10th Evolving Practice Of Ophthalmology Middle East Conference
EPOMEC
EXPANDING VISION

Phacoemulsification In Patients With Corneal Opacities Using Slit Illumination Of Surgical Microscope

Mahmoud Rateb

Associate Professor & Consultant Ophthalmologist

Introduction

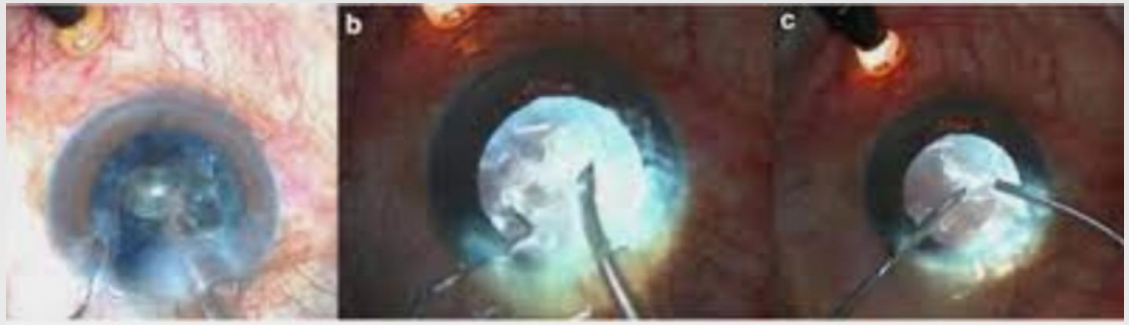
- Phacoemulsification can be challenging in patients with media opacity such as corneal scar or diffuse trachomatous opacification. Identification of important structure during cataract surgery is a key step to minimize complications such as anterior capsule, cortex and posterior capsule. [1]

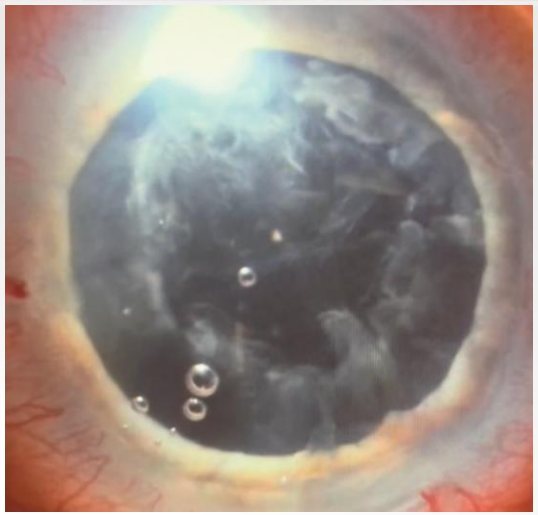
- Egypt is considered endemic in Trachoma by the World Health Organization (WHO). Prevalence of Trichiasis is 7-10% of adult population . So, there are many situation when cataract surgery must be performed with the presence of dense corneal opacity.[2]

Introduction

- Several techniques have been described to improve the intraoperative visualization through hazy corneas, especially when the triple procedure of combined keratoplasty, cataract extraction, and IOL implantation is infeasible because of economic issues or associated comorbidities.
- These techniques included the use of trypan blue dye, transcorneal illumination, intracameral endoillumination, chandelier endoillumination, and chandelier retroillumination.

Introduction





- Chandelier Retroillumination
- Intracorneal illumination
- Intracameral illumination

Introduction

- The slit lamp provides enhanced visibility to various ocular structures during examination and decrease scattered light especially by corneal opacities.
- Some surgical microscopes are equipped with a slit illumination (for cornea surgery) , we created a technique to enhance visualization in cataract surgery using slit beam.

Aim of the study

- This study aimed to evaluate the intraoperative visualization during phacoemulsification in eyes with corneal opacities using slit illumination of the surgical microscope and report the rate of possible complications and visual outcome.

