Clinical Data Summary

Materialise aMace Acetabular Revision System

The clinical data on the use of the Materialise aMace Acetabular Revision System\(^1\) shows that the preoperative planning combined with patient-specific instrumentation and implants, produced by additive manufacturing technologies (plastic and metal), helps to provide a good fixation of the acetabular component. Therefore, aMace represents a viable solution for revision cases with large bone defects.

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<th>Design</th>
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| Retrospective clinical and radiological short-term follow-up (18-39 months) study | Baauw et al. Orthopedics 2017 (n=12)\(^3\) | • 4 complications, no infections and no additional surgeries  
• 92% of patients would recommend the treatment  
• 83% of patients report improvement in daily functioning, had better mobility and less pain  
• Valuable 3D analysis of the defects prior to surgery |
| Retrospective clinical and radiological short-term follow-up (10-58 months) study | Colen et al. Acta Orthop Belg 2013 (n=6)\(^5\) | • No component removals, no revisions, no dislocations and no evidence of infection  
• No signs of loosening, migration or hardware breakage  
• All patients were satisfied with the clinical results. Good clinical outcome (HOOS score: 54-89)  
• Patient-specific guides and titanium porous structure with triflange design are added value in the treatment of severe acetabular bone loss and pelvic discontinuity and provide the best chances for long term stability of the implant |
| Early (2009-2014) Belgian (13 surgeons) retrospective clinical short-term follow-up (3-50 months) study + focus on experience with the aMace Acetabular Revision System | Myncke et al. Acta Orthop Belg 2017 (n=20)\(^2\) | • Good overall experience with aMace Acetabular Revision System (mean score 8.1/10)  
• All surgeons would consider using the solution again in a similar case  
• 8 complications, no radiographic signs of implant loosening and no additional surgeries  
• Patient satisfaction is high with almost all patients pain free  
• All but one patient would go for the same surgery again |
| Retrospective clinical and radiological short-term follow-up (10-58 months) study (2 surgeons) | Citak et al. Hip Int 2017 (n=9)\(^1\) | • Case series with complex acetabular defects (average 5 previous revisions, range 2-8)  
• Overall implant-associated survival rate was 89% at mean follow-up of 29 months: 1 implant failure in patient with bilateral pelvic discontinuity  
• 5/9 non-implant related complications  
• Significant improvement of HHS score in 91%  
• The study suggests a promising future for the technique |
| Evaluation of the accuracy with which a custom-made acetabular component can be positioned | Baauw et al. Bone Jt J 2015 (n=16)\(^4\) | • 3 complications, no infections, no additional surgeries  
• 13/16 patients within Lewinnek’s safe zone  
• 2/3 implants with deviating orientation had no complications  
• Encouraging results |

\(^1\) Materialise fully acquired the company Mobelife (which introduced the aMace Acetabular Revision System) in 2015.
1 Publications

Clinical


Technical


https://www.tandfonline.com/doi/abs/10.1080/10255842.2014.890186

https://online.boneandjoint.org.uk/doi/abs/10.1302/1358-992X.94BSUPP XXV.ISTA2010-040

https://www.tandfonline.com/doi/abs/10.1080/10255842.2010.548323


F. Gelaude, T. Clijmans, H. Delport, Quantitative computerized assessment of the degree of acetabular bone deficiency: Total radial Acetabular Bone Loss (TrABL). Advances in Orthopedics 2011; Article ID 494382, 12 pages
https://www.hindawi.com/journals/aorth/2011/494382/


https://www.tandfonline.com/doi/full/10.3109/10929080701684762

https://www.tandfonline.com/doi/abs/10.1080/10255840600604474
## 2 Presentations

### Clinical

G.G. van Hellemontd. First experience with custom made 3D printed cups in revision. 
EHS 2018, The Hague, The Netherlands

G. Flivik. 3D Implants, The Swedish Experience. 
EFORT 2018, Barcelona, Spain

G. Flivik. First experience with 3D implants. 
SOF 2017, Umea, Sweden

G.G. van Hellemontd. 3D printed cups in massive acetabular deficiency. 
AORecon 2017, Vancouver, Canada.

Johannesburg Arthroplasty discussion group & Division of Orthopaedic Surgery University of the Witwatersrand, 2016, Johannesburg, South Africa

CCJR Winter meeting, 2016, Orlando, Florida, US

T. Gehrke #101 The Custom Acetabular Component: The 3D Printed Solution 
CCJR Spring Meeting, 2016, Las Vegas

S. Weidert, Patient-specific Implant for Post-Traumatic Acetabular Defect Reconstruction. 
Materialise THINK Medical 3D Printing Webinars, 2016.

P. Van Overschelde. Complex acetabular reconstruction with custom made Mobelife implant. 
ICJR Middle East 2015, Dubai, United Arab Emirates

Endoprothetik 2015, Berlin, Germany

J. Nilsson, Extreme acetabular reconstruction 
BVOT Spring Symposium 2013, Antwerpen, Belgium

M. Spruit, Custom implants for the treatment of Paprosky type IIIa and IIIb acetabular defects 
BVOT Spring Symposium 2013, Antwerpen, Belgium

Orthopaedic Revision Forum. Challenges in the Hip. 2013, Leuven, Belgium

Mobelife Symposium @ NOF 2012, Tallin, Estonia

M. Spruit, G. Van Hellemontd. Case specific acetabular reconstructions for challenging defects. 
Mobelife Symposium @ NOF 2012, Tallin, Estonia
Technical

