Reducing Corneal Abrasions During Surgery Through Utilization of Bio-Occlusive Dressings: A Quality Improvement Project

CEDAR CREST COLLEGE

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Background

- The incidence of perioperative corneal abrasions during non-ocular surgery is 0.013 to 0.17 percent with some reports as high as 44 percent (Lichter et al., 2015).
- Corneal abrasions are the most common ophthalmologic complication that occurs during general anesthesia for non-ocular surgery (Grixti, Sadri, & Watts, 2013).
- The average cost of a corneal abrasion can be as high as $25,000 with a median payment of $3,000 (Morris, Bonnano, & Bennet, 2018).
- In fiscal year 2019, the community hospital had an incidence of perioperative corneal abrasions of 1.79 (20 of 11,173 cases).

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Objectives

(1) Increase compliance rates on use of bio-occlusive eye protective dressings during general anesthetic cases to reduce corneal abrasion incidence and (2) Increase knowledge and awareness to anesthesia providers on evidence-based practice

PICO Question: Amongst anesthesia providers, does the implementation of an education and corneal abrasion prevention intervention employing bio-occlusive dressings in surgical procedures, as compared to current practice, demonstrate an increase compliance of bio-occlusive dressing utilization and a reduction in corneal abrasion incidence during surgery?

Methodology

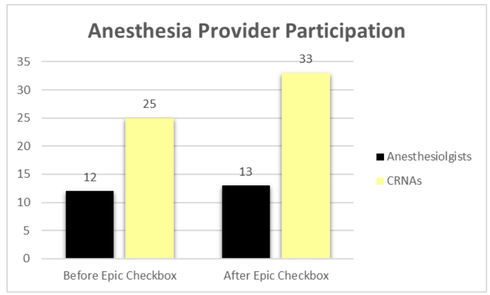
- Keywords: *corneal abrasion; surgery; general anesthesia; education; bio-occlusive dressing*
- *CINAHL, ScienceDirect, Google Scholar, Wiley Online Library, PubMed, and Springer Link*
- *4 systematic reviews*
- *2 RCTs*
- *5 retrospective studies*
- *3 clinical practice guidelines*

Recommendations for Practice

- Corneal abrasions are the most common ophthalmic complication during general anesthesia, in which Drzymalski, et al., (2020) and Grixti, Sadri, and Watts, (2013) demonstrate the utilization of a bio-occlusive dressing has reduced the incidence of corneal abrasions.
- A voiceover PowerPoint was utilized to increase knowledge and awareness regarding the use of bio-occlusive dressings.
  - Martin et al (2009) states increased anesthesia provider awareness regarding perioperative corneal injury coupled with educational initiative was associated with substantial reduction of corneal injury rates.
  - Ely et al., (2019) revealed the utilization of education on preventative measures and corneal abrasion risk factors led to the reduction in corneal abrasion incidence.

Translation

- Convenience sampling (n=46) of anesthesiologists and CRNAs
- 1,276 general anesthetic cases reviewed during 3-month implementation period



Post-implementation: Part 1

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.301[a]	1	.021		
Continuity Correction[b]	.871	1	.351		
Likelihood Ratio	3.694	1	.055		
Fisher's Exact Test				.159	.159
N of Valid Cases	289				

Pre-implementation

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.230[a]	1	.631		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.414	1	.520		
Fisher's Exact Test				1.000	.813
N of Valid Cases	380				

Post-implementation: Part 2

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	27.997[a]	1	.000		
Continuity Correction[b]	6.506	1	.011		
Likelihood Ratio	6.828	1	.009		
Fisher's Exact Test				.035	.035
N of Valid Cases	987				

- Perioperative use of bio-occlusive dressings significantly reduced perioperative corneal abrasions from 1.79 (20 of 11,173 cases) pre-implementation to 0.78 (1 of 1,276 cases) post-implementation

Conclusion

- Perioperative use of bio-occlusive dressings significantly reduced perioperative corneal abrasions from 1.79 (20 of 11,173 cases) pre-implementation to 0.78 (1 of 1,276 cases) post-implementation

- Compliance rates on EyePro use increased from 19 percent prior to the addition of the checkbox to 95 percent compliance after the addition of the checkbox within the electronic health record

- The ability to impact practice change with the addition of the checkbox has made a positive impact on increased compliance and awareness on use of bio-occlusive dressings to reduce corneal abrasion incidence.

- Sustainability can be achieved through monthly quality reports related to corneal abrasion incidence

- Limitations
  - Convenience sampling (n=46)
  - 3-month implementation
  - Participants at one community hospital

References