

# MARKUS C. MICHEL, MD

Dr. med. Markus C. Michel

Orthopedic Center Münsingen

- Phone: +41 317202323
- Fax: +41 317202321
- E-Mail: markus.c.michel@mac.com
- Web: [www.ozm.com](http://www.ozm.com)  
[www.oszm.ch](http://www.oszm.ch)  
[www.swiss-sportclinic.ch](http://www.swiss-sportclinic.ch)



## CURRICULUM VITAE

1. [Overview](#)
2. [Private Activities](#)
3. [Latest Publications](#)
4. [Acutal Activites](#)
5. [Curriculum 1977-2012](#)
  - A. [Awards](#)
  - B. [Publications](#)
  - C. [Abstracts](#)
  - D. [Presentations](#)
  - E. [Posters](#)
  - F. [Video](#)
  - G. [Chairs](#)
  - H. [PubMed](#)

## 1. OVERVIEW

### Visitation Centre

International Visitation Centre for:

- Hip arthroscopy (Labrum refixation techniques and treatment of the FAI, femoral acetabular impingement)
- MicroHip (THR by a direct anterior approach without traction table)
- Tissue sparing total joint replacement
- Computer assessed surgery

### Consultancies

- International consultant for tissue sparing joint surgery (MicroHip)
- International consultant for uncemented THR (Corail and TriLock), DePuy, Johnson & Johnson, Warsaw, USA
- International consultant for ultrasonic tissue techniques; development of a specific ultrasonic blade for orthopedic surgery (Ethicon Endo, Cincinnati, USA)

### Memberships

- International Corail Faculty
- International TriLock Faculty
- International development group for DAA (direct anterior approach to the hip)
- AAOS: American Association of Orthopedic Surgeons; International Affiliate Member
- EHS: European Hip Society
- DVOST: German Association for Orthopedic Sports Traumatology
- SGO: Swiss Orthopedic Association
- FMH: Swiss Medical Association
- SAC: Swiss Alpine Club

## Education

- 1979-85 Medical Degree at the University of Berne / Switzerland, Graduation in 1985
- 1986 Institute of Pathology, University of Bern, Switzerland
- 1987 Postgraduate study in experimental Medicine, University of Zürich,  
Switzerland (Grant: Swiss National Foundation)
- 1988 Biomechanics: Maurice E. Müller Institute of Biomechanics,  
University of Bern, Switzerland  
AO-Institute Davos, Switzerland
- 1989 Visceral Surgery: Prof. L.H. Blumgart, University of Bern, Switzerland
- 1990 Orthopedic Department, Beth Israel Hospital, Prof. Wilson C. Hayes,  
Harvard Medical School, Boston, USA
- 1990 Research Fellowship in Biomechanical Engineering, Harvard Medical School, Boston  
and Massachusetts Institute of Technology (MIT), Prof. Lona Gibson, Boston, USA
- 1991 Orthopedic Surgery: Hip Department, Prof. Reinhold Ganz,  
University of Bern, Switzerland
- 1991 Thesis: In vivo Measurements on the Loads acting in an intramedullary Nail.  
Prof. Stefan Perren, Basel, Switzerland
- 1992 Orthopedic Surgery: Shoulder Department, Prof. Christian Gerber,  
University of Bern, Switzerland
- 1993 Orthopedic Surgery: Knee Department, Prof. Roland Jakob,  
University of Bern, Switzerland
- 1993 MANRHYE FOUNDATION AWARD, 3.9.93  
Société Internationale de Chirurgie Orthopédique et de Traumatologie  
19th World Congress SICOT93, Seoul, 28.8.-3.9.1993
- 1994 Orthopedic Surgery: Spine Department, Prof. Max Aebi,  
University of Bern, Switzerland
- 1994 Hand and plastic Surgery: Prof. Ueli Büchler,  
University of Bern, Switzerland
- 1996 Orthopedic Surgery and Traumatology, Ziegler Hospital, Bern, Switzerland