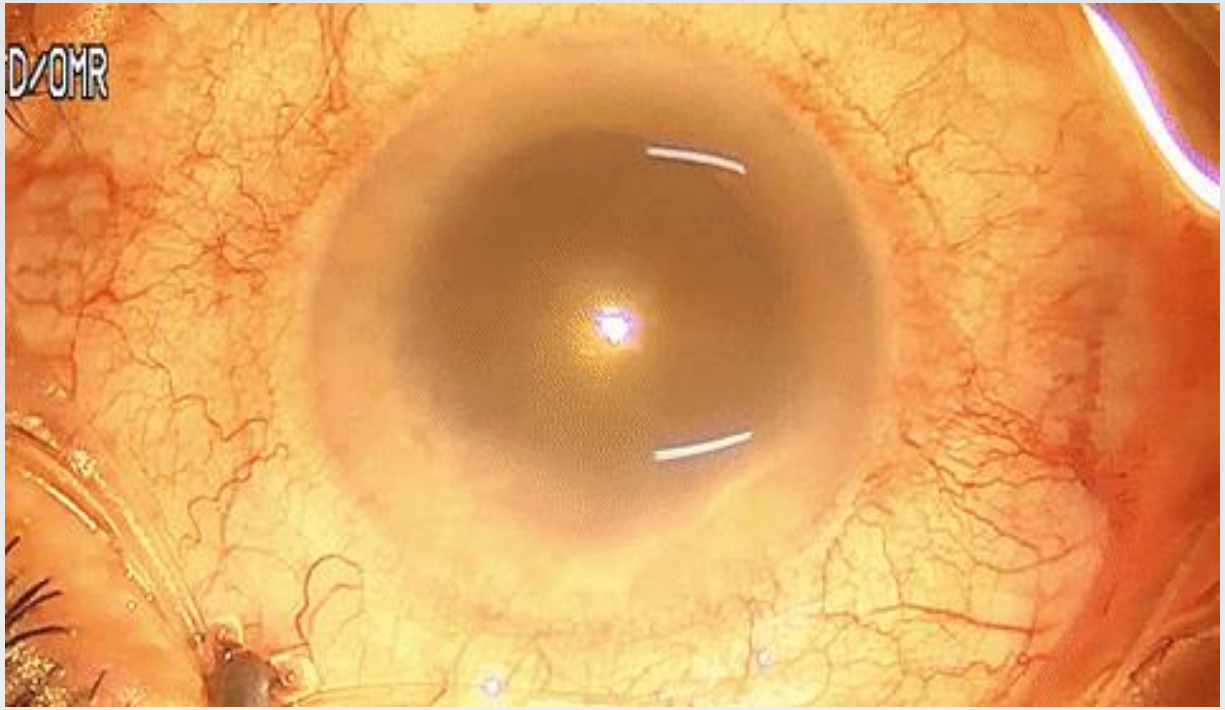
Patients and Methods

- This retrospective interventional case series enrolled patients with corneal opacities for whom phacoemulsification of senile cataract was performed under the slit illumination of the surgical microscope to enhance the intraoperative visualization. All surgeries were performed at Assiut University Hospitals, Egypt.

