

BARIUM SWALLOW: ITS ROLE IN THE MANAGEMENT OF AN OESOPHAGEAL F.B.

L E Loh, S G Chee

SYNOPSIS

This is a study of the reliability of Ba Swallow in detecting an ingested oesophageal F.B.

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INTRODUCTION

Often, in the management of a patient who has ingested a foreign body (F.B.), in particular bone of fish or fowl, doubt remains whether it has been impacted in the oesophagus even after thorough clinical examination and plain X-ray. In particular, in a patient who has symptom of chest pain, plain chest X-ray is of little benefit in detecting a F.B. It is in this category of patients that a Barium Swallow becomes essential.

The aims of this study are two folds:-

- (1) to evaluate the reliability of Barium Swallow in the management of patients who have an oesophageal F.B. and
- (2) to highlight the essence in reading and performance of Barium Swallow.

METHODS AND MATERIALS

This study spans a period of 1½ years from January 1986 to June 1987. A total of 93 Barium Swallows were carried out in the Radiology Department, Tan Tock Seng Hospital, for 93 ENT patients who were suspected of harbouring an impacted oesophageal F.B. and in whom clinical examination and routine plain X-rays of neck and or chest did not reveal any F.B. 22 patients complained of throat pain, 71 of chest pain.

In evaluating the reliability of Barium Swallow, four parameters are studied; namely sensitivity, specificity, diagnostic efficiency and false positivity. Sensitivity is defined

as the percentage of positive tests in patients who have an oesophageal F.B. Specificity is the percentage of negative tests in patients without an oesophageal F.B. Diagnostic efficiency is the percentage of correct test in all patients. False positivity is the percentage of false positive tests in patients without an oesophageal F.B.

Computations of the four parameters are shown in Tables 1 to 4.

Barium Swallow was carried out in the following manner. There was no patient preparation in any of our patients as most of them presented in the acute stage. EZ-HD, high density barium sulphate suspension was used in all our patients.

In some patients, a bowel relaxant, Buscopan (I/V 1.5 mls, Hyoscine Butylbromide 20 mg/ml), was administered before commencement of the examination.

The plain radiographs — lateral neck, PA and lateral CXR were first scrutinized in an attempt to locate the radio-opaque F.B. and to identify any associated complication such as soft tissue or mediastinal emphysema, abscesses and abnormal intra-oesophageal collection of air.

In a number of our patients, a pledget of cotton wool soaked in barium was first swallowed. This preliminary test is carried out in the hope that an impacted F.B. will trap the cotton fibres and therefore alert the radiologist to the presence of a F.B.

This manoeuvre was then followed by a double contrast barium study. As an adjunct, E-Z Gas II effervescent granules were given to the patient. The patient was then asked to swallow controlled boluses of barium and the radiologist closely examined the morphology and motility of the entire oesophagus.

Any abnormality was then captured on spot radiographs.

The F.B. is usually seen as a filling defect within the barium column. The barium coated F.B. may sometime be seen in an air-distended oesophagus, in the double contrast study.

Adjacent oesophageal spasm may also be seen in the area of the impacted F.B.

Extravasation of barium would indicate a tear or perforation of the oesophagus.

Ent Department
Tan Tock Seng Hospital
Moulmein Road
Singapore 1130

LE Loh M.B.B.S., F.R.C.S., A.M., Senior Registrar.

Radiology Department
Tan Tock Seng Hospital

S G Chee M.B.B.S. (S'PORE) D.M.R.D.(LONDON) F.R.C.R.(UK),
Senior Registrar

Address for correspondence: Dr Loh

Table 1
SENSITIVITY OF BA SWALLOW

No. of positive tests in patients with an oesophageal FB	15
No. of patients with an oesophageal FB	15
Sensitivity	100%

Table 2
SPECIFICITY OF BA SWALLOW

No. of negative tests in patients without an Oesophageal FB	74
No. of patients without an Oesophageal FB	78
Specificity	$\frac{74}{78} \times 100\% = 94.9\%$

Table 3
FALSE POSITIVITY

No. of false positive tests in patients without an oesophageal FB	4
No. of patients without an Oesophageal FB	78
Percentage of false positive tests	$\frac{4}{78} \times 100\% = 5.1\%$

Table 4
DIAGNOSTIC EFFICIENCY OF BA SWALLOW

No. of correct tests	89
Total no. of patients	93
Diagnostic efficiency	$\frac{89}{93} \times 100\% = 95.7\%$

RESULTS

There were 15 patients in whom Barium Swallow detected an oesophageal F.B. Oesophagoscopy was carried out. F.B. was removed in every case. The sensitivity of the Barium Swallow is thus 100%. Table 1.

