นิพนธ์ต้นฉบับ

Trend of intraocular lens implantation in cataract surgery at Chulalongkorn Hospital from 1982-1988.

Prachak Prachakvej*
Sudarat Yaisawang* Vilavun Puangsrichareon*

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Extracapsular cataract extraction c̄ intraocular lens implantation has been confirmed to be the procedure of choice for cataract patients at Chulalongkorn University Hospital, Bangkok. The many advanced instruments, techniques and lens designs which have recently been developed may not yet be appropriate to the Thai community. At the present time ECCE c̄ one piece PMMA IOL in-the-bag procedure is widely accepted and this has been sustained by our current research.

Reprint request : Prachakvej P, Department of Ophthalmology, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.
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* Department of Ophthalmology, Faculty of Medicine, Chulalongkorn University.

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ปัจจุบันการผ่าตัดต้อกระจกแบบเอ็กซ์ทราแคปซูล่าร่วมกับการใส่แก้วตาเทียมเป็นที่นิยมกันแพร่หลาย รวมทั้งในรพ. จุฬาลกงรณ์ ในปี 2531 การผ่าตัดแบบเอ็กซ์ทราแคปซูล่าคิดเป็นจำนวน 90% ของการผ่าตัดต้อกระจกทั้งหมด โดยมีการใส่แก้วตาเทียมร่วมด้วยเป็นจำนวน 62% ปัจจุบันมีการพัฒนาเทคนิคเครื่องมือตลอดจนวิธีการผ่าตัดและเลนซ์แก้วตาเทียมชนิดใหม่ออกมาใช้ รายงานฉบับนี้ได้กล่าวถึงขั้นตอนและวิธีการผ่าตัดต้อกระจกแบบเอ็กซ์-ทราแคปซูล่าร่วมกับการใส่แก้วตาเทียมชนิดทำจากสารพีเอ็มเอ็มเอทั้งอัน และใส่ลงในถุงแคปซูลของเลนซ์ โดยเสนอว่าการผ่าตัดชนิดนี้เป็นวิธีที่ไม่ยุ่งยาก ค่าใช้จ่ายไม่สูง มีโรคแทรกซ้อนน้อย รวมทั้งสามารถให้มีการมองเห็นหลังผ่าตัดได้ดี เป็นที่พอใจของผู้ป่วย ดังนั้นจึงน่าจะเป็นวิธีที่เหมาะสมสำหรับผู้ป่วยที่มารับการรักษาในปัจจุบัน

As the result of the introduction of the posterior chamber intraocular lens with flexible loops in 1977 by Stephen Shearing, extracapsular cataract extraction with IOL (Intraocular lens) implantation technique was developed and progressed rapidly. By the year 1982 it was accorded general acceptance all over the world.[2] The report of Prackakvej and Puangsricharern[3] confirmed the popularity of this surgical technique for cataract patients at Chulalongkorn University Hospital, Bangkok. In recent years several new techniques of ECCE (Extracapsular cataract-extraction) including ultrasound capsulectomy, endocapsular and intercapsular techniques have been introduced but they are not used universally.[4,5] Several new designs of the IOL have become available in the market.[6,7] In addition the use of sodium hyaluronate which was introduced in 1979 is an important factor in facilitating the surgical technique.[8]

In this presentation we would like to inform you about the present state of IOL implantation at Chulalongkorn University Hospital, Bangkok. As a result of previous report prepared at Chulalongkorn Hospital, the ECCE with IOL implantation was accepted as standard procedure.[3] Now however we use the technique of ECCE with one-piece all PMMA IOL in-the-bag as a procedure of choice. Although it is considered a more conventional technique compared to the newly introduced techniques such as intercapsular procedure we referred to earlier, we have obtained very good results in the majority of our cases and strongly believe that the simpler and less expensive methods may be more appropriate in our community. The details of our technique will be shown step by step by color slides.