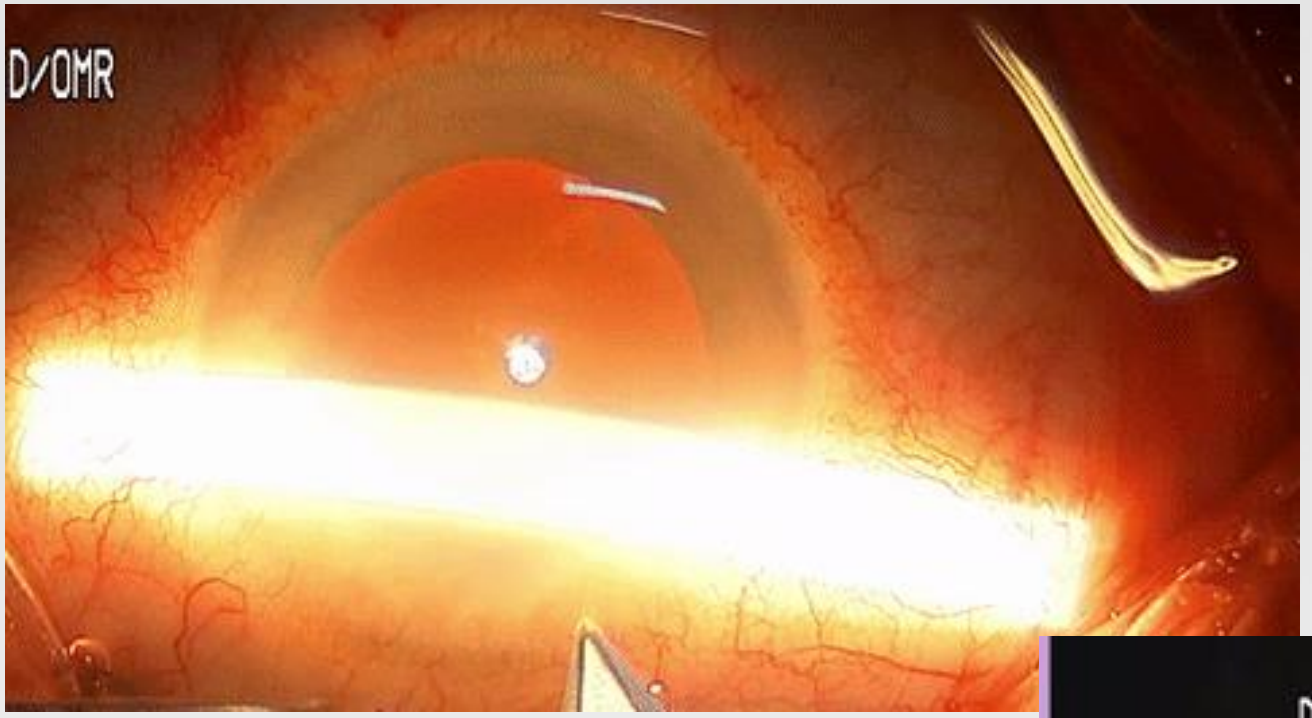
Patients and Methods

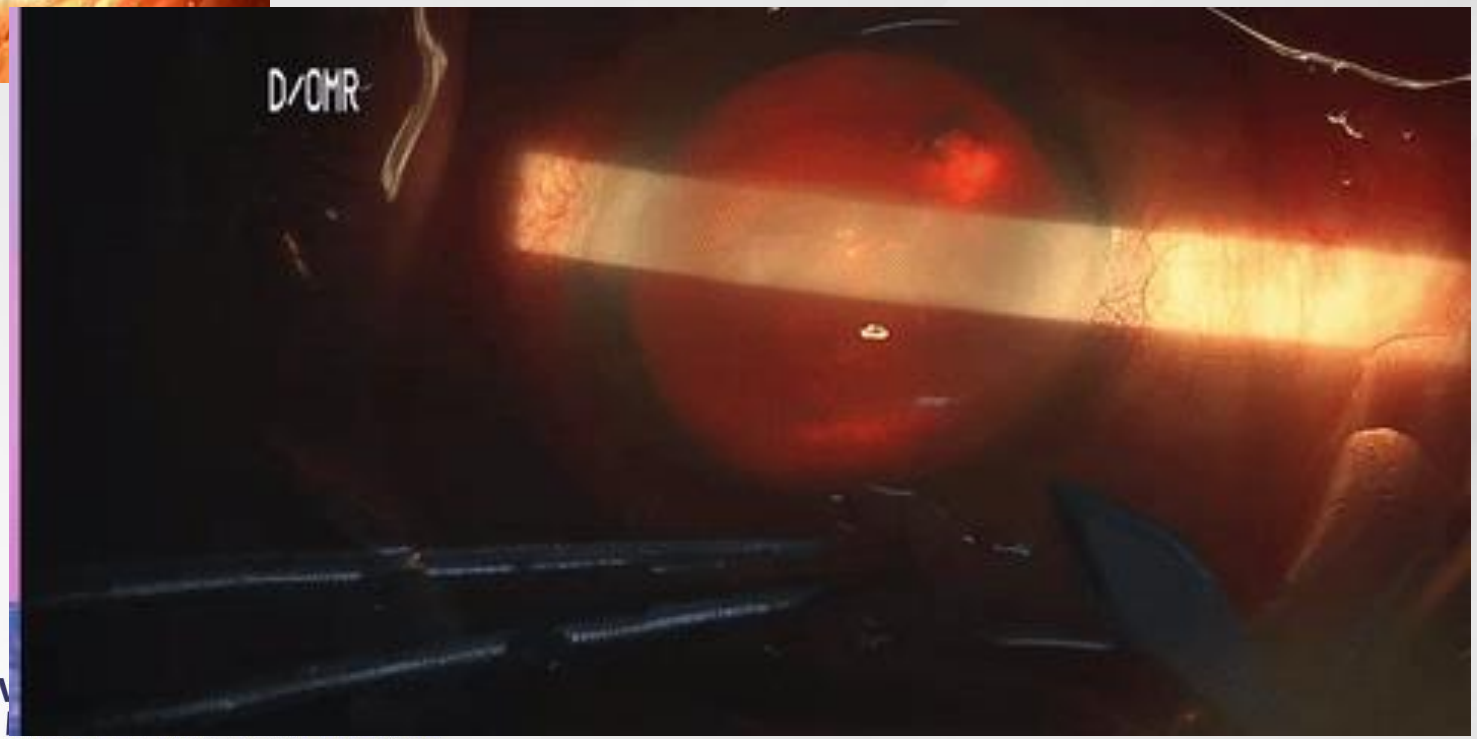
Inclusion Criteria	Exclusion Criteria
Visually Significant cataract	History of intraocular surgery
Stable Corneal Opacity : grade II to Grade III	Presence of Coexisiting ocular disease : glaucoma, RD
Recent history of diminution of vision	Unift patient

