

Usefulness of semicircular capsulotomy marker in surgical training



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(Authors have no financial interest)

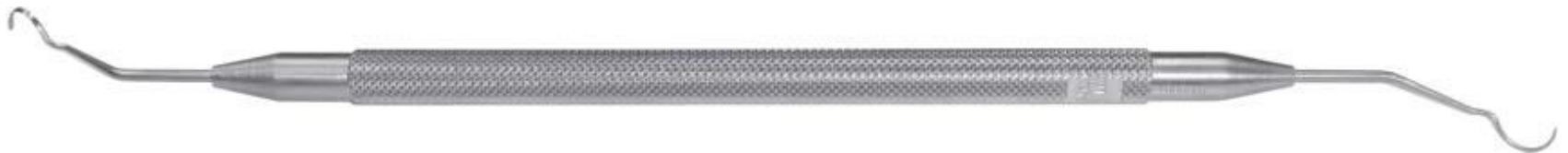
Background

Completion of continuous curvilinear capsulorrhexis (CCC) can sometimes be a challenge for residents.

If there is a guidance for CCC procedure, their CCC procedure can be improved.



We designed a semicircular marker with an internal diameter of 5.5 mm that can be used to make a semicircular mark directly on the lens capsule.



SUZUKI semicircular marker

Purpose

To evaluate the educational effect of semicircular capsulotomy marker in completion of CCC by residents.

Patients and Methods

In 12 eyes of 12 patients who underwent phacoemulsification performed by residents, a newly designed semicircular marker with an internal diameter of 5.5 mm was used to place a circular mark directly on the lens capsule (marker group).

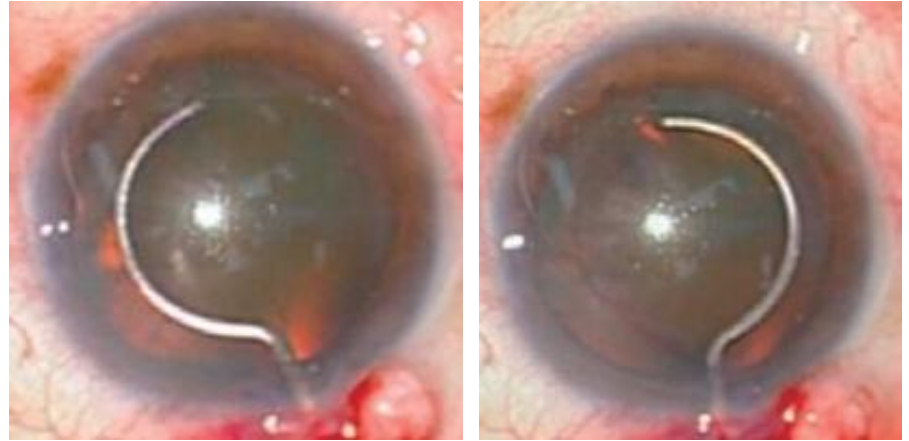
In other 12 eyes of 12 patients, the marker was not used (control).

- *The marker was used as a guide to complete CCC of the set diameter.
- *The resultant size of CCC was confirmed by image analysis.
- *The residents were under training of cataract surgery for 2 years.