Material and technique

All cases of cataract surgery at Chulalongkorn University Hospital from 1982-1988 were collected and analyzed. Our surgical technique of ECCE with one-piece PMMA IOL in-the-bag was documented by photographs taken through the operating microscope.

Results

Table 1. Cataract surgery & types at Chulalongkorn University Hospital from 1982-1988.

Year	Type*			
	ICCE	ICCE c̄ IOL	ECCE	ECCE c̄ IOL
1982	515	0	35	0
1983	497	0	68	0
1984	400	5	172	20
1985	234	3	360	157
1986	39	3	459	291
1987	85	6	355	567
1988	110	7	334	735

* **ICCE** Intracapsular Cataract Extraction
ECCE Extracapsular Cataract Extraction
IOL Intraocular Lens

Figure 1. Cataract surgery and types (1982-1988).

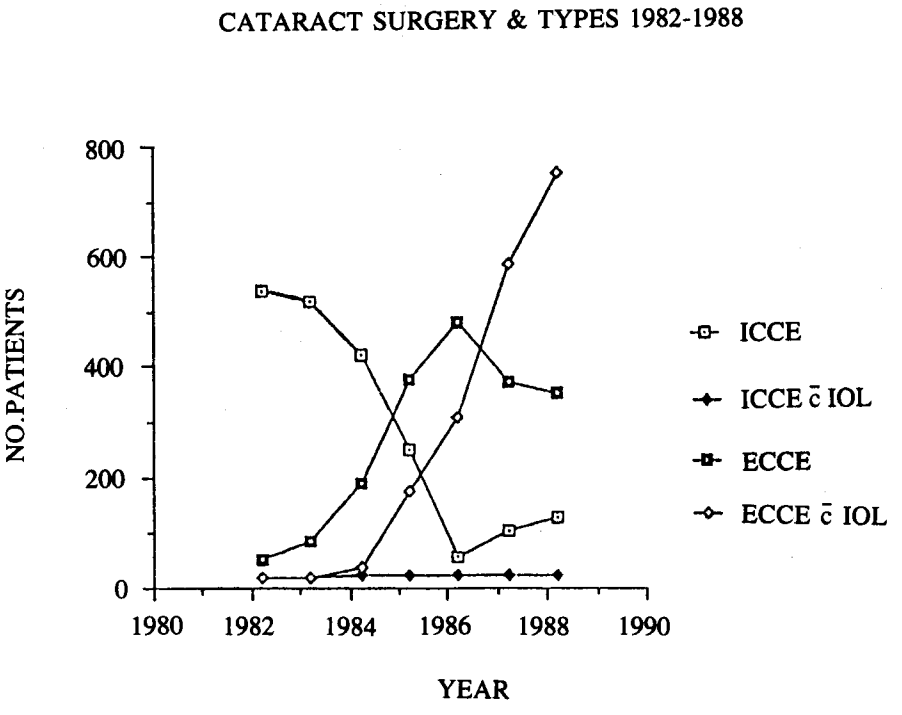


Figure 2. Cataract surgery and types (1982-1988) shown by bar diagram.