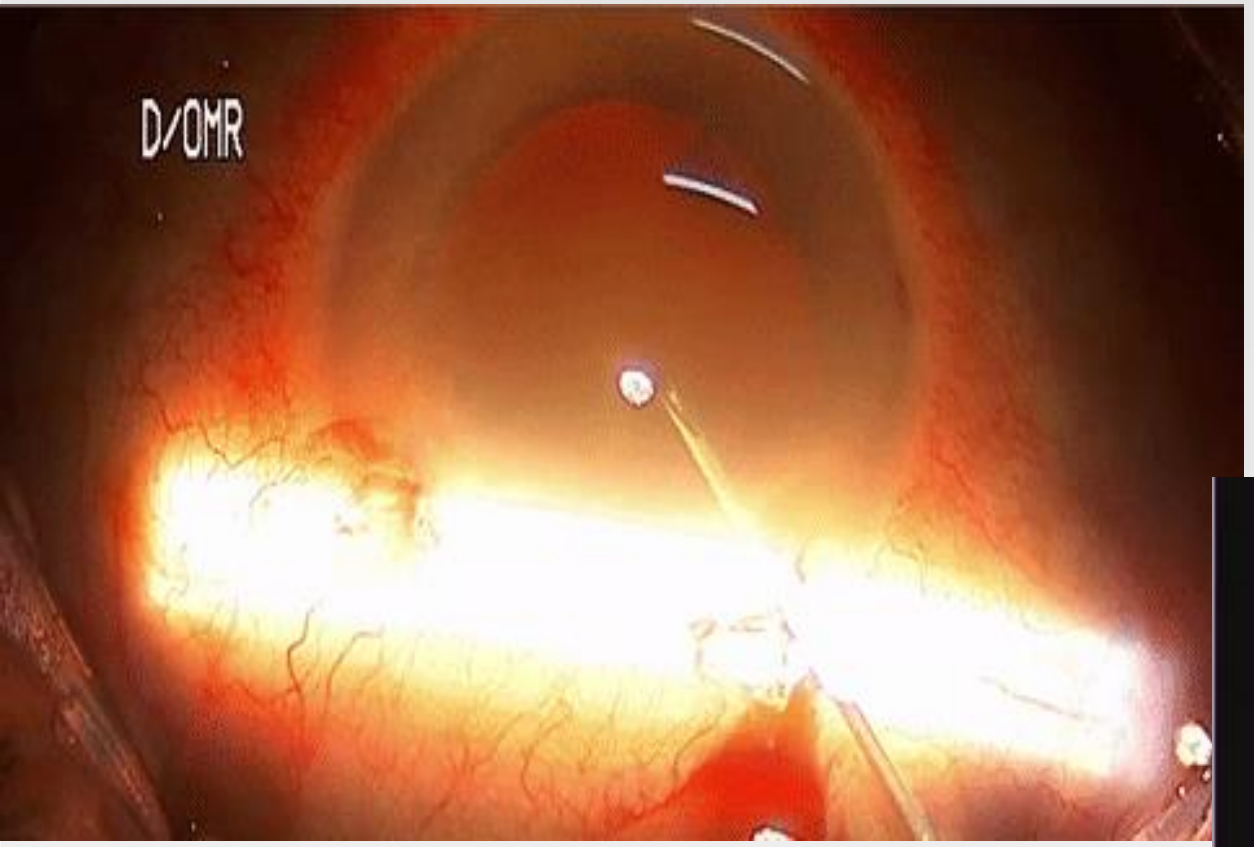
Patients and Methods


D/OMR

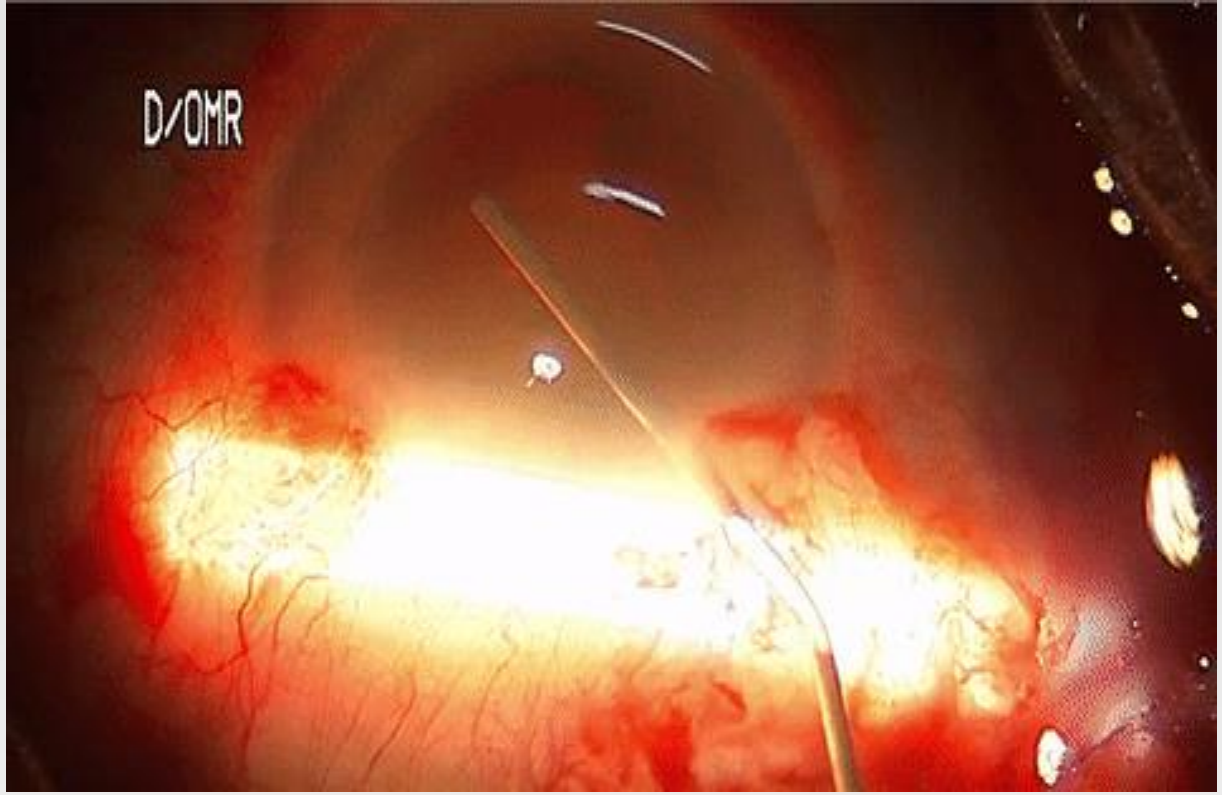

