

Extraction of Aspirated Headscarf Pins with Fiberoptic Bronchoscopy

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Abstract

Background: Foreign body aspiration is a common yet preventable health problem. Headscarf pin aspiration is a unique example of aspirated foreign bodies in young Muslim women usually removed using the rigid bronchoscope. However, the flexible bronchoscope is increasingly used for this purpose. This prospective study was conducted in Sulaimaniyah Teaching Hospital, Sulaimaniyah, Iraq and aimed to evaluate the usefulness of fiberoptic bronchoscope for removal of aspirated headscarf pins in view of the relevant literature. **Methodology:** Fifty female patients with headscarf pin aspiration were managed by fiberoptic bronchoscopy over an 8-year period (January 2008 to December 2015). The procedure was performed under local anesthesia and conscious sedation through the mouth. **Results:** The age ranged from 10 to 45 years with a mean of 27.5. All patients had cough, five had unilateral wheeze (10%) while haemoptysis occurred twice (4%). Fiberoptic bronchoscopy succeeded in 45 cases (90%). Rigid bronchoscopy under general anesthesia was necessary in (n = 4, 8%) while one patient (2%) required thoracotomy. **Conclusion:** Fiberoptic bronchoscopy is safe and effective in removal of aspirated headscarf pins and should be tried first.

Keywords

Fiberoptic Bronchoscopy, Headscarf Pin Aspiration

1. Introduction

Foreign body aspiration (FBA) is frequently observed in children particularly before the age of 4 [1]. It can result in asphyxia and death and sometimes causes chronic pulmonary problems. The affected patients could be misdiagnosed as having pneumonia or bronchial asthma [2] [3] [4]. FBA is uncommon in adults

[5], and only few large series have reported FBA in adults [6] [7] [8] [9]. The largest of these identified 62 adults over a period of 24 years [9]. Organic FBs are more common when compared to non-organic [10] [11].

A unique form of FBA is recently described among young Muslim girls who wear headscarves [12] [13] [14] [15] [16]. A sharp pin (headscarf or turban pin) is commonly used to hold the headscarf in place. The pin is about 4 cm in length with a smooth rounded pearl-like colored plastic head at one end (**Figure 1**). This beaded end is heavier than the rest of the pin and therefore the pin usually falls with the beaded end pointing downward. It is a common practice to hold the pin between the teeth or lips while both hands are used to adjust the head scarf. Aspiration usually happens during talking or laughing while the head is tilted backward.

The incidence of inhalation of this unique foreign body (FB) seems to be steadily increasing [17] [18]. The rigid bronchoscope (RB) is used to be the traditional method of removal [13] [14]. However, recently the fiberoptic bronchoscope (FOB) is increasingly reported to be used for this purpose [15] [16] [19] [20] [21]. The aim of this study is to explore the effectiveness and safety of FOB for extraction of aspirated headscarf pins.

2. Patients and Methods

This prospective study was performed at the Department of Thoracic and Cardiovascular surgery, Sulaimaniyah Teaching Hospital (STH), Sulaimaniyah, Iraq between January 2008 to December 2015. Informed written consent was taken from the 50 female patients who were enrolled in the study. The Ethical Committee of STH agreement to conduct the study has been obtained. Diagnosis of headscarf pin aspiration was established by typical history and plain chest radiography (**Figure 2(A)** and **Figure 2(B)**).



Figure 1. Headscarf pins with smooth rounded pearl-like heads.

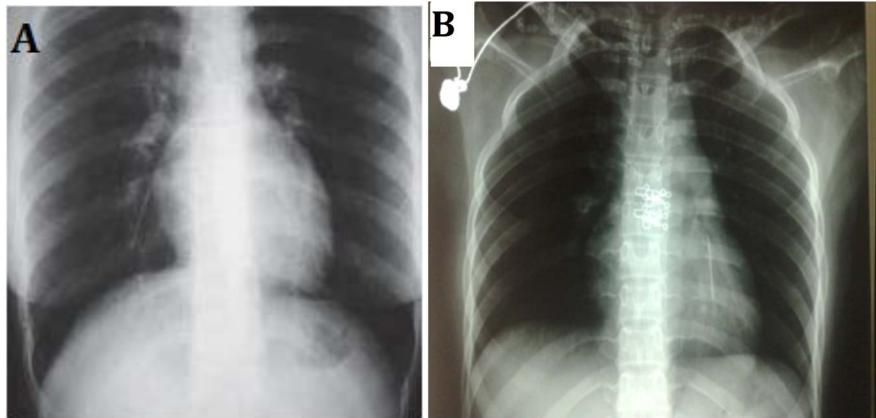


Figure 2. Chest radiographs showing headscarf pin in the right lower lobe (A) and in the left lower lobe (B).

Fiberoptic bronchoscopy was performed on day of admission. Olympus video-fiberoptic bronchoscope was used. Intravenous midazolam was used for sedation. Topical anesthesia was used with 5% lidocaine spray for the pharynx and 2% lidocaine for the larynx and the tracheobronchial tree. The bronchoscope was passed through the mouth. Pins were removed using a biopsy forceps (**Figure 3**) due to non-availability of foreign body forceps. Once a firm hold of the pin was secured, the grasping instrument was withdrawn to the tip of the bronchoscope, and then, the bronchoscope and the grasping instrument were both slowly withdrawn under direct vision. After removal of the pin, the bronchoscope was passed again to inspect any possible post extraction damage to the larynx, vocal cords or the tracheobronchial tree.