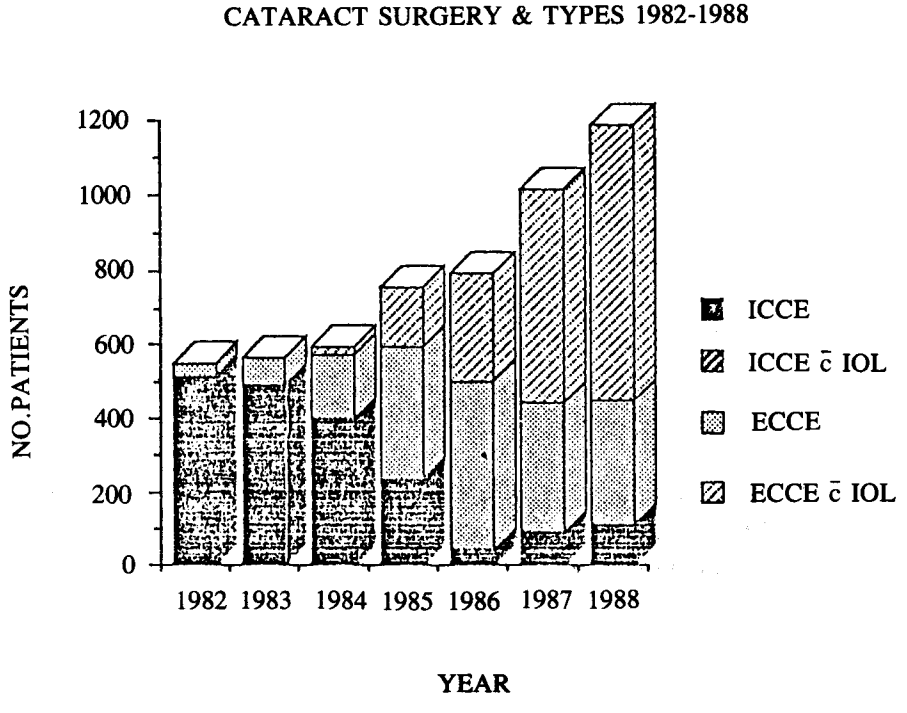


Figure 3. Diagram of cataract surgery in 1987.

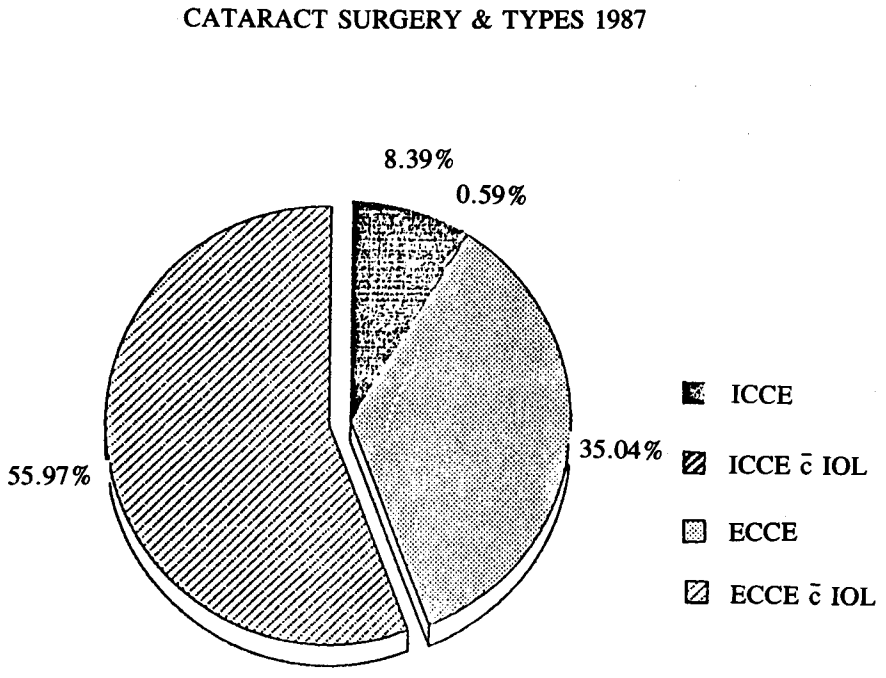
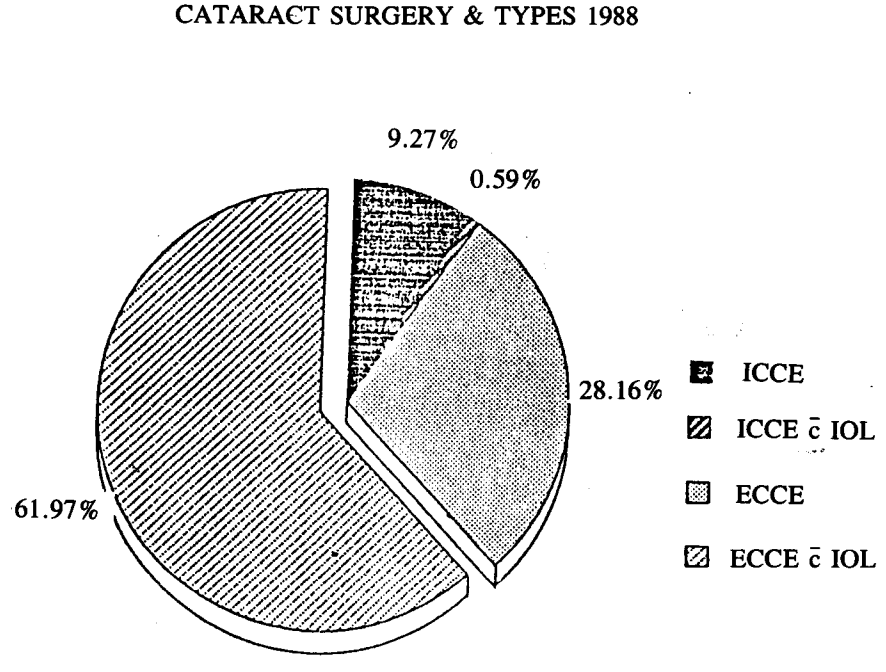


