a general anaesthetic which may not be without some hazard. The patient may be instructed to go home, but with the proviso that he should return immediately if there was any worsening of the symptoms or if the symptoms were not improving within 24 hours. Whilst accepting that there will always be exceptions to generalizations, and that no guidelines should be rigidly adhered to, we feel that the policy outlined above will lead to the minimum number of unnecessary endoscopies being performed, whilst at the same time not exposing patients to an unwarranted degree of risk.

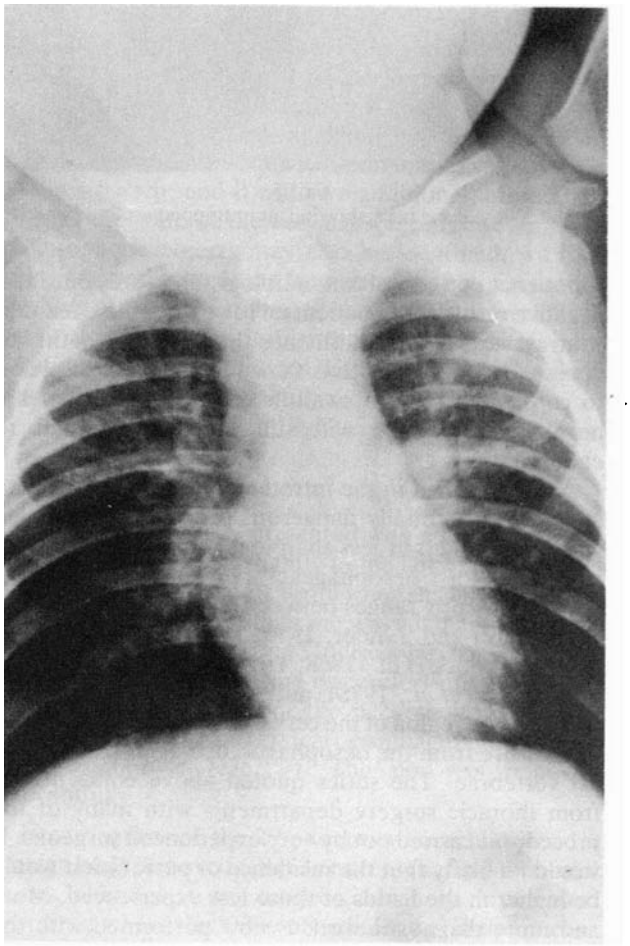


FIG. 8
Chest X-ray of infant showing coin stuck in upper oesophagus.

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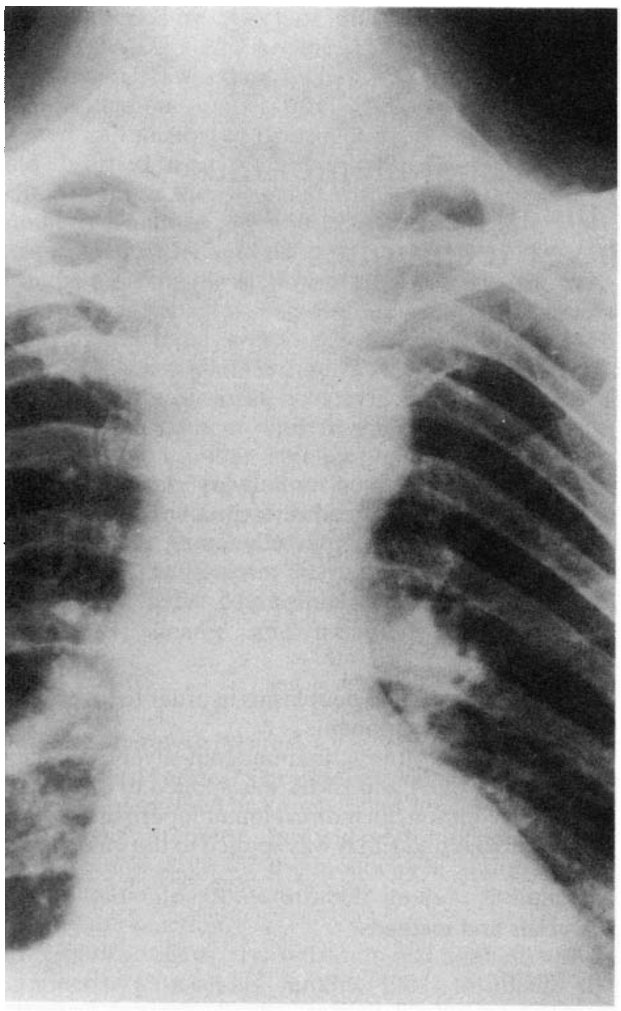


FIG. 9
Chest X-ray showing watch-strap stuck in the mid-oesophagus.

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