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Title: Emissions from silicone stent biofilm detected by ion mobility spectrometry

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Body: Background: Stent related biofilm formatiom is one of the encountered problems in interventional pulmonology. Biofilm causes pneumonia and granulations. Breath analysis such as canine scent, electronic nose and ion mobility spectrometry (IMS) have been reported to detect volatile organic compounds (VOCs). Objective: We hypothesized that IMS can detect specific VOCs in a patient with biofilm resulting from stent placement. Methods: The breath sample of 4 patients before and after stent removal were analyzed using IMS coupled to a multi-capillary column (MCC/IMS). Results: VOCs peaks were characterized using Visual Now 2.2 software. A total of 36 peaks were used to determine Wilcoxon-Rank tests. Box-and Whisker plots was prepared and 12 peaks were identified to contribute to separation power. Five of the 12 peaks have a separation power better than 95%. Conclusions: IMS was able to evaluate the degree of biofilm resulting from stent placement. From these results, we can consider whether to replace or extract the stent in conjunction with clinical symptoms using IMS.