Figure 4 Diagram of cataract surgery in 1988



Implantation technique

After facial akinesia and retrobulbar injection of 2% lidocaine combine with 0.50% bupivacaine. The eye-ball is softend by pressure and the pupil is fully dilated by mydriatic drops. The fornix-based conjunctival flap is prepared at the upper quadrant of the limbus. A limbal groove of 10 mm. chord length is made and the bleeding is controlled by bipolar cauterization (Fig 1). The anterior chamber is entered with a small puncture for cystotome using the tip of a 21 gauge needle (Fig 2). The anterior capsulectomy is performed in a circular shape by a 27 gauge bent needle in a closed and well formed chamber (Fig 3). The corneo-scleral incision is made along the groove. After the anterior capsular flap is removed (Fig 4) the lens nucleus is removed by simple expression technique using counter pressure at 12 o'clock and 6 o'clock (Fig 5). One or two stitches of 8-0 silk is used as a control suture. The co-axial canular system connected to BSS bottle is used to remove the residual cortex manually (Fig 6). The clean posterior portion of the capsular bag is preserved. The viscoelastic substance is then injected into the capsular bag in order to deepen the posterior capsule thereby opening the bag and keeping the chamber formed and protecting the corneal endothelium (Fig 7). The one-piece PMMA (Polymethylmethacrylate) IOL, modified J-loop is held with Kelman-McPherson forceps. The inferior fixation loop is gently pushed down into the capsular bag, the Lester lens manipulator is inserted into the chamber by the left hand and pressed on the optic portion of the IOL to keep the optic part down in the capsular bag. The tip of the superior loop is grasped with the same forceps by the right hand pushing down into the bag and then released allowing the superior loop to be placed into the upper capsular bag (Fig 8). When the IOL is in the bag the optical part will be centred and stabilized which can be tested by the lens manipulator. If the pupil is still dilated we may see the rim of the anterior capsule in front of the optical margin of the IOL. Peripheral iridectomy is done and the corneo-scleral wound is closed with continuous cross 10-0 nylon sutures (Fig 9). The procedure is then completed after the conjunctival flap is pulled down and fixed in place by cauterization (Fig 10).

Figure 1. Showing the limbal based conjunctival flap and 10 mm. chord length corneo-scleral groove.

