optimys
– what can we say after 5 years?

**SYMPOSIUM PROGRAMME**

*Restoration of hip biomechanics and bone preservation: Making the right choices*

**Tuesday, 6 September 2016**
13:30 – 18:15 h;
ICM (Internationales Congress Center München), Raum 2 (EG)
Chairman: Mr. Scheerlinck, Prof. MD

Joachim Pfeil

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Increase of number of cases by shorter operating times since introduction of short-stem prosthesis at Orthopedic Dept. at St. Joseph's Hospital Wiesbaden

Favorite short stem prosthesis:
- Metha 83%
- Nanos 57%
- Nanos 71%
- Optimys 62%
- Optimys 99%
- Optimys 100%
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Since December 2010 - more than 30’000 optimys stems are implanted!
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Distribution of implant sizes 2010-2016
Philosophy: Stem alignment along the calcar
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Resulting in broad bandwidth of CCD-angles to be reconstructed

valgus

varus
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Well suitable for minimally invasive techniques
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<table>
<thead>
<tr>
<th>CLS Spotorno</th>
<th>Spartakus Spotorno Type</th>
<th>Twinsys Corail Type</th>
<th>Optimys Short stem</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 %</td>
<td>4 %</td>
<td>0,8 %</td>
<td>0,2 %</td>
</tr>
</tbody>
</table>

93 cases 1986-89 OKK
1000 cases Register OKK
614 cases Register OKK
1173 cases Register OKK und JoHo Wiesbaden

Significantly less fractures!

Dr. S. Mai, Vitos OKK

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Reconstruction of femoro-acetabular offsets using a short-stem

Karl Philipp Kutzner & Mark Predrag Kovacevic & Christoph Roeder & Philipp Rehbein & Joachim Pfeil

114 patients

Increase of the offset by Ø 2.1mm

«...The analysis showed that loss of femoroacetabular offset can be avoided with an appropriate stem»
- Femoroacetabular offset can be maintained
- Valgisation can be avoided!

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Radiographic alterations in short-stem total hip arthroplasty: a 2-year follow-up study of 216 cases

Karl P. Kutzner¹, Dominik Pfeil², Mark P. Kovacevic², Philipp Rehbein³, Sabine Mai³, Werner Siebert³, Joachim Pfeil¹

¹ Clinic for Orthopaedic Surgery and Traumatology, St. Josefs Hospital Wiesbaden, Wiesbaden - Germany
² Clinic for Traumatology, Hand and Orthopaedic Surgery, Dr. Horst Schmidt Clinic Wiesbaden, Wiesbaden - Germany
³ Vitos Clinic for Orthopaedics Kassel, Kassel - Germany

- Resorption of femoral bone stock in a total of 8 cases (3.9%)
- Femoral cortical hypertrophy in a total of 9 hips (4.4%)
- No patient showed osteolysis
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Results for Micromotion:

Axial Micromotion:
CBC: 7 µm (± 4 µm)
optimys: 9 µm (± 4 µm) n.s.

Rotation:
CBC: 0,23° (± 0,10°)
optimys: 0,04° (± 0,03°) s.

Results for Migration:

Subsidence:
CBC: 137 µm
optimys: 81 µm

Retrotorsion:
CBC: 1,0°
optimys: 0,1°
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**Primary stability and strain distribution of cementless hip stems as a function of implant design.**

Bieger R, Ignatius A, Decking R, Claes L, Reichel H, Dürselen L.
Department of Orthopaedic Surgery, University of Ulm, Germany. ralf.bieger@uni-ulm.de

**Biomechanics of a Short Stem: In Vitro Primary Stability and Stress Shielding of a Conservative Cementless Hip Stem.**

Bieger R, Ignatius A, Reichel H, Dürselen L.
Department of Orthopaedic Surgery, Centre of Musculoskeletal Research, University Hospital Ulm, Ulm, Oberer Eselsberg 45, Ulm, 89081, Germany.
One-stage bilateral versus unilateral short-stem total hip arthroplasty: comparison of migration patterns using Ein-Bild-Roentgen-Analysis Femoral-Component-Analysis

Karl Philipp Kutzner 1 & Tobias Freitag 2 & Mark-Predg Kovacevis 1 & Dominik Pfeil 1 & Heiko Reichel 2 & Ralf Bieger 2

Mean axial subsidence: 1.43mm
(> 1.5mm: 39%)
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Influence of patient-related characteristics on early migration in calcar-guided short-stem total hip arthroplasty: a 2-year migration analysis using EBRA-FCA

Karl Philipp Kutzner¹, Mark Predrag Kovacevic², Tobias Freitag³, Andreas Fuchs³, Heiko Reichel³ and Ralf Bleger³

<75 kg vs. >75 kg
1.09 mm vs. 1.54 mm

Fig. 3 Box plots of axial subsidence by patient-related criteria (weight and BMI)
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Table 2 Clinical outcome after 2 years comparing axial subsidence ≤ 1.5 and > 1.5 mm

