

Contrast Sensitivity Results in HD Custom Surgery

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Material and Methods

- 37 eyes
- 34 patients
- 9 males 25 females
- mean age: 35,1 years (range: 24-64; SD 9,39)
- SE from -10.5 to -2D
- mean ideal pupil diameter: 5.29 mm (range: 3.28-6.72 mm)
- preop BCVA: 20/25 or better

Material and Methods

3 groups:

I- SE from -0.25 to -3 D (8 eyes)

II- SE from -3.25 to -6 D (19 eyes)

III- SE > -6 D (10 eyes)

Material and Methods

Custom Ablation (CIPTA) with iRES

- 37 eyes
- mean SE : - 4.46 D
(range: -10.50 -2; SD 2.79)
- Follow-up: from 3 to 7 months
(average 4.8 months)

Material and Methods

- UCVA
- BSCVA
- Manifest refraction
- Corneal Topography (Orbscan and CSO)
- Pachimetry (Orbscan)
- Biomicroscopy
- **Contrast Sensitivity**
(CSV-1000, Vector Vision)

Material and Methods

Examination of the visual quality with spectacles

Contrast sensitivity

CSV-1000E, Vector Vision

Luminance test: 85 cd/m²

Scotopic environment

Distance: 4m

Boxer Wachler B S MD; Krueger R R, MD, MSE

Normalized Contrast Sensitivity Values , J Refract Surg 1998;14:463-466

SURGICAL TECHNIQUE

Transepithelial topographic PRK (CIPTA)

- **Refractive optical zone:**
related to pupillometry (ideal pupil)
- **Transition zone:** up to 10 mm

SURGICAL TECHNIQUE

iRES High Definition Laser Features

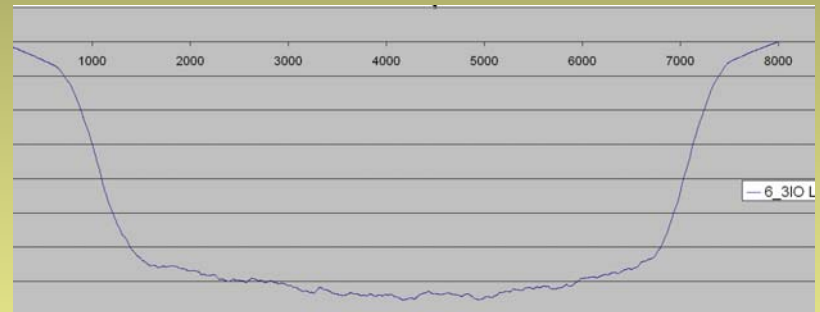
Main characteristics:

- High rate frequency: 1000 Hz
- Gaussian dimension spot: 650 microns
- Constant impact frequency on the cornea for area unit
- Total automation of processes

SURGICAL TECHNIQUE

These characteristics allow:

- **Very high ablation rate:**
0,6 sec for diopter
(optical zone 6 mm)
- **Very good quality**
of the ablated surface.



Post-op treatment

- Soft CL
- Ofloxacin
- Tobramycin + Dexamethasone
- Pranopropene
- Hyaluronic acid 0,2%