In 74 patients, Barium Swallow was reported as normal no F.B. seen. These patients were treated conservatively. All was well and discharged. In 4 patients, Barium Swallow revealed possibility of F.B. in the oesophagus; 2 in the cervical and 2 in the thoracic oesophagus. Oesophagoscopy was performed in all of them, none showed F.B. These 4 cases are categorised as false positive tests. The specificity and false positivity are thus 94.9% and 5.1% respectively. Table 2 and 3.

The total number of correct tests is 89 (15 + 74). Barium Swallow has a diagnostic efficiency of 95.7%. Table 4.

Figure 1 to 5 demonstrate the various presentations of F.B. and perforation in Barium Swallow.

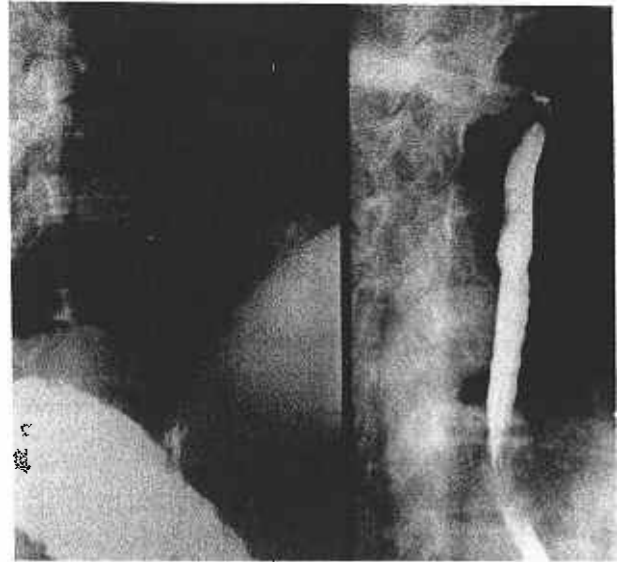


Fig. 1 Foreign Body in the thoracic oesophagus

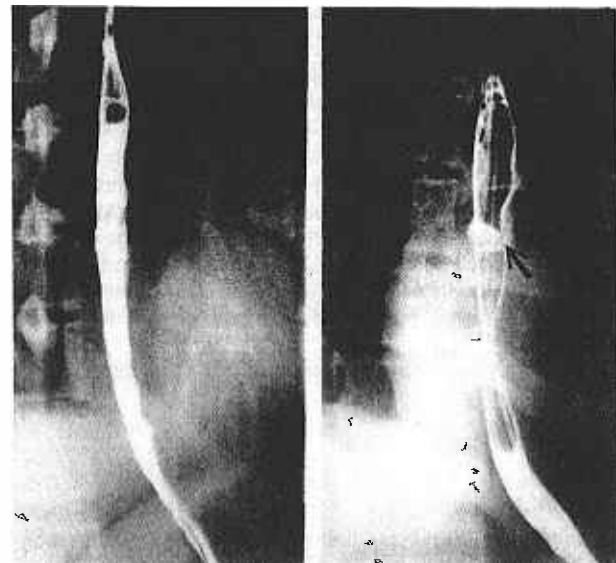


Fig. 2 Foreign body in the thoracic oesophagus

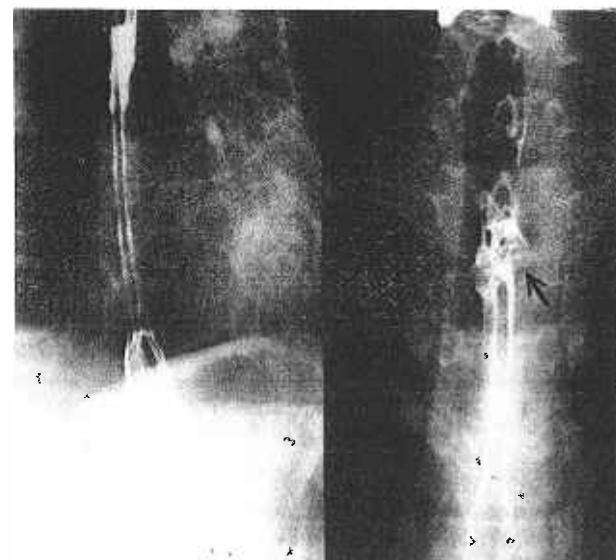


Fig. 3 Foreign body in the cervical oesophagus

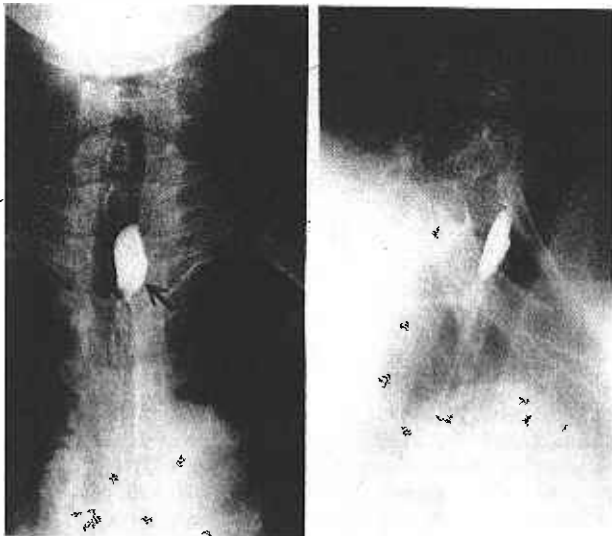


Fig. 4 Ba impregnated cotton wool arrested by foreign body in cervical oesophagus

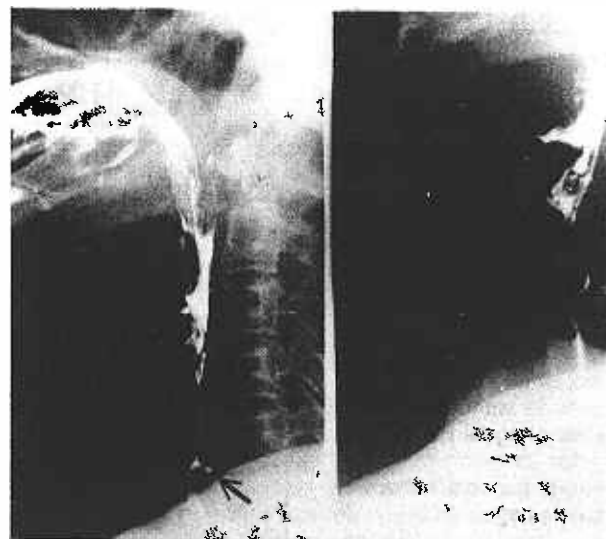


Fig. 5 Oesophageal perforation. Tear drop sign.

DISCUSSION

One of the roles of the radiologist in the management of suspected ingested F.B. is the confirmation of its diagnosis.

With the procedures mentioned previously, Barium Swallow can be an extremely rewarding and accurate examination in detecting and locating ingested intra-oesophageal F.B. It has also the added advantage of identifying any occult oesophageal abnormality and complication arising from the ingested F.B. Two cases of oesophageal strictures and a case of oesophageal perforation were discovered.

It is the hope of the authors that this study has put into

perspective the role of Barium Swallow in the management of an oesophageal F.B.

Impaction of F.B. in the oesophagus appears to be a common problem only in this part of the world. A review of the literature fails to uncover any comparable study of similar nature. Kraft (1) discussed a case of perforation of the oesophagus by an impacted F.B. Skucas (2) discussed the techniques of air contrast Barium Swallow.

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