Monovision LASIK—
the best option to treat presbyopia?

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Treatment of Refractive Errors

- Femto-LASIK
- Epi-LASIK/ PRK/ LASEK
- Phakic IOL
- Refractive lens exchange
Treatment of Presbyopia

- No perfect cure yet
- Compromise
Treatment of Presbyopia

- **Laser treatment options**
  - Monovision LASIK
  - CK
  - PresbyLASIK
  - Intrastromal femtosecond procedure (intraCOR™, FEMTEC)

- **Presbyopia-correcting IOLs**
  - Multifocal IOLs (ReZoom, ReSTOR, Tecnis, AcriLisa)
  - "Accomodating" IOLs (CrystaLens, Synchrony)

- **Intracorneal Inlays (AcuFocus™)**

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Monovision LASIK

- **Principle**
Monovision Concept

- Intraocular suppression of blur depending on cortical function: brain factor
- Conflicting images, binocular fusion
- Limit myopic defocus to -1.0 to -1.5 D
  - Avoids asthenopia
  - Preserves contrast sensitivity
  - Better stereoacuity

Monovision LASIK

Results Mannheim 2007/2008

- 1.1.2007 to 1.11.2008 Retrospective observational case series
- Monovision was offered to all 273 (pre)presbyopic patients (≥ 40y.)
  - 165 patients chose bilateral distance correction
  - 108 patients were tested preop (CL) for MV
    - 63 patients (58%) decided to have monovision (Mean Age 50.4 ± 5.0 years (42 to 66 years)
Monovision LASIK

Results Mannheim 2007/2008

- Conventional monovision
  - dominant eye corrected for distance
  - non-dominant eye corrected for near

- Preoperative monovision trial with soft contact lenses

- Target refraction monovision eye
  - -1.0 to -1.5 D

Monovision LASIK

Visx Star S4 IR

IntraLase 60
Monovision LASIK

- Spectacle independence in all patients for everyday tasks
- Reading glasses required for prolonged reading in 6.3%

- 8 retreatments: dominant (distance-corrected) eye undercorrected
- 1 patient not satisfied with monovision: monovision reversal
- Success rate 98.5%
Monovision LASIK


- 284 LASIK patients > 45 y.
  - 188 (67%) chose monovision
  - 96 (34%) chose bilateral distance correction
- 85% chose conventional MV (dom. eye corrected for distance)
- 7% monovision reversal
- 27.9% of patients had subsequent enhancement of their distance vision eye
  - Monovision patients have a lower tolerance for residual refractive error
Monovision LASIK

- Fawcett SL et al.  
  *Stereoacuity and foveal fusion in adults with long-standing surgical monovision.*  
  *J AAPOS.* 2001 Dec;5(6):342-7

- Advantage: reversible
- Disadvantage:
  - Reduced stereoacuity dependent on amount of anisometropia
    - > 1.5 D: stereoacuity 150"
    - < 1.5 D: stereoacuity 100"
    - Control group: 40"
Conclusion

- Modified Monovision LASIK offers spectacle independence for everyday visual tasks in most patients

- Monovision has the advantage that it can be corrected for distance and for near with glasses if maximum visual performance is required

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Conclusion

- Glasses for driving!

- Always perform contact lens trial as 42% of patients did not accept monovision correction!
Thank you very much!

Vielen Dank!