D/OMR

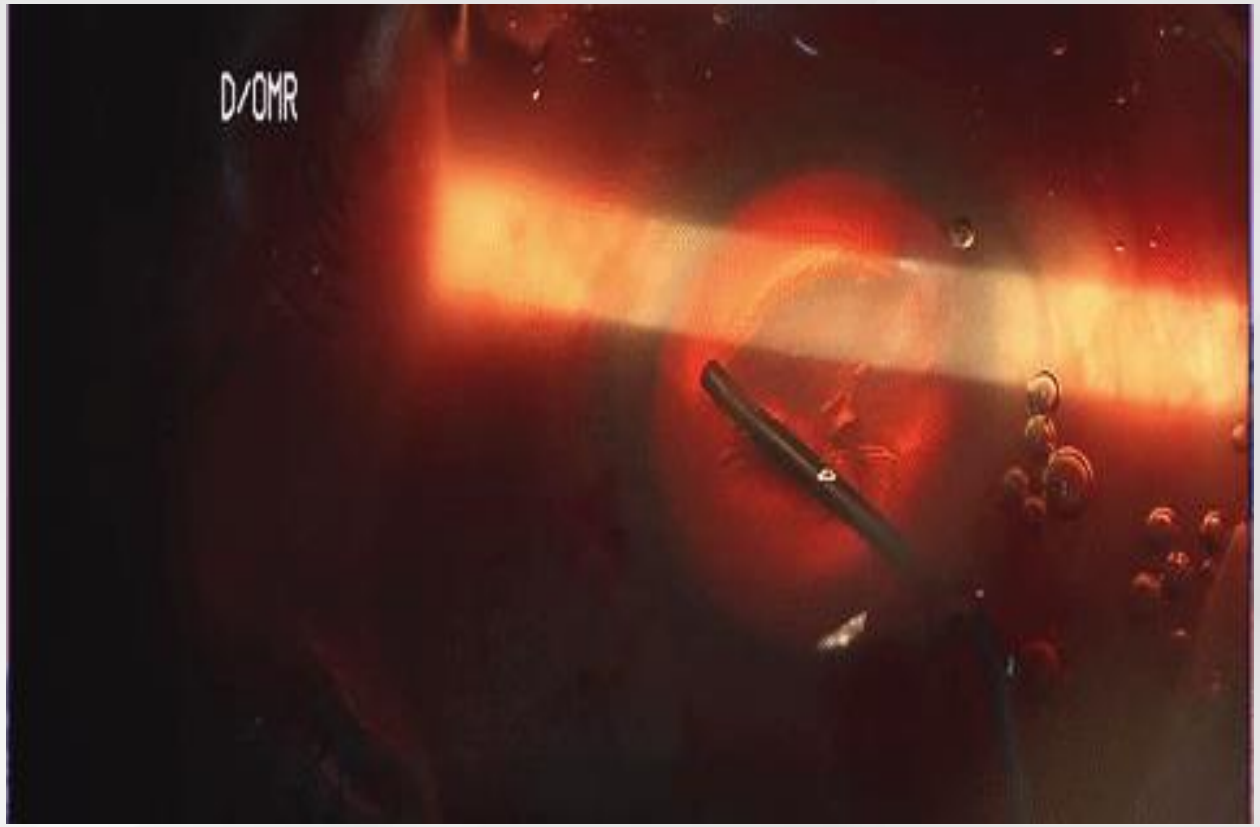

D/OMR


D/OMR

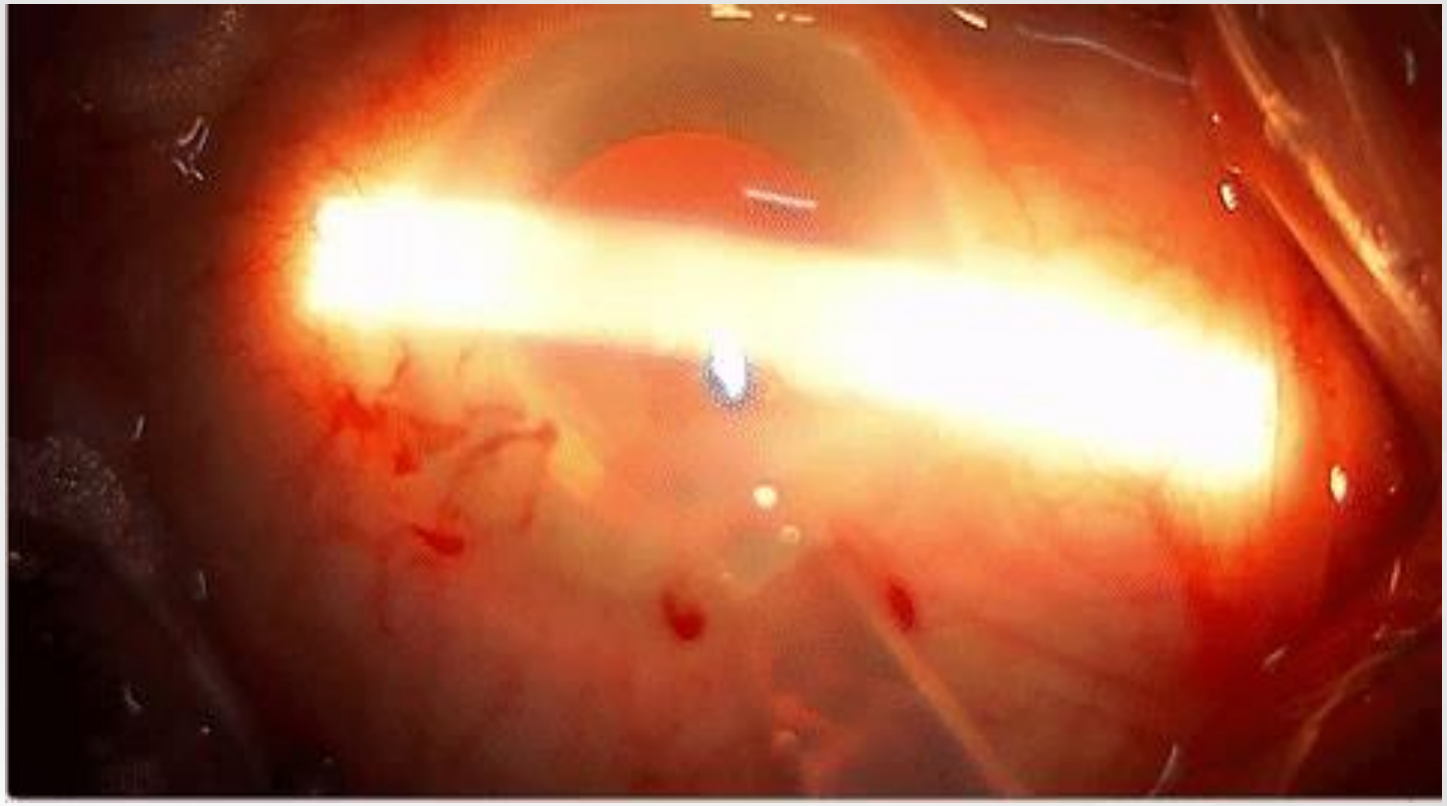

D/OMR


D/OMR


D/OMR


D/OMR


D/OMR



Results

Table 1. Clinical Features of Patients.

