

Systemic Outcomes Associated with the Method of Anesthesia Used While Performing Anti-VEGF Injections for Retinopathy of Prematurity (ROP) Patients: General Anesthesia (GA) Vs Local Anesthesia (LA)

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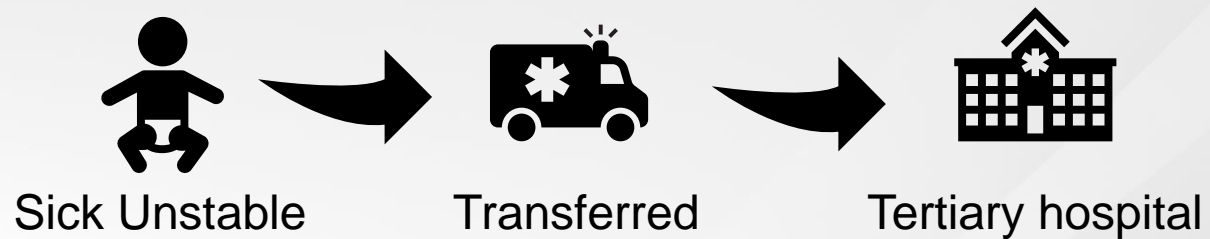
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Disclosure

All parties involved in this project have no financial disclosure or interest.

Background- Research Problem

- The type of anesthesia used is **not well standardized** .
- In Oman, GA remains the **first choice**.



Background- Existing Literature

British Journal of Ophthalmology 1997;**81**:283–287

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Retinopathy of prematurity: systemic complications associated with different anaesthetic techniques at treatment

Paul M Haigh, Malcolm L Chiswick, Eamonn P O'Donoghue

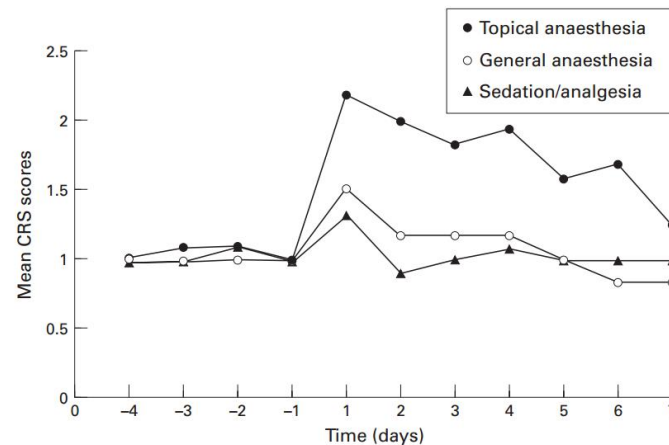


Figure 1 Mean cardiorespiratory stability (CRS) scores from 4 days preoperatively (–) to 7 days postoperatively. Scores above 1 indicate deterioration from baseline status (that is, increased instability) and scores below 1 indicate improvement (that is, decreased instability).

Use of topical anesthesia alone for the treatment of ROP is associated with more severe cardiorespiratory complications during and after surgery.

Background- Existing Literature

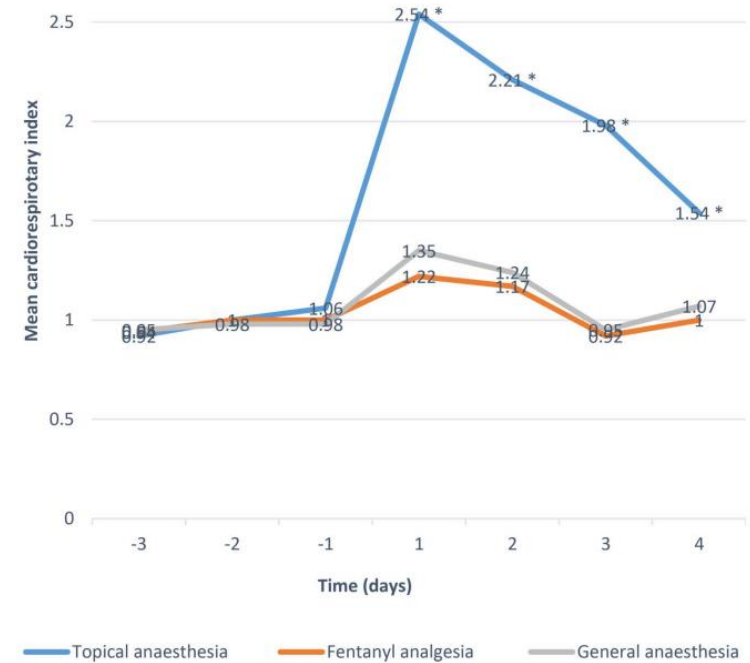
Open Access

Research

BMJ Open Anaesthesia modalities during laser photocoagulation for retinopathy of prematurity: a retrospective, longitudinal study

