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Does endobronchial administration of combined lignocaine and adrenaline[LOX 2% ADR] on Airway Bleeding During Bronchoscopy Cause Hypertension in patients- A Prospective Observational Study.- Dr. Guggilla Giridhar sai [1],MBBS,MD.

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Abstarct :

Does endobronchial administration of combined lignocaine and adrenaline [LOX 2% ADR] on Airway Bleeding During Bronchoscopy Cause Hypertension in patients- A Prospective Observational Study.

Introduction:

Bronchoscopy plays a major role in the diagnosis and is a revolutionary interventional procedure, crucial in various diagnostic and therapeutic treatments.Bleeding is a known complication during bronchoscopy, with increased incidence in patients undergoing a more invasive procedure.

Hence controlling intra procedure bleeding is evidently important and for this , administrating combined lignocaine and adrenaline [LOX 2% ADR] is a potent vasoconstrictor that can control airway bleeding when applied topically and has been used as an alternative to phenylephrine.Here, we compared the effects of endobronchial administrating combined lignocaine and adrenaline [LOX 2% ADR] versus cold saline on systemic blood pressure.

Methods :

Study type : A prospective observational study, All participants are clinically thoroughly evaluated , vitals and physical examination done and pre procedure diagnostics are done and Informed consent is obtained from all participants .

In all, 30 patients who underwent bronchoscopy and received either administrating combined lignocaine and adrenaline [LOX 2% ADR] or cold saline from July 1,2022 to June 30, 2024 were included in this prospective observational study. Intra-procedural blood pressure absolute and percent changes were measured and compared between the 2 groups.

Post bronchoscopy all participants are ensured that all are hemodynamically stable .

Results:

There were no observed statistical differences in blood pressure changes between groups, there were no statistically significant differences in diastolic and mean arterial blood pressure changes between both groups.This study ensured that there are no such potential post procedure complications or significant differences in blood pressure.

Conclusion:

This study found that there is no significant differences in median intra-procedural systemic blood pressure changes comparing patients who received endobronchial cold saline to those receiving administration of combined lignocaine and adrenaline[LOX 2% ADR],Overall, this study argues for the vascular and systemic safety of administrating combined lignocaine and adrenaline[LOX 2% ADR],or airway bleeding as a reasonable alternative to Phenylephrine.

Keywords : hypertension, phenylephrine , endobronchial, lignocaine and adrenaline(LOX 2% ADR), blood pressure , bronchoscopy ,cold saline.