until re-epithelialization

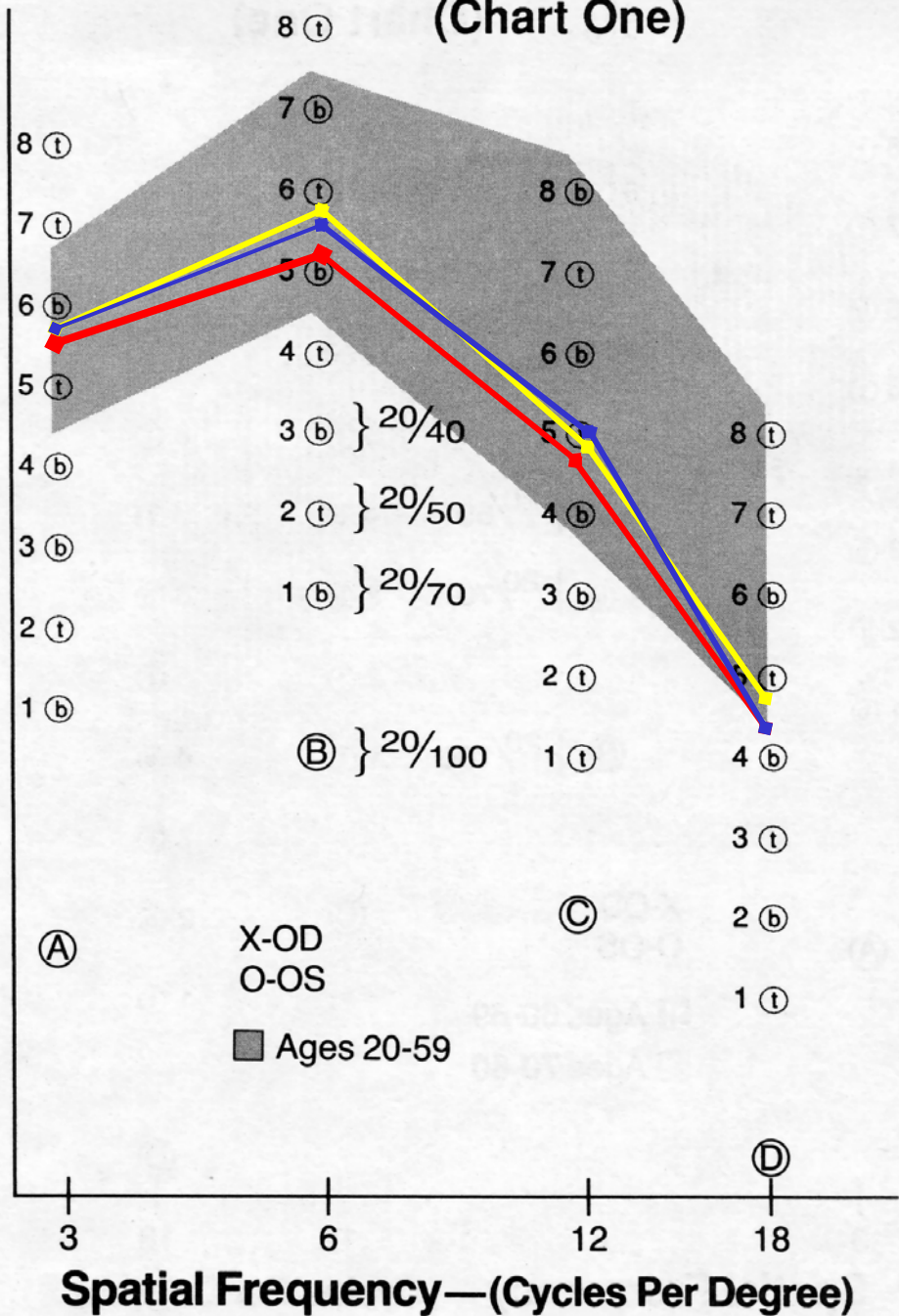
- Fluorometholone 0,1%
- Hyaluronic acid 0,2%

for 4 months postop.

RESULTS

- **Efficacy**
 - **Predictability**
 - **Safety**
 - **Stability**
 - **Vision quality analysis**