Jing-bo Jiang,^{1,2} Randy Strauss,³ Xian-qiong Luo,² Chuan Nie,² Yan-li Wang,² Jia-wen Zhang,² Zhi-wei Zhang¹

Topical anesthesia is associated with **more cardiorespiratory instability** during and after laser treatment.



Background- Existing Literature

Graefes Arch Clin Exp Ophthalmol (2013) 251:491–494
DOI 10.1007/s00417-012-2060-2

RETINAL DISORDERS

Pain assessment in premature infants treated with intravitreal antiangiogenic therapy for retinopathy of prematurity under topical anesthesia

Maria Ana Martínez Castellanos · Shulamit Schwartz ·
Ricardo Leal · Robison Vernon Paul Chan ·
Hugo Quiroz-Mercado

Topical anesthesia is an effective method for pain relief, associated with intravitreal injections in premature infants with ROP.

ARVO Annual Meeting Abstract | April 2010



Topical Anesthesia in Antiangiogenic Therapy for Retinopathy of Prematurity

J. Guerrero-Naranjo; M. A. Martinez-Castellanos; R. V. Chan; V. Morales-Canton

Topical anesthesia an option for the treatment of ROP with antiangiogenic therapy avoiding complications of general anesthesia or sedation.

Background –Literature

- General anaesthesia in pre-term infants:

- Short –term  Apnea and cardiorespiratory instability
- Long – term  Neurodevelopment of the brain.

30% chance for the pre-term infant below the age of 44 weeks to have **post-operative apnea.**



Long-term learning, memory, motor activity, attention, and behaviour changes.

Long-term differences in language and cognitive functions after childhood exposure to anaesthesia : children exposed to anaesthesia before the age of 3, compared with not exposed , had an increased risk **for long-term deficits in language and abstract reasoning at age 10.**

Gap of Knowledge

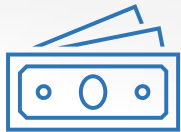
No Specific study Done on the short-term systemic outcome , cost-effectiveness comparing between GA vs topical in Anti-vegf injection for ROP .



Research Question



Q 1 . Is Anti-vegf under topical safer systemically than GA ?



Q2 . Is Anti-vegf under topical more Cost-effective than GA?

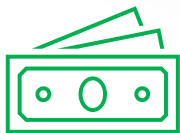
Outcome

Primary

Systemic outcome: Short -term (need of O2 post procedure/respiratory support) 48 hours post procedure.

Secondary : Compare the

Cost



Duration



Surgeon preference



Methodology



Study design

- A prospective cohort study with historical comparison.



Sample Size

- The estimated sample size is **36 (18 in each group)**.



Methodology



Ethical Approval

- Obtained from both centers



Data collection

- A standardized information sheet used for both groups to elicit the clinical parameters 48 hours post procedure.
- Additional customized survey used to assess surgeons' preference.



Data Analysis

- SPSS Ver.26 and a P-value < 0.05 is considered statistically significant.
- Independent samples t-test, Chi-square test used to compare the association between variables.

Methodology



Inclusion criteria:

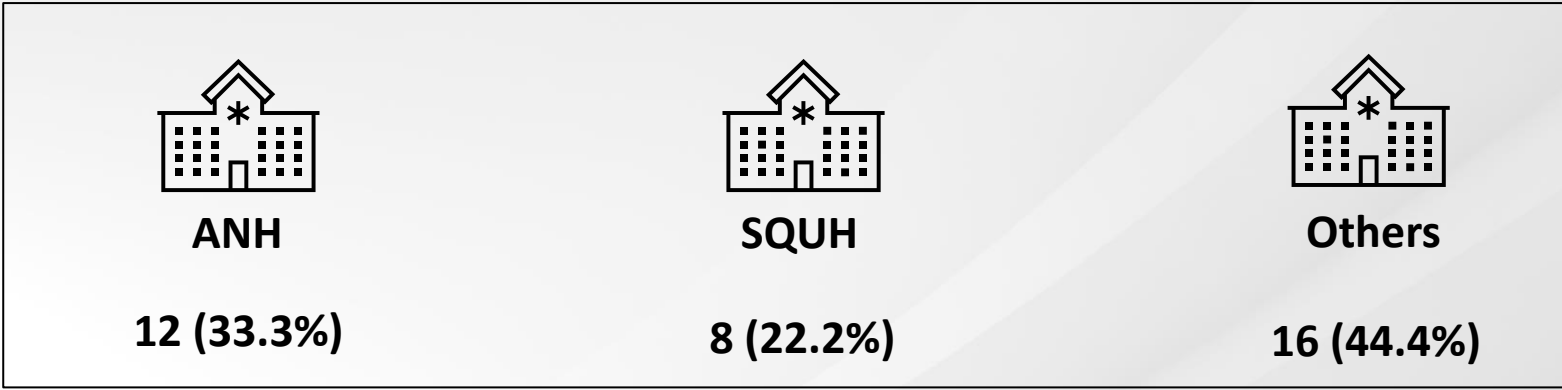
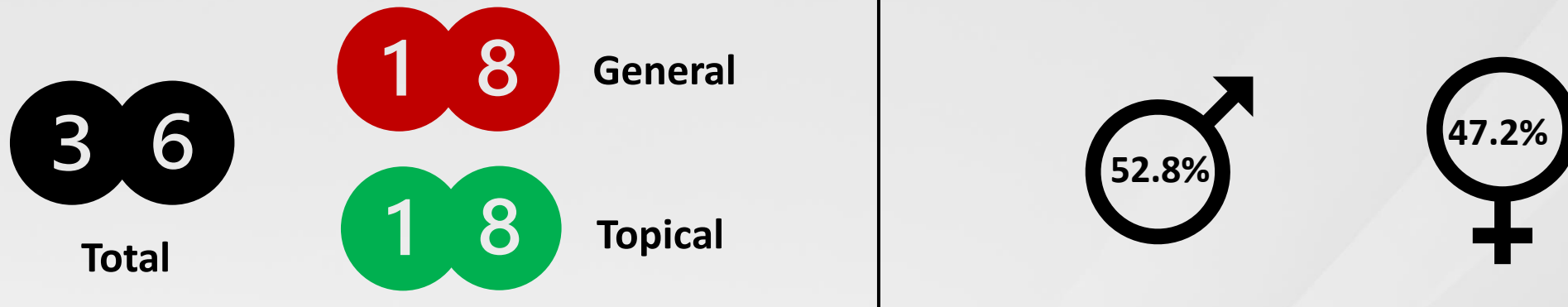
1. ROP patient underwent IVI under GA
2. ROP Infants indicated for IVI under topical



Exclusion Criteria:

