



## Procedures

# Does foreign body inhalation make a health problem in young female muslims?

Ahmed Mostafa El Saied\* and Waleed Hassan Rizk

Cardiothoracic Surgery Department, Mansoura University, Egypt

**Received:** 15 June, 2020

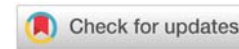
**Accepted:** 22 July, 2020

**Published:** 23 July, 2020

\*Corresponding author: Ahmed Mostafa El Saied, Cardiothoracic Surgery Department, Mansoura University, Egypt, E-mail: [mostafaa407@yahoo.com](mailto:mostafaa407@yahoo.com)

**Keywords:** Foreign body; Pin aspiration; Scarf pin; Female muslims

<https://www.peertechz.com>



## Abstract

**Background:** Foreign body aspiration is a common life threatening emergency and easily preventable problem. Every year thousands of lives are endangered because of foreign body inhalation by children and teenagers. In Muslim nations, a unique group of population has recently been reported. This comprises young girls and women who put headscarf.

**Aim:** This study presented an experience with scarf pin aspiration and discussed the unique clinical characteristics of this problem and challenges in management.

**Patients and methods:** A prospective cohort study included 50 females with a history of scarf pin inhalation. This study was conducted in Cardiothoracic Surgery Department, Mansoura University Hospital after approval from the Research and Ethics Committee of Faculty of Medicine, Mansoura University from January 2017 to January 2019. Other forms of foreign body inhalation were excluded from this study. All patients underwent radiological work-up in the form of plain chest X-ray, both Postero-Anterior (PA) and lateral views, to confirm the presence of the pin within the tracheo-bronchial tree.

**Results:** In one patient the pin was successfully removed Spontaneously by coughing, in 36 patients retrieved by rigid bronchoscope, In 6 patients the pin was removed by flexible bronchoscope in the same sitting. In 7 cases pin could not be retrieved at all because of penetration into lung parenchyma and hemorrhage due to initial manipulation. These patients managed by thoracotomy (5 cases of bronchotomy, 1 case of right lower lobectomy and 1 case of left lower lobectomy).

**Conclusion:** The use of the scarf pin is a sociocultural practice that carries serious health risks in Egyptian Muslim females who wear Hijab. Rigid bronchoscopy is the preferred treatment modality.

## Introduction

Foreign body aspiration is a common life threatening emergency and easily preventable problem. Every year thousands of lives are endangered because of foreign body inhalation by children and teenagers. In Muslim nations, a unique group of population has recently been reported. This comprises young girls and women who put headscarf [1].

During the fixation of the scarf, the neck is extended and the pins are held between the lips. Meanwhile speech or laughter can cause the deep aspiration of the pin into the tracheo-bronchial tree [2].

The majority of inhaled foreign bodies lodge into right main bronchus due to its anatomical position, conversely pins mostly lodge in the left main bronchus. Various writers have endorsed the reason this finding to the Bernoulli phenomenon,

which manifest that greater negative pressure is produced in the left bronchus than in right bronchus which is wider [3].

The most common presentation in metallic scarf pin inhalation is choking, coughing, pain and rarely respiratory distress. The inhalation of metallic foreign bodies into airway is a serious and life-threatening condition. The inhalation of metallic objects loses many lives every year because they are infrequently coped in due course for intervention [1].

These foreign bodies can easily be diagnosed by x-ray chest as all of these inhaled FBs are radiopaque [4].

Uncommonly pins are spontaneously expectorated, and the definitive treatment of foreign body aspiration is removal as soon as possible. Aspirated turban pins can be removed by rigid or fiber-optic bronchoscopy, if both flexible and rigid bronchoscopies are unsuccessful, extraction of pin through thoracotomy will be the only solution [5].

This study presented an experience with scarf pin aspiration and discussed the unique clinical characteristics of this problem and challenges in management [6].

## Patients and methods

A prospective cohort study included 50 females with a history of scarf pin inhalation. This study was conducted in Cardiothoracic Surgery Department, Mansoura University Hospital after approval from the Research and Ethics Committee of Faculty of Medicine, Mansoura University from January 2017 to January 2019. Other forms of foreign body inhalation were excluded from this study.

