



SMILE

*Management of
Intraoperative Difficulties
& Complications*



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SMILE The next generation method for laser vision correction

PRK - LASEK - Epi-LASIK	LASIK - Standard LASIK - Femto-LASIK	SMILE - smile Small Incision Lenticule Extraction
		
Indications <ul style="list-style-type: none"> • Compound myopic astigmatism <ul style="list-style-type: none"> ▪ Sphere up to -10.00 D ▪ Cylinder up to - 5.00 D 	Sum up to -12.5D	<ul style="list-style-type: none"> ▪ Min. RST 250 μm ▪ Better 280 μm <div style="border: 1px solid black; padding: 2px;"> Hyperopia is not yet commercially released </div>



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Why SMILE

Same (if not better) excellent results of F-LASIK but with

- **Minimally invasive**
 - **80%** less side cut - **30%** less cap cut
- **↓↓ flap complications**
- **Correction** not affected by room conditions
- **fully corrected OZ**
- **↓↓ Dry eye**
- **Biomechanical advantage**



*Flapless & minimally invasive
Small incision - big advantage*



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Effectiveness – Predictability and accuracy of MRSE correction

Comparison to most recent LASIK approvals



Predictability and accuracy of the MRSE correction is comparable to or better than LASIK (**6 months** after surgery).

MRSE	Sphere-only SMILE	Spherocyl SMILE	Alcon Contoura	iDesign	Nidek EC-5000
Preoperative mean \pm SD	-4.86 \pm 2.21 D	-5.46 \pm 2.35 D	-4.61 \pm 2.43 D	-6.21 \pm 2.78 D	-3.57 \pm 1.45 D
Postoperative mean \pm SD (deviation from attempted MRSE*)	-0.14 \pm 0.33 D (-0.04 \pm 0.32 D)	-0.03 \pm 0.28 D (-0.02 \pm 0.28 D)	0.01 \pm 0.35 D	-0.46 \pm 0.42 D	-0.08 \pm 0.33 D
Within \pm 0.50 D	93%	94%	93%	69%	91%
Within \pm 1.00 D	99%	99%	99%	93%	99%

*eyes with MRSE target due to 0.25 D or 0.5 D untreated cylinder



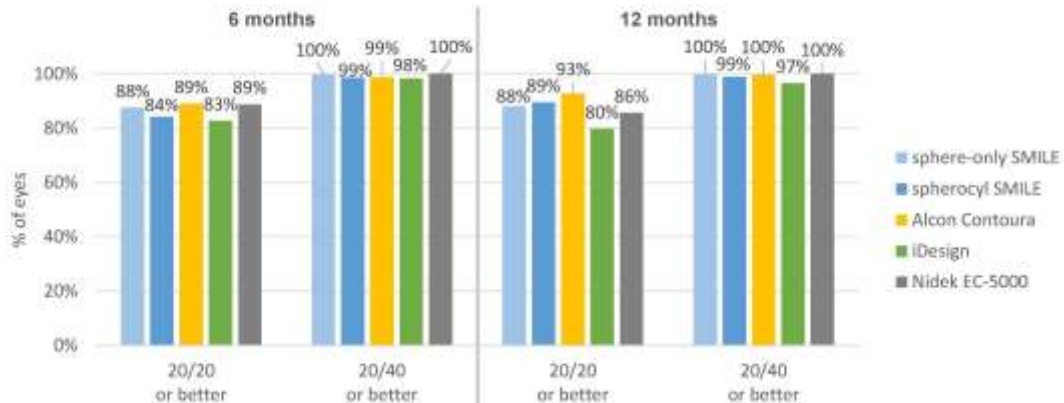
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Effectiveness – Improvement of UCVA after surgery

Comparison to most recent LASIK approvals



UCVA results after SMILE are comparable to results after LASIK.



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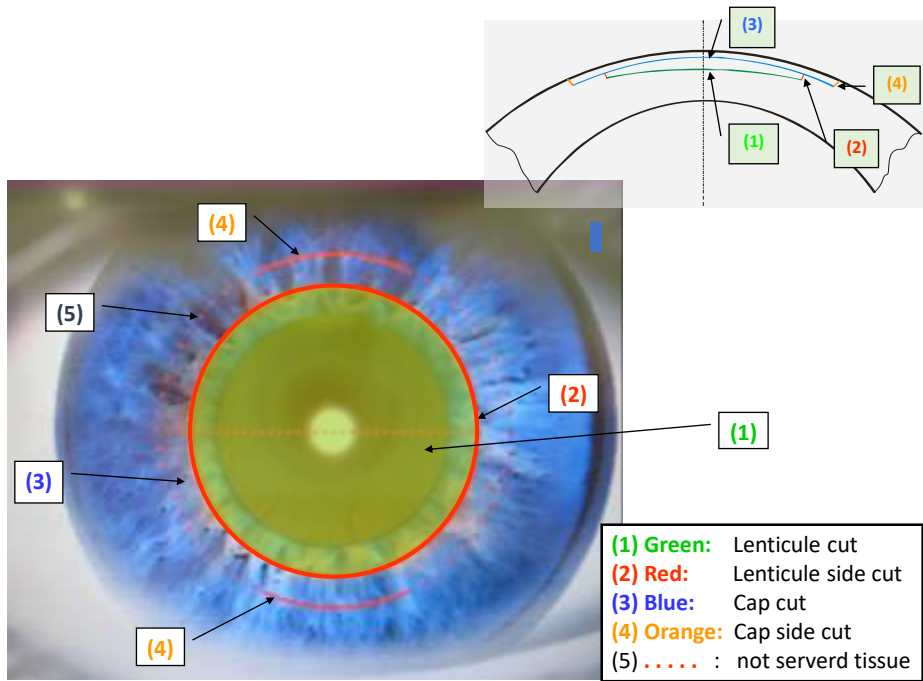
SMILE *A minimally invasive and innovative procedure*