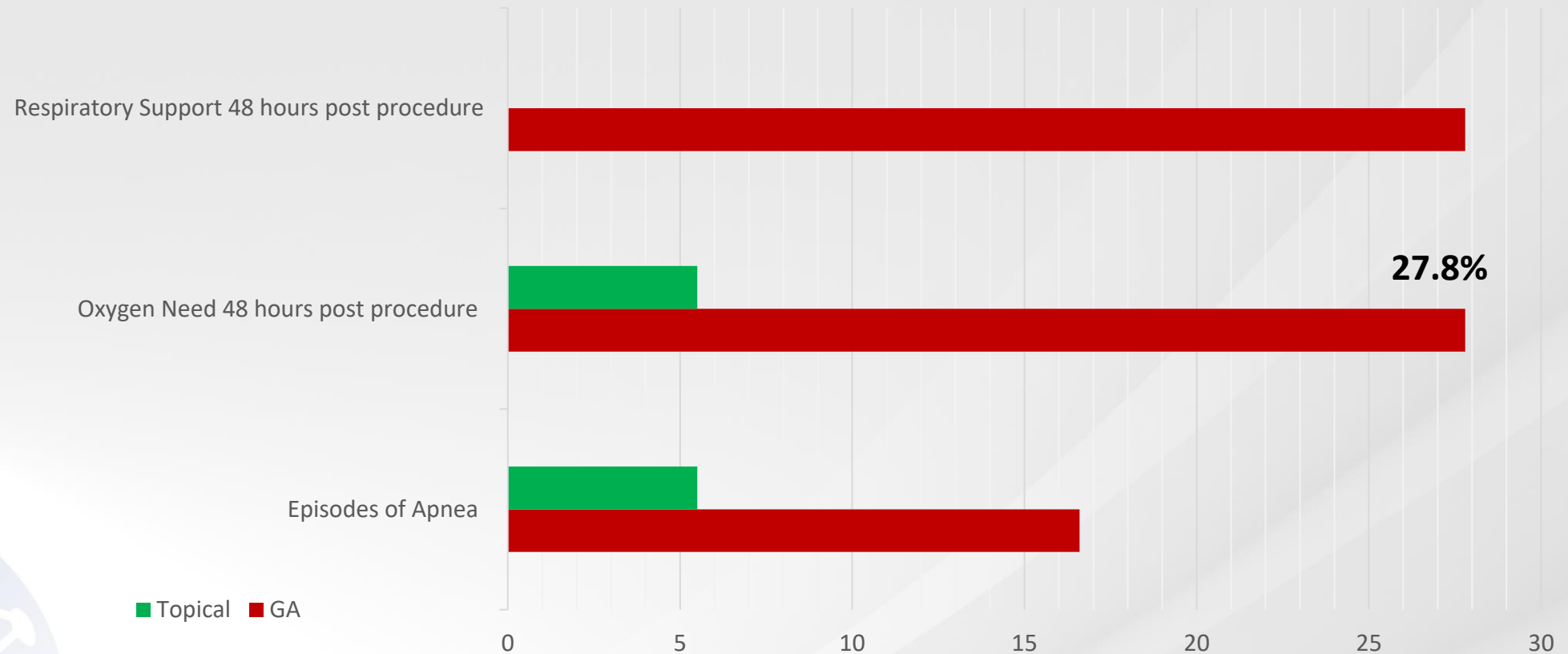
1. Suspected sepsis/illness in previous 48 hours before the procedure.
2. Congenital anomalies/syndromic.
3. Patient receiving narcotics.

Results- General



Results- Primary Outcome

CHART.2 PRIMARY OUTCOMES : SHORT-TERM SYSTEMIC OUTCOME 48 HOURS POST PROCEDURE IN %.



■ Topical ■ GA

*P value < 0.05

Results- Secondary Outcomes

Table 1. Summary of the cost of each stage of the procedure in the both methods.

	GA	Topical
Pre-op	<ul style="list-style-type: none"> - Medication - Anesthesia Consultation +/- any subspeciality asked by anesthesia 	<ul style="list-style-type: none"> - Medication
Intra-op	<ul style="list-style-type: none"> - Anesthesia doctor + Anesthesia nurse +medications + instruments. - OR Nurse/ophthalmic - surgeon - Shifting patient from the Ward to OR. - OR time 30-60 Minutes. 	<ul style="list-style-type: none"> - NICU staff - NICU nurse - Surgeon
Post-op	<ul style="list-style-type: none"> - Post-op recovery - Shifting from OR to Ward. 	<ul style="list-style-type: none"> - NICU nurse observation

Results- Secondary Outcome

April 18, 2018

Understanding Costs of Care in the Operating Room

Christopher P. Childers, MD¹; Melinda Maggard-Gibbons, MD, MSHS¹

» [Author Affiliations](#) | [Article Information](#)

JAMA Surg. 2018;153(4):e176233. doi:10.1001/jamasurg.2017.6233

Table 2. Summary of the cost of each stage of the procedure in the GA group.*

	GA	Cost
Pre-op	- Anesthesia Consultation +/- any subspecialty asked by anesthesia	130 \$ (121.5 Euro)
Intra-op	- Anesthesia doctor + medications + instruments. - OR time 30-60 Minutes.	390 \$ (364.29 Euro) 2150 \$ (2035 Euro)
Post-op	- Post-op recovery	52 \$ (48.57 Euro)
Total		2722 \$ (2576.6 Euro)