## Orthopedic Consultant

- 1996-97 Consultant in Orthopedic Surgery, Ziegler Hospital, Bern, Switzerland
- 1998- now Director at the Orthopedic Centre in Münsingen, Bern
- 1999- now Appointed Consultant at the Hirslanden Hospitals in Berne, Switzerland
- 2002- now Head of the Orthopedic Department, Spital Netz Bern, Münsingen, Switzerland
- 2005- now International Consultant for Orthopedic Surgery, Tissue Sparing Hip Surgery
- 2007- now Appointed Consultant at the Sonnenhof Hospital in Berne, Switzerland
- 2008- now Head of the Board Orthohealth AG
- 2008- now Founding of the Swiss Joint Foundation
- 2009- now Opening of the Orthopedic Centre Brig, Switzerland
- 2010- now Opening of the Orthopedic Centre Muri, Switzerland
- 2011- now Opening of OSZM Orthopedic Sport Centre Münsingen, Switzerland
- 2011- now Founding of the Swiss Sport Clinic Berne, Switzerland

## 2. PRIVATE ACTIVITIES

- 1959 Born in Interlaken/ Switzerland
- Family: married to Christine Arregger Michel, Attorney-at-Law/ Executive MBA
- Children Kayla 2011 / Keanou 2009 / Oliver 1994 / Manuel 1991
- Sports: Marathon Running, Triathlon, Snowboarding, Biking, 18x Grand-Prix of Berne, 4x Jungfraumarathon  
2x New York Marathon, Two Ocean Marathon, ....  
Mountaineering; Everest-Expedition 2003  
Ironman Finisher 2009
- Travelling: all over the World
- Music: Saxophone, Classical Jazz
- History: Antique and prehistoric History

## 3. LATEST PUBLICATIONS

### **Wear patterns of failed taper connections in large diameter metal-on-metal bearings**

<sup>1</sup>N.Bishop, <sup>1</sup>F Witt, <sup>2</sup>R Pourzal, <sup>2</sup>A Fischer, <sup>3</sup>M Rüttschi, <sup>4</sup>M Michel, <sup>1</sup>M.Morlock

J.of Orthopaedic Research, 2013, published in Wiley Online Library (wileyonlinelibrary.com). DOI 10.1002/jor.22326

### **Selection Criteria: Prêt-à-Porter**

Markus C. Michel, p. 54

The Corail Hip System

A Practical Approach Based on 25 Years of Experience

1st Edition, 2011, XXVII, 338 p. 299 illus., 162 in color. ISBN 978-3-642-18395-9

### **Direct Anterior Without Traction Table: Lateral Position**

Markus C. Michel, p 200

The Corail Hip System

A Practical Approach Based on 25 Years of Experience

1st Edition, 2011, XXVII, 338 p. 299 illus., 162 in color. ISBN 978-3-642-18395-9

### **Total Hip Arthroplasty (THA) After Proximal Femoral Osteotomy**

Markus C. Michel, p 297

The Corail Hip System

A Practical Approach Based on 25 Years of Experience

1st Edition, 2011, XXVII, 338 p. 299 illus., 162 in color. ISBN 978-3-642-18395-9

### **MicroHip Total Hip Arthroplasty Technique by Direct Anterior Approach Without the Use of a Traction Table: 5-year results**

Markus C. Michel

Adv. Venous Arterial Thrombos 2011; 1(2): 52–5.

### **Tissue Sparing Solutions**

MicroHip: Minimal-invasive Hüftendoprothetik

Orthopedic Dimensions, Austria 1/2009

### **Schonung für Gewebe und Kasse**

Die Vorteile der minimal invasiven Endoprothetik

FutureDimensions i/2009

**MicroHip: Une technique mini-invasive pour une arthroplastie total de hanche.**

**La voie de Smith-Peterson modifiée**

Markus C. Michel, Pierre Witschger

Maîtrise Orthopédique (2007) No: 160 1: 10-14

**MicroHip: A minimal invasive procedure for total hip replacement surgery.**

**A modified Smith-Peterson approach**

M.C. Michel, P. Witschger

Interact Surg (2006) I: 16-20

**MIS Total hip Arthroplasties**

T. Ait Si-Selmi, M. C. Michel, L. Jaquot, S. Lustig

Medico-Surgical Encyclopedia (EMC), Elsevier Editor, (December 2006)

