



# Comparison of General or Local Anesthesia Among Patients of Ophthalmic Surgery in Baghdad-Iraq

Saad Kadhom Hamid Al Zawi\*

High Diploma of Anesthesia, Iraqi Ministry of Health, Iraq

\*Corresponding author: Saad Kadhom Hamid Al-Zawi, High Diploma of Anesthesia, Iraqi Ministry of Health, Iraq

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## Abstract

Understanding the effects of anesthesia and the techniques used in eye surgery are very important to providing perioperative anesthesia care. This study aimed to identify the type of anesthesia was used of ophthalmic surgery and comparison between them during the study period. A cross-sectional study was conducted in all the hospital which included the eyes clinic in Baghdad. All the cases admitted from the 1st of January 2020 up to the end of December 2020 were enrolled in this study. We included all the cases of various reasons. Semi-structured questionnaire was used to collect the information on them. The sample size was 27,010 cases. Data was described by using the descriptive statistics such as frequency, percentage, Fisher chi-square, and p. value. STATA version 14 statistical package was used to analyze the data. There was 37.9% of them were in the age groups 51 to 65 years old; female cases 60.5% were more than 39.5% male cases; 46.8% were unemployed; 71.9% of the studied sample had cataract operation; followed by 7.8% had vitreous and 5.3% had ptosis operation. There was a significant association has been found between the type of operation and type of anesthesia at the p.value =0.001. Half of them were used local anesthesia during the eyes operation. Nausea and vomiting are the main side effect of anesthesia. We need effective communication and planning among all involved and it's essential to safe and efficient perioperative care.

**Keywords:** Anesthesia; Local; General; Eyes Operation; Comparison

## Introduction

Understanding the effects of anesthesia and the techniques used in eye surgery are very important to providing perioperative anesthesia care [1]. The goals of anesthesia during elective eye surgery should focus on patient safety, providing analgesics for a pain-free experience, and creating optimal surgical conditions to facilitate the procedure in collaboration with surgical staff, including eye surgeons and surgical technicians [2]. It is critical to minimize the risks that may arise during eye surgery under sedation and anesthesia while anticipating and managing any potential outcomes associated with eye surgeries [3]. The most common eye surgeries performed today are cataracts, glaucoma, and vitreoretinal surgery [4]. It is estimated that approximately 26 million Americans suffer from cataracts, and approximately 3.6 million cataract operations are performed annually, making it the most common surgical procedure in the United States [5]. Eye operations are generally considered rather quick operations and do not require general anesthesia, as many operations are performed under local anesthesia using anesthetic drop or

through an anesthetic needle for the eye only [6]. Sometimes we may resort to performing operations under general anesthesia [7]. The methods that are followed in anesthetizing the patient during different eye operations may differ based on the type of operation itself, but most types of operations that are performed on the eye are usually done through the use of local anesthesia in the eye in different ways [8-9]. One of these methods is the use of types of drug solutions in the form of drops that are used to numb the sensation in the eye locally [10]. The other method depends on the use of anesthetic solution in the form of needles to be injected into the inner chamber of the eye until it gives the effect of anesthesia in the eye [11]. Local anesthesia is usually safe, and it certainly carries fewer risks than those associated with general anesthesia, but it may sometimes lead to a feeling of darkening in the eyes, a headache, vomiting, muscle twitching, in addition to a persistent feeling of numbness and tingling in the area where it was applied, and its lead to bruising, and bluish skin [12-14]. This study aimed to identify the type of anesthesia was used for ophthalmic surgery and comparison between them during the study period.

## Methodology

A cross-sectional study was conducted in all the hospital which included the eyes clinic in Baghdad. All the cases admitted from the 1<sup>st</sup> of January 2020 up to the end of December 2020 were enrolled in this study. We included all the cases of various reasons. Semi-structured questionnaire was used to collect the information from them. The sample size was 27010 cases. Ethical clearance was obtained from the Ministry of Health/Iraq. Oral and written informed consent was obtained from them before starting to collect our data. Data was described by using the descriptive statistics such as frequency, percentage, Fisher chi-square, and p. value. STATA version 14 statistical package was used to analyze the data.