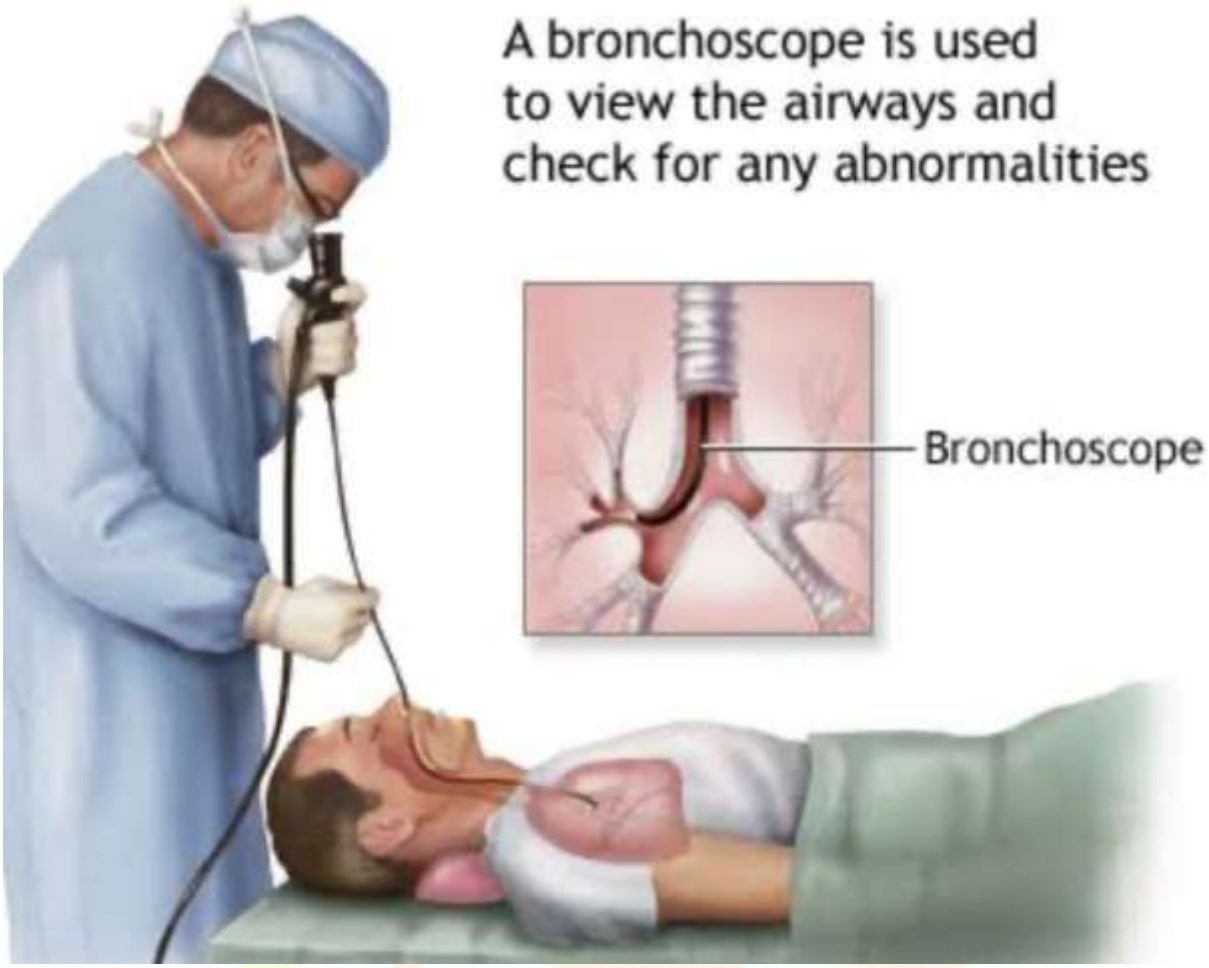
Abstract:

Does endobronchial administration of combined lignocaine and adrenaline [LOX 2% ADR] on Airway Bleeding During Bronchoscopy Cause Hypertension in patients- A Prospective Observational Study.

Background of the study *:*

Bronchoscopy is a medical procedure that allows direct visualization of the airways and lungs using a bronchoscope, a flexible or rigid tube equipped with a camera and light[1], basically used for both diagnostic and therapeutic procedures in the field of respiratory medicine.

Fig.1 virtual bronchoscopy.



This procedure is performed by a pulmonologist often in a specialized medical setting such as a hospital or clinic[2] .Bronchoscopy plays a major role in the diagnosis and is a revolutionary interventional procedure, crucial in various diagnostic and therapeutic treatments[1].

Diagnostic Importance:

Visualization and Assessment,Biopsy and Sampling,Foreign Body Removal,Evaluation of Abnormalities[3].

Therapeutic Importance of Bronchoscopy:

1. **Airway Clearance:** Removes mucus, pus, or debris from the airways to alleviate obstructions and improve breathing, especially in COPD,CF[4]
2. **Foreign Body Removal:** Extracts foreign objects lodged in the trachea or bronchi
3. **Medication Delivery:** Directly administers medications into the lungs to target localized infections or inflammations[5].
4. **Endobronchial Laser Therapy:** Uses lasers to remove or shrink obstructive tumors
5. **Stent Placement:** Inserts stents to keep improving airflow in patients with conditions like bronchial stenosis or certain malignancies[6]
6. **Bronchial Thermoplasty:** A procedure to reduce airway smooth muscle mass, which helps in reducing symptoms and improving control over asthma[7]
7. **Bronchial Lavage:** Washes out and collects fluid from the airways to diagnose infections, has be validated in diagnostic tool in lung cancers too[8]

These therapeutic applications enhance the management of various pulmonary conditions, improving patient outcomes and quality of life.