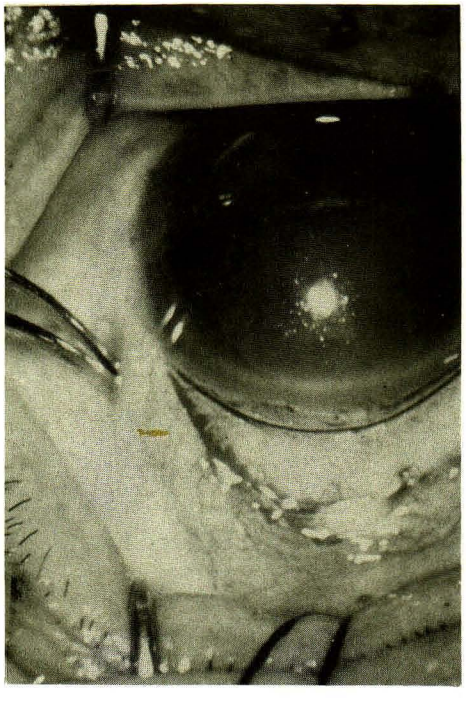


Figure 2. At 10 o'clock a minimal puncture into the anterior chamber is made by the tip of a 21 gauge needle.

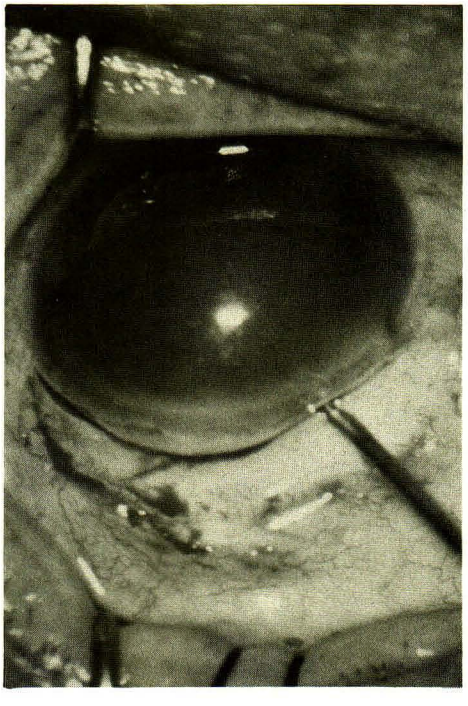


Figure 3. Throught the small puncture the capsulectomy is performed under fluid (BSS) or sodium hyaluronate substance by a 27 gauge needle. This picture shows many small punctures made in a circular pattern.

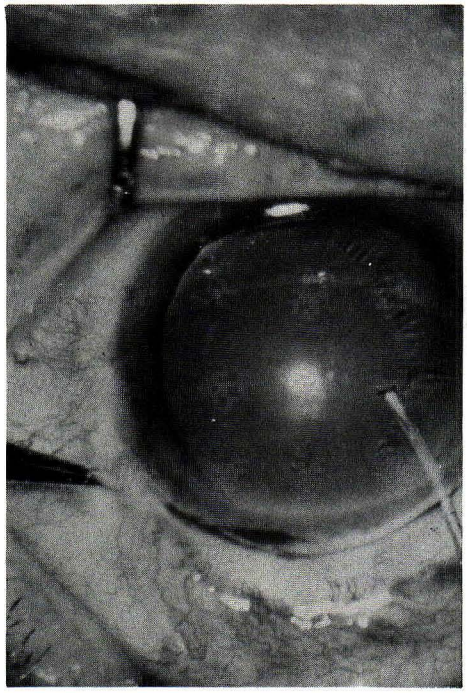


Figure 4. The anterior capsule is removed after the corneo-scleral incision is made along the groove.

