

THE COMMON ANAESTHETIC DRUGS AND THEIR EFFECTS AMONG EYE SURGERY PATIENTS IN JINJA REGIONAL REFERRAL HOSPITAL, JINJA, UGANDA, A CROSS-SECTIONAL STUDY.

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Abstract

Background

Anaesthesia, defined as the loss of sensation with or without loss of consciousness, is essential in ensuring patient comfort and safety during surgical procedures. In the area of eye surgery, anesthesia plays a crucial role in facilitating optimal surgical outcomes and patient well-being. This study aimed to identify the common anaesthetic drugs and their effects among eye surgery patients at Jinja Regional Referral Hospital, Jinja, Uganda.

Methodology

The study used a descriptive cross-sectional design, and quantitative data were collected from 72 patients. A simple random sampling technique was used to pick respondents, and Pre-tested structured questionnaires were formulated and used to collect data.

Results

40(56%) of the participants were male, (33%) were between the ages of 45-54. The study denoted a modal age 45 to 54 had a high proportion of eye surgery patients, 29(40%) had a history of eye surgery 43 (60%) had no history of eye surgery, 50% indicated a predominance of local anesthesia, 30% regional, 15% regional and 5% topical anesthesia was used in eye surgery, 25(35%) presented with nausea, 18(25%) dizziness 10(14%) vomiting, 12(17%) headache, 7(9%) fatigue as anesthetic effects.

Conclusion

Local and regional anesthesia are the most commonly used techniques in eye surgeries at Jinja Regional Referral Hospital (JRRH), aligning with global standards.

Anesthetic effects on eye surgery patients were generally manageable, with most patients reporting mild pain or no pain post-surgery.

Recommendation

Anesthetic effects on eye surgery patients were generally manageable, with most patients reporting mild pain or no pain post-surgery.

Develop individualized pain management strategies for patients, especially those undergoing more invasive procedures or those at higher risk for severe pain. Consider multimodal pain management approaches, combining various analgesics and non-pharmacological methods.

Keywords: Anesthetic drugs, Eye surgery, Postoperative outcomes, Jinja Regional Referral Hospital, Uganda.

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Background

Anaesthesia, defined as the loss of sensation with or without loss of consciousness, is essential in ensuring patient comfort and safety during surgical procedures. In the area of eye surgery, anesthesia plays a crucial role in facilitating optimal surgical outcomes and patient well-being. The types of anaesthesia commonly employed in eye surgery include local anesthesia, regional anesthesia, and general anaesthesia, customized to the specific needs of patients and the requirements of surgical procedures.

Globally, the types of anaesthesia used in eye surgery include local, regional, topical, retrobulbar, intracameral, and subconjunctival. Peribulbar, sub-Tenon's, and general anesthesia have evolved over the years with improvements

in anesthetic techniques and pharmacological agents aimed at improving eye surgery outcomes and reducing complications.

Anaesthesia effects in eye surgery are, IOP increase, dryness or irritation of the ocular surface, inadequate anesthesia or excessive manipulation during surgery can result in corneal edema, leading to blurred vision and delayed visual recovery Anaesthesia-related factors, such as intraoperative hypotension or prolonged positioning, may increase the risk of retinal detachment following eye surgery (Patel & Nguyen, et al 2020) anaesthesia medications trigger postoperative nausea and vomiting, causing Diplopia Temporary double vision ptosis, as a result of anaesthesia infiltration affecting the function of the

levator palpebral superioris muscle Blepharoptosis
Conjunctiva Hemorrhage occurs during
anaesthesia Injection in the tissue, resulting in redness and
discomfort, Some patients may experience allergic
reactions to anaesthesia medications, manifesting a
stitching, rash anaesthetic drugs may affect cardiovascular
function, leading to changes in heart rate, blood pressure,
or cardiac output during eye surgery (Brown & Smith, at al.
Also, Anaesthesia-related effects on eye surgery patients
are managed to ensure optimal surgical outcomes and
patient satisfaction through; conducting the preoperative
assessment, having an individualized anesthesia plan,
Intraoperative monitoring of vital signs i.e. intraocular
pressure and oxygen throughout surgery, along with careful
medication selection and dosage of anesthesia drugs,
patient education and counseling play a crucial role in
preparing patients for the anesthesia experience, alleviating
anxiety, and fostering cooperation. This study aimed to
identify the common anesthetic drugs and their effects on
eye surgery patients in Jinja Regional Referral Hospital,
Jinja, Uganda.