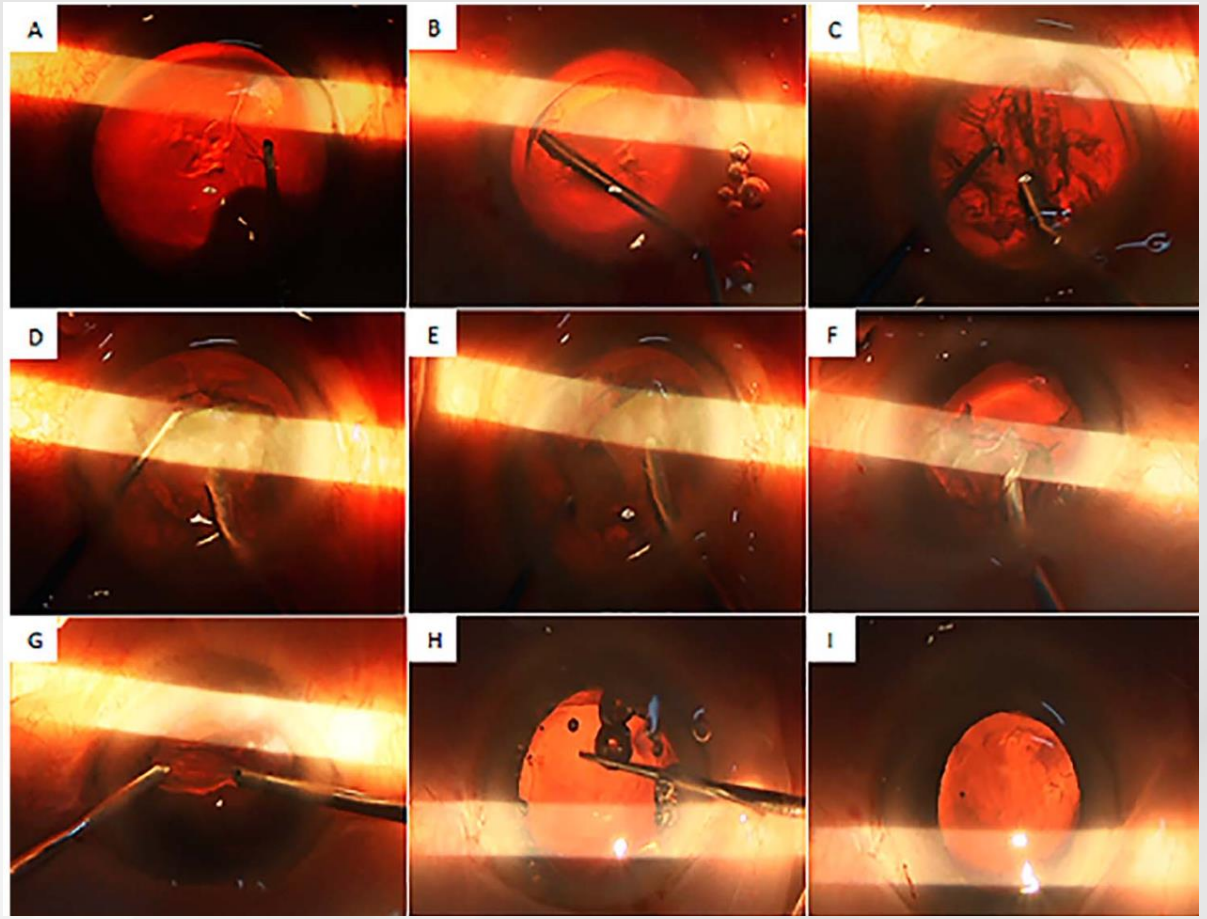
Age (y)	Sex	Opacity grade	NO grade	Cause of corneal opacity	Preop CDVA	Postop CDVA	Complications	Follow-up (mo)
56	F	3	+3	Trachoma	CF 4m	0.4	None	3.00
61	F	3	+3	Trauma	CF 3m	0.2	None	4.00
59	F	2	+3	Trachoma	CF 3m	0.4	None	6.00
58	F	3	+3	Herpetic keratitis	HM	0.4	Transient corneal edema	6.00
49	M	2	+4	Bacterial keratitis	HM	0.6	Transient corneal edema	6.00
62	M	2	+5	Trauma	CF 1 m	0.3	None	5.00
67	M	3	+3	Trachoma	CF 1 m	0.5	None	4.00
56	F	3	+3	Trachoma	CF 1 m	0.4	None	3.00
55	F	3	+3	Herpetic keratitis	CF 2 m	0.5	None	5.00
58	F	3	+2	Bacterial keratitis	CF 2 m	0.3	None	6.00

Discussion

- Various techniques have been introduced to enhance visualization during phacoemulsification in patients with corneal opacities
- These techniques either more invasive or needs a second assistant, but our technique utilizes the slit beam mounted on the surgical microscope.
- Slit illumination differs from the standard illumination used in anterior segment surgeries and from the illumination of the red reflex enhancer offered in modern microscopes. Slit illumination is a slit-shaped isolated coaxial illumination beam with an adjustable width and position. The oblique component of the standard