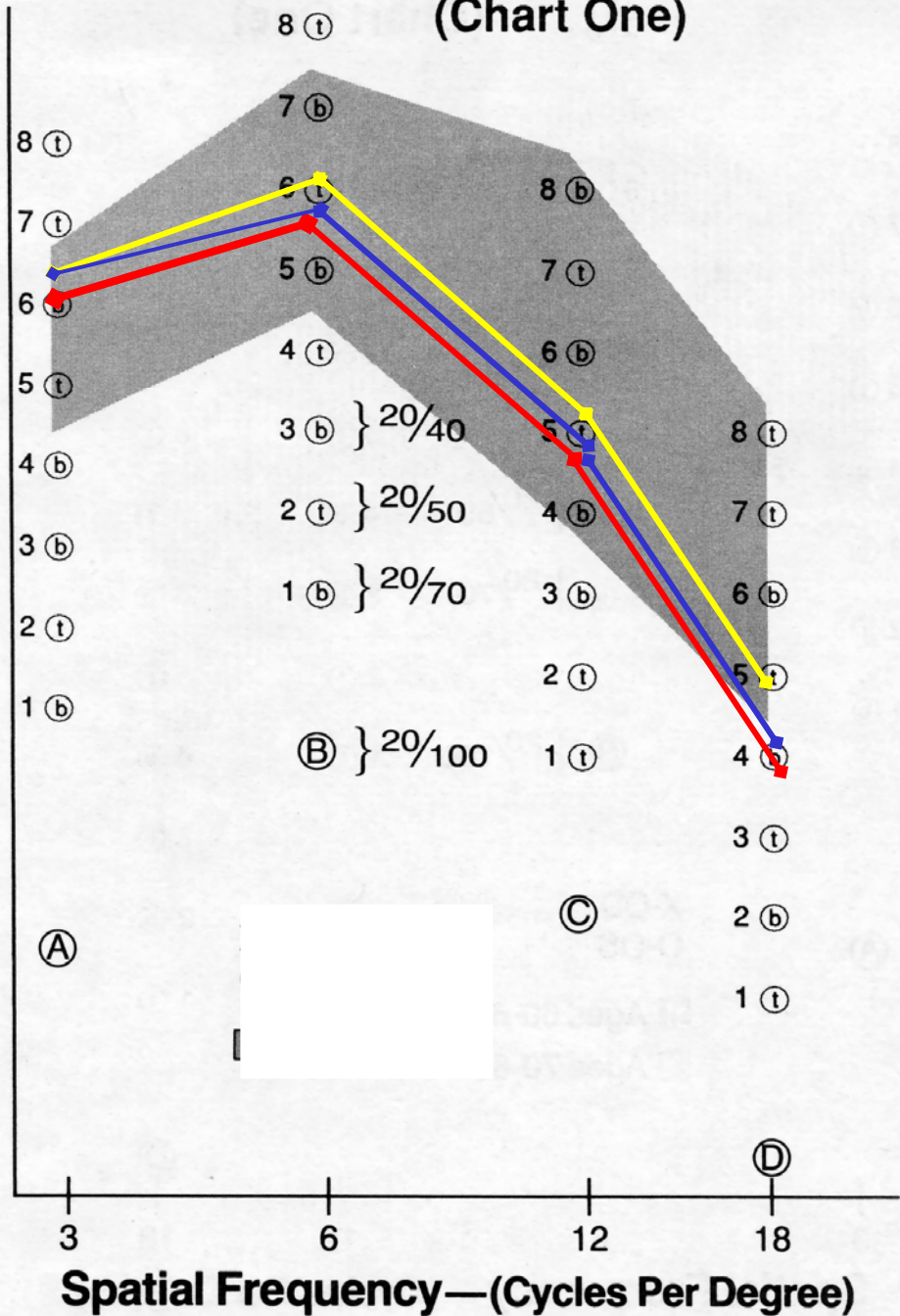
CSV-1000 Contrast Sensivity (Chart One)



CSV

	Spatial Frequency	Average values
Pre-op	3 c/d	5,7
	6 c/d	5,8
	12 c/d	4,9
	18 c/d	4,9
1 month post-op	3 c/d	5,6
	6 c/d	5,3
	12 c/d	4,8
	18 c/d	4,3
3 months post-op	3 c/d	5,7
	6 c/d	5,6
	12 c/d	5,0
	18 c/d	4,3