- 1** Create the complete lenticule and access cut in one step
- 2** Manual tissue separation through the small incisions
- 3** Extraction of the refractive intrastromal lenticule through the small incision



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SMILE
steps



Intraoperative Complications In SMILE

Difficult docking

Radial tear

Suction loss

Residual part

Difficult dissection

Bleeding to the interface



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- **Head position:** Elevate
- **Hair pillow** .. Free it
- **Nose** .. Face turn
- **Chin up** .. Lower it



- Wash the conjunctiva and the cornea before docking
- Keep the cornea moist but not too wet
- **Reclean the cone and the conjunctiva before docking**



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Suction loss during SMILE

- Can happen with movement of the patient, loss of green light, ...
- Can be inconsequential or disastrous
- Calm down and reassure the patient (Verbal anesthesia)



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How to Manage

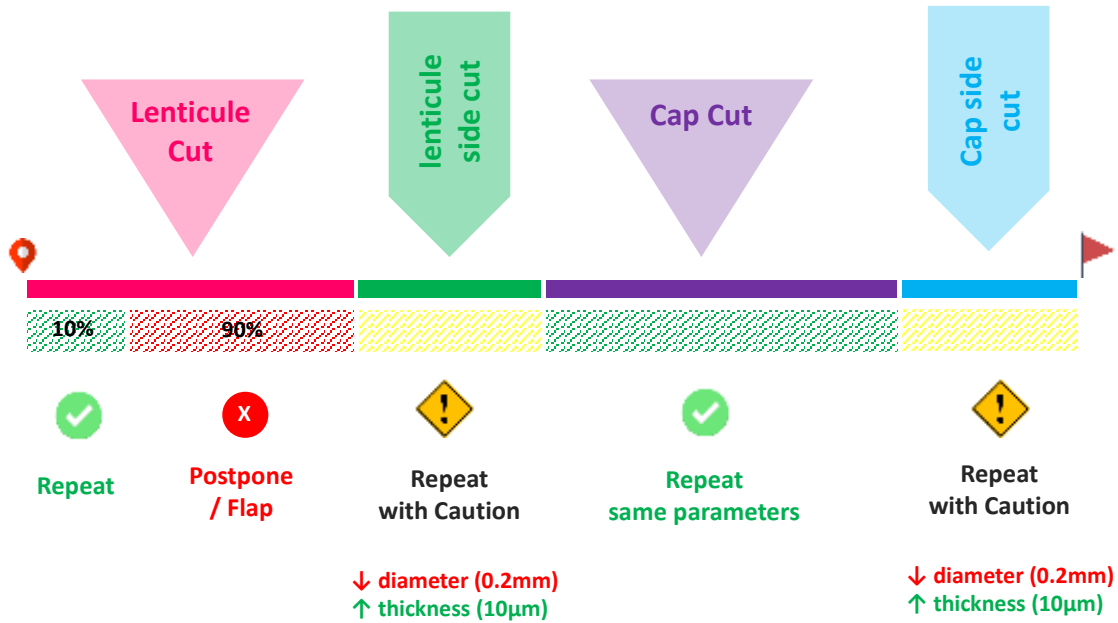
Suction loss is detected by the laser and procedure stops automatically

- confirm the immediate restart message with "YES"



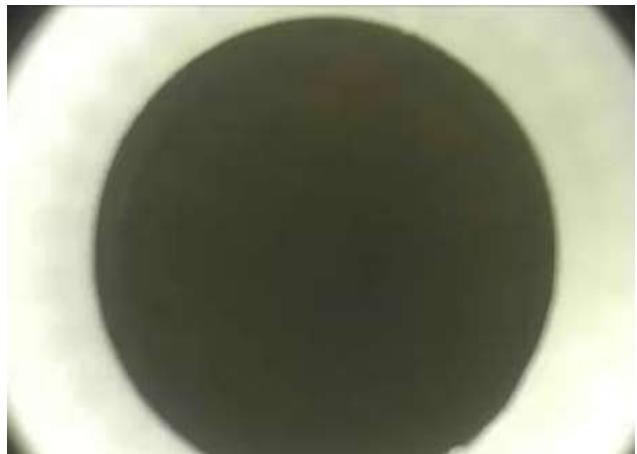
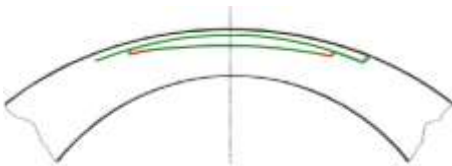
Management depends on the stage in which suction loss happened