**MicroHip: A minimally invasive procedure for total hip replacement surgery**

**A modified Smith-Peterson approach**

M.C. Michel, P. Witschger

Hip International (2006) 16. (suppl. 3) 40-47

**MicroHip: Minimal-invasive Hüftendoprothetik**

M.C. Michel, P. Witschger

Orthopedic Dimensions: (2006) 2: 6-9

**MicroHip: Minimal Invasive Hip Endoprosthesis**

Markus C. Michel, Pierre Witschger

Charnley Chronicle (2005) 8: 3-8

## 4. ACTUAL ACTIVITIES

- 26.09.2013 TriLock Workshop  
Ceramic on Ceramic, Best Practice
- 27.09.2013 Symposium on DAA / MicroHip : Anatomy, Technique, Tips and Tricks, Outcome
- 28.09.2013 Economics, outcomes while using MIS in a routine practice  
St. Petersburg, Russia
- 16.09.2013 Live Surgery: DAA, MicroHip  
Johannebourg, South Africa
- 12.09.2013 Live Surgery: DAA, MicroHip  
Durbanville, South Africa
- 30/31.8.2013 The direct anterior approaches for total hip arthroplasty-exploring the options:  
Instructional Cadaver Course  
Chair, DAA MicroHip, TriLock: Options with DAA  
Cape Town, South Africa
- 22.07.2013 Live Surgery: DAA, MicroHip  
Northampton, England
- 28.06.2013 The anatomy of approaches  
MicroHip: Direct Anterior Approach - Decubitus Lateral  
Chair: Conservative Revision Surgery  
International Corail Learning Center, Annecy, France
- 21.06.2013 Rationale for using MicroHip, Surgical Technique, Clinical Results
- 21.06.2013 Balancing Excellence in Total Knee Arthroplasty
- 21.06.2013 Workshop: Navigation in TKA  
  
Cheboksary, Ukraine
- 31.05.2013 Direkt anteriorer Zugang ohne Extensionstisch mit Standardschaft  
Hüftendoprothetik kontrovers, Vienna, Austria
- 02.05.2013 The Swiss Experience: Long term results on Hip Arthroscopy: 10 years +  
First International SASHA Meeting, Cape Town, South Africa
- 20.04.2013 THR by Direct Anterior Approach (MicroHip): Five Years Results including gate  
analyse

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SAAS, Drakensberg, Kwazulu-Natal, South Africa

- 14.03.2013 The anatomy of approaches  
MicroHip: Direct Anterior Approach - Decubitus Lateral  
International Corail Learning Center, Annecy, France
- 4./5. 3. 2013 Live surgery's in Durban, South Africa: 2 MicroHip, 4 Periacetabular Osteotomies  
using a single incision Stoppa approach
- 22.01.2013 "Arthrose" ein Volkskrankheit  
Public presentation, Thun, Switzerland
- 19.01.2013 The TriLock BPN experience of Switzerland  
International user group meeting, Zug, Switzerland
- 21.12.2012 PAO and DAA Surgery, Pellenberg, Belgium
- 30.11.2012 MicroHip: Soft tissue sparing approach to the hip, technique and results  
Live surgery: MicroHip & Corail  
Saratov, Ukraine, Russia
- 29.11.2012 MicroHip: Soft tissue sparing approach to the hip, technique and results  
Two live surgeries: MicroHip & TriLock  
Samara, Ukraine, Russia
- 09.11.2012 Minimal Invasive Surgery  
International Corail Learning Center, Annecy, France
- 17.10.2012 DAA in lateral decubitus: 5-years results with the MicroHip technique  
Oslo, Norway
- 17.10.2012 Live surgery: THR with MicroHip technique  
PAO  
Oslo, Norway
- 13.09.2012 The anatomy of approaches  
MicroHip: Direct Anterior Approach - Decubitus Lateral  
International Corail Learning Center, Annecy, France
- 12.09.2012 Differences between high-offset and standard Corail implants:  
Radiologic findings  
International Corail Faculty, Annecy, France