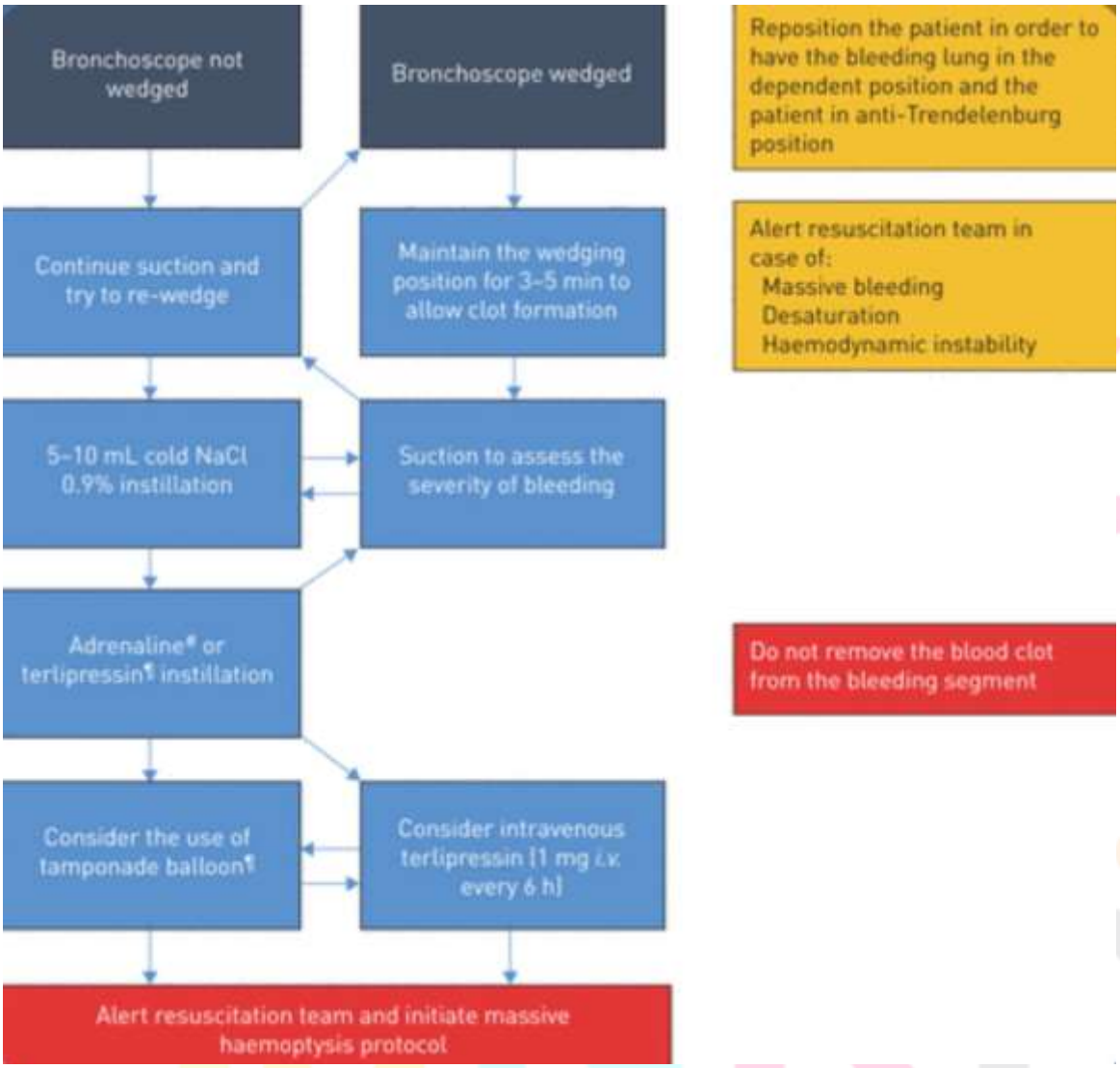
Complications of bronchoscopy :

