A Retrospective Review of Factors Associated with Corneal Abrasions after Oncologic Surgery in a Tertiary Cancer Center

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BACKGROUND: The American Society of Anesthesiologist (ASA) closed-claims analysis and a large scale retrospective study found that corneal abrasion (CA) was the single most common ocular injury in the perioperative period[i]. Current literature review suggests that the incidence of perioperative CAs range between 0.13% and 1.51%.[ii] Apart from the significant discomfort, perioperative CAs contribute to delays in discharge from the hospital while awaiting consultation, diagnosis and treatment. As a result, patient satisfaction and healthcare costs are significantly impacted. The most commonly cited etiologies of perioperative CAs are corneal exposure, pressure on the globe, and direct chemical or mechanical trauma[iii]. However, the perioperative factors which may be contributory to the aforementioned etiologies continue to be explored[iv]. The objective of our study was to investigate the incidence of corneal abrasions and its associated factors in our unique cohort of oncologic surgery patients.

HYPOTHESIS: We hypothesize that the incidence of corneal abrasions and its associated factors in the unique cohort of cancer patients who presented for oncologic surgery at our tertiary cancer center would be similar to that reported for other heterogeneous surgical populations. In addition, we expected to see a novel association with the use of preoperative chemotherapy.

METHODS: After institutional quality review board approval, the departmental quality improvement database was retrospectively queried from August 25, 2013 to August 25, 2015 for cases of CA. Medical records of patients with a CA were reviewed, and the incidences of known and hypothetical clinical factors associated with the development of CA were recorded. Clinical characteristics of interest included: demographics, surgery type and duration, patient positioning, use of preoperative chemotherapy, co-morbidities, use of intraoperative eye-lubricant, intraoperative blood loss, total intravenous fluid administered intraoperatively, and use of postoperative supplemental oxygen were recorded. Descriptive statistics were used to summarize our findings.

RESULTS: Over the 2-year period, 19 cases of CA were reported from a total of 28,814 general anesthetic cases, for an incidence of 0.059%. In patients with a diagnosis of CA, the factors with the highest frequency of observation included:

Trendelenburg positioning (73.7%), age over 60 years old (73.7%), lack of eye lubricant application (63.2%), body mass index (BMI) greater than 25 (84.2%), urologic procedures (63.2%), and robotic procedures (63.2%). A comprehensive review of all the clinical characteristics and their frequency of observation are described in table below. Contrary to our expectations, there was a low incidence of prior chemotherapy in our study cohort

i Gild, W.M., et al., *Eye injuries associated with anesthesia. A closed claims analysis.* Anesthesiology, 1992. **76**(2): p. 204-8.

ii Vetter, T.R., N.M. Ali, and A.M. Boudreaux, *A case-control study of an intraoperative corneal abrasion prevention program: holding the gains made with a continuous quality improvement effort.* Jt Comm J Qual Patient Saf, 2012. **38**(11): p. 490-6.

iii Moos, D.D. and D.M. Lind, *Detection and treatment of perioperative corneal abrasions.* J Perianesth Nurs, 2006. **21**(5): p. 332-8; quiz 339-41.

iv Grixti, A., M. Sadri, and M.T. Watts, *Corneal protection during general anesthesia for nonocular surgery.* Ocul Surf, 2013. **11**(2): p. 109-18.