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- 22.06.2012 The athletic hip: What fit's best? (1)  
What is your ultimate hip design? (2)  
Patient Specific Management in Modern Hip Arthroplastic  
Treviso, Italy
- 14.06.2012 The anatomy of approaches  
MicroHip: Direct Anterior Approach - Decubitus Lateral  
International Corail Learning Center, Annecy, France
- 24.05.2012 Teaching session: Direct anterior approach with live surgery and presentations  
Vienna, Austria
- 14.05.2012 Tissue Sparing Solutions, THR by Direct Anterior Approach (DAA):  
Corail and MicroHip  
17th SICOT Trainees Meeting
- 15.05.2012 Teaching session: Direct anterior approach with live surgery and presentations.  
Moscow, Russia
- 30.04.2012 Aeschbacher Talk: Gesundheitsschiff - Mittelmeer
- 18.04.2012 The Swiss Experience  
International TriLock user group meeting  
Amsterdam, Holland
- 6.-7.04.2012 Teaching session: Direct anterior approach with live surgery and presentations.  
Nizhny Novgorod, Russia
- 29.03.2012 The anatomy of approaches  
MicroHip: Direct Anterior Approach - Decubitus Lateral  
International Corail Learning Center, Annecy, France
- 12.03.2012 MicroHip Surgery  
Cape Town, South Africa
- 03.03.2012 TriLock BPS well matched for a DAA  
TriLock user group meeting  
Dublin, Ireland
- 8.-11.02.2012 DAA in lateral decubitus, International DAA Conference  
American Academy of Orthopedic Surgeons  
San Francisco, USA
- 24.11.2011 TriLock, Evolution and Technique, Hand's on Workshop  
Sanatorium Hera, Wien, Austria

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SWITZERLAND

- 05.11.2011 The Direct anterior approach for Total Hip Replacement  
Corail on Tour, Italy
- 03.11.2011 The anatomy of approaches  
MicroHip: Direct Anterior Approach - Decubitus Lateral  
International Corail Learning Center, Annecy, France
- 27.10.2011 Teaching session: Direct anterior approach with live surgery and presentations.  
Cheboskary, Russia
- 30.09.2011 Does the approach matter?  
TriLock BPS Preservation Stem Learning Center Dublin, Ireland
- 22.09.2011 The anatomy of approaches  
MicroHip: Direct Anterior Approach - Decubitus Lateral  
International Corail Learning Center, Annecy, France
- 23.06.2011 Live Surgery: Tissue sparing Total Hip Replacement  
Hip Symposium - 25 Years of Hydroxyapatite in Total Hip Arthroplasty  
Geneva, Switzerland
- 17.06.2011 TriLock BPS well matched for a DAA  
Short Stem Symposium, Norddeutscher Orthopädenkongress, Hamburg, Germany
- 15.06.2011 TriLock, Evolution and Technique, Hand's on Workshop  
Sanatorium Hera, Wien, Austria
- 27.05.2011 MIS: Side position  
AVOR Hip-Symposium, Lucerne, Switzerland
- 28.4.2011 Bone Preserving and Soft Tissue Sparing - TriLock BPS and MicroHip, the perfect  
Match  
Delta-Motion, the Advantages of Big Heads, Ceramic on Ceramic  
The Future of THR, Helsinki, Finland
- 01.04.2011 MicroHip: Direct Anterior Approach - Decubitus Lateral  
Corail Learning Center, Annecy, France
- 21.01.2011 The Great Debate: Controversies in Hip and Knee Surgery:  
Cement less is the new gold standard  
London, UK
- 21.01.2011 The Great Debate: Controversies in Hip and Knee Surgery:  
Mini anterior can be low-tech and muscle sparing

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London, UK

03.11.2010 Chair  
/ Wet Lab Session

Tissue Sparing Solutions, Instructional Course, 2<sup>nd</sup> & 3<sup>rd</sup> November 2010  
Kiel, Germany