3. Results

All patients were previously healthy. Aspiration of headscarf pins has occurred as a result of sudden speech, coughing or laughing while the pin was between the lips or teeth. The mean age was 27.5 years (range 10 - 45 years). The time interval between aspiration and admission to our unit was less than 24 hours in 45 patients (90%). The pin was found in the right side in 25 cases (50%), in the left side in 22 cases (44%), and in the trachea in 3 cases (6%). All aspirated pins were found with the pearl head down and the sharp end embedded in the mucosa. The pin was successfully removed using FOB in 45 cases (90%). Rigid bronchoscopy was needed in 4 cases (8%). Thoracotomy was done in 1 case (2%) after failure of FOB and RB. All patients were discharged home a few hours after completion of the procedure.

4. Discussion

Fiberoptic bronchoscopy has been used increasingly in the diagnosis and treatment of tracheobronchial diseases in recent years. Traditionally, RB has been the procedure of choice for removal of foreign bodies in children [20]. Nevertheless;



Figure 3. Removal of the pin by grasping its proximal end using the forceps. The removed headscarf pin is shown.

FOB is the gold standard for the diagnosis of airway foreign bodies and the preferred instrument for their removal in adults. Moreover, FOB is used increasingly in the treatment of the FBA in adults and children [22] [23]. The success rate of FOB removal varies between 86% and 100% [24] [25]. In most reported studies, sharp foreign bodies such as pins were removed using the RB [14], FOB [9] or both instruments [26].

In Iraq, the standard method for removal of bronchial foreign bodies remains rigid bronchoscopy [2]. It is of interest to note that the first Iraqi patient examined by FOB in 1976 by Dr. Azhar K Kassab (FRCS) was a man with chronic cough following inhalation of a small metallic coin 4 years earlier. FOB revealed a partial obstruction of the right bronchial tree by a dark-colored 25-fils coin which was successfully removed by the FOB without needing the rigid bronchoscope [27]. Recently, Taha AY [2] and Baram *et al.* [17] from Sulaimaniyah, Iraq reported their experience in using FOB to remove bronchial foreign bodies.

In the study carried out by Lan *et al.*, FBs were successfully removed with FOB in all 33 adults except one [19]. The success rates of FOB have been reported as 56%, 62.5% and 80.6% in three studies [26] [28] [29] [30]. Fenane *et al.* reported that the average number of attempts of FOB removal was 2.5 times per patient [31]. Kaptanoglu *et al.* reported that they could extract all but six of a total of 63 patients in the first attempt [13].

In the study of Chen *et al.*, the aspirated material could be removed by one or more attempts of FOB in 34/43 patients (74%) [8]. The reasons for unsuccessful endoscopy were reported as distal localization and pins embedded in bronchus wall with inflammatory reaction [31].

Limper *et al.* reported on 60 patients with FBA. RB was successful in 98% of

cases while FOB achieved a 60% success rate only. Hence, they do not agree with the opinions arguing that the FOB should prevail compared to RB. However, they believe that FOB would be advantageous in certain situations such as foreign bodies beyond the reach of RB, FBA in ventilated patients and when the use of a RB is not possible due to the lack of cervical stabilization [6].

Due to the fact that the pin can travel down to the segmental bronchi, the FOB may be more successful in pin removal. The aspirated pins usually do not pose a risk of obstruction due to their small size. Traditionally, Muslim women start to wear a scarf at the onset of puberty; therefore, all patients in this study were either older children or young adults. The patients were co-operative enough to tolerate FOB under local anesthesia. Four patients required RB after failure of FOB. This could be due to implantation of the pins in bronchial mucosa and non-availability of a proper grasping FB forceps.

In previously reported series of headscarf (turban) pin aspiration, RB was the main procedure for pin removal [12] [13] [14]. FOB was used in 5/47 cases (11%) by Ucan *et al.* [12] and in 2/63 cases (3%) by Kaptanoglu *et al.* [13] but never (0/6) by Murthy *et al.* [20]. In contrast, other authors preferred FOB. In a series of 5 cases described by Shabb *et al.* [15], FOB under general anesthesia was used in all cases. Recently, Gokirmak *et al.* [16] retrospectively reported the usefulness of FOB under local anesthesia in the retrieval of 8/11 aspirated turban pins (73%).

A potential complication of the approach with FOB under conscious sedation and local anesthesia is the risk of injury to the larynx or tracheobronchial tree during extraction of aspirated pins. In this study, we did not encounter such complications. Another potential complication is the risk of losing the pin in the throat. The pin is then quickly swallowed and settles in the stomach. We did not encounter such a complication. FBA is a frightening event. Most of our patients experienced extreme stress and panic. Therefore, sedation was necessary and proved to be helpful.

In this study, the distribution of aspirated pins in the tracheobronchial tree was similar to previous reports [12] [13]. Fifty % of the pins were found in the right bronchial system (due to wider caliber of right main bronchus and being more in line with the trachea than the left bronchus). The lower lobe bronchus predominated as site of pin settlement as the aspiration occurred while the patients were standing up.

The number of patients involved in the present study was relatively good. However, a major limitation to the study was the unavailability of a proper grasping foreign body forceps.

5. Conclusion

In summary, aspiration of headscarf pin is a serious event in Muslim culture. Prevention can be achieved by improving public awareness and wearing a type of headscarf that does not need a pin for fixation. Once it occurs, immediate

medical consultation is mandatory. Fiberoptic bronchoscopy is safe and effective for removal of these pins and should always be tried first.

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