* Average prices in private and government sectors

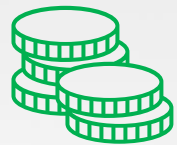
Cost



If we planned in future



X



2722 \$

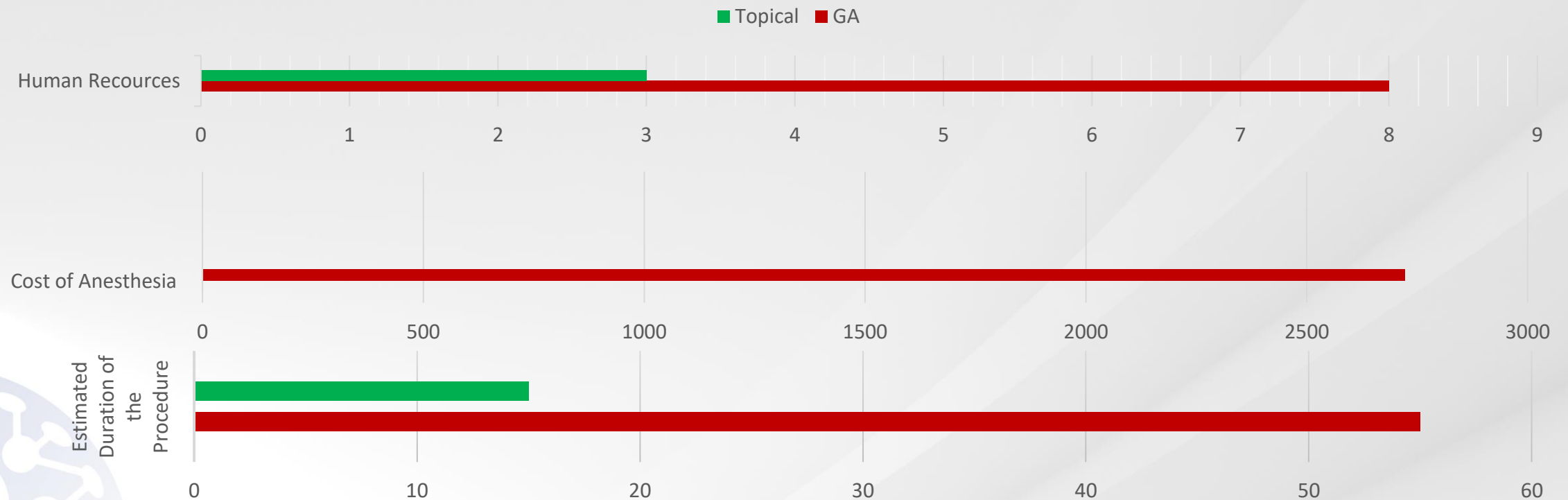
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272,200 \$ (257,600.6)€

$$\text{ICER} = \frac{1 \$ - 2722 \$}{18 - 13} = \frac{- 2721}{5} = 544.2 \$/\text{avoided outcome in infants}$$

Results- Secondary Outcome

Chart 4. Estimated Difference in the Cost of Anti-vegf Injection Method of Anesthesia GA vs Topical .



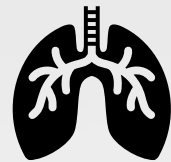
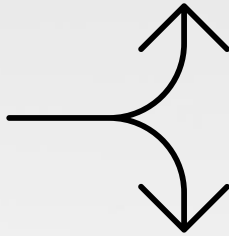
Results- Secondary Outcome

Chart5 . Surgeon Preference: What Method of Anesthesia Preferred in Term of ?



Discussion

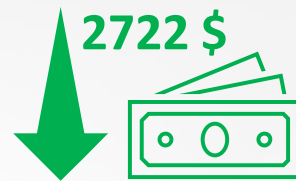
Q 1 . Is Anti-vegf under topical safer systemically than GA ?



27.8% vs 5.5%

27.8% vs 0.0%

Q2 . Is Anti-vegf under topical more Cost-effective than GA?



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Surgeons preferred topical

Conclusion

Anti-vegf injections for ROP infants is safe in both groups GA and LA, however patients showed systemically better outcomes in the topical group in term of the need of O2 48 hours post procedure .
is also supported by the reduced duration, cost, and surgeon preference.



Limitation



- Sample size.
- Prospective randomization trial will be better.

References

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Thank You

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