02.11.2010

Chair

Tissue Sparing Solutions, Instructional Course, 2<sup>nd</sup> & 3<sup>rd</sup> November 2010  
Kiel, Germany

Presentations:

Anatomic Consideration and Patient Selection for the Anterior Approach  
How to Achieve Correct Acetabular Cup Positioning  
Using a Bone-preserving 'Blade' Stem  
Results from The Anterior Approach

27.10.2010

Individuelle Versorgungskonzepte der Hüfte: Zwischen Tradition und Innovation  
DGOT Berlin, Germany

23.10.2010

Kniearthrose – vom Knorpelschutz bis zur Knieprothese  
Schmerzkongress, Nottwil, Switzerland

20.10.2010

Early Intervention Scientific Advisory Board  
Rome, Italy

19.10.2010

Alternative Tissue Dissection Technology in TKA  
25 Years of High Function and Low Wear TKA Symposium, 18.-20. October  
Rome, Italy

09.10.2010

Minimally Invasive hip replacement surgery  
Latin-American Symposium, Rio, Brasil

08.10.2010

Clinical experience with Rivaroxaban - Perspectives from Switzerland  
Latin-American Symposium, Rio, Brasil

24.09.2010

Tri-Lock BPS Workshop,  
Konzept und Design des Tri-Lock® Hüftschafts  
Der Micro Hip Zugang mit Tri-Lock® mit operativen Tips und Tricks  
Klinische Resultate/ Templating/ Workshop am frischen Präparat  
Vienna, Austria

20.09.2010

International Corail Faculty  
Lyon, France

21.09.2010

Chair: Does the approach matter?

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Applied Anatomy of the Hip  
International Learning Center, Lyon, France

MicroHip: Direct Anterior Approach - Decubitus Lateral  
International Learning Center, Lyon, France

- 22.09.2010 Hip Core Faculty Meeting  
Lyon, France
- 15.09.2010 Live Surgery: THR by DAA in lateral decubitus  
Durban, Pietermaritzburg, South Africa
- 16.09.2010 Live Surgery: THR by DAA in lateral decubitus  
Richard's Bay, Durban, South Africa
- 17.09.2010 Live Surgery: THR by DAA in lateral decubitus  
Pretoria, South Africa
- 9/10.8.2010 Evaluation & Design of an orthopedic ultrasonic device  
Cincinnati, USA
- 01.07.2010 Chair / Wet Lab Session  
Tissue Sparing Solutions, Instructional Course  
Kiel, Germany
- 30.06.2010 Chair  
Tissue Sparing Solutions, Instructional Course  
Kiel, Germany
- Presentations:  
Anatomic Consideration and Patient Selection for the Anterior Approach  
How to Achieve Correct Acetabular Cup Positioning  
Using a Bone-preserving 'Blade' Stem  
Results from The Anterior Approach
- 17.06.2010 Austrian Sales Training  
Vienna, Austria
- 21.05.2010 International Corail Faculty  
Annecy, France
- 26.05.2010 The MicroHip Approach - Well Matched to the Blade Stem  
Hip Symposium: Tri-Lock® BPS  
Learning Center, Rome, Italy