<table>
<thead>
<tr>
<th>Subsidence</th>
<th>Clinical Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HHS (p = 0.764)</td>
</tr>
<tr>
<td>≤ 1.5 mm</td>
<td>n 122</td>
</tr>
<tr>
<td></td>
<td>Mean (SD) 98.0 (5.05)</td>
</tr>
<tr>
<td></td>
<td>95 % CI 97.1, 98.9</td>
</tr>
<tr>
<td></td>
<td>Median 100.0</td>
</tr>
<tr>
<td></td>
<td>Range 65–100</td>
</tr>
<tr>
<td>&gt; 1.5 mm</td>
<td>n 79</td>
</tr>
<tr>
<td></td>
<td>Mean (SD) 98.4 (3.66)</td>
</tr>
<tr>
<td></td>
<td>95 % CI 97.6, 99.2</td>
</tr>
<tr>
<td></td>
<td>Median 100.0</td>
</tr>
<tr>
<td></td>
<td>Range 80–100</td>
</tr>
</tbody>
</table>

Values of one case in the > 1.5-mm group are missing

n number of cases, SD standard deviation, CI confidence interval
The prediction of failure of the stem in THR by measurement of early migration using EBRA-FCA

M. Krismer, R. Biedermann, B. Stöckl, M. Fischer, R. Bauer, C. Haid
From the University of Innsbruck, Austria

The question was:
Does the optimys stem stabilize after 24 months? (pattern B)

Fig. 1

The four migration patterns which we recognised in 158 curves (see text).
A, early onset followed by continued subsidence (n = 12).
B, early onset with subsequent stabilisation (n = 33, 1%).
C, initial stability with late onset of subsidence (n = 5).
D, stability throughout the whole period of observation (n = 108, 68%).
The answer:
5 year results EBRA (under way...)
Wertigkeit der intraoperativen Röntgenkontrolle in der primären Hüftendoprothetik

Intraoperative radiography in primary total hip arthroplasty

In 38.5%: Adjustments to implant size, implant position and offset version!
Intraoperative radiography in primary total hip arthroplasty

In 38.5%: Adjustments to implant size, implant position and offset version!

<table>
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<tr>
<th>Reason for adjustments</th>
<th>Rate (%)</th>
<th>Type of adjustment</th>
</tr>
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<tbody>
<tr>
<td>Stem undersized</td>
<td>47.8%</td>
<td>Upsize stem</td>
</tr>
<tr>
<td>Insufficient offset</td>
<td>10.9%</td>
<td>Change to lateralized offset</td>
</tr>
<tr>
<td>Stem undersized + insufficient leg length</td>
<td>10.9%</td>
<td>Upsize stem + change head size</td>
</tr>
<tr>
<td>Stem undersized + insufficient offset</td>
<td>8.7%</td>
<td>Upsize stem + change to lateralized offset</td>
</tr>
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</table>
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## VAS satisfaction

<table>
<thead>
<tr>
<th>FU period</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>PreOP</td>
<td>884</td>
<td>2.7</td>
<td>2.4</td>
</tr>
<tr>
<td>6-12 weeks</td>
<td>840</td>
<td>9.0</td>
<td>1.6</td>
</tr>
<tr>
<td>6 months</td>
<td>268</td>
<td>9.2</td>
<td>1.5</td>
</tr>
<tr>
<td>12 months</td>
<td>773</td>
<td>9.5</td>
<td>1.3</td>
</tr>
<tr>
<td>24 months</td>
<td>637</td>
<td>9.7</td>
<td>1.0</td>
</tr>
<tr>
<td>5 years</td>
<td>63</td>
<td>9.7</td>
<td>0.7</td>
</tr>
</tbody>
</table>

## Harris Hip Score

<table>
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<th>FU period</th>
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<tr>
<td>PreOP</td>
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<td>97.9</td>
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**Excellent clinical results!**
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Full weight bearing from day 0: important for modern fast-track rehabilitation concepts
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Wiesbaden study cases (216 hips) after 5 years:

No stem revision!

1 x deep infection with change of head and inlay (no further consequences)

1 x intraoperative avulsion of greater trochanter (no clinical malfunction)

1 x DVT (treated successfully)
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preop | postop | 6 months
--- | --- | ---

12 months | 24 months | 5 years
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- Preoperative planning mandatory!
- Intraoperative radiography should be the standard!
- Undersizing should be avoided!
- Reconstruction of individual anatomy ✔
- Very low rates of bony alterations ✔
- Excellent clinical scores ✔
- High satisfaction rates ✔
- Initially axial subsidence with subsequent stabilisation ✔
- Soft tissue sparing design ✔
- Easy implantation technique ✔
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- optimys is our standard stem!
- Limitations in indication:
  severe osteoporosis = cemented stem (future: optimys cemented !?!) 
  femoral neck fracture going down the diaphysis = cemented stem

primary hips in hip arthrosis 2015: 1066
optimys: 1023 (96%)