

# European Respiratory Society Annual Congress 2012

Abstract Number: 3499

Publication Number: P2938

**Abstract Group:** 8.1. Thoracic Surgery

**Keyword 1:** Surgery **Keyword 2:** Airway management **Keyword 3:** No keyword

**Title:** Use of heliox and small size endotracheal tubes for surgery of severe tracheal stenoses (STS)

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**Body:** Heliox improves ventilation by reducing density dependent resistance due to high kinematic viscosity and high diffusivity. Objective: To present our experience and evaluate feasibility to maintain adequate ventilation using Heliox through small size endotracheal tubes during the initial period of operations for STS until the trachea is divided below the stenosis. Methods: 4 patients with postintubational STS were intubated spontaneously breathing He-O<sub>2</sub> (70/30) after topicalization and light sedation. In 3 of them (high stenoses) we used microlaryngeal tubes; for one (low stenosis) we designed double-size tubes.

Anesthesia was deepened with propofol, relaxants and opioids. He and O<sub>2</sub> were mixed via recalibrated rotameters at 75/25 ratio, controlled paramagnetically and delivered with a bellow ventilator. Monitoring: side stream spirometry, recalibrated mechanical volumeters, pulse oxymetry, invasive pressure, ABGs. Results: for the period of Heliox ventilation.

Patient #, sex, kg	Heliox tidal vol. (ml)	Time (min)	int. diameter of STS (mm)	PetCO <sub>2</sub> , PaCO <sub>2</sub> (mmHg)	Ppeak,Pplat,PEEPi (cmH <sub>2</sub> O)	SatO <sub>2</sub> %
1, F, 57	450	55	3	40, 43	42, 32, <5	>95
2, M, 61	550	75	4	34, 36	25, 18, 0	>96
3, M, 75	500	45	3.5	41, 45	38, 32, <4	>96
4, M, 67	500	65	3	38, 42	40, 33, <3	>95

**Conclusions:** Heliox through small size tubes may be an alternative ventilation for securing free airways during the initial period of operations for STS.