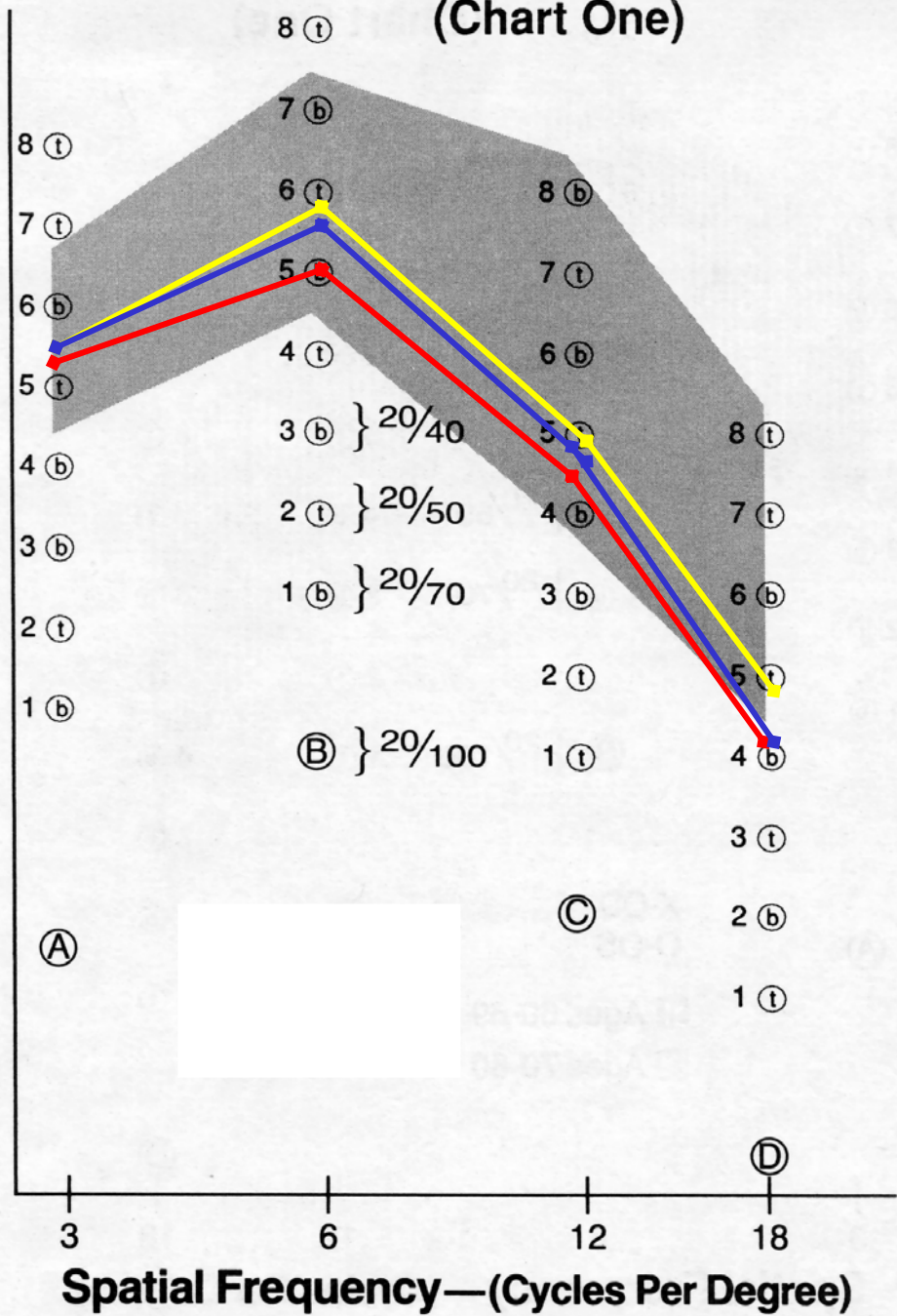
CSV-1000 Contrast Sensivity (Chart One)



CSV in group I SE from -0.25 to -3 D

	Spatial Frequency	Average values
Pre-op	3 c/d	6.3
	6 c/d	6.1
	12 c/d	5.1
	18 c/d	5.0
1 month post-op	3 c/d	6.0
	6 c/d	5.9
	12 c/d	4.9
	18 c/d	4.2
3 months post-op	3 c/d	6.3
	6 c/d	5.9
	12 c/d	5.0
	18 c/d	4.0

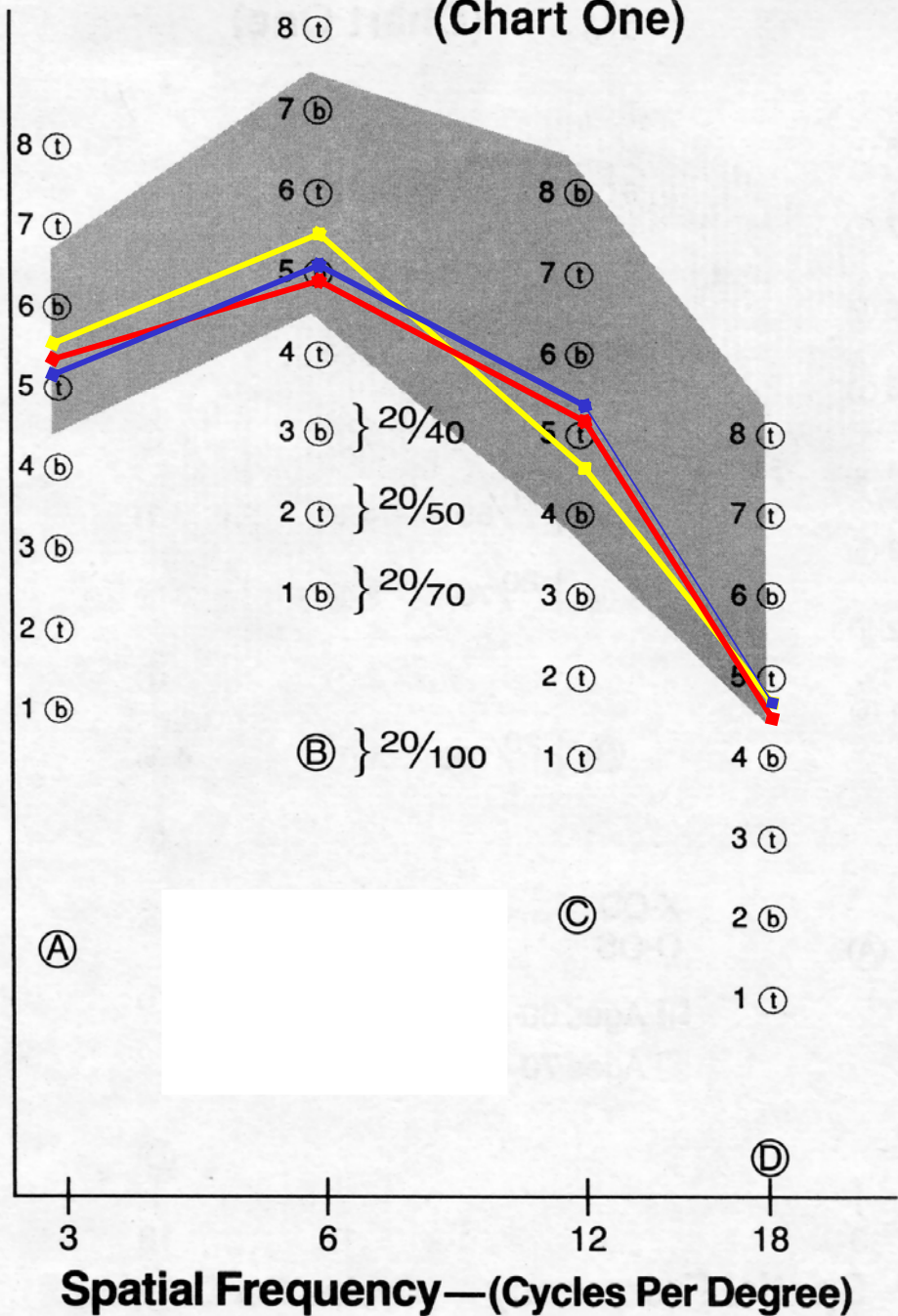
CSV-1000 Contrast Sensivity (Chart One)