## Results

Out of 27010 studied samples of ophthalmic surgery, there was 37.9% of them were in the age groups 51 to 65 years old; followed

by 20.3% in the age 36 to 50 years old and the less frequency 12.1% were in the age groups 21 to 35 years old (Table 1). In Table 2 shows that the female cases 60.5% were more than 39.5% male cases. The highest percentage of studied sample 46.8% were unemployed and 29.6% were employed (Figure1). Most 71.9% of the studied sample had cataract operation; followed by 7.8% had vitreous and 5.3% had ptosis operation (Table 3). The highest percentage 34.1% of them had diabetes disease and 27% had hypertension disease (Figure 2). More than half of the cases 56.6% had overweight and 31.9% was obese (Figure 3). The highest frequency of them 56.1% had local anesthesia and 43.9% had general anesthesia (Table 4). There was a significant association has been found between the type of operation and type of anesthesia at the p. value =0.001 (Table 5). The highest percentage of nausea was 26% and it was the main side effect of anesthesia, followed by vomiting 15.2% and shivering 14.9% 9 (Figure 4).

**Table 1:** Distribution of studied sample according to age groups.

Age groups	Frequency	Percent
Less than 20 years	3547	13.1
21-35	3254	12.1
36-50	5482	20.3
51-65	10254	37.9
>65	4473	16.6
Total	27010	100

**Table 2:** Distribution of studied sample according to gender.

Gender	Frequency	Percent
Male	10658	39.5
Female	16352	60.5
Total	27010	100

**Table 3:** Distribution of studied sample according to types of operation by general anesthesia.

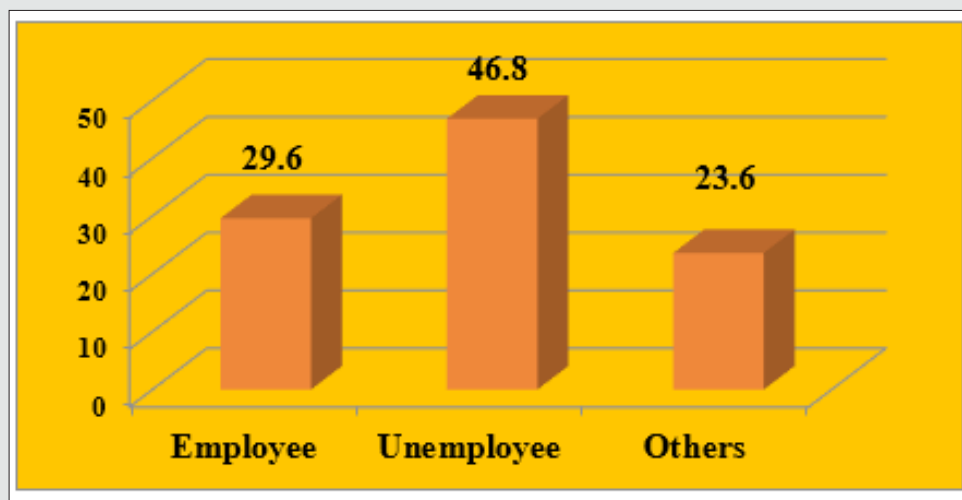
Types of operation	Frequency	Percent
Ptosis	1422	5.3
Strabismus amendment	888	3.3
Cataract	19430	71.9
Glaucoma	926	3.4
Corneal graft operation	1492	5.5
Retinal detachment operation	542	2.0
Foreign body operation	212	0.8
Vitreous operation	2098	7.8
Total	27010	100

**Table 4:** Type of anesthesia.

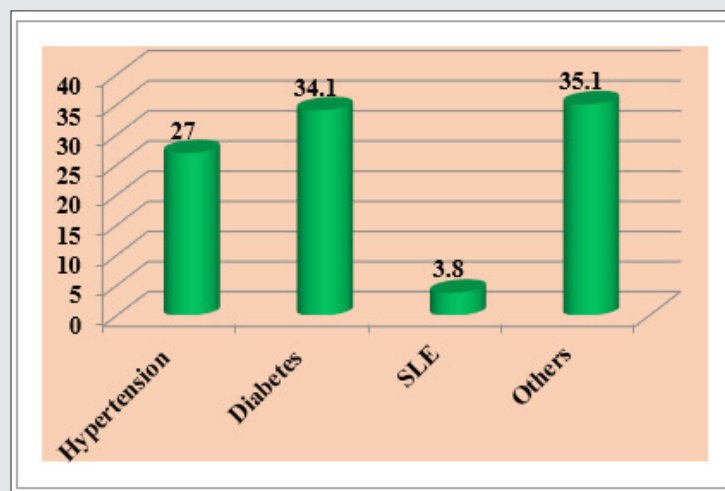
Type of anesthesia	Frequency	Percent
General	11859	43.9
Local	15151	56.1
Total	27010	100