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SWITZERLAND

- 20.05.2010 Chair: Does the approach matter?  
Applied Anatomy of the Hip  
International Learning Center, Annecy, France
- MicroHip: Direct Anterior Approach - Decubitus Lateral  
International Learning Center, Annecy, France
- 21.05.2010 International Corail Faculty  
Annecy, France
- 27.03.2010 Soft-Tissue sparing: Approaches and Technologies in Total Joint Arthroplasty to effectively protect and preserve soft tissues  
Brussels, Belgium
- 20.03.2010 Das Künstliche Kniegelenk: Was macht das Gelenk erst richtig gut?  
1. Berner Patientenkongress, Bern, Switzerland
- 20.03.2010 MicroHip: Hüftoperation im Schongang  
1. Berner Patientenkongress, Bern, Switzerland
- 05.03.2010 Indication for a fully coated hydroxiapethite stem  
Hip Core Faculty, Annecy, France
- 04.03.2010 Chair: Does the approach matter?  
Applied Anatomy of the Hip  
International Learning Center, Annecy, France
- MicroHip: Direct Anterior Approach - Decubitus Lateral  
International Learning Center, Annecy, France  
International Corail Faculty, Annecy France
- 03.03.2010
- 25.02.2010 Medical Talk: Hüfte im Schongang; von der Hüftarthroskopie bis zum Gelenkersatz  
Swiss TV Production, Switzerland
- 22.01.2010 Options for a short stem design in DAA  
Venice, Italy
- 11.12.2009 Direct Anterior Approach without traction Table  
The Annecy Hip Meeting, Annecy France
- 04.12.2009 Bisturi nuova generazione Harmonic  
Congresso Nazionale della Societa Italiana dell'Anca  
Rome, Italy
- 09.11.2009 Evaluation of a proximally coated tapered-wedge short stem

Phoenix, USA

- 06.11.2009 Direct Anterior Approach without traction Table  
The Annecy Hip Meeting, Annecy, France
- 23.10.2009 Soft Tissue sparing Procedures: DAA  
Oslo, Norway
- 14.10.2009 New Techniques and Technologies in Total Joint Replacement  
The importance of Soft-Tissue Management in Joint Replacement Surgery,  
The Tourniquet free TKR, My technique to perform a TKA?  
The subcapsular release in a subvastus approach  
Lausanne, Switzerland
- 13.10.2009 New Techniques and Technologies in Total Joint Replacement  
The importance of Soft-Tissue Management in Joint Replacement Surgery  
Lisbon, Portugal
- 12.10.2009 New Techniques and Technologies in Total Joint Replacement  
The importance of Soft-Tissue Management in Joint Replacement Surgery  
Manchester, England
- 08.07.2009 Soft Tissue Preserving Techniques for Total Hip Replacement  
Subcapsular Release in TKR by the use of the Harmonic Scalpel  
Innovative approaches & Techniques in total Joint Replacement  
Anatomical demonstrations  
London, United Kingdom
- 10.07.2009 Subcapsular Release in TKR by the use of the Harmonic Scalpel  
Soft Tissue Preserving Techniques for Total Hip Replacement  
Hands-on workshop  
Innovative approaches & Techniques in total Joint Replacement  
Belfast, Ireland
- 08.07.2009 Subcapsular Release in TKR by the use of the Harmonic Scalpel  
Soft Tissue Preserving Techniques for Total Hip Replacement  
Innovative approaches & Techniques in total Joint Replacement  
Anatomical demonstrations  
Zürich, Switzerland
- 04.06.2009 Expert Meeting EFCOT: The direct anterior approach  
Vienna, Austria
- 28.05.2009 Introduction to Anatomic Approaches  
Surgical Demonstration – MicroHip  
Practical Session

- Tissue Sparing Solution Instructional Course, Kiel, Germany
- 27.05.2009 Using Harmonic in MicroHip Surgery  
Tissue Sparing Solution Instructional Course, Kiel, Germany
- 28.05.2009 The Use of a Hydroxyapatite Stem with a Fully Modular Acetabular System  
Tissue Sparing Solution Instructional Course, Kiel, Germany
- 27.05.2009 The MicroHip Approach  
Tissue Sparing Solution Instructional Course, Kiel, Germany
- 22.04.2009 Teaching Approaches  
Corail Faculty Meeting, Annecy, France
- 19.03.2009 Total Hip Arthroplasty using minimally invasive Approaches  
South African Arthroplasty Meeting, Sun City, South Africa
- 19.03.2009 The Subcapsular Release in TKR by the use of the Harmonic® Scalpel  
South African Arthroplasty Meeting, Sun City, South Africa
- 17.03.2009 Silent Evaluator Instructional Course  
Hamburg, Germany
- 13.02.2009 Instructional Course on Minimal invasive Hip Surgery: Part 2  
Paris, France
- 12.02.2009 Instructional Course on Minimal invasive Hip Surgery: Part 1  
Paris, France
- 23.01.2009 Developer presentation on new technologies in orthopedic surgery  
Hamburg, Germany
- 10.12.2008 Table Sessions on soft tissue sparing THR  
Current Concepts, Orlando, Florida, USA
- 1/2.12.2008 Development of ultrasonic scalpels for orthopedic surgery  
Cincinnati, USA
- 13.11.2008 Le vie chirurgiche: Via anteriore: esperienze a confronto  
La Mini-invasivita: Mito O Realta'? In Ortopedia Ed In Traumatologia  
Centro Congressi Marina Di Carrara, Italia
- 30.10.2008 MicroHip surgical approach: experience and results  
Use of Hydroxyapatite in primary and revision surgery  
Annecy, France