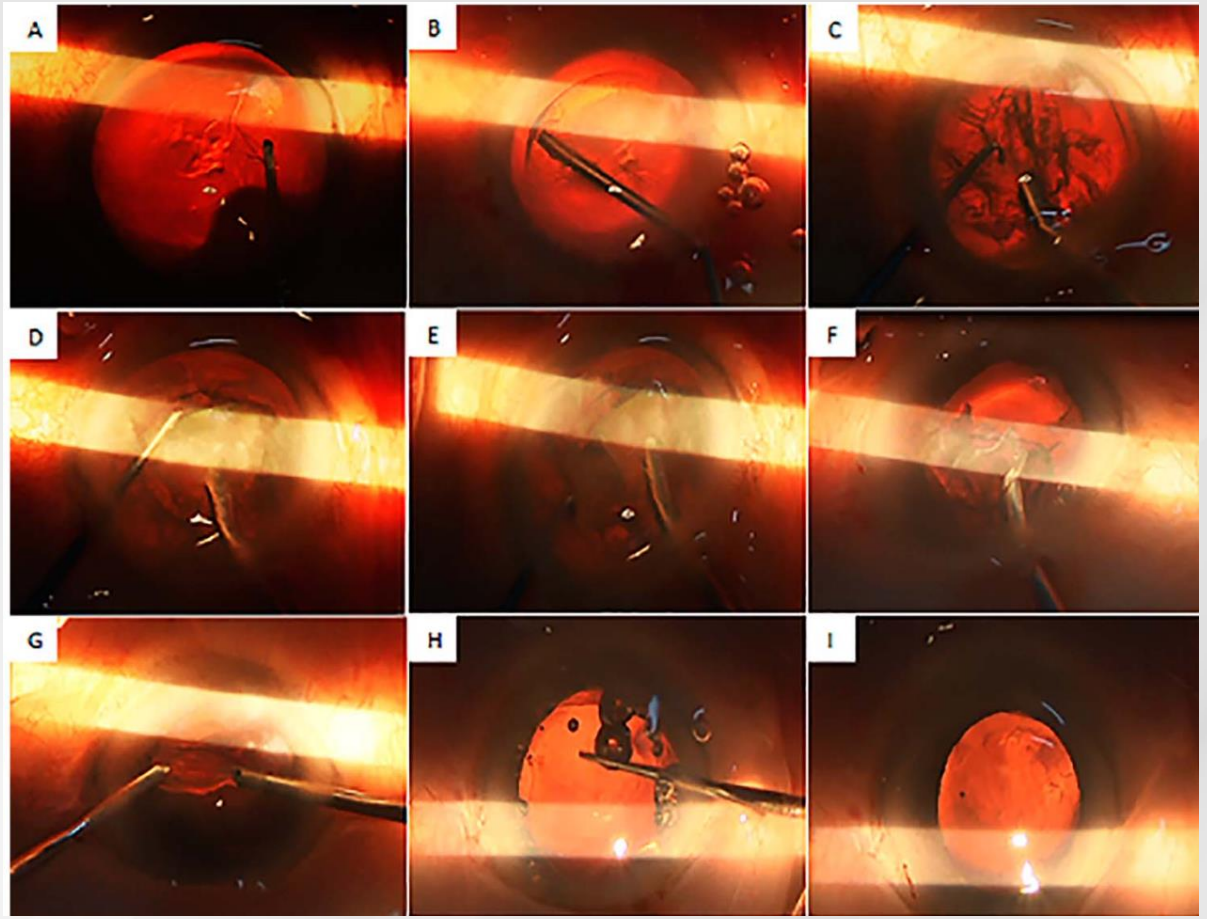
Discussion

slit illumination has the advantage of offering an adequate red reflex with minimal light scattering and reflection, in addition to enhanced depth perception. The corneal opacities appear dark instead of glary white, which improves the contrast.



Discussion

The red reflex is beneficial in steps of capsulorhexis in immature cataract, irrigation/aspiration of the cortical matter, and IOL implantation. Enhanced depth perception is important for emulsification of the nucleus, particularly in eyes with dense NO and dim red reflex, and IOL implantation in the bag



Discussion

- The main limitation of our study is the unavailability of the slit beam in all surgical microsocpes and small sample size.
- To conclude, phacoemulsification was safely performed in eyes with senile cataract and coexisting corneal opacity under slit illumination of the surgical microscopy. Slit illumination enhanced the red reflex, depth perception, and contrast without the need for additional expensive instrumentation to improve the visualization. However, surgeons should counsel patients about the possibility of a future keratoplasty in case of unsatisfactory visual outcome.

References

- 1-Oshima, Y., Shima, C., Maeda, N., & Tano, Y. (2007). Chandelier retroillumination–assisted torsional oscillation for cataract surgery in patients with severe corneal opacity. *Journal of Cataract & Refractive Surgery*, *33*(12), 2018–2022. doi:10.1016/j.jcrs.2007.07.055
- 2-Corneal blindness: a global perspective. (2001). Corneal blindness: a global perspective, 1–8.
- 3-Handheld Slit Beam Techniques to Facilitate DMEK and DALK. (1BC). Handheld Slit Beam Techniques to Facilitate DMEK and DALK, 1–3.
- 4-Webb, R. H. (1996). Confocal optical microscopy. *Reports on Progress in Physics*, *59*(3), 427.
- 5-Surgical Ophthalmology, Volume 1 edited by F.C. Blodi, Günter Mackensen, Hellmut Neubauer

Thank you