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Research Article

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Local Anesthesia Vs. General Anesthesia in Adult Strabismus Surgery

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Abstract

The patient and the particular surgery being performed will determine the type of anesthesia that is selected. The advantages of adult strabismus surgeries under local anesthesia versus those under general anesthesia, both performed by the same surgeon, were evaluated in a cross-sectional study. The information was gathered from July through October of 2023, a total of 177 adult patients, ages 15 to 50, were admitted for strabismus surgery (97 men and 80 women). Every patient had their kind of strabismus assessed, and the benefits of LA and the risks of GA were thoroughly discussed with the patients and their families. In LA, 85.3 percent of them were in the 15-35 age range, 14.7% were over 35, and 56.9% were men. For both LA and GA, the mean and standard deviation of the anesthetic time was 36.2 ± 14.2) minutes, the hospital stay was 0.20 ± 0.0 hours, and the operation duration was 33.56 ± 13.0 minutes. The anesthesia time was measured at 37.4 ± 13.2 minutes, the hospital stay was 14.3 ± 3.4 hours, and the operation time was 34.48 ± 11.9 minutes. The length of hospital stay seems to be correlated with the kind of anesthesia utilized. We recommended carrying out more study in this field.

Keywords: LA; GA; Adult; Strabismus surgery; Complication

Introduction

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The surgeon, anesthesiologist, and patient all have significant concerns when choosing an anesthesia for ocular surgery [1]. Anesthesia is generally very safe [2]. Complications may be minimized before general anesthesia and postponing elective surgery if the patient is ill. Modern anesthesia allows surgery to be performed without pain or anxiety [3].

For the majority of eye procedures, local anesthetic is now favored over general anesthesia [4]. Local anesthetic not only spares the patient from general anesthesia's difficulties, but it also allows the patient to resume walking more quickly [5]. Retrobulbar, peribulbar, subtenon, and subconjunctival infiltration of local anesthetic solution are examples of local anesthesia techniques [6]. When these techniques are used with adjustable suture technique, the influence of the local anesthetics on the muscles must sufficiently dissipate before adjustment can be made; this requires delaying adjustment for at least 6 hours [7].

However, in some situations, such as allergies to local anesthetics or patients who are unable to comply, lie flat, or remain motionless, general anesthesia is required [8]. Many elderly patients undergoing ocular surgery have several comorbidities, including hypertension and diabetes. Patients undergoing eye surgery may have uncommon genetic disorders [9]. Thus, perioperative problems might be reduced with proper preoperative evaluation and planning [10]. Smooth induction and emergence, steady intraocular pressure (IOP), and globe akinesia are the objectives of general anesthesia [11]. This study aimed to assess the benefits of adult strabismus procedures performed under local anesthetic versus those performed under general anesthesia by the same surgeon in both cases.

Methodology

At the Ibn Al-Haithum Teaching Hospital for Eyes, a crosssectional study was carried out to assess the benefits of adult strabismus procedures performed under local a versus those performed under general anesthesia by the same surgeon in both cases. The information was gathered from July through October of 2023, a total of 177 adult patients, ages 15 to 50, were admitted for strabismus surgery (97 men and 80 women). Every patient had their kind of strabismus assessed, and the benefits of LA and the risks of GA were thoroughly discussed with the patients and their families. A signed informed consent form was completed by either the patient or a first-degree relative. Every patient was ready for GA, just in case the patient changed his mind. (Xylocaine 2 percent plus adrenaline 1-200 000) to lessen toxicity and lengthen the duration of the action. Each milliliter of xylocaine was combined with three IU of hyaluronidase. The amount of xylocaine administered into the orbit was more than that used for intraocular surgery because the procedure was extraocular. One peribulber injection, up to 10 ml, serves as a facial bloc. 100% oxygen was administered during the procedure plus monitoring. Communication between the patient and the surgeon remained constant during the procedure. We tested and evaluated our procedure on a table. Using SPSS version 20, each variable in the data was analyzed after being input into an Excel spreadsheet. Whereas categorical variables were expressed as a number (%), continuous data were expressed as mean (SD).

Results

Out of 177 strabismus patients, 57.6% were used local anesthesia (LA) and 42.4% were used General anesthesia (GA). In LA, 85.3 percent of them belonged to the 15-35 age group, 14.7% to the age >35 years old, and 56.9% of them were male. As seen in Table 1, for GA, 62.7% of them were in the age over 35 years old, with 52% of males and 48% of females.



Figure 1: Distribution of studied samples by months.

Shows that the percentage of cases was greatest in August (37.3%), followed by July (28.8%), and September and October (low percentages of 15.3% and 18.6%).



Table 1: Characteristic of strabismus	patients among types of anesthesia
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Variables	Types of anesthesia				Total (177)		Duchus	
	Local (102)	General (75)		10tal (177)		P.value	
Age groups	Frequency	Percent	Frequency	Percent	Frequency	Percent		
15-35	87	85.3	28	37.3	115	65	0.66	
>35	15	14.7	47	62.7	62	35		
Gender								
Male	58	56.9	39	52	97	54.8	0.354	
Female	44	43.1	36	48	80	45.2		

Table 2: Shows the mean and standard deviation of the anesthetic time (36.2 ± 14.2) min, the hospital stay (0.20 ± 0.0) hrs, and the operation duration (33.56 ± 13.0) min for LA. The mean and standard deviation of the anesthesia time was 37.4 ± 13.2 min, the hospital stay was 14.3 ± 3.4 hrs, and the mean and standard deviation of the operation time was 34.48 ± 11.9 min for GA. At the p. value less than 0.1, there is a link between the kind of anesthesia time was 14.3 ± 3.4 hrs, and the mean and standard deviation of the operation time was 34.48 ± 11.9 min for GA. At the p. value less than 0.1, there is a link between the kind of anesthesia time was 14.3 ± 3.4 hrs, and the mean and standard deviation of the operation time was 34.48 ± 11.9 min for GA. At the p. value less than 0.1, there is a link between the kind of anesthesia time was 14.3 ± 3.4 hrs, and the mean and standard deviation of the operation time was 34.48 ± 11.9 min for GA. At the p. value less than 0.1, there is a link between the kind of anesthesia time was 14.3 ± 3.4 hrs, and the mean and standard deviation of the operation time was 34.48 ± 11.9 min for GA.

thetic and the length of hospital stay.

