

Sutureless 23G Vitreorrhexis in Pediatric Cataract Surgery

Ayman Lotfy* and Ayman Abdelrahman

Department of Ophthalmology, Zagazig University Hospital, Zagazig, Sharkia, Egypt

*Corresponding author: Ayman Lotfy, Department of Ophthalmology, Zagazig University Hospital, 3 Ahmed Orabi st., Zagazig, Sharkia, Egypt, Tel: 00201022204510; E-mail: elnadyayman@gmail.com

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Abstract

Sutureless 23G vitreorrhexis could be used as a surgical tool for anterior capsulorrhexis (ACCC), irrigation, aspiration and posterior capsulorrhexis (PCCC) in pediatric cataract.

Patients and methods: A prospective consecutive randomized clinical trial of 48 patients less than two years old underwent bilateral pediatric cataract surgeries. These patients were divided into two equal groups. Group A underwent manual ACCC and PCCC. Group B underwent sutureless 23 G vitreorrhexis. For every patient, one eye was randomly distributed for one group and the other for other group.

Results: Extension of the PCCC in (8.33%) in Group A and in (10.4%) in Group B ($p=0.5$). Surgical time in the manual capsulorrhexis group averaged about 26.5 ± 3.2 min, while that of the vitreorrhexis group was 17.2 ± 2.3 min ($p=0.003$).

Conclusion: Sutureless 23G Pediatric cataract extraction, ACCC, PCCC and anterior vitrectomy by 23G vitrectomy probe is an easy to learn alternative to manual ACCC and PCCC in pediatric cataract surgery.

Keywords: Posterior capsulorrhexis; Vitreorrhexis; Pediatric cataract

Introduction

Performing anterior and posterior continuous curvilinear capsulorrhexis (ACCC and PCCC) has been an important surgical step in congenital cataract [1,2]. Sutureless 23G vitreorrhexis is used as surgical tool for ACCC and PCCC. The aim of this work was to compare the results of manual ACCC and PCCC with sutureless 23G vitreorrhexis while performing capsulorrhexis in pediatric cataract surgery.

Methods

A clinical trial of 48 patients less than two years old underwent bilateral pediatric cataract surgeries. In this prospective consecutive randomized study, these patients were divided into two equal groups. For every patient, one eye was randomly distributed for one group and the other for other group. Group A underwent manual ACCC and PCCC. Group B underwent sutureless 23 G vitreorrhexis. The age of the cases was ranged between 1 m and 18 ms. After filling of the anterior chamber with high molecular weight ocular sodium hyaluronate 1% (Healon[®], Abbot Medical Optics, USA), manual ACCC was performed by microrrhexis forceps, irrigation and aspiration, PCCC was performed, taking care that the surface of posterior capsule was more or less flat. An opening was performed in the posterior capsule center. Methylcellulose was injected in the Berger's space between the posterior capsule and the anterior vitreous phase. The edge of the PCCC was grasped and re-grasped to achieve a 4 mm diameter PCCC smaller than the ACCC. Anterior vitrectomy was done with settings of 2500 cuts per minute and aspiration of 150 mm Hg using the Oertli[®] OS3, Berneck, Switzerland. Closure of the two

paracentes was done using 10/0 nylon sutures. These sutures were removed within the 2nd to 4th postoperative weeks. In cases of sutureless 23G vitreorrhexis, two 2 mm length limbal paracentesis were made at 3 and 9 clock by 23G MVR. An opening was made in the anterior capsule. The vitreorrhexis enlarged this opening followed by irrigation and aspiration. The probe is used to make an opening in the posterior capsule and then enlarged it under vision. 4 mm posterior capsulotomy was done followed by the anterior vitrectomy. The instruments were removed and the two paracenteses were hydrated till the eye was normotensive.

Results

The average age of patients was 11.3 ms (range 1 m to 18 ms). Extension of the PCCC in 4 eyes (8.33%) in Group A and in 5 eyes (10.4%) in Group B ($p=0.5$). Surgical time in the manual capsulorrhexis group averaged about 26.5 ± 3.2 min, while that of the vitreorrhexis group was 17.2 ± 2.3 min ($p=0.003$).

There was insignificant difference between the two groups with regards to the postoperative refraction after the 3rd postoperative month.

There were two cases of mild iritis and corneal edema in Group A and three cases of iritis and corneal edema in Group B. These cases were treated with topical and systemic corticosteroids and topical cyclopentolate eye drops. There was statically insignificant difference between the two groups in corneal edema and anterior segment reactions. There were no cases of leakage, irregular anterior chamber, irregular pupil or postoperative endophthalmitis.

Discussion

Hazirolan et al. [1] proved that the techniques for anterior and posterior capsulorhexis are comparable as regard to visual axis clarity and complications. Andreo et al., Trivedi et al., and Neuhann et al., concluded that the capsulorhexis by manual method was more resistant to extent than the vitreorhexis and also showed a smoother, regular edge [2-4]. Sharma et al. [5] used trypan blue assisted capsulorhexis with optic capture in their study on surgery of pediatric cataract. They operated 18 eyes with trypan blue and 17 eyes were done without the stain, they reported that the rhexis was completed in 94.4% when the dye was used compared to 64.7% when it was not used. In our study the rhexis was completed in 83.33% of cases in the group (A) (manual ACCC and PCCC) and in 75% of cases in group (B) (vitreorhexis).

Saini et al. [6] had a randomized study on 44 eyes with congenital cataract and operated 23 of them using trypan blue dye and 19 eyes without stain and reported that 82.6% of cases had complete posterior rhexis in group used the dye while only 52.6% of cases in the group without using the dye had complete rhexis.

Conclusion

Sutureless 23G ACCC, Pediatric cataract extraction, PCCC and anterior vitrectomy by 23G vitrectomy probe is an easy to learn alternative in pediatric cataract surgery. It is more predictable and reproducible with a short learning curve and lesser surgical time.

What was Known

Capsulorhexis forceps, microrhexis forceps or 20 G vitreous cutter have been used to perform ACCC and PCCC. The vitreous cutter has

been used to perform the anterior vitrectomy. Suturing the limbal or sclera tunnels is essential.

What This Paper Adds

It is faster and sutureless to do the ACCC, Pediatric cataract extraction, PCCC and anterior vitrectomy by 23G vitrectomy probe.

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