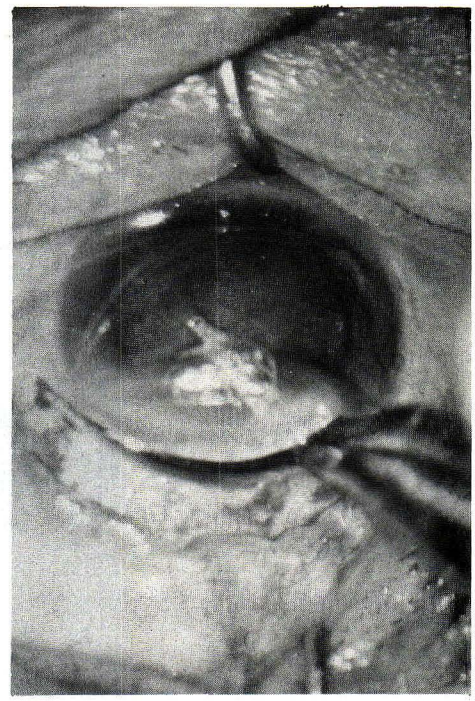


Figure 5. The lens nucleus is removed by simple expression technique.

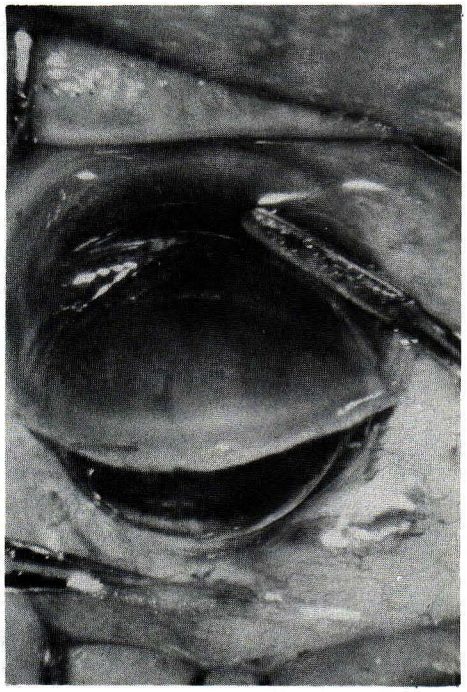


Figure 6. The residual lens cortex is aspirated by a co-axial canular system connected to BSS. We closely observed our activities against the red reflex from the operating microscope. One or two control suture stitches is needed to keep the anterior chamber closed and well formed.

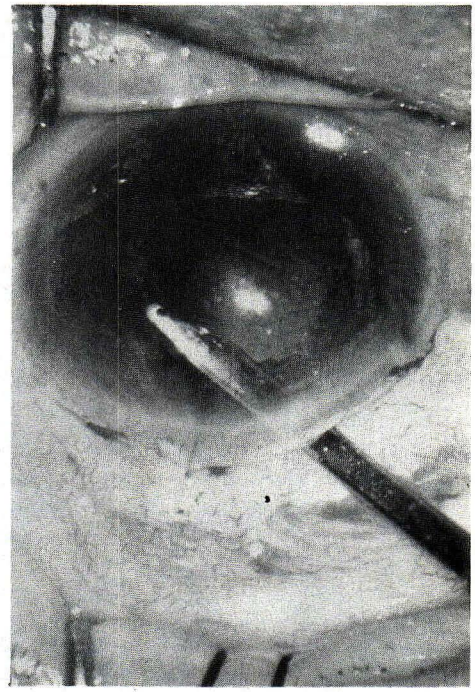


Figure 7. The sodium hyaluronate viscoelastic substance is injected into the capsular bag in order to open the capsular bag and protect the corneal endothelium against damage.