- Bleeding
- Infection
- Hypoxemia
- Pneumothorax

- CVS events
- Bronchospasm
- Pain n discomfort
- Sedation reactions
- Perforations are rare.

There are few potential complications during the procedure and airway bleeding is common among them.Bleeding is a known complication during bronchoscopy, with increased incidence in patients undergoing a more invasive procedure.

Fig2. Management of active endobronchial bleeding:



Hence controlling intra procedure bleeding is evidently important and for this , endobronchial administration of combined lignocaine and adrenaline[LOX 2% ADR] is a potent vasoconstrictor that can control airway bleeding when applied topically and has been used as an alternative to phenylephrine[9] .

The clinical effects of endobronchial administration of combined lignocaine and adrenaline on systemic vasoconstriction have not been clearly evaluated. Here, we compared the effects of endobronchial administration of combined lignocaine and adrenaline [LOX 2% ADR] versus cold saline on systemic blood pressure[10] .

Material and Methods:

Study done among patients who came to OPD, IPD or admitted in RICU Of respiratory medicine in career institute of medical sciences and hospital, Lucknow, U.P.

Sampling method : random sampling

S*tudy type* : A prospective observational study

Inclusion criteria :

All participants aged between 15 to 80 years of both gender

Exclusion criteria:

Patients with pre diagnosed with HIV,CKD,CHF,Hypertension,connective tissue disorders

Pregnant women

All included participants are clinically thoroughly evaluated , vitals and physical examination done and pre procedure diagnostics are done I.e ChestX-ray, CT-scan,CBC,LFT,KFT,PT/INR .

Informed consent is obtained from all participants and are willing for follow-ups.

In all, 30 patients who underwent bronchoscopy and received either endobronchial administration of combined lignocaine and adrenaline or cold saline from July 1,2022 to June 30, 2024 were included in this prospective observational study. Intra-procedural blood pressure absolute and percent changes were measured and compared between the 2 groups.

Post bronchoscopy all participants are ensured that all are hemodynamically stable .

Results:

There were no observed statistical differences in blood pressure changes between groups.

The median absolute change between the median and the maximum intra-procedural systolic blood pressure in the cold saline group was 29 mm Hg (IQR 19 to 41) compared with 31.8 mm Hg (IQR 18 to 45.5) in the endobronchial administration of combined lignocaine and adrenaline [LOX 2% ADR]group.

Fig3. Visible endobronchial bleeding and controlling active bleeding.