The detailed history of onset, duration and time between inhalation and presentation to hospital was taken. Size and shape of pin was asked from the patients. The comprehensive physical examination was carried out in all patients to recognize any cardio respiratory complications. All patients underwent radiological work-up in the form of plain chest X-ray, both Postero-Anterior (PA) and lateral views, to confirm the presence of the pin within the tracheo-bronchial tree.

The patient was asked to cough forcibly, in a hope for coughing the pin. If the previous trial failed, the patient was prepared for rigid bronchoscopy. Rigid bronchoscopy (Storz, Germany) is done under general anesthesia. After choosing an appropriate sized scope, it is connected to the light source and by aid of the direct laryngoscope the bronchoscope is advanced from the mouth till it passes between the vocal cords. Then the laryngoscope is removed, and bronchoscope is slightly advanced in the trachea and the anesthesia machine is connected to the side port of the bronchoscope. The site of the pin is localized, and if the pin is visualized, a crocodile forceps is advanced through the bronchoscope to retrieve the pin. If pin is not visualized or retrieval is not possible by the rigid bronchoscope, a fiber-optic bronchoscope is advanced through the rigid bronchoscope and the pin is picked-up. If the above procedure failed to retrieve the pin, the procedure was repeated few days later after taking a written consent from the patient and/or her relatives for thoracotomy and operative intervention in the form of bronchotomy if bronchoscopic retrieval of the pin failed in the second time.

Patients who underwent successful rigid bronchoscopy were hospitalized for 24 h. Those who underwent classic thoracotomy were discharged from the hospital after the total expansion of both lungs and removal of the chest tubes.

## Statistical analysis

After data collection, verification and revision. We analyzed tabulated data statistically using SPSS (statistical package for social science for windows statistical package, version 24.0). Data were expressed as number and percentage for qualitative variables and mean + standard deviation for quantitative one. Data were summarized using the arithmetic mean, the standard deviation and median.

## Results

A total of 50 female patients were identified with a diagnosis of scarf pin inhalation. Their age ranged from 11 to 30 years and

the mean was 14.7 years. All patients had the same history, that while holding the pin between teeth or lips for fixing Hijab, and at that time a sudden episode of deep inspiration due to laughing, crying or hiccup followed by choking due to pin inhalation. The average duration of reporting to our emergency department was 5 hours with delayed presentation ranging from 24 to 36 hours.

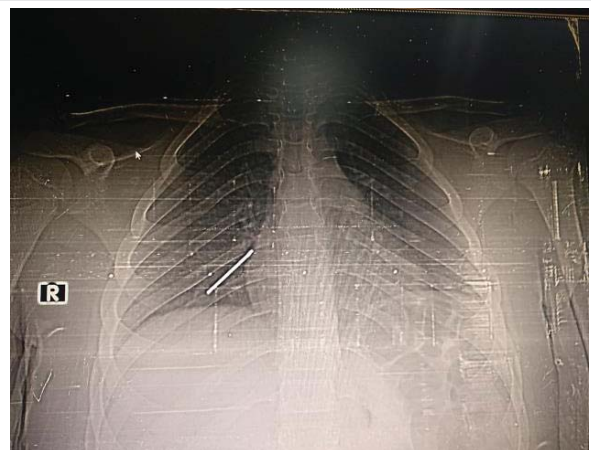
Seventeen patients have no symptoms when arrived to the hospital while 10 complained of dry cough, 4 complained of odynophagia, 1 complained of suffocation, 7 complained of foreign body sensation, 5 complained of chest pain, 6 complained of blood tinged sputum. None of the patients had any specific physical findings. No associated neurologic or psychiatric comorbid condition was documented in any of the patient (Table 1) Figure 1. Presentation was early (within the first 24 hours) in 97% of patients. Late presentation occurred in 3% of patients (24 hours to 5 days).

Postero-anterior and lateral chest X-rays documented the presence of FB in all cases and pin location was as follow, in 9 patients was located in trachea, in 16 patients the pin was located in the right main bronchus, in 6 patients the pin was located in the right Intermediate bronchus, in 12 patients was in the left main bronchus and in 7 patients was located in the left Intermediate bronchus (Table 2) Figure 2.