	Туре	P. value	
Variables	Local anesthesia General anesthesia		
	Mean ±SD	Mean ±SD	
Operation time(min)	33.56±13.0	34.48±11.9	0.6
Anesthesia time(min)	36.2±14.2	37.4±13.2	0.66
Recovery time(min)	0	22.4±5.2	-
Hospital stay (hrs)	0.20 ± 0.0	14.3 ±3.4	<0.001

Discussion

The purpose of this research was to evaluate the advantages of adult strabismus surgeries carried out under local anesthesia vs. those carried out under general anesthesia by the same physician in both situations. The following variables may influence the choice of anesthesia modality: patient and surgeon preferences, the type of planned procedure, the patient's health, and the anesthesiologist's recommendations [12].

42.4% of participants in the current study utilized general anesthesia (GA), while 57.6% of participants used local anesthesia (LA). According to a survey conducted in China by Yang et al. in 2022, general anesthesia is typically used for those who cannot endure surgery, such as those with extraocular muscular paralysis (2053 cases, or 57.0%), and 1465 patients under the age of 12, or 93.4% of the total. In this study, the local anesthetic technique involves injecting lidocaine subconjunctively and dropping obucaine hydrochloride into the conjunctival sac [13].

A prospective longitudinal group of adult patients having GA or CTA surgery to correct strabismus. 49 individuals in total had surgery; 26 had GA and 23 had CTA. Regarding age and sex, there were no statistically significant differences between the two groups [14].

Aging-related functional and anatomical alterations can result in new onset strabismus such as distance esotropia or vertical strabismus caused by the sagging eye syndrome, as well as phoria decompensation and convergence insufficiency decompensation in Cioplean (2016) [15].

Additionally, the study's findings indicate that, of those in LA, 56.9% were men, and 85.3% of them were in the 15-35 age range.

In contrast, 52% of the GA population was over 35 years old, and 48% of the population was female. In 2022, Yang et al. carried out a retrospective assessment at a hospital in China, covering 3596 patients diagnosed with strabismus between 2014 and 2019; 1.11:1 of males to females; one year old patients were the youngest, and 71-year-old patients were the oldest [13]. The mean age for propofol/local patients was 43 years (range, 24 to 90) and the mean age for general patients was 39 years (range, 15 to 61), according to Greenberg and Zane's 2003 report [16]. Sanz et al. performed a retrospective investigation in 2020 on 153 patients in Spain who had strabismus surgery; the mean age of these patients was 43.14 ± 25.58 years, with women making up 61.4% of the sample. 33.33% of the population was older over 60, while 74.5% was younger than 18 [17]. A cross-sectional study was conducted by Huang, Jingxia, et al. with 210 consecutive patients participated in the study; 102 of the patients were male and 108 were female. The age distribution was 27.0 years (IQR: 22.0-33.3) [18].

The mean and standard deviation of the anesthesia time (36.2 ± 14.2) , hospital stay (0.20 ± 0.0) hours, and operation duration (33.56 ± 13.0) minutes for LA are displayed in our data. In GA, the anesthetic time mean and standard deviation were 37.4 ± 13.2 , the hospital stay was 14.3 ± 3.4 , and the surgery time mean and standard deviation was 34.48 ± 11.9 . There is a correlation between the type of anesthesia and the length of hospital stay at the p-value of less than 0.1. According to Yang et al.'s 2022 study, the average hospital stay lasted 4.4 days, with the lowest day being 2 days and the highest day being 13 days [13]. In the US, a study by Greenberg and Zane found that the average time for propofol/local anesthesia to leave the operating room was 4.8 minutes (range, 2 to 8) and for general anesthesia, it was 8.8 minutes (range, 3 to 28) (P<.001). For propofol/local, the mean time from the end of surgery to the DC

time was 64.8 minutes (range, 30 to 140) and for general, it was 116.5 minutes (range, 68 to 325) (P<.001) [16]. According to Huang, Jingxia, et al., the majority of patients in China had operations that lasted less than 30 minutes (N = 151, 71.9%) and anesthesia that lasted less than 60 minutes (N = 160, 76.19%) [18]. Fu, Qi, et al. highlighted the average length of stay in hospital and recovery time in day surgery group were significantly lower ((P<0.001) [19]. The study's analysis of the monthly distribution of cases revealed that August had the highest percentage of instances (37.3%), followed by July (28.8%), September, and October (low percentages of 15.3% and 18.6%). Regretfully, I was unable to locate any more studies to compare our findings with.

Conclusion

There appears to be a correlation between the type of anesthetic used and the duration of hospital stay; of them, half underwent local anesthesia (LA), and over half were in the 15-35 age groups. August had the highest percentage of cases, followed by July. Peribulbar LA and intermittent topical anesthetic drops intraoperatively is a reliable way to avoid pain and Oculocardiac reflex during strabismus surgery in adults thereby completing the surgery smoothly and rapidly. We suggested conducting additional research in this area.

Acknowledgement

None.

Conflict of interest

No conflict of interest.

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