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DISPOSABLE COVID BOX – A new invention

Abstract

Objective: To introduce a new method to do safe bronchoscopy, a highly aerosol generating procedure through disposable COVID box in this difficult COVID time.

Methods: We have introduced an unbelievably cheap and effective method “DISPOSABLE COVID BOX”. We took an acrylic board 70 cm x 20 cm and attached 3 bars 32 cm long and slid it under the side of the patient. A similar contraption is used on the other side. Then, it is covered by a polypropylene sheet 2’ x 2’. It makes a completely disposable airtight chamber with the polypropylene sheet. We make a 1 cm nick in the sheet and introduce the videobronchoscope, which is further navigated into the patient without any discomfort either to the patient or Bronchoscopist. When the procedure is finished, scope is withdrawn from the patient and the polypropylene sheet is squeezed out. The polypropylene sheet is removed and disposed off with all precautions, and the acrylic boards and the bars are cleaned with 1% Sodium hypochlorite solution. This way, the cost is only of polypropylene sheet which is negligible.

Results: Videobronchoscopies in indicated patients were done using this novel disposable covid box. This new invention called Disposable COVID box has been practiced for the first time, it’s an innovative technique about which we want the world to be known.

Conclusion: To conclude, there are no aerosols released in atmosphere after the procedure, making it absolutely safe for bronchoscopist and at same time patient also remains safe. We are ready again in no time with fresh polypropylene sheet to do the next bronchoscopy.

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1. Introduction

The Corona virus pandemic has spread like Spanish Flu of 1918–1920 and has already claimed lives in hundreds of thousands. Although the droplet inhalation is the main route of transmission of Covid-19, aerosol generating procedures can also be a potent source of airborne transmission, like Bronchoscopy. As per one of the studies, the virus can remain suspended in air for up to three hours.

Respiratory infections can be transmitted through droplets of different sizes: when the droplet particles are 5–10 μm in diameter they are referred to as respiratory droplets, and when then are <5 μm in diameter, they are referred to as aerosols or droplet nuclei. According to current evidence, COVID-19 virus is primarily transmitted between people through respiratory droplets and contact routes.

Bronchoscopy is, at times unavoidable and essential to diagnose pulmonary problems, which becomes a serious point of concern as the droplet and aerosol infection during the procedure can endanger the lives of all the medical and para-medical staff. Non-urgent bronchoscopies should be avoided, but at times, bronchoscopy is unavoidable as in

Fig. 1 – Airway Respiratory Containment system.
massive hemoptysis, stent migration, severe tracheobronchial obstruction, to exclude lung cancer, FB inhalation or severe, undiagnosed pulmonary infection, etc. 3

2. Discussion

Various boxes have sprouted during these times, namely Airway Respiratory Containment system, Intubation Box, Aerosol Box, Angled Aerosol Box, Aerosol box shield, etc. They can be good for video assisted ETT intubation, but very cumbersome to do bronchoscopic navigation. They are made of plastic/fiber and costing in the range of 130$, which greatly increases the cost of the procedure. Not only that, they must be thoroughly disinfected after the procedure (Figs. 1–6).

We have introduced an unbelievably cheap and effective method “DISPOSABLE COVID BOX”. We take an acrylic board 70 × 20 cm and attach 3 bars 32 cm long and slide it under the side of the patient. A similar contraption is used on the other side.

Then, it is covered by a polypropylene sheet 2’ × 2’. It makes a completely disposable airtight chamber with the polypropylene sheet. We make a 1 cm nick in the sheet and
introduce the video-bronchoscope, which is further navigated into the patient without any discomfort either to the patient or Bronchoscopist.

When the procedure is finished, scope is withdrawn from the patient and then squeeze it out of the polypropylene sheet through a set of pinched fingers. The polypropylene sheet is removed and disposed off with all precautions, and we clean the acrylic boards and the bars with 1% Sodium hypochlorite solution. This way, the cost is only of polypropylene sheet which is negligible. There are no aerosols released in atmosphere after the procedure making it absolutely safe for bronchoscopist and at same time patient also remains safe. We are ready again in no time with fresh polypropylene sheet to do the next bronchoscopy.

3. Conclusion

To conclude, there are no aerosols released in atmosphere after the procedure making it absolutely safe for bronchoscopist and at same time patient also remains safe. We are ready again in no time with fresh acrylic sheet to do the next procedure. This system has the advantage of very low cost, ease of use, better prevention of spread of infection as it is a completely closed system, and best of all, the polypropylene sheet is discarded after single use, which is the need of the times during this COVID-19 era.

Conflicts of interest

The authors have none to declare.

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