UTILITY OF FIBEROPTIC BRONCHOSCOPY FOR RETRIEVAL OF ASPIRATED HEADSCARF PINS

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Abstract

Background: Tracheobronchial foreign body aspiration is a worldwide health problem which often results in life threatening complications.

Headscarf pin aspiration is a common and unique form of foreign body aspiration among young Muslim women. Rigid bronchoscopy (RB) is considered the standard procedure for retrieval. Standard flexible bronchoscopy (FOB) is used increasingly in the treatment of tracheobronchial headscarf pins aspiration in adults.

Aim: The aim of this study is to evaluate the utility (use) of FOB for the retrieval (extraction) of aspirated headscarf pins.

Materials and Methods: Patients with the diagnosis of headscarf pin aspiration admitted to Sulaimanyah Teaching Hospital, department of cardiothoracic and vascular Surgery from January 2008 to September 2011 were included in the study. Standard FOB procedure using an oral approach with patient in recumbent position, under local anesthesia and conscious sedation was performed as the primary tool for retrieval.

Results: A total of 20 cases were admitted during the study period. The mean age of the sample was 24 years (10-40 years).All patients presented with cough while two of them had hemoptysis (10%) and five had unilateral wheeze on chest auscultation (25%). The aspirated pin was successfully retrieved in 19/20 cases (95%) during the first attempt of FOB. However, FOB was not successful in 1/20 case (5%). The aspirated pin was successfully retrieved by RB under general anesthesia.

Conclusions: FOB is a safe and successful method when performed by an experienced bronchoscopist, well educated staff, and at a well equipped bronchoscopy unit. Headscarf pin aspiration is a relatively common form of foreign body aspiration among young Muslim Iraqi

women. It commonly occurs when women hold the pins in their teeth while wearing the hejaab and talking to others at the same time.

Keywords: Fiberoptic bronchoscopy, Headscarf pin aspiration

Introduction

Foreign body aspiration occurs rarely in adults compared to children [Chen, 1997]. It can result in asphyxia and death in children less than 4 years old and sometimes causes chronic pulmonary problems. These patients are commonly misdiagnosed with pneumonia or asthma [Pasaoglu, 1991.Gurpınar, 2003.Kula, 2003].

Tracheobronchial foreign body aspiration (FBA) is a common and serious problem among children. Organic material such as seeds and nuts are most commonly aspirated [Elhassani, 1988.Ciftci, 2003]. FBA is uncommon in adults [Baharloo, 1999], and only few large series have reported FBA in adults [Limper, 1990.Lan, 1994.Chen, 1997.Debeljak, 1999.]. The largest of these identified 62 adults over a period of 24 years [Debeljak , 1999]. A unique form of FBA is recently described among young Muslim girls who wear headscarves (Hejaab) [Ucan, 1996.Kaptanoglu, 1999.Murthy, 2001.Shabb, 1996.Gokirmak, 2002]. 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 head (fig. 1). It is a common practice to hold the pin between the teeth while both hands are used to adjust the head scarf. Aspiration usually happens during talking or laughing while the head is tilted backward.

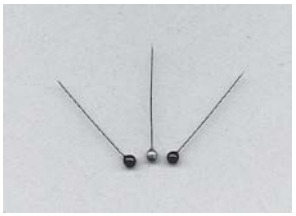


Fig.1. Headscarf pins with smooth rounded pearl-like heads

Flexible fiberoptic bronchoscopy (FOB) is commonly used to diagnose and retrieve tracheobronchial foreign bodies in children and adults with a high success rate [Martinot , 1997.Swanson , 2002.]. However, in cases of headscarf pin aspiration, rigid bronchoscopy (RB) is considered to be the standard procedure for extraction and FOB was rarely used [Kaptanoglu , 1999.Murthy , 2001].

There are many studies on the utility of FOB under conscious sedation and local anesthesia for retrieval of aspirated headscarf pins. Shabb et al. [Shabb , 1996] reported 5 cases of aspirated pins which were successfully retrieved by FOB under general anesthesia.

Recently, in a retrospective study, Gokirmak et al. [Gokirmak , 2002] reported on the use of FOB under local anesthesia for retrieval of aspirated pins in 11 cases with a success rate of 73%.

The aim of our study is to explore the effectiveness and safety of FOB under conscious sedation and local anesthesia as the initial procedure for extraction of aspirated headscarf pins in Iraq,sulaimanyah city.

Material and Methods

This study was carried out in the department of thoracic and cardiovascular surgery, sulaimanyah teaching hospital, sulaimanyah city from January 2008 to September 2011.Informed written consent was taken from patients to be placed in this study.

20 patients who were referred to our unit with the diagnosis of headscarf pin aspiration were included in the study.

Diagnosis of headscarf pin aspiration was established by typical history and posterior-anterior and lateral chest radiography (fig. 2).

Fig.2 Chest radiographs showing headscarf pin, A. in the right lower lobe. B,in the left lower lobe.