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If the laser treatment is interrupted during the **first 10 %** of lenticule cut:

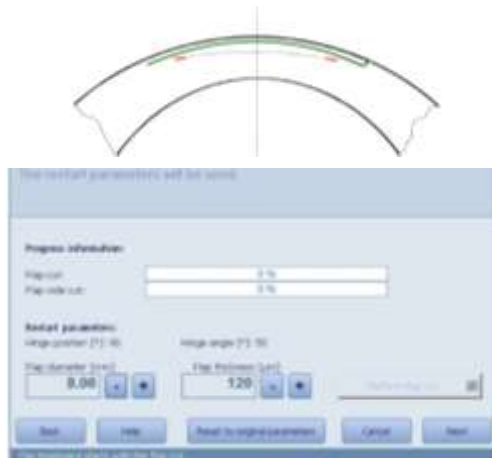
Repeat the entire procedure with the same parameters.



If the laser treatment is interrupted **between 10 % and 100 %** of lenticule cut

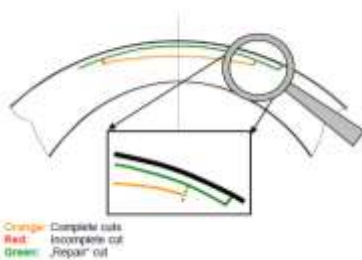


The laser switches automatically to a flap cut or postpone and repeat the whole procedure later on



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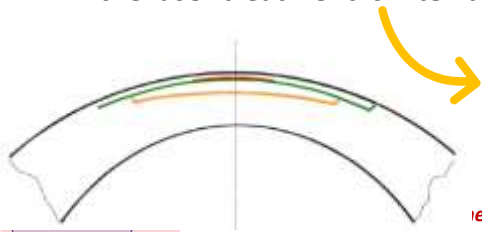
If the laser treatment is interrupted during the creation of a **lenticule side cut**



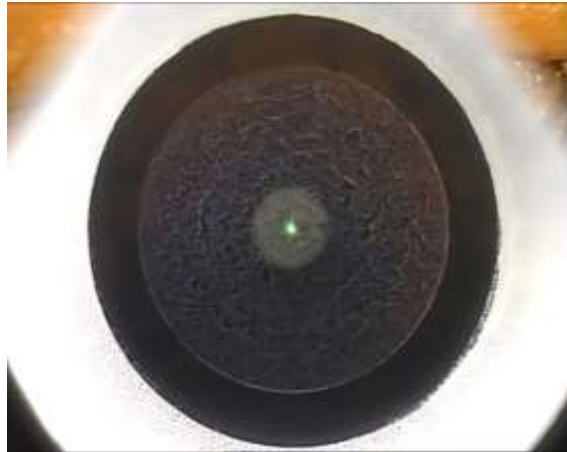
- ↓ the lenticule **diameter** by 0.2mm
- ↑ the lenticule **thickness** by 10µm.

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If the laser treatment is interrupted during the creation of a **cap cut**



Repeat from the start of the cap cut with the same parameters.

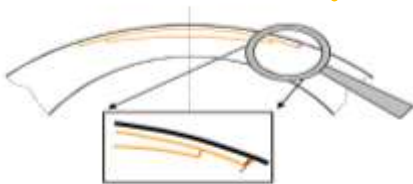


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If the laser treatment is interrupted during the creation of a cap sidecut



- ↓ the lenticule **diameter** by 0.2mm
- ↑ the lenticule **thickness** by 10µm.



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Intraoperative Complications In SMILE

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Difficult dissection

Bleeding to the interface



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- The speed matches the resistance
- Expect more resistance if,
 - Energy higher than needed (OPL)
 - Steep cornea
 - Black spots in the laser profile



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If you find difficulty getting under the lenticule, you may have lenticule stuck to the cap

If you miss the superior plane don't worry
Do not make the cornea dry
Try gently to get above the lenticule from the corridor



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- **Avoid by**
 - *Pivot at the access incision*
 - *Fix limbus with forceps*
- **If it happened**
 - *Minimize manipulation at the site of the incision*
 - *Apply bandage contact lens*



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- Keep MLT > 15 μm in low errors
- Separate the edge before trying to pull the lenticule
- Examine the lenticule carefully
- prednisolone drops \uparrow visualization
- If significant, you have to remove it to avoid irregular astigmatism



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- Try to avoid having blood in the interface
 - *Use vasoconstrictors*
 - *Vary the position of the access incision*
 - *Dry the bleeding*
 - *And finally wash the interface if you have to*



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Conclusion

- SMILE is a simple safe effective and predictable refractive procedure
- It has eliminated most of LASIK flap related complications however it has its own subset of difficulties complications
- Systematic approach to prevent and manage such complications together with growing experience and proper instrumentations would decrease the incidence of such events and make them harmless should they happen

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