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Research Article

Small Incision Cataract Surgery with Self-Sealing Corneal Tunnel: What Interest?

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Abstract

Introduction: The choice of the surgical technique of cataract depends on the means, the patient and the abilities of the ophthalmologist. In our context of resource limited countries the Small Incision Cataract Surgery (SICS) is the rule and phacoemulsification an exception. The purpose of this survey was to compare two groups of patients operated with two different variants of SICS.

Methodology: Analytical cross-sectional study carried out in the Ophthalmology department of the Brazzaville University Hospital, between January and July 2019. Two groups (G1 and G2) of fourteen patients each suffering from cataracts had been operated. G1 and G2 were operated by the same surgeon, G1 with periorbulb anesthesia and self-sealing sclero-corneal tunnel, and G2 with topical anesthesia and self-sealing corneal tunnel. Two parameters had been compared: the existence of an orbital hematoma and the number of cotton stems used intraoperatively. The Student's test (t) with its confidence interval (95% CI) and the prevalence ratio (Rp) were used. The probability (p) was statistically significant for a value less than 0.05.

Results: Orbital hematoma 4G1 VS 0G2 ($t = 2.1$, 95% CI [2.4 - 8], $Rp = 3.2$, $p < 0.05$), Cotton stems 10G1 VS 3G2 ($t = 3.2$, 95% CI [3.8 - 7], $Rp = 3.5$, $p < 0.05$).

Conclusion: The variant with self-sealing corneal tunnel has three times less risk of bleeding. There is therefore less risk of contamination when the patient suffers from HIV infection or viral hepatitis.

Keywords: *Cataract Surgery; SICS; Orbital Hematoma; Bleeding; HIV; Viral Hepatitis*

Introduction

In the presence of a cataract the choice of surgical technique depends on the means, the patient and the ability of the Ophthalmologist to practice one technique over another [1,2]. In our context of resource limited countries the Small Incision Cataract Surgery (SICS) is the rule and phacoemulsification an exception [3,4]. The SICS has several variants, that with a self-sealing sclero-corneal tunnel and that with a self-sealing corneal tunnel.

Aim of the Study

The aim of this work was to compare two groups of patients operated with one of the two variants, and to highlight the interest of the self-sealing corneal tunnel variant in our countries where certain communicable diseases such as HIV infection and viral hepatitis are rife.

Methodology

It was a cross-sectional analytical study conducted in the Ophthalmology department of the Brazzaville University Hospital between January and July 2019. Two groups (G1 and G2) of fourteen patients each suffering from age-related cataract had been operated on. G1 consisted of patients whose names began with a vowel and G2 with patients whose names began with a consonant. They had all been operated on by the same surgeon. The operative technique was as follows:

- **Group1:**
    - Peribulbar anesthesia with 6 ml of Lidocaine hydrochloride,
    - Limbic peritomy between 10 am and 14 pm, removal of the conjunctiva with exposure of the sclera over 2 mm, haemostasis,
    - Non-perforating linear scleral incision of 6.5 mm, 1.5 mm from the limbus with a 2.5 knife,
    - Construction of a self-sealing sclero-corneal main tunnel with a Crescent's knife up to 1 mm in clear cornea,
    - Injection of the viscoelastic product,
    - Capsulorhexis,
    - Hydrodissection,
    - Removal of the nucleus with an Anis' cannula (2-port irrigation cannula connected to a perfusor),
    - Cleaning of masses with a Simcoe's cannula,
    - Injection of the viscoelastic product into the bag,
    - Placement of the lens,
    - Cleaning of the viscoelastic product,
    - Checking the tightness of the tunnel.
- **Group2:**
    - Instillation of 10 drops of 0.4% Oxybuprocaine, 1 drop at 3 minutes intervals,
    - Non-perforating peri-limbic incision at 1 mm in the clear cornea between 10 o'clock and 14 o'clock with a 2.5 knife, construction of a self-sealing corneal main tunnel with a Crescent knife up to 2 mm,
    - Injection of the viscoelastic product,
    - Capsulorhexis,
    - Hydrodissection,

- Removal of the nucleus with an Anis' cannula (2-port irrigation cannula connected to a perfusor),
- Cleaning of masses with a Simcoe's cannula,
- Injection of the viscoelastic product into the bag,
- Placement of the lens,
- Cleaning of the viscoelastic product,
- Checking the tightness of the tunnel.

In the event of a leak or doubt about the self-sealing nature of the tunnel, a stitch with nylon 10.0 is made at 12 o'clock. Two parameters had been compared: the existence of an orbital hematoma and the number of cotton stems used intraoperatively. The Student's test (t) with its confidence interval (95% CI) and the prevalence ratio (Rp) were used. The probability (p) was statistically significant for a value less than 0.05.

Results

The mean age was 62 ± 3.5 years [55 years - 75 years] G1 vs 60 ± 4.1 years [57 years - 82 years] G2, with a sex ratio equal to 1.1G1vs1.3G2. Table 1 represents the 2 parameters compared in the 2 groups, namely the existence or not of an orbital hematoma and the number of cotton stems used intraoperatively.

	Orbital hematoma	Number of Cotton stems
Group 1	4	10
Group 2	0	3
Rp	3.2	3.5
t [95% IC]	2.1 [2.4 - 8]	3.2 [3.8 - 7]
p	< 0.05	< 0.05

Table 1*: Orbital hematoma and number of cotton stems used intraoperatively in two groups of patients operated at the University Hospital of Brazzaville, between January and July 2019, with two variants of Small Incision Cataract Surgery.*

Group 1*: Patients operated with a peribulbar anesthesia and a self-sealing sclero-corneal tunnel.*

Group 2*: Patients operated with a topical anesthesia and self-sealing corneal tunnel.*

Discussion

In rich countries phacoemulsification is the rule as a technique of cataract surgery, and the extra capsular manual exception. In countries with limited resources, mostly in Africa and even in part of the Indian subcontinent, poverty is endemic, so phacoemulsification is inaccessible to the vast majority of people [3- 5]. The extra capsular becomes the rule in these regions to get out of the darkness millions of patients in a state of blindness. studies have shown that the functional results of manual extra capsular can be equivalent to those of phacoemulsification [6-9].

In our daily practice, operating a patient who suffers from cataracts in the context of a serious general illness, such as HIV/AIDS, hepatitis or haemophilia is not exceptionally. It is therefore appropriate that we find alternatives either to reduce the risk of contamination for the surgeon, or the risk of complication for the patient in particular the risk of hemorrhage.

Although this was not the focus of this study, the self-sealing corneal incision version is probably responsible for greater corneal astigmatism. But when we compare the benefit of a simple less aggressive gesture, this astigmatism is negligible compare to the risk of contamination or hemorrhage.

Although having a very small sample, this survey showed that the manual extra-capsular variant with a self-sealing corneal incision is as effective as the variant with a sclerocorneal incision. It has the advantage of less bleeding the patient, therefore significantly reduces the risk of contamination.

Conclusion

The Small Incision Cataract Surgery variant with a self-sealing corneal tunnel is three times less likely to bleed than with a sclero-corneal tunnel. This means fewer complications and risk of contamination in case of communicable disease, such as HIV infection and viral hepatitis very common in Africa.

Conflicts of Interest

There are no conflicts of interest.

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