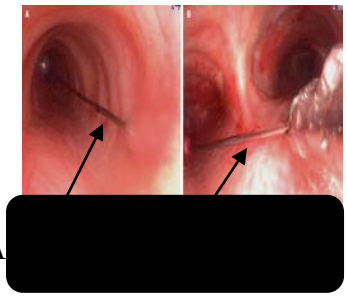
The standard FOB procedure was performed in the endoscopy unit on the same day. A flexible Olympus PF type video bronchoscope was used. Sedation was achieved with intravenous midazolam under cardiopulmonary monitoring. Topical anesthesia was performed with 5% lidocaine spray for the pharynx and 2% lidocaine for the larynx and the tracheobronchial tree. The bronchoscope was passed through the mouth (transoral). The pin was removed by using biopsy forceps, (fig. 3). 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 retrieval of the pin, the bronchoscope was passed again to inspect any possible post extraction damage to the larynx, vocal cords or the tracheobronchial tree.

Fig.3. Biopsy forceps, rat tooth forceps, and disposable grasping forceps

Results

A total of 20 cases was admitted to the hospital with the diagnosis of headscarf pin aspiration during a study. All patients were previously healthy with a mean age of 24 years (range 10–40). The time interval between aspiration and admission to our unit was less than 24 h for seventeen (85%) patients (Table 1).

The pin was found in the right side in 11 cases (55%), in the left side in 8 cases (40%), and in the trachea in 1 case (5%). (Table1). Most aspirated pins in the tracheobronchial tree were found with the pearl head down and the sharp end up and embedded in the mucosa (fig. 4).

A 

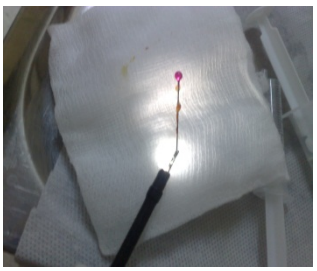
B 

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Fig.4. Headscarf pin with its end at upright position. A. end of the pin placed in the bronchial mucosa. B. Removal of the pin by grasping its proximal end using the forceps. The removed headscarf pin is shown. C and D. examples of pins that were removed

Table1. Clinical data of patients with headscarf pin aspiration

Patient	Age, years	Location	Duration	Grasping tool	Complications
1	10	RBT	6 h	biopsy forceps	none
2	15	RBT	5 h	biopsy forceps	none
3	20	LBT	4 h	biopsy forceps	none
4	18	LBT	12h	biopsy forceps	none
5	13	RBT	10 h	biopsy forceps	none
6	30	LBT	3 days	biopsy forceps	RB
7	35	RBT	8 h	biopsy forceps	none
8	38	RBT	1 day	biopsy forceps	none
9	24	RBT	12 h	biopsy forceps	none
10	27	LBT	7 h	biopsy forceps	none
11	23	RBT	6 h	biopsy forceps	none
12	14	RBT	14h	biopsy forceps	none
13	19	LBT	12 h	biopsy forceps	none
14	31	trachea	6 h	biopsy forceps	none
15	39	LBT	2days	biopsy forceps	none
16	34	RBT	15 h	biopsy forceps	none
17	11	RBT	8h	biopsy forceps	none
18	17	LBT	16h	biopsy forceps	none
19	22	LBT	14h	biopsy forceps	none
20	40	RBT	17h	biopsy forceps	none

RBT = Right Bronchial Tree; LBT = Left Bronchial Tree; RB = rigid bronchoscopy.

The pin was successfully retrieved during the first attempt of FOB in 19/20 cases (95%). Biopsy forceps were used in all cases, Post retrieval inspection of the larynx, vocal cords and tracheobronchial tree showed no damage as a result of withdrawing the pin. All theses 19 cases were discharged within hours (2–4 h) of completion of the procedure.

FOB was not successful in retrieving the pin in 1 case. In this case, the sharp end of the pin was found to be firmly embedded in the mucosa. Several attempts to dislodge it were unsuccessful. The pin was successfully retrieved by RB under general anesthesia. The patient was discharged the following day.

Discussion

Bronchoscopy has been used increasingly in the diagnosis and treatment of tracheobronchial diseases in recent years [Herth, 2006.Becker, 2006.]. Traditionally, RB has been the procedure of choice for the removal of foreign bodies in children [Martinot, 1997] .Nevertheless; 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 [Chen, 1999.Gerritsen, 2003.]. The success rate of FOB removal varies between 86 and 100% [Rafanan, 2004.Rafanan, 2001.]. In most

reported studies, sharp foreign bodies such as pins were removed either by using RB alone or RB and FOB together [Ruegemer, 1999]. But in some studies, FOB alone was used for their removal [Debeljak, 1999]. RB should be preferred in small children or when the foreign body is large enough to obstruct a main airway [Dikensoy, 2002.Nussbaum, 1987.Debeljak, 1999]. Our patients had aspirated pins that were small enough to pose no risk of obstruction. Traditionally, Muslim women start to wear a scarf at the onset of puberty; therefore, all our patients were either older children or young adults. Hence, we preferred the use of FOB.Only one of our cases required RB probably because of the age of our patients and because the pins were smooth and slender. The removal of larger, more complex pins or other sharp foreign bodies might increase the necessity for RB. In these cases, if attempts at FOB fail, rigid bronchoscopic extraction should be available immediately

This study is to evaluate the utility of FOB as the primary method for the retrieval of aspirated headscarf pins. We treated 20 cases of headscarf pin aspiration using FOB with a success rate of 95%. However, In 1 case, FOB was not successful as the pin was firmly embedded in the bronchial mucosa. RB under general anesthesia was required to retrieve the pin.