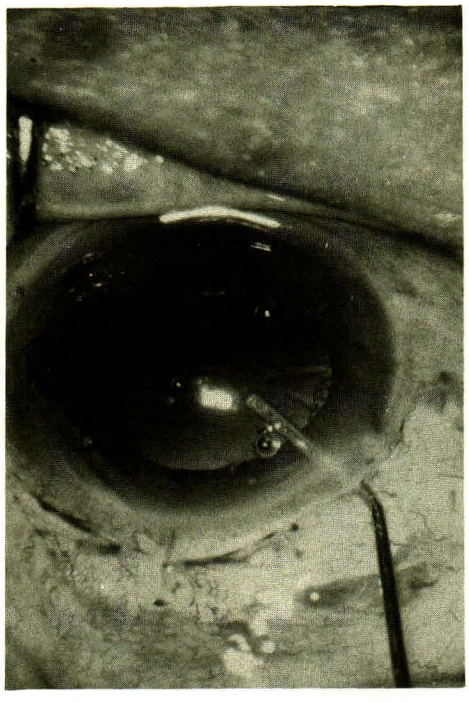
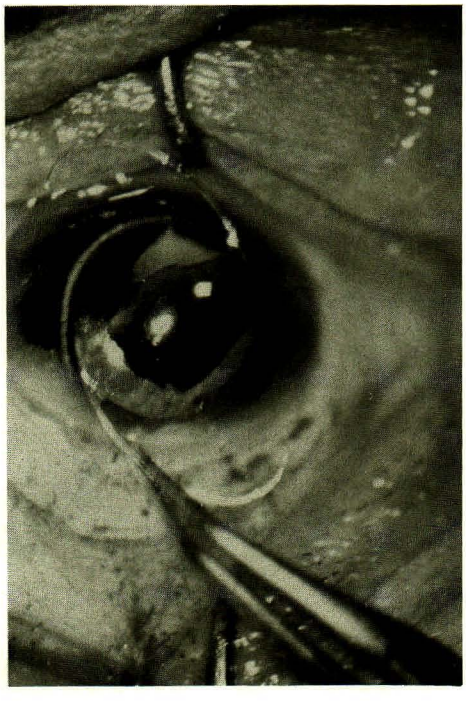
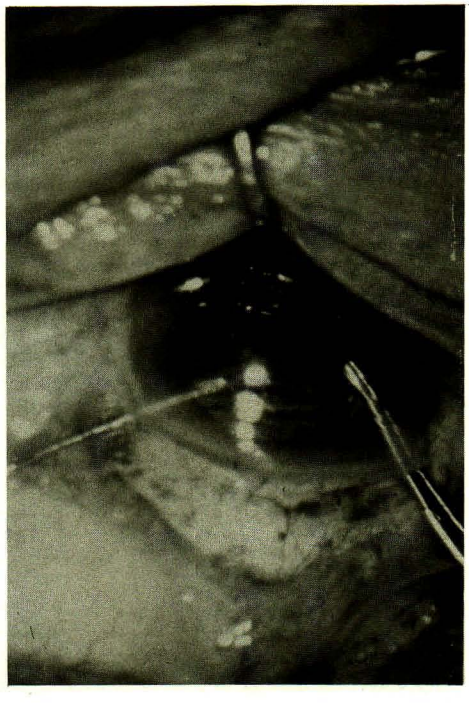


Figure 8.1-8.3 The inferior loop of the one-piece PMMA modified J-loop is in pushed gently down into the capsular bag inferiorly. The IOL is held in place with a lens manipulator held in the left hand. The superior loop is grasped with Kelman McPherson forceps by the right hand, pushing down into the bag and then releasing allowing the superior loop to be placed into the upper capsular bag.





