

Abstract

Efficacy of intranasal stent with filters for different laser smoke particle concentration.

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Intranasal, hollow, cylindrical, medical grade, silicone stent with two layers and one layer of half face mask outer filter at each end was tested with different concentrations of laser smoke particles. A single pulse mode of carbon dioxide laser smoke particle created suitable polydisperse atmospheric suspended particulate matter amount. The personal respiratory protective device efficacy was done at the Otolaryngology Department, Ramathibodi Hospital from July to September 1998. The Whatman filter had the same laser smoke particle amount that passed through each filter of the intranasal stent. The cyclical air flow rate of 2 l/min in the nasal model was controlled by a lung model machine and respirometer. The particle deposition in filter materials was counted under a high power optical microscope. The filtration efficacy of an intranasal stent with filters for 5, 10 and 20 shots of laser smoke particle were 90.5, 94.6 and 95.6 per cent respectively with a mean of 93.6 per cent. The device application in a human nasal vestibule depended on acceptable nasal air flow resistant in various highly air-polluted areas