

927 Efficacy of Surgical Helmet Systems for Protection Against COVID-19: A Double-Blinded Randomised Control Study

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Introduction: This study assesses whether sterile surgical helmet systems (SSHS) provide additional protection from aerosol pathogens alongside protecting against splash. There has been debate on whether to use such systems in orthopaedic surgery during the COVID-19 pandemic.

Method: Thirty-five participants were enrolled in a double-blinded randomised controlled study investigating efficacy of the Stryker Flyte Surgical Helmet (Stryker Corporation, Kalamazoo, MI, USA) as protection against respiratory droplets. Wearing the SSHS in a fit testing hood, subjects were randomised to nebulised saccharin solution or placebo. Twenty were allocated to the saccharin group with 15 to placebo. Positive sweet taste represented test failure. Taste tests were performed with the helmet fan turned on and off.

Results: SSHS did not prevent saccharin taste ($p < 0.0001$). Within the saccharin cohort, 40% recorded a positive taste with the fan on and 100% with the fan off. There was a statistically significant difference in mean time-to-taste saccharin ($p = 0.049$) comparing fan on (123.5 s) vs. off (62.6 s).

Conclusions: SSHS do not protect against aerosol particulate and therefore are not efficacious in protection against COVID-19. The fan system employed may even increase risk by drawing in particulates and delaying recognition of intraoperative cues that point to respirator mask leak.