Methodology

Study Design

In this study, the candidate employed a descriptive cross-sectional study design, which involved quantitative methods; a cross-sectional study looks at variables at one point in time. The choice of this type of design was because it helped to provide a snapshot to determine anaesthetic effects on eye surgery patients in Jinja Regional Referral Hospital.

Study Area

The study was carried out in the eye department of Jinja Regional Referral Hospital. The hospital was located at Nile Avenue, Rotary Road, Central Division, Jinja City in South Eastern Uganda and served several districts including Iganga, Mayuge, Bugiri, and Kaliro.

Quantitative Methods

This method was used in the later phase of the study to compile data in the form of tables, pie charts, and bar graphs.

Study Population

The study population comprised eye patients of Jinja City and the neighboring districts undergoing eye surgery at JRRH.

Sample Size Determination

The sample size was determined using Cochran's formula.

$$n = (z^2pq) / d^2$$

where:

n = sample size

Z = the standard normal deviation estimated at 1.96 (adopted from the z distribution at 95% confidence interval)
P = estimated proportion of individuals with microbial keratitis (target population) estimated at 7% = 0.07, which was the maximum.

Q = 1 - P (1 - 0.07) = 0.93 (the probability of selecting respondents with anesthetic effects)

d = the minimum error

A sample size of 100 respondents was considered for the study. The principal investigator intended to use 72 patients for the study.

Sampling Technique

A simple random sampling technique was used to pick respondents.

Sampling Procedure

The principal investigator carried out a simple random sampling of all patients undergoing eye surgery who attended eye care services at JRRH, as well as eye health workers who were on duty at the time of the study. The principal investigator and assistants assigned each patient a unique number. The numbers 2 and 3 were written on small pieces of paper, then folded, put in a basin, and thoroughly mixed. They were told to pick up the papers and open them. Those with the number 2 were picked to participate in the study.

Inclusion Criteria

This study included:

Patients of all ages and genders are undergoing eye surgery at JRRH.

Patients who received anesthesia during their eye surgery

Exclusion Criteria

This study excluded:

Patients undergoing non-eye surgeries

Patients who required emergency surgery and could not wait for the research protocol.

Patients who refused to participate in the study or provide informed consent.

Data Collection Method

The researcher used interviews as a data collection method, employing an interviewer's guide with structured questions. The tools captured demographic data and any other associated history of anesthetic effects on eye surgery patients.

Data Collection Tool(s)

Pre-tested structured questionnaires were formulated and used to collect data.

Data Collection Procedure

Before distributing the questionnaires, the researcher fully explained the questions to the respondents, and after being answered, the questionnaires were used to collect data. Each filled questionnaire was checked for accuracy.

Study Variables

Dependent Variables

The anesthetic drugs and effects were the dependent variable

Independent Variable

The type of anesthesia was the independent variable.

Quality Control

This was accomplished through pre-visiting training of research assistants and pre-testing of data by the supervisor for approval. Field editing was performed on the spot, and data was kept safely in a file.

Data Analysis and Presentation

Data was analyzed manually using a scientific calculator, and tabulations were made to establish the relationship between the variables. Microsoft Excel was used to draw charts and graphs for a clear presentation of the findings. A computer was used to type the research proposal. The results were presented in tables, figures, and statements.

Study limitations

The data collection process was expensive in terms of purchasing materials and was time-consuming. There were limitations related to access to patient records, potential bias in data, and a small sample size. To overcome these issues, data triangulation, multiple sources, and statistical controls were employed, and collaboration with experts was established to ensure the findings were valid, reliable, and generalizable.