**Table 5:** Distribution of studied sample according to type of operation by type of anesthesia.

Type of operation	Type of anesthesia				Total	
	General		Local			
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Ptosis	1016	8.8	406	2.7	1422	5.3
Strabismus amendment	860	7.2	428	2.8	888	3.3
Cataract	5091	42.9	1358	8.9	19430	71.9
Glaucoma	918	7.7	318	2.1	926	3.4
Corneal graft operation	1472	12.4	209	1.4	1492	5.5
Retinal detachment operation	500	4.2	242	1.6	542	2.0
Foreign body operation	20	0.2	10210	67.4	212	0.8
Vitreous operation	1980	16.6	1980	13.1	2098	7.8
Total	11859	100	15151	100	27010	100
P. value						0.001



**Figure 1:** Types of occupation among studied sample.



**Figure 2:** Types of systemic disease.

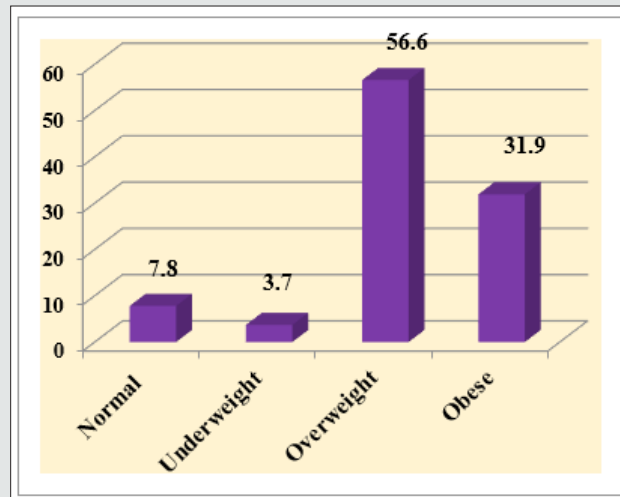


Figure 3: BMI among studied sample for ophthalmic surgery.

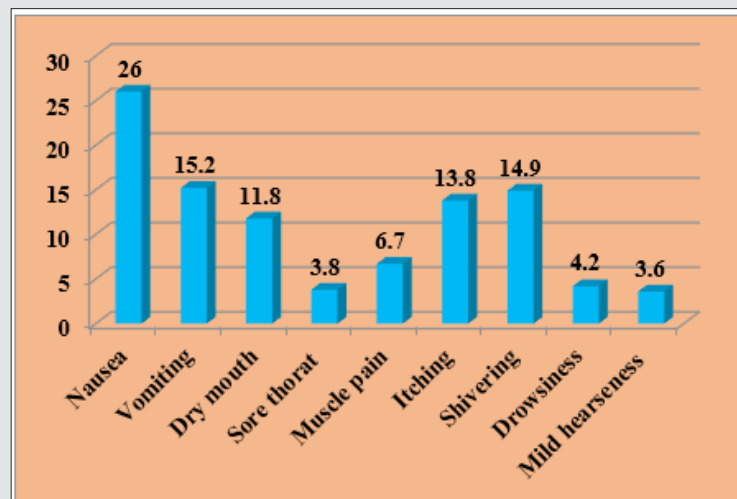


Figure 4: Side effect of anesthesia.

