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EP06

FLEXIBLE BRONCHOSCOPY FOR THE EXTRACTION OF ASPIRATED STRAIGHT PIN IN CHILDREN

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Background
Straight pin aspiration, as a type of foreign body aspiration (FBA), is especially prevalent in Islamic countries such as Indonesia due to its common use of headscarf and straight pin as fixation. Extraction of aspirated straight pin can be performed either by rigid or flexible fiberoptic bronchoscopy, depending on the foreign body location and practice patterns. This study aimed to describe between extraction procedures and complications of straight pin aspiration removal in children.

Methods
A retrospective study was conducted on 17 children cases of straight pin aspiration in Cipto Mangunkusumo Hospital between January 2018 and December 2022, who underwent rigid bronchoscopy and flexible bronchoscopy. Chi-square analysis was performed to analyze association between FBA extraction procedures and complications.

Results
In this study, 6 out of 17 (35,3%) aspirated straight pin were successfully extracted under rigid bronchoscopy. Flexible bronchoscopy was performed in 11 patients (64,7%), with 2 of them failed due to its lower site of impaction. Thoracotomy procedure was then performed and succeeded in the remaining 2 patients. Most common location of impaction were in left main bronchus (n=7, 41.2%) and left lower lobe bronchus (n=5, 29.4%). Complications were reported in 14 patients (82.4%), with laceration as the most common complication (n=8; 47.1%), without any serious or fatal complications. Study analysis found no correlation between flexible bronchoscopy and other procedures on higher rate of complications, with laceration (p=0.430), edema (p=0.087), bleeding (p=0.773), hyperemia (p=0.080), and granulation (p=1.000).

Conclusion

Flexible bronchoscopy is a safe extraction procedure of aspirated straight pin, with high success rate and no increased risk for complications.

EP07

OUTCOMES OF SLIDE TRACHEOPLASTY IN CONGENITAL TRACHEAL STENOSIS: A 10-YEAR EXPERIENCE

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Background

Congenital tracheal stenosis (CTS) is a rare condition but carries detrimental effect. Slide tracheoplasty is currently the gold standard treatment for CTS but little is known about the postoperative outcome.

Methods

This is a retrospective observational study of CTS patients associated with congenital heart defect underwent surgical intervention between February 2013 until February 2023 in Hospital Serdang. Patients' demographic data, radiological images, echocardiography and bronchoscopy findings, peri-operative conditions, operative details and outcomes were collected from the medical records. Our primary objective is to determine the mortality and re-stenosis rate. The secondary objective is to review the patients' characteristics and the postoperative ventilation support.

Results

50% were boys(n=10) and mean age was 9.8 months (range:3 days - 4 years old). Half of the patients were syndromic, 3 with Down syndrome and 2 with VACTERL association. 30% (3/10) were born premature. Pre-operatively, 50% (5/10) were on invasive ventilation and 40% (4/10) on non-invasive ventilation. 60% (6/10) had long segment tracheal stenosis. All patients had cardiac surgery at the same setting of slide tracheoplasty. Our mortality rate is 20% (2/10) and 30% (3/10) had re-stenosis required dilatation procedure. Postoperatively, 30% (3/10) required home Bilevel Positive Air Pressure (Bi-PAP), 30%(3/10) were on Continuous Positive Airway Pressure and 10%(1/10) required tracheostomy with invasive ventilation. Only 10% (1/10) did not require any ventilation support pre- and post-operatively. Those who had poor outcome were born prematurely, weight ≤ 3 kg at surgery and required multiple tracheal dilatations.

Conclusion

Slide tracheoplasty has a promising outcome for CTS patients. Our mortality rate is comparable with previous studies. Patients with good outcome were those born at term, good weight at surgery and no re-stenosis occurrence. The success of slide tracheoplasty requires multidisciplinary team effort with optimum post-operative care.

EP08

FRONTIERS IN MANAGING BENIGN CENTRAL AIRWAY STENOSIS: THE FIRST CASE OF BIODEGRADABLE AIRWAY STENT IN ASIA

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Background

Airway stents are crucial devices that help keep the airway open in patients with tracheobronchial stenosis. Despite advancements in stent technology, an ideal airway stent has not been developed. However, biodegradable (BD) stents made of polydioxanone have shown promise in recent developments. These stents disintegrate naturally in the airway within 3 to 4 months after implantation, eliminating the need for removal. They retain sufficient mechanical strength for up to 6 weeks and gradually degrade until complete degradation approximately 15 weeks after implantation, making them a promising solution for airway stenting.

Case Report

Two cases of non-malignant post-Tuberculosis airway stenosis were successfully treated using tracheal and bronchial BD stents. Through a thorough and collaborative evaluation by a multidisciplinary team, it was determined that the persistent airway narrowing, despite multiple balloon dilatations with Mitomycin applications, required stent insertion due to unfeasibility of surgical intervention. The stent placement was necessary to achieve durable and significant improvement in patients' airway patency. Rigid bronchoscopy was utilized for the stent implantation, followed by regular surveillance bronchoscopy. No complications were encountered during the procedure. Both patient experienced improvement in their symptoms following the stent placement.

Conclusion

BD stents are a novel type of tracheobronchial support device used for treating benign airway stenosis. Although their effectiveness has not been fully studied, they can induce inflammation and mucosal hypertrophy, which can help stabilize malacic airways. BD stents are usually considered when other options are not available as they can prevent the need for multiple procedures, unlike silicone stenting which requires stent removal. However, there is a possibility of requiring repeat procedures like re-stenting if restenosis occurs after BD stent degradation. BD stents offer a promising alternative to traditional silicone and metal stents, but further research is necessary to confirm their efficacy.

EP09

THE RELATIONSHIP BETWEEN RADIATION EXPOSURE AND THE EXPOSURE REDUCTION EFFECT OF THE PROTECTIVE GLASSES DURING BRONCHOSCOPY USING A C-ARM X-RAY FLUOROSCOPY SYSTEM

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Background

In 2019, the Ministry of Health, Labor, and Welfare (Japan) established the new standard for the equivalent dose limits of radiation exposure to the lens of the eye from previous 150 mSv/year or less to 20 mSv/year or less on average for 5 years and 50 mSv or less each year.

Methods

We performed diagnostic bronchoscopy for peripheral lung lesions using a C-arm fluoroscopy system (VersiFlex Apla®). The operator and assistant wore radiation protective glasses (FG50-770®), and fluorescent glass dosimeters (GD-352M®) were placed inside and outside the glasses to measure radiation dose during bronchoscopy. Performing transbronchial biopsy, the C-arm was rotated so that the incidence angle of fluoroscopy was perpendicular to the direction of biopsy forceps. We examined the exposure reduction effect of protective glasses and the relationship between the rotation angle of the C-arm and the radiation exposure.

Results

Forty-six cases were included. The mean lesion diameter was 28.7 mm, the mean fluoroscopy time was 9.1 minutes, and the mean radiation dose was 53.5/23.8Gy (outside/inside the glasses) to the operator and 26.2/12.9Gy to the assistant. The radiation dose to the operator was significantly higher in the group with C-arm rotation than in the group without rotation (33/13 cases, average 120.2/27.2Gy, $p<0.05$). Furthermore. the larger the rotation angle, the higher the radiation dose ($p<0.05$). Assuming that the operator and the assistant were in charge of 100 bronchoscopies each in our department, the estimated annual equivalent dose would be 12.7/5.9 mSv (outside/inside of protective glasses).

Conclusion

Wearing protective glasses can reduce lens exposure under fluoroscopy in half, and the glasses are considered important, especially when the C-arm is rotated.