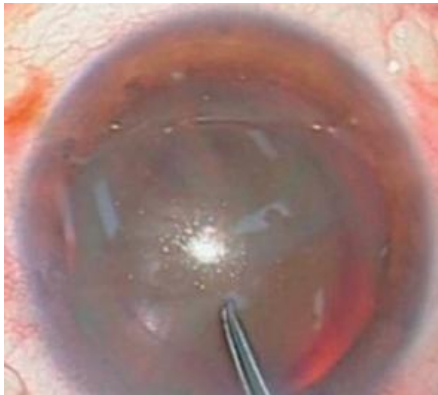
How to use the semicircular marker



1. Stained with pyoktanin.

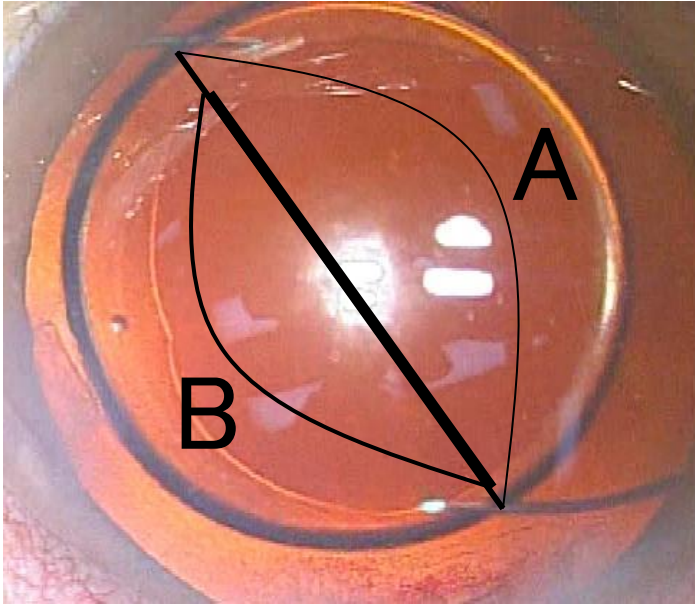


2. Marked on the surface of the anterior capsule.
(This step was done by an instructor.)



3. CCC was performed by residents.

Evaluation



The size of the CCC was determined by calculating the ratio to the IOL diameter.

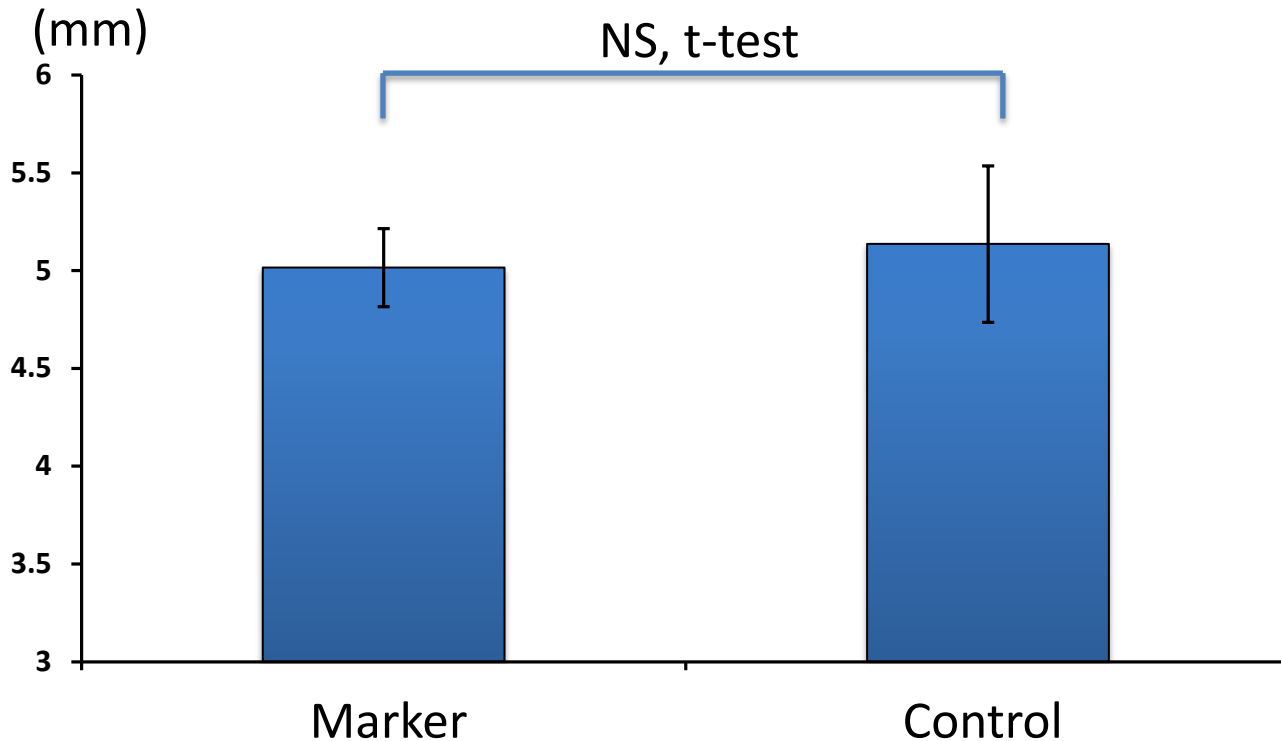
$$A : B = 6 \text{ (IOL) mm} : X \text{ (CCC) mm}$$

The following items were analyzed.