## MARKUS C. MICHEL, MD

- 29.10.2008 Live Surgery, MicroHip with Corail and Pinnacle,  
St. Etienne, France
- 17.10.2008 Design Developments of The Corail Stem: Clinical Results and Long Term Bone  
Remodeling  
Tissue Preserving Anterior Approach Hip Replacement  
Ottawa, Canada
- 17.10.2008 Moderation Live Surgery Direct Anterior Approach with an Orthopedic Table  
Tissue Preserving Anterior Approach Hip Replacement  
Ottawa, Canada
- 17.10.2008 MicroHip Surgical Approach without an Orthopedic Traction Table  
Tissue Preserving Anterior Approach Hip Replacement  
Ottawa, Canada
- 19.09.2009 Developer presentation on new technologies in orthopedic surgery  
Hamburg, Germany
- 04.09.2008 Arthrose – Mit minimalem Aufwand zum maximalen Resultat. Die optimale  
Behandlung von Knie- und Hüftarthrosen. Vom vorbeugenden Training bis  
zum neuen Gelenk.  
Schmerzkongress Nottwil, Switzerland
- 13.06.2008 Midterm Results on MicroHip: An Extension Table free anterior Procedure  
without Restrictions  
57. Jahrestagung der Norddeutsche Orthopädenvereinigung  
Hamburg, Germany
- 12.06.2008 Live Surgery: Fully HA Coated Stem with a Ceramic on Metal Bearing  
Through a Direct Anterior Approach (Surgery and Moderation)  
European Hip Society, Madrid, Spain
- 12.06.2008 Satellite Presentation: The minimal invasive Hip Replacement  
NOF (Nordic Orthopedic Federation) Congress, Amsterdam, Netherlands
- 13.05.2008 Live Surgery: Fully HA Coated Stem with a Ceramic on Metal Bearing  
Through a Direct Anterior Approach, Moderation  
High Performance Hip Symposium, Munich, Germany
- 13.05.2008 The MicroHip Approach  
High Performance Hip Symposium, Munich, Germany
- 25.04.2008 Case study: How to deal with difficult situations in THR  
Turkish Orthopedic Surgeons Meeting, Antalya, Turkey



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- 25.04.2008 The direct anterior approach for THR, MicroHip  
Turkish Orthopedic Surgeons Meeting, Antalya, Turkey
- 20.04.2008 Swiss Television: SF2; Minimal Invasive Hip Procedures in high demand patients
- 18.04.2008 The role of TAL in Hip Navigation  
Corail: 20 años en España, Barcelona, Spain
- 18.04.2008 Ceramic on Ceramic: the perfect Bearing Option?  
Corail: 20 años en España, Barcelona, Spain
- 18.04.2008 Anterior approach MICROHIP  
Corail: 20 años en España, Barcelona, Spain
- 13.04.2008 Chair: Current Topics in Surface Replacing  
Restoring the Joy of Motion Symposium, Shanghai, China
- 13.04.2008 HA - The Science behind the Fixation  
Restoring the Joy of Motion Symposium, Shanghai, China
- 13.04.2008 MicroHip, a minimal invasive procedure for THR  
Restoring the Joy of Motion Symposium, Shanghai, China
- 18.02.2008 Video-Demonstration des MicoHip Zugangs.  
Surgery Week, MUW Medizinische Universität Wien, Austria
- 18.02.2008 Präparate Workshop: Anatomie des anterioren Zugangs.  
Surgery Week, MUW Medizinische Universität Wien, Austria
- 18.02.2008 Hüftnavigation mit TAL –Zukunft der Hüftchirurgie.  
Surgery Week, MUW Medizinische Universität Wien, Austria
- 18.02.2008 MicroHip Zugang modifiziert nach Smith Peterson.  
Surgery Week, MUW Medizinische Universität Wien, Austria
- 14.02.2008 The direct anterior approach for THR  
Corail Learning Center, Annecy, France
- 14.02.2008 Chair: Hip revision with HA coated Implants, HA Coated Implants  
Annecy, France
- 24/25.1.2008 Developer meeting on new cup implants  
Hamburg, Germany
- 08.11.2007 Cadaver workshop on Proxima and direct anterior approach