Results

Demographic Characteristics of Respondents

Table 1 showing Demographic data of the Respondents;

Variable	Category	Frequency	Percentage (%)
Age	25-34	18	25
	35-44	22	30
	45-54	15	20
	55yearsand older	17	25
TOTAL		72	100
Gender	Male	40	56
	Female	32	44
	Total	72	100
Previous eye surgery	Yes	29	40
	No	43	60
	T0tal	72	100

Table 1 indicates that the majority of patients (33%) are between the ages of 45 and 54, indicating that middle-aged individuals make up the largest proportion of eye surgery patients at JRRH. The remaining patients are distributed relatively evenly across the younger and older age groups, with fewer patients aged 55 and above (14%).

56% of patients are male, while 44% are female. This shows a slight predominance of male patients in eye

surgery at JRRH, though the difference between genders is not substantial.

More than half (58%) of the patients had no previous history of eye surgery, while 42% had undergone eye surgery before. This suggests that many patients were experiencing surgery for the first time, which could influence their reactions to anesthesia and overall satisfaction with the care provided.

Common Types of Anesthesia Used in Eye Surgery

Figure 1 Types of Anesthesia Used in Eye Surgery

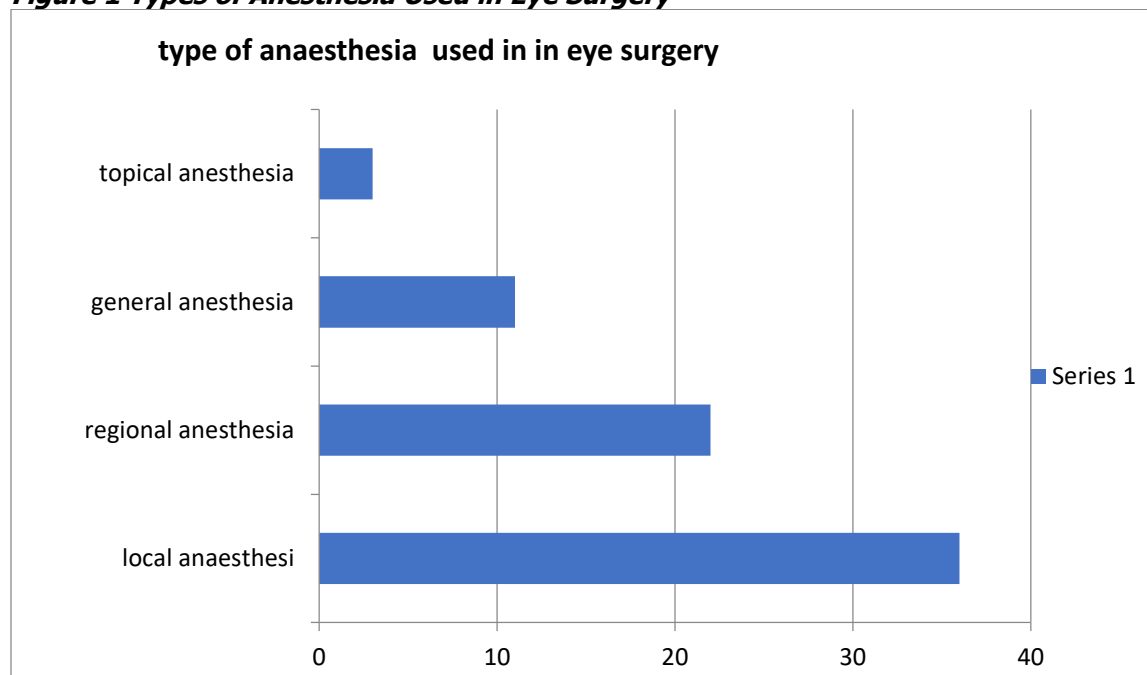


Figure 1 shows the predominance of local anesthesia (50%), which aligns with current clinical practices, where it is preferred for its effectiveness in pain control during minor eye procedures. Regional anesthesia (30%) is also significant, particularly in more invasive surgeries, while

general anesthesia (15%) is reserved for complex cases. The low usage of topical anesthesia (5%) suggests it may be more suited for specific situations or less invasive procedures.