CSV in group II SE from -3.25 to -6 D

	Spatial Frequency	Average values
Pre-op	3 c/d	5.5
	6 c/d	5.9
	12 c/d	5.0
	18 c/d	5.0
1 month post-op	3 c/d	5.3
	6 c/d	5.0
	12 c/d	4.4
	18 c/d	4.2
3 months post-op	3 c/d	5.5
	6 c/d	5.7
	12 c/d	4.9
	18 c/d	4.3

CSV-1000 Contrast Sensivity (Chart One)



**CSV in group III
SE > -6 D**

	Spatial Frequency	Average values
Pre-op	3 c/d	5.4
	6 c/d	5.3
	12 c/d	4.6
	18 c/d	4.8
1 month post-op	3 c/d	5.4
	6 c/d	4.9
	12 c/d	5.1
	18 c/d	4.6
3 months post-op	3 c/d	5.3
	6 c/d	5.1
	12 c/d	5.3
	18 c/d	4.8

DISCUSSION

Post-PRK worsening of quality of vision

Glare Disability

- *MCT 8000*
- *BAT*
- *Berkeley glare tester*
- *Lohmann e Fitzke*

> 1-6 months post-op, then <

Ghaith et al, Niesen et al, Dutt et al, Boxer Wachler, Lohmann e Fitzke . . .

DISCUSSION

Post-PRK worsening of quality of vision

Related to

Pupil diameter?

Optical zone diameter?

Treated zone smaller than pupil diameter?

Transition zone?

DISCUSSION

Post-PRK worsening of quality of vision

Baron WS, Munnerlyn C.

Predictive visual performance following excimer photorefractive keratectomy.

Refract Corneal Surg 1992; 8: 355-62

Roberts CW, Koester CJ.

Optical zone diameters for photorefractive corneal surgery.

Invest Ophthalmol Vis Sci 1993; 34: 2275-81

Boxer Wachler BS, Durrie D, Assil KK, Krueger RR.

Role of clearance and treatment zones in contrast sensitivity: Significance in refractive surgery.

J Cataract Refract Surg 1999; 25: 16-23

CONCLUSION

The photopic contrast sensitivity was not significantly reduced below the baseline scores both at 1 and 3 months following PRK for all spatial frequencies.

Why?

1. Ideal pupil study
2. Optical zone related to ideal pupil
3. Very good quality of the ablated surface
4. No haze

Limits

Very small number of patients

Short follow up

METODI

Questionario:

- Grado di soddisfazione totale
- Qualità visiva diurna
- Qualità visiva notturna
- Presenza di glare
- Qualità visiva durante la guida notturna

Score:

1



5

insoddisfatto

soddisfatto