In one patient the pin was successfully removed Spontaneous by coughing, in 36 patients retrieved by rigid bronchoscope, In 6 patients the pin was removed by flexible bronchoscope in the same sitting. In 7 cases pin could not be retrieved at all because of penetration into lung parenchyma

**Table 1:** Common symptoms of pin aspiration.

Symptoms	No. (%)
Dry Cough	10 (20)
☒Suffocation	1 (2)
Foreign body sensation	7 (14)
Odynophagia	4 (8)
Chest pain	5 (10)
blood tinged sputum	6 (12)
Asymptomatic	17 (34)



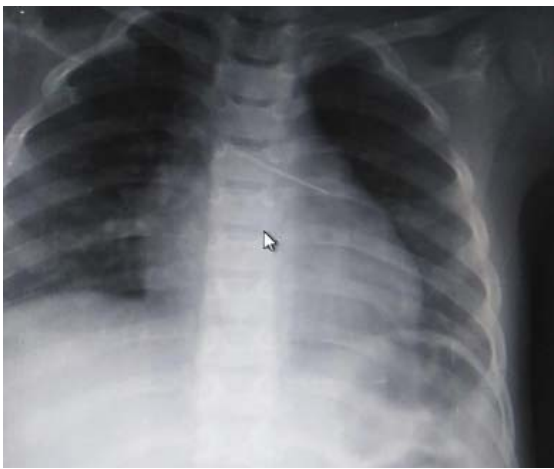
**Figure 1:** Female patient 21 years old and chest X-ray showed that pin was located in right main bronchus.



and hemorrhage due to initial manipulation. These patients managed by thoracotomy (5 cases of bronchotomy, 1 case of right lower lobectomy and 1 case of left lower lobectomy) (Table 3) Figure 3. The complications noted only in one patients of those managed by thoracotomy and the complication was in the form of prolonged air-leak (more than one week), that spontaneously resolved.

**Table 2:** Anatomical site of pin after aspiration.

Anatomical Site	No. (%)
Trachea	9 (18)
Right main bronchus	16 (32)
Right Intermediate bronchus	6 (12)
Left main bronchus	12 (24)
Left Intermediate bronchus	7 (14)



**Figure 2:** Female patient 25 years old and chest X-ray showed that pin was located in left main bronchus.

**Table 3:** Methods of Retrieval of the pin.

Methods	No. (%)
Spontaneous by coughing	1 (2)
Rigid bronchoscope	36 (72)
Fiber-optic bronchoscope	6 (12)
Bronchotomy	5 (10)
lower lobectomy	2 (4)



**Figure 3:** Female patient 19 years old and chest X-ray showed that pin was located in left intermediate bronchus.

## Discussion

Foreign bodies are multidisciplinary emergency. Frequently seen in younger children it is sometimes a life-threatening condition. Foreign Bodies Aspiration (FBA) can largely be prevented by proper education and care. In the children younger than 4 years of age, the major cause of accidental death is asphyxia that is caused by inhaled foreign body [6].

Headscarf pin aspiration is a distinct clinical entity found in countries where headscarves are used because of religious or traditional reasons. In Islamic countries, females begin to wear scarves when secondary sex characteristics appear. The lack of experience in wearing headscarves can predispose young women to pin inhalation [7].

This complex task is usually done by both hands in front of a mirror with one or more pins held between lips or teeth with plastic end inwards during sequential insertion of pins. Any maneuver during the task like talking, coughing, sneezing or laughing predisposes them to inhalation of the pins especially in young teenage group who lack the requisite experience that the task demands. Diagnosis is usually straightforward via a history and the presence of the radio-opaque pin on a chest X-ray. For proximally located pins in the trachea and main bronchi, the treatment is extraction using a rigid bronchoscope and less commonly a flexible bronchoscopy [8].

All patients included in this study are females, because Muslim females only wear Hijab, this history was the same that reported by Al-Halfawy [9], in a similar study that included 32 patients.

Another study done by Kaptanoglu, et al. [10], included 414 patients for turban pins aspiration, 56% of the patients were females and 44% were males. However, most of patients included in that study were young children.

