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Tracheobronchoscopy: Case Series with the Telescope

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ABSTRACT
Bronchoscopy or tracheobronchoscopy is life-saving procedure, especially in paediatric patients where foreign bodies are commonly encountered in the airway.
Method
In demonstrating the importance of this procedure, 4 cases in a series were used, who were clinically suspected to have had foreign bodies in the airway.Each of these cases had tracheobronchoscopy to identify foreign body.
Result
4 cases were involved, 3 males and one female. Foreign bodies were lodged in bronchial airway. Three (75%) patients had foreign bodies lodged in the left main bronchus, while one (25%) had foreign body in the right main bronchus.
Aim
The aim of this case series is to showcase the use of the telescope in removal of tracheobronchial foreign bodies.
Conclusion
Bronchoscopy remains gold standard for management of tracheobronchial foreign bodies.The Telescope offers a better instrument option than others.

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I. Introduction

Bronchoscopy or Tracheobronchoscopy remain gold standard procedures in management of tracheobronchial foreign bodies. This can be achieved using a rigid bronchoscope or fibre-optic scope, depending on which instrument is available.
However, the telescopic method appear to be a better option than other methods.[1]
It allows a good anaestheticstability to the patient and the surgeon throughout the period of surgery and avoids interruption arising from fall in oxygen saturation during the procedures, unlike other methods.
Foreign bodies most distal to the bronchus are easily accessed with a wider field of view. In this study, we have four patients in a series that were managed using the telescope over the rigid or fibre-optic scope.[2]
By these series we want to highlight the use and advantages of the telescope over other technique showcasing it in the tracheobronchoscopy procedure.
We hope that centers will acquire the Telescope and compare the usefulness over other methods.

Instruments
1. Light Source
2. Light Cable
3. Telescope
4. Grasping/Biopsy Forcep
5. Good Suction
6. Appropriate sized endotracheal tubes
7. Long/metal/sized suction tube
8. Laryngoscope

Patient A
Patient A is 2 years old male child with history of sudden bouts of cough followed by respiratory distress. Child was said to have been fed with a groundnut prior to the episode. There was no associated fever or change in voice.
Examination
Examination revealed child in moderate respiratory distress with reduced air entry on the right lung field. No remarkable finding were seen in the oropharynx and abdomen.
Plain X-ray of the chest and lateral soft tissue of the neck did not demonstrate any significant finding. The full blood count, electrolyte and urea did not indicate any abnormal finding.

Telescopic Bronchoscopy
Telescopic Bronchoscopy revealed disintegrated groundnut particles visible in the right main bronchus. As much were picked and removed and bronchial toileting done by suctioning.
Patient B
Seven (7) years old boy presented with recurrent cough associated with difficulty in breathing which is usually aggravated by episodes of cough. Treatment for episodes of cough had been given in various clinics and hospitals before referral was made. This was associated by occasionalexpectoration of mucous fluid. No history of fever was noted.
Examination
Young boy with mild respiratory distress and reduced air entry on the left side of the lung field. No remarkable findings in the abdomen.
Plain X-Ray
Plain X-Ray revealed a dense screw like object lodged at the left main bronchus. Full blood count, electrolyte and urea were normal.

Telescopic Bronchoscopy

Screw nut was removed from left main bronchus as shown on the displayed gauze.

Screw nut removed from left main bronchus

Patient C
36 years old female referred from a hospital in Bayelsa State was said to have presented with signs of upper airway obstruction and tracheostomy tube was situ on presentation. No obvious indication was given for the tracheostomy done.
CT Scan
CT scan of the neck and chest did not demonstrate any lesion. The larynx and the tracheobronchial airway were free from foreign body.

1. Direct Larygoscopy done did not show foreign bodyin the larynx
2. Telescopic view of the tracheobronchial airway was done without demonstrating any lesion or foreign body.
3. Post-operatively a weaning process/extubation were successfully done and patient discharged.

Patient D

Nine (9) year old male child with history of recurrent cough and fever of about a year duration was said to have visited many hospital for treatment, concerning his cough but improvement was not observed.

Examination of the chest revealed reduced air entry on the left lung field. Chest X-Ray showed evidence of a dense foreign body in the left field. Oropharyngealexamination and abdomen did not reveal any remarkable findings.On telescopic examination, a board nail was removal from the left main bronchus, as displayed on the gauze.

Board nail removed from left main bronchus

Advantages of the Telescope

1. Wider field of view
2. Higher magnification of objects and airway
3. Good anaesthetic control of airway with endotracheal intubation

II. Conclusion

Treatment of airway obstructions is highly challenging. The use of the telescope in tracheobronchial management of foreign bodies offers better accessibility, wider field of view and airway control. This is in comparison with rigid and fibre-optic instrument.

III. Discussion

The use of the telescope can be applied both in adults and paediatric patients. It is obvious that tracheobronchial foreign bodies present more in children than adults. [2]

First case is a two (2 years) old male who was fed with groundnut prior to presentation. Due to poor swallowing reflexes observed in paediatric age, they are prone to foreign body aspiration. There may not be fever or change in voice as was observed in our first case.[3,4] This was also noted by Orji et al in their Trachobronchial foreign body aspiration in children: how reliable are clinical and radiological signs. There was no radiological sign to suggest foreign body lodgementin the bronchial airway [4,5].

Telescopic bronchoscopy done revealed disintegrated groundnut particles visible in the right main bronchus, which were picked with the telescope forcep. This is one of the advantages of the telescope since enough time is allowed without drop in oxygen saturation due to continuous ventilation via the endotracheal tube.

The second patient was a 7 year old boy who presented with recurrent cough associated with difficulty in breathing. This second case presented with obvious breathlessness aggravated with episodes of cough.

Chuan et al in a review and analysis of 3028 cases reported similar obvious sign in airway foreign body [6,7]. A dense screw like object was lodged at the left main bronchus.

Telescopic Bronchoscopy procedure was done and screw metal was extracted. The lung field was adequately aerated postoperatively.

The third case involved a 36 year old female who was referred from secondary health centre in a neighboring state. Already had tracheal tube insitu. No obvious indication than that the patient had upper airway obstruction.

Jose et al reported a case of bronchoscopy and tracheostomy in removal of bronchial foreign body [8,9]. There was need to do both direct laryngoscopy in this patient considering the fact that there was no stated indication for tracheostomy. CT scan of the neck and chest did not indicate any foreign body, however not all foreign bodies are radiopaque. Hence, there was need to do both direct laryngoscopy and bronchoscopy via the telescope. There was no obvious foreign body observed during both procedure.Extubation was successful post operatively[10].

Fourth patient was a 9 year old with history of recurrent cough and fever of about one year duration [11]. Several hospitals were visited prior to presentation. There was obvious reduced air entry at the left lung field. Chest x-ray revealed a dense foreign body at the left lung field [12,13]. Telescopic Bronscopic procedure extracted a board nail from the left lung field. Anaesthetic procedure had no difficulty and no desaturation was observed during the process [14,15]. It is worth mentioning that access for biopsies are easily obtained during telescopic procedures [16,17]. It is obvious that the procedure has more advantages when compared with the rigid and fibre-optic procedures [18,19].

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