Correction of presbyopia at the cataract surgery with polyfocal intraocular lens WIOL-CF
- one year experience

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- The implantation of multifocal intraocular lens become a popular method to restore vision after cataract surgery and an option to correct presbyopia in same procedure.
- Different multifocal IOLs provide near, intermediate and distance vision based on different principles (diffractive, refractive, pseudoaccomodative IOLs).
- Purpose of this study is clinical evaluation of functional results and quality of vision after the bilateral cataract surgery with implantation of a bioanalogic, polyfocal intraocular lens.

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**WIGEL®** is synthetic biocompatible hydrogel from cross-linked metacrylat copolymer

**Characteristics:**
- long-term stability, transparency
- absence of protein deposits and calcifications on the IOL surface,
- and low rate of posterior capsulae opacifications.
- low rate of glare and halo, high amount of water (> 40%)
- refractive index of WIGEL-CF is the same as the human lens (1.42)
- Calculation of IOL – Haigis formula
- Select IOLs for dominant and non-dominant eye with consideration for optimized binocular vision
- WIGEL – CF – important steps of implantation
  1. Capsulorexis size 6.0 mm
  2. Implantation without wasting time, because IOL grows in size after taking off from transporting container.
  3. The accurate cleaning of capsular bag from viscoelastic is necessary, behind the IOL too.

*Stoy VA. et al: Poster No.187, ESCRS Berlin, September 2008*
**WIOL – CF**

**Characteristics:** 13 patients (26 eyes), underwent uneventful cataract surgery during the period 06/2013 – 12/2014. 6 men and 7 women, average age 57 (range 34-70 years).

- **Methods:** The cataract surgery was done by incision 2.75mm, capsulorhexis 6.0 mm, implantation by injector in to the capsular bag.
  - [https://www.youtube.com/watch?v=5nntmKVIYwQ](https://www.youtube.com/watch?v=5nntmKVIYwQ)

- **Examination after cataract surgery:**
  - Binocular uncorrected visual acuity (UNVA) was evaluated for distance, intermediate (70 cm) and near (40 cm) on reading tables.
  - The contrast sensitivity was examined by the Pelli-Robson test.¹
  - The quality of vision, spectacle independence and personal satisfaction of patients was assessed by completing a questionnaire (the Visual function test VFQ14).²

²Steinberg E.P at all.: The VF14, Arch ophthalmol /vol 112, May 1994, 630 - 638
Results

1. 92% of patients had mean binocular uncorrected visual acuity (UNVA) 0.9 (Snellen optotypes - decimal) 3 month after surgery. Binocular intermedial VA (UIVA) for 70 cm was 0.16 logMAR and near VA (UNVA) for 40 cm was 0.22 logMAR.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>UDVA binocular (decimal)</td>
<td>13</td>
<td>0.9</td>
<td>0.63 – 1.0</td>
</tr>
<tr>
<td>UIVA binocular (logMAR)</td>
<td>13</td>
<td>0.16</td>
<td>0.10-0.30</td>
</tr>
<tr>
<td>UNVA binocular (logMAR)</td>
<td>13</td>
<td>0.22</td>
<td>0.10-0.30</td>
</tr>
</tbody>
</table>

2. The mean binocular contrast sensitivity was 2.69%, (average logCS 1.575) for the size of letters 4/125. Contrast sensitivity with WIOL –CF is in normal range or over. Fig.4.

3. Two patients gave an account of light phenomenon at night. (information from questionare).
Results

• **4. Glass-independence**
  
  Any patient with binocular implantation of WIOL –CF need a spectacles for daily activities, driving and reading.

• **5. Visual function test VF-14** has high internal consistency and correlated with patients vision and their satisfaction.

  *Results of VF – 14 scores :*

  
  100 = patient is able to all applicable items without difficulty

  0 = unable to do all applicable activities because of vision.

• The average VF -14 score **96.25** was in our group of patients ( range 87.5 -100).

• 4 patients achieved score 100.
Summary

**WIOL-CF**

- is further possibility of cataract and presbyopia solution
- need precision cataract surgery
- demands clear education about training of accommodation.

The next following of the stability of results is necessary.

References:
- Hlozanek,M: Extensive experience from prospective observational registry and retrospective long-term (2-9 years) clinical evaluation. ESCRS, London 2014
- Stodulka,P: Optimizing WIOL-CF selection to maximize polyfocal optics benefit: TARGET study results. ESCRS, London 2014

This picture shows clear red reflex, no PCO, good centration of IOL at the eye 6 years after implantation WIOL – CF. The patient has UDVA 1.0, UNVA 0.2, UIVA 0.18.