The age of patients in this study ranged from 11 to 30 years with a mean of 14.7 years and this result is close to that obtained by Ragab, et al. [11] as the mean age of patients included in that study was 14 years.

In our study 34% of patients were asymptomatic when arrived to the hospital while 20% complained of dry cough, 8% complained of odynophagia, 2% complained of suffocation, 14% complained of foreign body sensation, 10% complained of chest pain, 12% complained of blood tinged sputum.

Al-Sarraf, et al. [12], in a similar study included 35 patients reported that all patients initially experienced coughing and all had normal physical examination as they were all non-asphyxiating and non-obstructive FB aspiration. Hemoptysis was only observed in four cases (11%).

The study in our hand showed that the pin location was as follow, in 18 % of patients was located in trachea, in 32% of patients the pin was located in the right main bronchus, in 12% of patients the pin was located in the right secondary bronchus, in 24% of patients was in the left main bronchus and in 14% of patients was located in the left secondary bronchus.





In contrary with our results, a study of Hasdiraz, et al. [13], included 105 patients reported that in 52% of patients the pin was located in the right bronchial system which is exactly the same percent in our study. However, right sided predominance is not a rule as in a similar study that was done by Arshad, et al. [14], on 33 patients, the scarf pin was located on the left main bronchus in 14 (60.8%) cases, in 6 (26.06%) cases pin was located in right main bronchus and in the trachea in 3 (13.04%) cases.

The present study shows that the pin was successfully retrieved in the majority of patients (72%) by rigid bronchoscope, successfully removed Spontaneously by coughing in 2% of patients, In 12% of patients the pin was removed by flexible bronchoscope in the same sitting. In 14% cases pin could not be retrieved at all because of penetration into lung parenchyma and hemorrhage due to initial manipulation. These patients managed by thoracotomy (10% of cases by bronchotomy, 2% of case by right lower lobectomy and 2% of case by left lower lobectomy).

Findings of our results are in agreement with study of Rizk, et al. [15], as they reported that the FB was successfully removed with bronchoscope in 97.3 % of patients. In 5 (6.8%) patients, the initial trial was unsuccessful and a second bronchoscopy successfully removed the foreign bodies. In 2.7% of patients with pin in the posterior segment of the left and right lower lobe, respectively, thoracotomy was performed to remove the pin after failure of two bronchoscopic trials.

Another study by Fenane, et al. [16], showed that 28 patients were operated for surgical removal of a scarf pin inhaled by accident after unsuccessful endoscopy due to very distal migration of pins and/or their embedding in the bronchus wall with penetration of the lung parenchyma

There was no mortality as scarf pin is nonasphyxiating, and regarding this point the result of this study was better than that reported by Elmustafa and Osman [17], in a study that included 14 patients they reported 1 (7.1%) mortality due to foreign body inhalation and its complications.

## Conclusion

The use of the scarf pin is a sociocultural practice that carries serious health risks in Egyptian Muslim females who wear Hijab. The clinical presentation and radiological findings of Scarf Pin aspiration are diagnostic in all cases. Rigid bronchoscopy is the preferred treatment modality. If thoracotomy is expected, it should be done on C arm table for intraoperative radiological guidance. Health education of girls in the preadolescent period about choking hazards of scarf pins and warning them about the risks of putting pins between their teeth may guard against this problem.

