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The 23 Gauge Capsulorrhexis Forceps Having a Cystotome Function

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We evaluate the operational performance of the 23 gauge capsulorrhexis forceps with a cystotome function.
The 23 gauge capsulorrhexis forceps were applied in 6 complex cases such as cataract surgery after closed-angle glaucoma with shallow anterior chamber, mal mydriasis, or lens subluxation. In all cases, we measured each patient's gonio angle level and degree of mydriasis. The forceps can be used in all cases even shallow anterior chamber glaucoma, because the forceps have both the functions of forceps and a cystotome with 55 degrees angulated needle. Although lens subluxation was found in 5 out of the 6 cases during continuous curvilinear capsulorrhexis (CCC), implantation of the intraocular lens (IOL) in the capsular bag was successfully completed in these 5 cases.
The 23 gauge forceps were effective particularly in cases for cataract surgery after glaucoma operation.

Key words : Cataract surgery, Post glaucoma surgery, Continuous Curvilinear Capsulorhexis (CCC), Lens subluxation, Side-port forceps

INTRODUCTION

One of the keys in cataract surgery is to create a continuous curvilinear capsulorrhexis (CCC) of 5-6 mm in diameter. The major advantages of CCC are the safe removal of the nucleus within the capsular bag which physically avoids rupture, and ease of insertion of prosthetic intraocular lenses (IOLs) [1-3].

However, there are some cases where application of CCC would be extremely difficult, e.g. patients with shallow anterior chambers, high vitreous pressure with atopic cataracts, hyper-mature cataracts, small pupil or Zinn zonules rupture. It seems very difficult for surgeons to perform CCC successfully in these cases.

In this study, the 23 gauge forceps having a multi-function (Fig. 1) was used in the CCC procedure of a total of six complex cases of post-glaucoma surgery with mal mydriasis (among the 6 cases are 2 cases of pseudoexfoliation syndrome, and 4 cases of acute glaucoma). The forceps were evaluated for their effectiveness and usefulness in cataract surgery after glaucoma surgery.

CASES AND METHODS

The forceps (Type AE4389, ASICO) have a 23 gauge, a 2 mm tip length when closed and 2.8 mm when opened, a 55° needle angle, and a shaft length of 26 mm (Fig. 1). The tip of the forceps would be inserted into the anterior chamber through a port incision of 0.9 mm made at the corneal limbus.

We used the forceps in operations on 6 difficult CCC cases (6 eyes) of cataract surgery during the period of March 2000 to August 2002. All of these 6 cases had previously undergone closed-angle glaucoma operations. Five out of the 6 cases were women, and the ages of all cases ranged from 60 to 82 years old (mean 75.2 ± 8.1 years old). Mal-mydriasis was seen in all cases (100%). The gonio angle level ranged from I to II. Four cases had acute glaucoma (66.7%) and 2 cases had pseudoexfoliation syndrome

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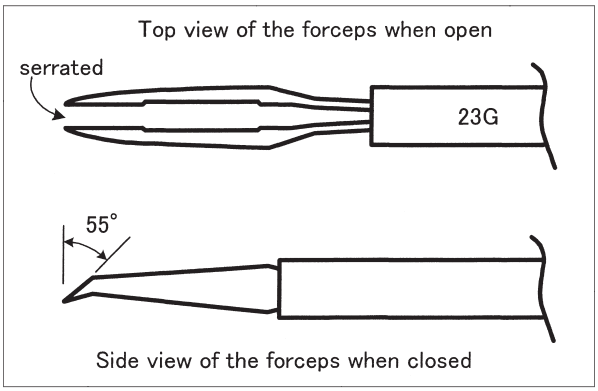

Fig. 1 The tip of the forceps.