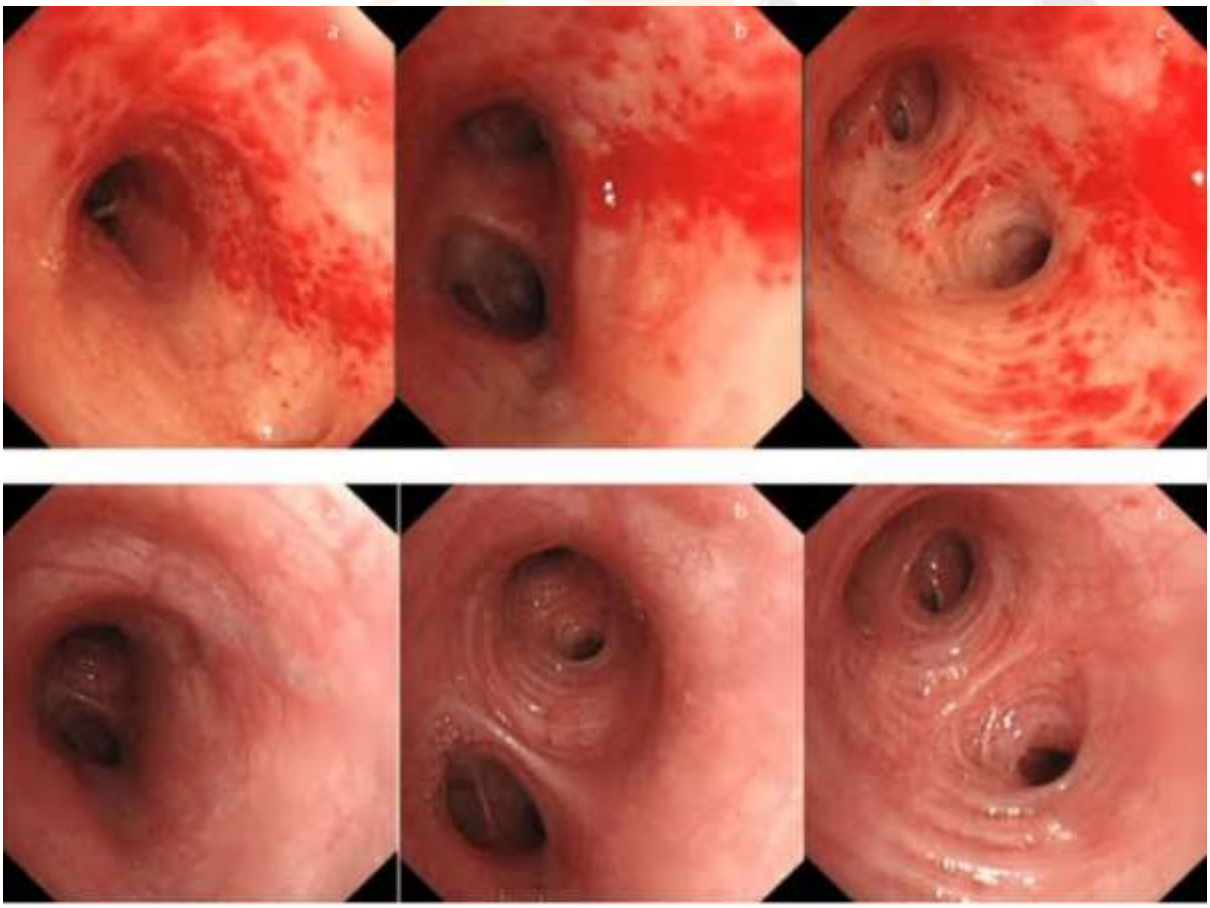
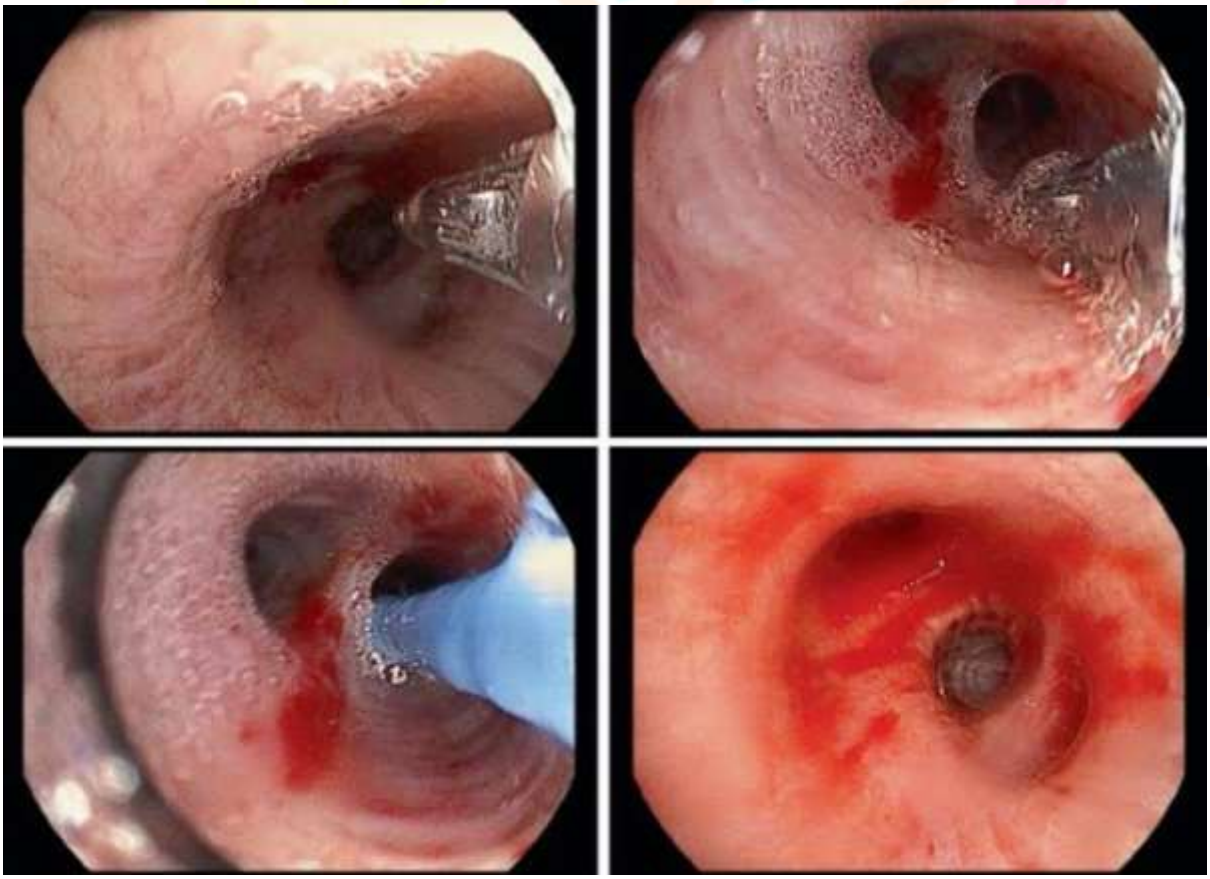