## References

1. Wani ML, Ganie F, Wani N, Lone H, Ahangar AG, et al. (2013) The Pattern, Presentation and Management of Pardah Pin Inhalation: Report from a Single Center in Northern India. *Bull Emerg Trauma* 1: 171-174. [Link: https://bit.ly/3jqxm94](https://bit.ly/3jqxm94)
2. Aydođdu K, Findik G, Sađlam L, Kaya S (2010) Occult Foreign Body; Mimicking Lung Cancer. *J Clin Anal Med* 1: 57-59. [Link: https://bit.ly/20HKGr](https://bit.ly/20HKGr)
3. Baram A, Kakamad F, Bakir D (2017) Scarf pin-related hijab syndrome: A new name for an unusual type of foreign body aspiration. *J Int Med Res* 45: 2078-2084. [Link: https://bit.ly/3eNEqUs](https://bit.ly/3eNEqUs)
4. Kandath M, Parvez Y (2016) Accidental aspiration of head scarf pin in left bronchus piercing the lung parenchyma: A rare case in a child. *Lung India* 33: 424-426. [Link: https://bit.ly/20LwKgk](https://bit.ly/20LwKgk)
5. Fenane H, Bouchikh M, Bouti K, El Maida M, Ouchen F, et al. (2015) Scarf pin inhalation: Clinical characteristics and surgical treatment. *J Cardiothorac Surg* 10: 61. [Link: https://bit.ly/2CphzHb](https://bit.ly/2CphzHb)
6. Salih A, Alfaki M, Alhuda D (2016) Airway foreign bodies: A critical review for a common pediatric emergency. *World J Emerg Med* 7: 5-12. [Link: https://bit.ly/3hnhzHQ](https://bit.ly/3hnhzHQ)
7. Soysal O, Kuzucu A, Ulutas M (2006) Tracheobronchial foreign body aspiration: A continuing challenge. *Otolaryngol Head Neck Surg* 135: 223-226. [Link: https://bit.ly/20JqeGL](https://bit.ly/20JqeGL)
8. Apillioğulları B, Duzgun N, Esmel H (2015) Headscarf pin localized in the right main bronchus and two pins in the abdomen. *Eur J Gen Med* 12: 82-85. [Link: https://bit.ly/3fQ5TLQ](https://bit.ly/3fQ5TLQ)
9. Al-Halfawy A (2007) Flexible Bronchoscopy for the Retrieval of Aspirated Metallic Pins: A Case Series. *Journal of Bronchology* 14: 83-85. [Link: https://bit.ly/2DZzXGQ](https://bit.ly/2DZzXGQ)
10. Kaptanođlu M, Nadir A, Dogan K, Sahin E (2007) The heterodox nature of "Turban Pins" in foreign body aspiration; the central Anatolian experience. *Int J Pediatr Otorhinolaryngol* 71: 553-558. [Link: https://bit.ly/2ZLielR](https://bit.ly/2ZLielR)
11. Ragab A, Ebied OM, Zalal S (2007) Scarf pins sharp metallic tracheobronchial foreign bodies: presentation and management. *Int J Pediatr Otorhinolaryngol* 71: 769-773. [Link: https://bit.ly/2CTveGk](https://bit.ly/2CTveGk)
12. Al-Sarraf N, Jamal-Eddine H, Khaja F, Ayed AK (2009) Headscarf pin tracheobronchial aspiration: a distinct clinical entity. *Interact Cardiovasc Thorac Surg* 9: 187-190. [Link: https://bit.ly/3jnC4oa](https://bit.ly/3jnC4oa)
13. Hasdiraz L, Bicer C, Bilgin M, Oguzkaya F (2006) Turban Pin Aspiration: Non-Asphyxiating Tracheobronchial Foreign Body in Young Islamic Women. *Thorac Cardiovasc Surg* 54: 273-275. [Link: https://bit.ly/32F2Cvh](https://bit.ly/32F2Cvh)
14. Arshad M, Umar M, Kashif M (2019) Scarf Pin Inhalation in Young Girls: Atypical Type of Foreign Body Inhalation. *Journal of Rawalpindi Medical College* 23: 72-75. [Link: https://bit.ly/2ZPzif4](https://bit.ly/2ZPzif4)
15. Rizk N, Gwely NE, Biron VL, Hamza U (2014) Metallic hairpin inhalation: a healthcare problem facing young Muslim females. *J Otolaryngol Head Neck Surg* 43: 21. [Link: https://bit.ly/3eQ3qQr](https://bit.ly/3eQ3qQr)
16. Fenane H, Bouchikh M, Bouti K, El Maida M, Ouchen F, et al. (2015) Scarf pin inhalation: Clinical characteristics and surgical treatment. *J Cardiothorac Surg* 10: 61. [Link: https://bit.ly/2CphzHb](https://bit.ly/2CphzHb)
17. Elmustafa OM, Osman WN (2009) A clinical experience with sharp bronchial foreign bodies in Sudanese patients. *Sudanese Journal of public health* 4: 256-258. [Link: https://bit.ly/3jr6TIF](https://bit.ly/3jr6TIF)