1. The average CCC diameter size.
2. The range of the maximum and minimum CCC diameter.
3. The completion rate of IOL coverage by the anterior capsule.

Result 1

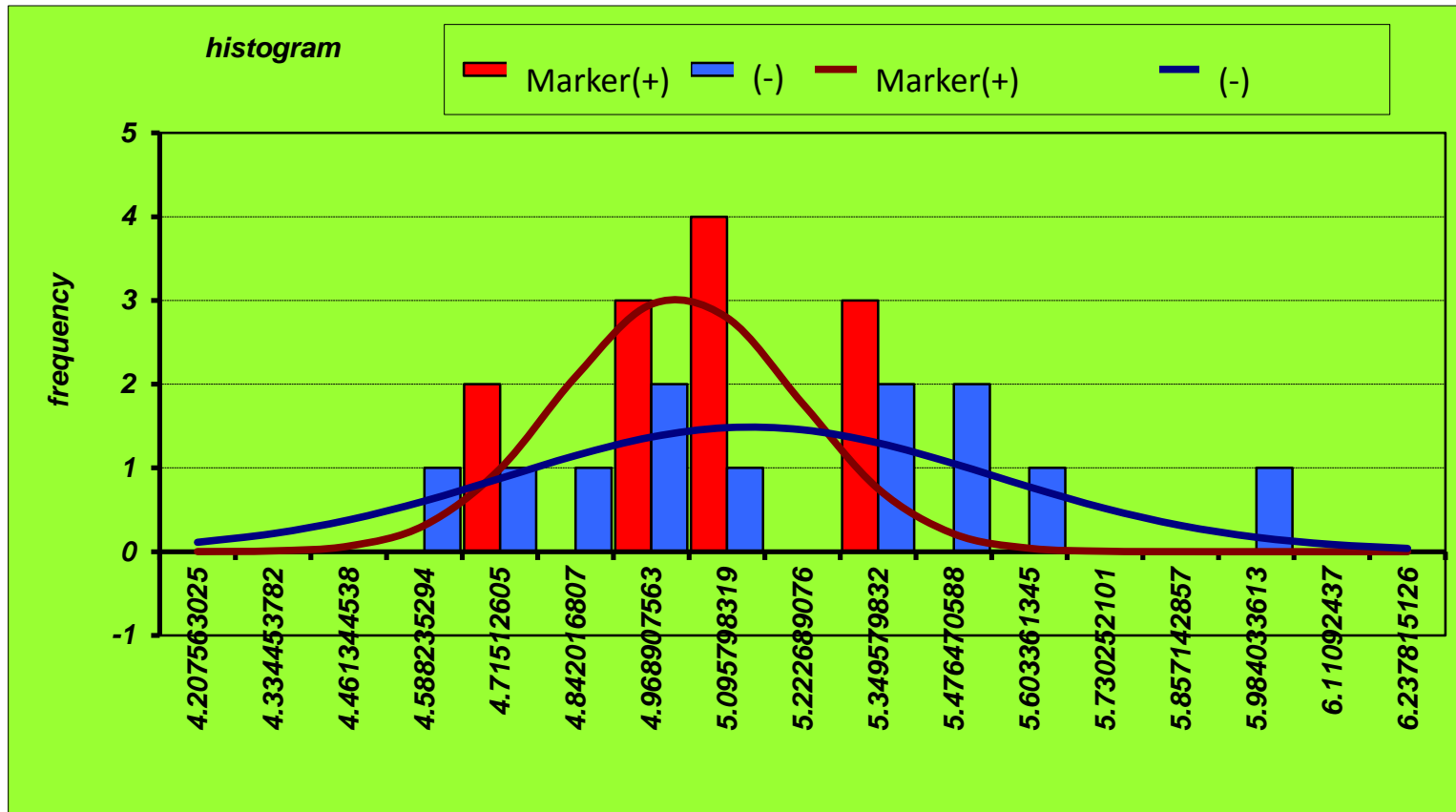
Average CCC diameter size



Average size of CCC:

There was no significant difference between the marker group and control ($p=0.365$, t-test).