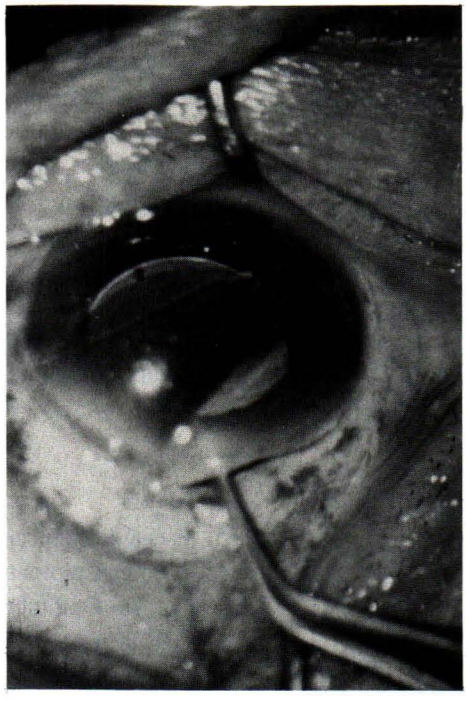
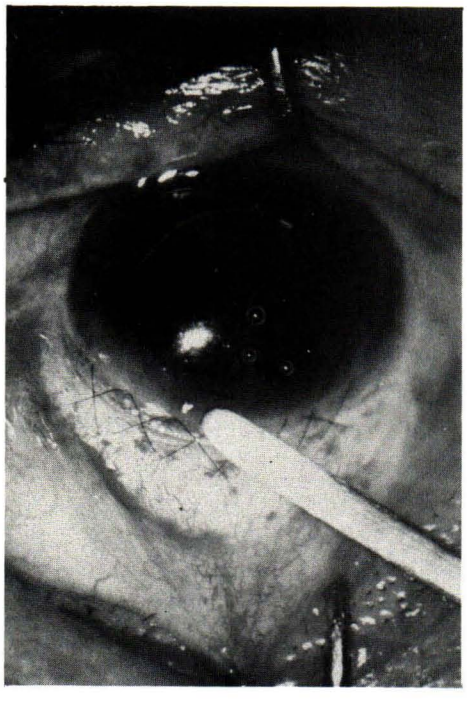
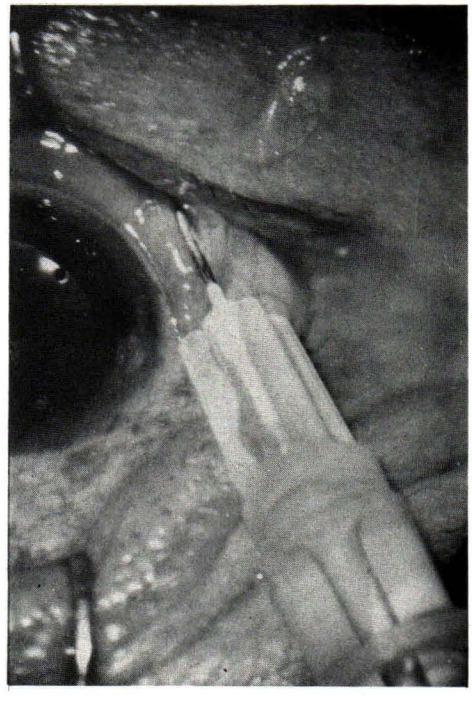


Figure 9. After peripheral iridectomy, the corneo-scleral wound is closed with continuous cross 10-0 nylon sutures.

Figure 10. The conjunctival flap is pulled down and fixed in place by a wet-field cauterization.





Discussion

The report of Prachakvej and Puangsricharern[3] confirms that ECCE c̄ IOL implantation is now a standard procedure at Chulalongkorn Univeristy Hospital. The three pieces IOL with prolene flexible loops of Sinskey type was the most popular. However biodegradation of polypropylene material was noticed.[9] As a result, in 1988 the ECCE c̄ one piece PMMA IOL in the bag is currently the preferred procedure for the cataract patients. Due to the excellent results we are satisfied with this technique. In the past few years several new instruments, techniques, and IOL designs have been introduced by many pioneer investigators. This includes ultrasound capsulectomy, intercapsular cataract extraction, foldable, multifocal and disc-like IOL. We will continue to learn and follow these techniques closely. However we believe that for the time being our technique as described is appropriate to our community taking into account the surgical cost, the capacity of our patients to pay, and most important of all the fact that good vision is restored to virtually all our cataract patients with minimum complications.

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