

Transdermal Scopolamine as an Adjunct to Multi-Modal Pain Management in Patients Undergoing Total Joint Arthroplasty

Ari Ruben Berg, BA, Akshay Lakra, MBBS, Emma Jennings, BS, Herbert John Cooper, MD, Roshan P. Shah, MD, **Jeffrey A. Geller, MD**

Introduction: Postoperative nausea and vomiting (PONV) after surgery is detrimental to patient experience, tolerance of pain medication, rehabilitation progress, and functional outcomes. Given the importance of early rehabilitation following arthroplasty (TJA), we asked whether transdermal scopolamine is effective in reducing rates of PONV and improving functional outcomes following TJA.

Methods: We retrospectively reviewed the charts of 1,085 consecutive patients who underwent TJA between 2014 and 2017 and compared patients prior to the addition of the scopolamine patch in our peri-operative regimen (control group) to those after the addition (study group). All patients after 10/1/2014 were given scopolamine patch in the holding area unless contraindicated in our protocol (allergy, open angle glaucoma, age over 75 years, urinary retention history). 495 were excluded. Charts were reviewed for incidence of PONV, demographic information, surgical time, length of stay, distance walked with physical therapy, and VAS pain scores. Student t-test was used to compare continuous data and fisher exact test was used for categorical variables.

Results: The incidence of PONV was significantly lower in the scopolamine group compared to the control group (14.4% vs. 29.3%, $p < 0.0001$). Patients who were given scopolamine also had a significantly shorter length of stay (2.3 days vs. 2.8 days, $p < 0.0001$), were more likely to be discharged (84.0% vs. 63.9%, $p < 0.0001$), had lower VAS pain scores on postoperative days (POD) 0-2 ($p < 0.01$), were able to walk further distances on POD 0-3 ($p < 0.001$), and received fewer morphine equivalents when compared to the control group on POD 1-2 ($p < 0.001$).

Conclusions: Use of a scopolamine patch was associated with a significant reduction in PONV and improvement in functional outcomes following TJA. This data supports the use of transdermal scopolamine as part of a multi-modal, perioperative pain protocol in patients undergoing TJA.