

## **P143-EN-01-122024 - BLITZ #2 Suction Matters V2**

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Welcome to our special segment on bronchoscopy section performance.

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Today we are joined by Michael, the observer of a fascinating study evaluating the section capabilities of single use flexible bronchoscopes.

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Michael, thank you for joining us.

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Thank you for having me.

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I'm excited to share the findings.

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Let's jump right in.

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So tell me, what was the primary objective of this study?

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So this study was conducted by Doctor Reddy and his team and published during the American Thoracic Society Congress of 2024.

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The primary goal was to systematically evaluate the suction capabilities of commercially available single use flexible bronchoscopes across different fluid viscosities.

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The aim was to replicate the real world conditions seen in intensive care units, particularly during the therapeutic aspiration of secretions.

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This allowed for a comparison of the efficacy of different bronchoscopes under a variety of challenging scenarios.

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OK, this appears to be highly pertinent to clinical applications.

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How did they prepare the testing environment, specifically the pseudomucous used in the study?

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The pseudomucous was created by mixing gargum with water, and then the viscosities were adjusted using a viscometer to ensure accuracy.

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The team tested a range of viscosities from 10 centipoise to 1000 centipoise to simulate different types of secretions that might be encountered during bronchoscopy.

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Hey, and how was the performance of the bronchoscopes measured?

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The authors developed a custom smart scale system to measure the mass of the pseudo mucus suction by each bronchoscope in 30 seconds.

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The system was sensitive enough to detect even small changes, starting the measurement once a mass drop of 2G was detected.

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Well that's impressive.

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Bio suction pressures were tested as well.

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Could you elaborate on that?

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Yes, they tested at three different suction pressures -100 negative 200 and -360 millimetres of mercury.

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These levels reflect the typical suction pressures found in hospital settings, with -100 representing the lower end of wall suction and -360 being the maximum that is generally considered as clinically acceptable.

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The middle level was chosen as a common setting in many clinical situations.

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They used a manometer to verify the accuracy of the suction pressures before each test.

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OK.

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And the study also highlighted the performance differences between regular and slim bronchoscopes.

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What were some of the key findings?

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So among the regular single use flexible bronchoscopes, TSC Life's Broncho Flex 5.62 Point 8, also called Vortex, and Boston Scientific's Exalt B Regular were the top performers, particularly in high viscosity scenarios.

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However, TSC Life's Broncho Flex 3.91.4, also called Agile, stood out among slim models, consistently outperforming others at all viscosities and pressures.

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OK, how do these findings impact clinical practice?

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This study underscores the importance of balancing bronchoscopes size and suction power, especially in critical care.

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While larger bronchoscopes may offer more powerful suction, they can also increase the risk for complications such as autopsy, positive and excretory pressure, and barotrauma, particularly when used in smaller endotracheal tubes.

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This highlights the need for clinicians to consider both suction efficacy and patient safety, particularly in scenarios where the airway is already compromised.

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I see.

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I understand this study aligns with findings from a study by Calibiev and colleagues.

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How do their results support this study?

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The Carel BF study focused on how the size of bronchoscopes and the endotracheal tubes impacts airway pressures, especially in patients with compromised lung function, like those with ARDS acute respiratory distress in them.

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Their study showed that using larger bronchoscopes and smaller endotracheal tubes significantly increased airway pressures, such as peak and plateau pressures, which can raise the risk of barotrauma.

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This finding supports the study's conclusion that while larger bronchoscopes are more effective at suctioning, they also carry a higher risk of complications, particularly in patients with poor lung compliance.

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Both studies emphasized the importance of selecting the appropriate bronchoscope size based on clinical situation to minimize risks while ensuring effective suction.

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OK, The Calibayev study was conducted by ENT doctors.

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Can you tell me why is that involvement significant?

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So, ENT specialists are crucial in managing airway procedures and addressing complications from intubation and bronchoscopy.

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Laryngeal injuries such as vocal cord damage, stenosis and barotrauma can occur during prolonged intubation, and ENT doctors often manage these issues.

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Their involvement in the CALAB EF study reflects their expertise in balancing effective bronchoscopy with minimizing harm to the airway, particularly in patients with conditions like ours where lung compliance is already compromised.

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By understanding the effects of different bronchoscope sizes on airway pressures, ENT doctors can make informed decisions to reduce long term damage.

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OK, And given the findings, what do you foresee as the next steps for research and clinical guidelines?

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This study suggests the need for more detailed guidelines that consider the balance between suction power and safety, particularly in patients with conditions like ours.

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Future research could explore optimal bronchoscope and endotracheal tube combinations, refining the approach to manage complex airway cases.

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Finding the optimal ratio between outer diameter and inner diameter of the bronchoscope, like TSC life managed for bronchoflex 5.62 point 8 could be one of these solutions.

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This allows physicians to benefit from ideal suction performance, as demonstrated by Doctor Reddy's findings, without compromising the patient's ventilation by obstructing the airway with a large bronchoscope.

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Michael, This research provide valuable insight that could shape future clinical practices.

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Thank you for sharing this work with us.

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Thank you for the opportunity to discuss the study.

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I hope the findings will contribute to a safer and more effective care in clinical settings.

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That's for sure.

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And thank you to our viewers for tuning in.

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We'll see you next time.