Result 2



The range of the maximum and minimum CCC diameter :

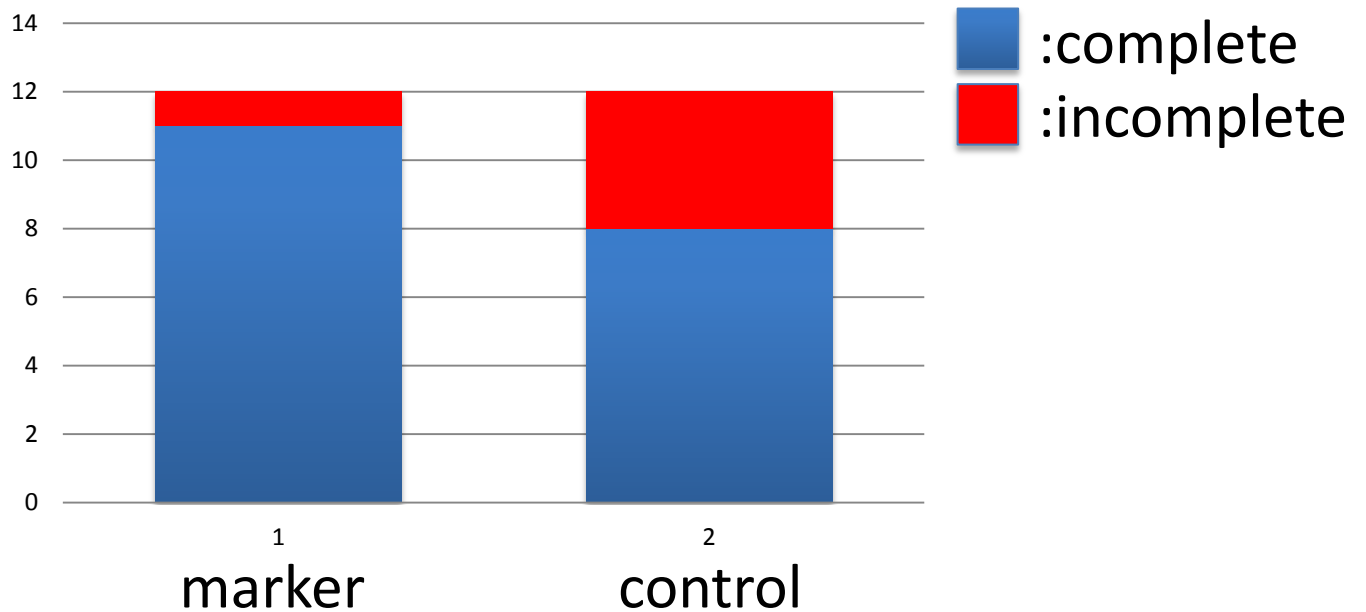
The range was significantly larger in control than in the marker group.

($p=0.02$, F-test)

Result 3

The completion rate of IOL coverage by the anterior capsule:

1: marker group 11/12 (91.7%)
2: control group 8/12 (66.7%)



There was no significant difference (2x2 Chi square test: P=0.13).

Discussion

Previous Report:

The semicircular capsulotomy diameter marker was useful in making a complete CCC of a set diameter.

(Suzuki H, et. J Nippon Med Sch. 2012)

In this study:

- *Maker group showed significantly better results in the range of the maximum and minimum CCC diameter.
- *Marker group also showed better results in the completion rate of IOL coverage.



For residents:

The semicircular capsulotomy marker was useful for training of the CCC procedure.

Conclusion

- The semicircular capsulotomy marker was useful for training of the CCC procedure.