Overall anaesthetic Effects on Eye Surgery Patients Pain Levels Post-Surgery

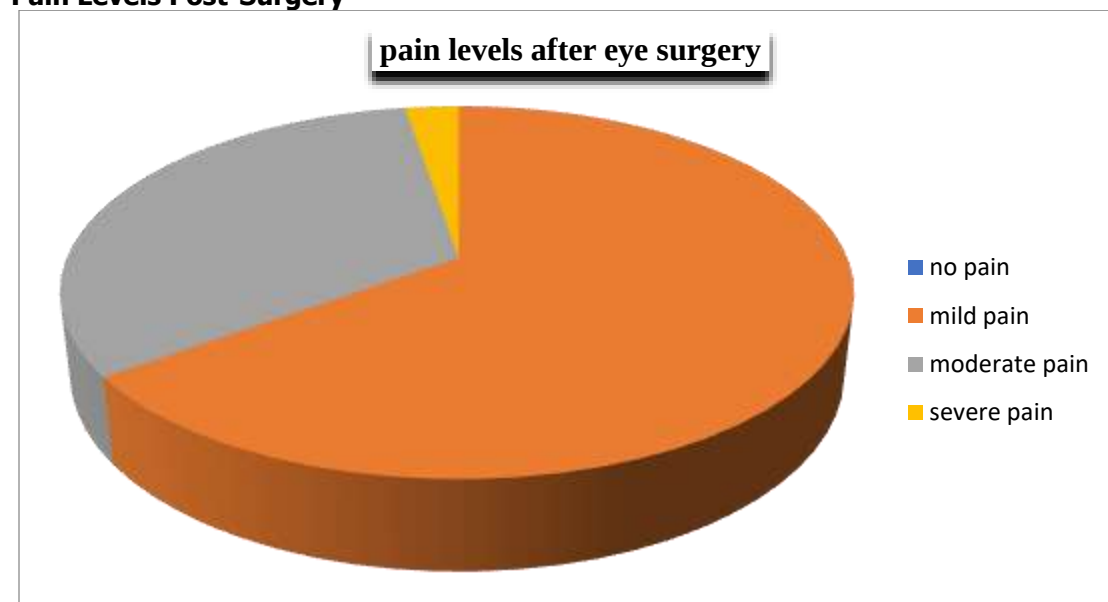


Figure 2 shows that 42% of patients experienced mild pain after surgery, while 28% reported no pain at all. A smaller portion (9%) experienced severe pain, indicating that the

majority of patients had manageable or minimal discomfort following anesthesia and surgery. This suggests that

anesthesia administration was effective in controlling pain in most cases.

Common side effects reported by eye surgery patients

Table 2: Reported anesthetics Side Effects

Side Effect	Number of Respondents	Percentage (%)
Nausea	25	35
Dizziness	18	25
Vomiting	10	14
Headache	12	17
Fatigue	7	9
Total	72	100

Table 2 shows that Nausea was the most frequently reported side effect, experienced by 35% of patients. Dizziness (25%) and headaches (17%) were also commonly reported. These results suggest that although side effects were common, they were generally mild and manageable, with more severe effects like vomiting affecting a smaller portion of the patients.

Recovery Time from Anaesthesia

Table 3: Recovery Time

Recovery time	Frequency	Percentage
Less than 30mins	20	28%
30mins to 1 hour	25	25%
1-2hours	15	21%
2-3hours	7	10%
More than 3 hours	5	6%
Total	72	100%

Table 3 indicates that 75% of patients recovered within the first hour, which is a positive outcome reflecting effective anesthesia administration. However, 10% of patients took longer than 1 hour to recover, warranting further investigation into their medical history or surgical complications.

Discussion

Common Types of Anaesthesia Used in Eye Surgery

The objective of the study was to find out the common types of anesthesia used in eye surgery. The data analysis and interpretation revealed the following major findings under this objective. The study revealed that local anesthesia was used in 50% of the cases at JRRH, regional anesthesia in 30%, general anesthesia in 15%, and topical anesthesia in 5%. These findings agree with Mahan et al. (2023), who reported that local and regional anesthesia are preferred in eye surgeries due to their effectiveness in pain control and reduced intraoperative complications. The study also agrees with Mahan et al. that local anesthesia is effective for minor eye surgeries such as cataracts, while regional anesthesia is preferred for more invasive surgeries, including glaucoma procedures. However, these findings indicate a lower use of topical anesthesia (5%) compared to Lodhi et al. (2023) in India, who reported a higher uptake of topical anesthesia for cataract surgery. This discrepancy could be due to differences in surgical practices, patient demographics, or the availability of anesthetic agents in the two regions. The present study agrees with Scholle et al. (2020) on the effectiveness of local and regional anesthesia

in ensuring good surgical outcomes, but notes that topical anesthesia is less commonly used at JRRH.