The rationale behind using FOB for retrieval of aspirated headscarf pins is to avoid general anesthesia and to shorten hospital stay. In our study, these goals were achieved in 19/20 cases (95%),Also, using FOB as the primary tool for retrieval of aspirated pins helped to localize the site of the pin even if failing to retrieve it, which facilitated retrieval by RB.

In previously reported series of headscarf (turban) pin aspiration, RB was the standard procedure for retrieval and FOB was rarely used [Ucan, 1996.Kaptanoglu, 1999.Murthy, 2001]. In the series by Ucan et al. [Ucan, 1996], FOB was used in only 5/47 (11%) cases, in the series by Kaptanoglu et al. [Kaptanoglu, 1999] in 2/63 cases (3%), and in the report of Murthy et al. [Murthy, 2001] in 0/6 cases. In a series of 5 cases described by Shabb et al. [Shabb, 1996], FOB under general anesthesia was used in all cases. Recently, Gokirmak et al. [Gokirmak, 2002] retrospectively reported the usefulness of FOB under local anesthesia in the retrieval of 11 aspirated turban pins. They successfully removed 8/11 pins by FOB with a success rate of 73%.

A potential complication of the approach with FOB under conscious sedation and local anesthesia is the risk of damage to the larynx or tracheobronchial tree during retrieval 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 complication.

FOB is less invasive than RB. Under local anesthesia, foreign bodies can be removed easily and quickly [Dikensoy, 2002.Nussbaum, 1987] .This is a major advantage compared with RB. In all our cases, FOB was performed successfully under local anesthesia.

However, the aspiration of a foreign body, especially a pin, caused extreme stress and panic among our patients. Therefore, our patients were admitted to the hospital early following aspiration. Good sedation as part of the premedication contributed to the success rate of bronchoscopy [Chhajed, 2005]. Moreover, at least 2 well-trained assistants, a bronchoscope assistant and a nurse, are needed for successful intervention.

As in previous reports, most aspirated pins were found head down because girls usually hold the pearl head of the pin in the mouth while they are fixing the headscarf, and all patients in our study were of a young age group, with a mean age of 24 years, which is similar to previous reports [Ucan, 1996.Kaptanoglu, 1999.Murthy, 2001.Shabb, 1996.Gokirmak, 2002].

In this study, the distribution of aspirated pins in the tracheobronchial tree was similar to previous reports [Ucan, 1996.Kaptanoglu, 1999]. Most of the pins were found in the right bronchial system 55% .The lower lobe preference is likely because all patients aspirated while in the upright position, while the right side preference reflects the anatomy of the right main stem bronchus. The large size of the pin with its sharp end may explain why some settled in the main airways.

FBA in adults is a rare problem. The largest series reported 1–3 cases per year [Baharloo, 1999.Limper, 1990.Lan, 1994.Chen, 1997.Debeljak, 1999]. In most of the cases, the aspirated material was organic, either bone fragments or vegetable material. In this study, we encountered about 5 cases annually of aspirated headscarf pins in a relatively small no. of population who use Hejaab in Sulaimanyah city. This makes headscarf pin aspiration the most common form of FBA in young healthy Muslim Iraqi women wearing scarves.

Headscarf pin aspiration appears to be an accidental problem due to the habit of placing the pin in the mouth while fixing the headscarf. In this study, there were no predisposing risk factors for aspiration. All patients were healthy and had normal medical and neurological examination. This problem can be prevented by increasing public awareness, including avoidance of holding the pin in the mouth while fixing the headscarf or wearing a type of headscarf that does not need a pin for fixation. However, if pin aspiration occurs, early presentation to hospital is advisable as it might make retrieval of the pin easier.

In conclusion, diagnosing and removing headscarf pin, especially in distal airways, in adolescents and adults with FOB is a safe and successful method in the hands of an

experienced bronchoscopist, well educated staff, and a well equipped bronchoscopy unit, headscarf pin aspiration is a common form of tracheobronchial FBA among young Muslim females. Flexible FOB under conscious sedation and local anesthesia can be a useful first-step tool in retrieving aspirated headscarf pins, Sharp pin inhalation is a serious hazard and can have lethal outcome. It commonly occurs when women hold the pins in their teeth while wearing the hejaab and talking to others at the same time.

The use of headscarf pin is a cultural practice that carries serious health hazard which can be avoided by community health education & awareness. Sticker manufacturer specifications and trade regulations for scarf pins should be implemented.

In teenage and adult patients, FOB is a safe procedure for the initial diagnosis and removal of a foreign body. The success rate of FOB in removing foreign bodies such as a pin can be as high as 100% in experienced hands, if the physician considers our suggestions. The use of these techniques can reduce the need for thoracotomy or other invasive methods especially in the treatment of distal localized pins.

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