table 1. summarizing the contents of the above data:

Group	Median Absolute Change (mm Hg)	IQR (mm Hg)	Median Percent Change (%)	IQR (%)
Cold Saline	29	19 to 41	33.6	18.8 to 39.4
Endobronchial Administration of Combined Lignocaine and Adrenaline	31.8	18 to 45.5	28	16.8 to 43.5

This table compares the median absolute change and median percent change in systolic blood pressure between the two groups, along with their interquartile ranges (IQR).

Fig4. Active bleeding while performing bronchoscopy:



The corresponding median percent changes in SBP were 33.6 % (IQR 18.8 to 39.4) and 28% (IQR 16.8 to 43.5) for the cold saline and endobronchial administration of combined lignocaine and adrenaline[LOX 2%ADR]groups, respectively.

Fig4.Steps we followed to control active bleeding Intra procedure :

Similarly, there were no statistically significant differences in diastolic and mean arterial blood pressure changes between both groups.

This study ensured that there are no such potential post procedure complications or significant differences in blood pressure.

Conclusions:

This study found that there is no significant differences in median intra-procedural systemic blood pressure changes comparing patients who received endobronchial cold saline to those receiving combined lignocaine and adrenaline[LOX 2%ADR] .

Overall, this study argues for the vascular and systemic safety of endobronchial administration of combined lignocaine and adrenaline[LOX 2%ADR] on airway bleeding as a reasonable alternative to phenylephrine.

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Keywords : hypertension, phenylephrine , combined lignocaine and adrenaline,blood pressure , bronchoscopy , endo bronchial ,cold saline.