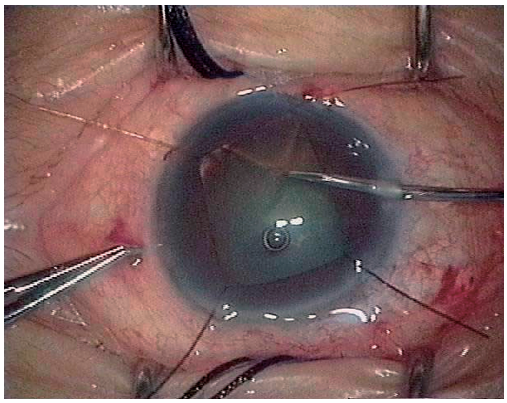

Fig. 2 The case of abnormality of lens.

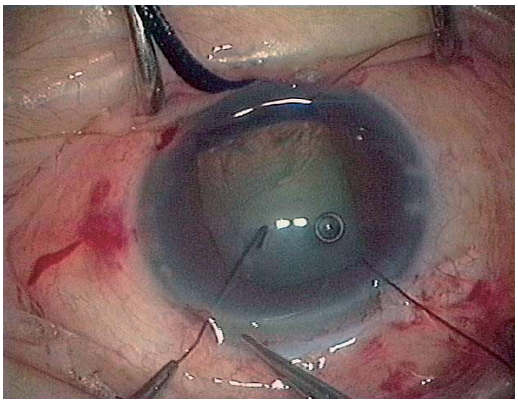

Fig. 3 Positioning iris retractors on the torn edge of the anterior capsule.

(33.3%). Lens subluxation was not observed in any case preoperatively.

RESULTS

In 5 of the 6 cases (83.3%) of closed-angle glaucoma, iris retractors were used to widen the pupil. By using the forceps, capsulotomy of 5-6 mm in diameter was successfully completed in all 6 cases (100%). It is worth noting that lens subluxation was found in 5 cases (83.3%) intraoperatively. According to the Emery-Little chart, the nuclear hardness was grade III in 2 cases (33.3%), and grade IV in 4 cases (66.7%). The levels of lens subluxation were below 90° in one case (20.0%) and over 90°, but below 180° in four cases (80.0%). IOLs were successfully implanted in the capsular bags in all five subluxation cases (100%) using iris retractors at the properly torn edge of the anterior capsule [4]. At 13.2 ± 7.8 months post-operation, no complex luxation of the IOLs was found.

DISCUSSIONS

The side port forceps that we developed by incorporating both the advantages of cystotome and of CCC forceps are to be strongly recommended for use in every cataract surgery.

The forceps were useful in case of lens subluxation. This was evident in performing capsulotomy where direct observation of the anterior capsule can be attained and corrections can be made as the operation proceeds. For instance in this study, when an attempt was made to capture the capsule with forceps in order to begin the CCC, the anterior capsule was seen to be like a loosened curtain with wrinkles. As the incision of the capsule was continued, the abnormality of the lens itself was observed. When such symptoms were observed, the surgeon could immedi-

ately control the size of the capsulotomy (Fig. 2). Phacoemulsification and aspiration (PEA) was then performed, after positioning iris retractors on the torn capsule edge to hold the lens capsule (Fig. 3). Although it was possible to implant a capsular tension ring [5-6], we used the iris retractors to create the CCC without the collapse of the nucleus to the vitreous cavity, and successfully implanted the IOL in the capsular bag.

Moreover, of particular significance is the fact that by use of the forceps, lens subluxation could be ascertained during the surgery. In this study, of the 6 cases lens subluxation was identified in 5 cases (83.3%) which, for the first time, led to the prevention of complications, such as capsule fall. An additional merit can be achieved by positioning iris retractors on the torn edge of the anterior capsule, thereby resting on the four corners to prevent expansion of the subluxation. This allowed for successful removal of all nuclei with hardnesses ranging from grade III to IV without any fall, and subsequent insertion of all IOLs was done without mishap. This success may be attributed to the completion of the CCC made by the forceps and the use of the iris retractors [7-8].

One of the new findings from our study is that lens subluxation can likely exist in post-glaucoma surgery cases, especially cases with shallow anterior chambers at the grade of Shaffer 0-1 undergoing laser iridotomy. The use of the forceps would ensure relatively smooth cataract surgery with less postoperative complications such as nucleus fall and vitreous loss.

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We do not have any financial nor proprietary interest borne in regard to this work.

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