Anaesthetic Effects on Eye Surgery Patients

The findings revealed that 42% of patients experienced mild pain after surgery, 28% reported no pain, and 9% experienced severe pain. This aligns with Lee et al. (2019), who observed that most patients experience mild discomfort following cataract surgeries, but a small proportion may suffer from more severe pain. The current study supports Lee's findings that anesthesia, particularly local and regional types, is effective in controlling pain in the majority of cases. Side effects such as nausea (35%), dizziness (25%), and headaches (17%) were frequently reported, findings that are similar to the work of Kumar et al. (2015), who identified nausea and vomiting as common side effects of anesthesia in eye surgery patients. The occurrence of these side effects in the present study supports the literature's assertion that anesthesia-related side effects are common, especially when using general and regional anesthesia. However, the current study found a slightly higher incidence of severe pain compared to Kumar et al. (2015), who noted lower levels of postoperative pain in patients receiving local anesthesia. This could indicate a need for individualized pain management strategies at

JRRH, especially for patients undergoing more invasive procedures.

Conclusion

Based on the findings of the study, the following conclusions were drawn: local and regional anesthesia are the most commonly used techniques in eye surgeries at Jinja Regional Referral Hospital (JRRH), aligning with global standards. These methods provide effective pain control with minimal complications, making them suitable for most eye surgeries.

Anesthetic effects on eye surgery patients were generally manageable, with most patients reporting mild pain or no pain post-surgery. However, a small proportion experienced severe pain, indicating the need for tailored pain management strategies. Common side effects such as nausea, dizziness, and headaches were frequently reported, particularly among patients receiving general or regional anesthesia.

Recommendation

Provide comprehensive preoperative counseling to all patients about the type of anesthesia, potential side effects, and recovery expectations. This will help patients better understand and manage side effects, improving overall satisfaction.

Develop individualized pain management strategies for patients, especially those undergoing more invasive procedures or those at higher risk for severe pain. Consider multimodal pain management approaches, combining various analgesics and non-pharmacological methods.

Implement preventive measures, such as administering anti-nausea medications preemptively for patients undergoing general or regional anesthesia. This can help reduce the incidence of common side effects like nausea and dizziness.

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Abbreviations

AM:	anesthesia monitoring.
PONV:	Postoperative Nausea and Vomiting
OCO:	Ophthalmic Clinical Officers.
UAHEB:	Uganda Allied Health Examinations Board.
ES:	Eye surgery.
HMIS:	Health Management Information System.
MOH:	Ministry of Health.
WHO:	World Health Organization.
PACU:	Post anesthesia care unit

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There is no source of funding.

Conflict of interest

The authors declare no conflicting interest.

Availability of data

Data used in this study is available upon request from the corresponding author

Author's contribution

SMM designed the study, conducted data collection, cleaned and analyzed data, drafted the manuscript, and JK supervised all stages of the study from conceptualization of the topic to manuscript writing and submission.

Ethical Considerations

A permission letter and an introductory letter from the principal of the OCO Training School were taken to the hospital director, who recommended the researcher to the person in charge of the JRRH eye department, who then permitted the research.

Informed Consent

Verbal consent was sought from the patients after explaining the study topic. The patients were assured of their right to consent. Before data collection, the principal investigator and research assistants assured the patients that the information collected would be kept confidential and used only for academic purposes and planning to promote better social life for adults aged 18 years and above. To further ensure confidentiality, code numbers were used instead of the patients' names.

Author's biography

Steven Masayi Masaba is a student of diploma in clinical ophthalmology at Ophthalmic Clinical Officers Training School Jinja

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