P. Tack. 3D is Here, But Can We Afford It Moving Forward? Materialise World Summit 2017, Brussels, Belgium

F. Gelaude. Patient specific implant solutions. Regensburger Revisionssymposium 2015, Regensburg, Germany

K. Govaers. Innovative custom technology in hip replacement. BVOT Spring Symposium 2013, Antwerpen, Belgium

P. Vanden Bergh, J. Demol, F. Gelaude, J. Vander Sloten. Automatic reconstruction of large acetabular bone defects using statistical shape models. CORS 2013, Venice, Italy

T. Clijmans. CT-based quantification of bone loss for refined classification of acetabular deficiencies: comparison of 30 Paprosky type IIIA-B cases BOA Congress 2012, Manchester Central, Manchester, UK

J. Demol, B. Lenaerts, S. Leuridan, H. Delport. Bone loss management with 3D printed metal augments: in vivo evaluation of bone ingrowth and fixation EHS 2012, Milano, Italy


J. Demol, A. Soares, B. Lenaerts, S. Leuridan, S. de Boodt, H. Delport. In vivo biological fixation of selective laser melted bone scaffolds. 6B.6 EORS 2012, Amsterdam, Netherlands


H. Delport, M. Mulier, P. Vanderschot. Paprosky type Illb pelvic defect reconstruction by patient-specific technology. International Society for Technology in Arthroplasty (ISTA), 2011, Bruges, Belgium

F. Gelaude for M. Mulier, M. Raaijmakers, A. Willems, T. Clijmans. Personalized implant design for acetabular revision IMUKA 2010, Maastricht, Netherlands

T. Clijmans. 3D image processing and pre-operative planning in orthopaedics. EHS 2010, Athens, Greece

F. Gelaude for H. Delport, M. Mulier, P. Vanderschot. All-in-one patient-specific implant solution for severe acetabular revision – a case report. EHS 2010, Athens, Greece


M. Raaijmaakers. Surgical guides for hip joints. 33ème Journée Informelle HIS - site Ixelles 2010, Brussels, Belgium
3 Abstracts & Posters

Poster @ EFFORT 2013

Abstract n° 32465 @ Combined 33rd SICOT & 17th PAOA Orthopaedic World Conference 2012, Dubai, United Arab Emirates

Abstract n° 32461 @ Combined 33rd SICOT & 17th PAOA Orthopaedic World Conference 2012, Dubai, United Arab Emirates

Abstract n° 32471 @ Combined 33rd SICOT & 17th PAOA Orthopaedic World Conference 2012, Dubai, United Arab Emirates

Poster @ TERMIS World Congress 2012 “Tissue Engineering and Regenerative Medicin”. 2012, Vienne, Austria
Journal of Tissue Engineering and Regenerative Medicine 2012: 6(Suppl.1):401

Abstract @ NOF 2012

T. Clijmans for F. Gelaude, J. Demol, H. Delport. Computerised quantification of the degree of bone loss in 30 Paprosky type IIIA-B cases: comparision and relevance to classification
Abstract @ NOF 2012

Abstract @ NOF 2012

E-poster #5499 @ EFORT 2012, Berlin, Germany

H. Delport, M. Mulier. Extreme acetabular reconstruction: Solving the impossible requires innovative techniques. A Case illustration
E-poster @ EHS 2012, Milano, Italy

F. Gelaude, J. Demol, T. Clijmans, H. Delport. CT-based acetabular deficiency classification by numbers: illustration on 50 Paprosky type IIIA-B cases.
E-poster @ EHS 2012, Milano, Italy

Abstract FM 64 @ SGOT 2012, Basel, Switzerland
Abstract FM 1 @ SGOT 2012, Basel, Switzerland

F. Gelaude, T. Clijmans, H. Delport. 3-dimensional quantitative classification of acetabular defects: Total radial Acetabular Bone Loss (TrABL). 
E-poster @ 30. Jahrestagung der Österreichischen Gesellschaft für Orthopädie und Orthopädische Chirurgie, 2011, Linz, Austria

W. Bartels, G. Lenaerts, M. Mulier, G. Van der Perre, J. Vander Sloten, I. Jonkers. Subject-specific musculoskeletal models are needed to accurately predict hip loading. 
Abstract @ ISB Congress 2011, Brussels, Belgium

Poster @ International Society for Technology in Arthroplasty (ISTA), 2011, Bruges, Belgium

T. Clijmans, M. Mulier, P. Broos, F. Gelaude. Custom pelvis salvage surgery planning and implantology for better functionality. 
Poster @ EMSOS 2010, Birmingham, UK

A. Willems, M. Mulier, M. Raaijmakers, T. Clijmans, F. Gelaude. Reconstruction of complex acetabular deficiencies with patient-specifically designed and evaluated implants. 
Poster 53 @ EORS 2010, Davos, Switzerland

Poster 26306 @ 7th SICOT/SIROT Annual International Conference & SOF Ortopediveckan 2010, Gothenburg, Sweden

Poster 26290 @ 7th SICOT/SIROT Annual International Conference & SOF Ortopediveckan 2010, Gothenburg, Sweden

Poster 26263 @ 7th SICOT/SIROT Annual International Conference & SOF Ortopediveckan 2010, Gothenburg, Sweden

Poster @ Symposium ‘Prediction and evaluation of THR performance: can we plan success?’ 


Poster @ Computer assisted radiology and surgery conference (CARS) 2006, Osaka, Japan