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“Bitter Taste Sensitivity as a Potential Predictor of Postoperative Nausea and Vomiting in Breast Reconstruction Patients (Following Breast Cancer)”

Abstract

Postoperative nausea and vomiting (PONV) is a common postoperative complication; however, individual susceptibility varies considerably, suggesting that the biological factors influencing risk remain incompletely understood. Bitter taste is mediated by a 25-member subfamily of class A G-protein-coupled receptors (GPCRs) known as bitter taste receptor type 2 (TAS2Rs). These receptors are expressed not only in the oral cavity but also throughout the body, where they detect bitter compounds as an evolutionary defense against potentially toxic substances. Bitter taste sensitivity is also influenced by the density of fungiform papillae on the tongue, which reflects the number of taste buds and taste receptors available to detect taste stimuli. Beyond their role in taste perception, TAS2Rs have been implicated in delayed gastric emptying and an enhanced gag reflex, mechanisms that may contribute to PONV. PONV is particularly common following reproductive health procedures, including breast reconstruction surgery.

The purpose of this study was to examine the relationship between bitter taste perception, fungiform papillae density, food preferences, and the likelihood of experiencing PONV among females diagnosed with breast cancer undergoing breast reconstruction surgery. We hypothesized that women with higher fungiform papillae density, greater bitter taste sensitivity, and a stronger dislike of bitter foods would be more likely to experience PONV.

A total of 70 participants were enrolled. Bitter taste perception was assessed using taste test strips consisting of a control strip without a bitter compound and strips containing phenylthiocarbamide (PTC), sodium benzoate, and thiourea. Participants rated each strip as "no taste," "some taste," or "strong taste." Fungiform papillae density was measured by staining the anterior tongue with blue food dye and counting fungiform papillae within a standardized region. Preoperative, intraoperative, and postoperative medications, including anesthetics and antiemetics, as well as the occurrence of PONV, were recorded by nursing staff. Participants also rated their preference for a series of foods categorized as sweet, salty, bitter, or fatty. Results are currently pending.