## Discussion

Aging involves a progressive loss of functional reserve in all organ systems, to the variable extend. Compensation for age-related changes is usually adequate, but limitation of physiological reserve is evident during times of stress such as the perioperative period [15]. In this study we found that 37.9% of them were in the age groups 51 to 65 years old; followed by 20.3% in the age 36 to 50 years old and the less frequency 12.1% were in the age groups 21 to 35 years old. Compared with a result done it by Raczynska in 2016, they mentioned the most of them were elderly people [16]. In our study, we found the female cases 60.5% were more than 39.5% male cases. The study was done it by Mitchell in 2013 reported the general anaesthesia patients was more anxious than local anaesthesia patients and females more anxious than males. The results indicate that general anaesthesia patients may require

more preoperative information, and gender differences associated with waiting may need to be given greater consideration [17]. Most of the studied sample 71.9% had cataract operation; followed by 7.8% had vitreous and 5.3% had ptosis operation. A survey done in Singapore in 2004 showed 92% cataract extraction was done by phacoemulsification technique; the anesthetic technique of choice was peribulbar anesthesia (43%). A survey of members of the American Society of Cataract and Refractive Surgeons (ASCRS) in 2000 revealed an increase in the use of topical anesthesia among surgeons. In Oman, over the last few years, anesthesia for cataract surgery has shifted from general to local anesthesia [18]. In Jordan, phacoemulsification is the preferred surgical technique for the cataract. Topical with intracameral anesthesia is the most common anesthesia for phacoemulsification while retrobulbar anesthesia is the most common for extracapsular cataract extraction [19].

In addition, the highest percentage 34.1% of them had diabetes disease and 27% had hypertension disease. In 2017, Cornelius mentioned to a significant percentage of the patients that presented for surgery and anesthesia in the ambulatory setting have type 2 diabetes. It is paramount that all anesthesia providers have a firm grasp on the concepts associated with the pathophysiology of type 2 diabetes and associated disease states that frequently accompany the diabetic patient. It is also of utmost importance that anesthesia providers understand the pharmacokinetics and pharmacodynamics of the many types of oral and injectable antidiabetic drugs that patients with the disease often utilize. Regimens of the various time-sensitive insulin therapies must also be understood. This second installment of this 2-part series on the anesthetic management of type 2 diabetes has addressed the pharmacology of the various medications used to treat the disorder and has reviewed the most recent guidelines on blood glucose management in ambulatory surgical patients [20]. In this study, more than half of the cases 56.6% had overweight and 31.9% had obese BMI. Obesity raises the risk of surgical and anesthetic complications. Otherwise, the obese individuals thus far worse than normal weight individuals in surgeries [21,22]. Topical and injective anesthesia (with or without conscious sedation) are generally methods of choice, but general anesthesia can be preferable or mandatory in patients with particular internal diseases, children, emergencies and for extended surgical procedures. Pre-emptive analgesia before the operation is a meaningful complement of ophthalmological anesthesia [23].

Skillful anesthetic management is integral to optimal outcomes after ophthalmic surgery. Although the majority of ophthalmic operations in the United States are performed with local anesthetic techniques, nonetheless general anesthesia may be either necessary or advisable in several challenging circumstances. Ophthalmic patients are often at the extremes of age and don't uncommonly have extensive associated systemic or metabolic diseases. Because the complications from ophthalmic anesthesia can be vision threatening or life threatening, it is imperative that the ophthalmologist and the anesthesiologist understand the complex and dynamic interaction among patient diseases, anesthetic agents, ophthalmic drugs, and surgical manipulation [24]. In this study we found the significant association with the type of operation and type of anesthesia at the  $p$  value = 0.001. In our study we found the highest percentage of nausea was 26% and it was the main side effect of anesthesia, followed by vomiting 15.2% and shivering 14.9%. Ocular complications associated with anesthesia in ocular and non-ocular surgeries are rare adverse events which may present with clinical presentations vacillating between easily treatable corneal abrasions to more serious complication such as irreversible bilateral vision loss [25]. Anesthesiologists as perioperative physicians play a key role in fast-track surgery through their choice of preoperative medication, anesthetics and

techniques, use of prophylactic drugs to minimize side effects (e.g., pain, nausea and vomiting, dizziness), as well as the administration of adjunctive drugs to maintain major organ system function during and after surgery [26].

## Conclusion

We concluded that most of them were in the age groups 51 to 65 years old; female cases were more than male cases; unemployed; had diabetes history; overweight and obese. Majority of them had cataract operation. Half of them were used the local anesthesia during the eye's operation. Nausea and vomiting are the main side effect of anesthesia. There was significant association has been found between the type of operation and type of anesthesia.

## Recommendation

We recommended to effective communication and planning among all involved and its essential to safe and efficient perioperative care.

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