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Hamburg, Germany

- 07.11.2007 Maximizing Bone and Soft Tissue Preservation /Presentation  
Proxima: Technical workshop  
Hamburg, Germany
- 26.10.2007 Teaching Operation: THR with MicroHip  
Luxemburg
- 25.10.2007 Presentations on Anatomy/Planning/Direct Anterior approach for THR/ Tips and Trics  
Cadaver workshop on MicroHip  
MicroHip Learning Center in Luxemburg
- 20/23.09.07 Validation of the Russian Visitation Center for MicroHip  
Prof. Victor Kuzin, Moscow
- 14.09.2007 TV-Presentation: Hip Arthroscopy  
Medical Talk; Swiss TV
- 06.09.2007 Evolution in MIS for Hip replacement: MicroHip the only MIS approach in an  
internerveous plane  
Marbella, Spain
- 05.07.2007 International Meeting on Tissue Sparing Cups: Presentation  
Leeds, England
- 06.06.2007 Live transmission from Münsingen to Paris:  
Surgery: The MicroHip approach with Ceramic on Metal  
International Hip Learning Center, Paris, France
- 05.05.2007 The direct anterior approach: MicroHip; Technique and Results  
Learning Center, Paris, France
- 05.06.2007 Surgery at the Hospital in Paris (Prof. Hutten)  
2 MicroHips with Corail
- 25.05.2007 Metal on Metal: An objective assessment  
International Learning Center, Chennai, India
- 25.05.2007 MIS: Results and technical tips and tricks  
International Learning Center, Chennai, India
- 25.05.2007 The Minimal invasive approaches to the Hip: The MicroHip technique  
International Learning Center, Chennai, India
- 18.05.2007 Instructional course on the direct anterior approach

# MARKUS C. MICHEL, MD

- Proxima, around the corner technique, Workshop  
Learning Center Graz, Austria
- 17.05.2007 A direct anterior approach: MicroHip, Technique and Results  
Learning Center Graz, Austria
- 13.05.2007 MicroHip: a modified Smith-Peterson approach: Results and technique; Symposium  
25: Why a short stem? 8<sup>th</sup> EFFORT Congress, Florence, Italy
- 13.05.2007 Minimal invasive hip replacement: the MicroHip technique  
Advances in the surgical and clinical management of orthopedic patients; Satellite  
Symposium; 8<sup>th</sup> EFFORT Congress, Florence, Italy
- 10.05.2007 Advisor Meeting on Rivaroxaban, Florence, Italy
- 03.05.2007 Workshop: The technique of the Corail stem.  
International Congress on Hydroxiapatite in primary and Revisions  
Lyon, France
- 03.05.2007 Radiographic long term follow up on a fully hydroxiapatite coated stem  
International Congress on Hydroxiapatite in primary and Revisions  
Lyon, France
- 03.05.2007 Clinical Results of the direct anterior approach: MicroHip  
International Congress on Hydroxiapatite in primary and Revisions  
Lyon, France
- 17.04.2007 MicroHip: Technique and Preliminary Results  
Learning Center Graz, Austria
- 18.04.2007 Direct anterior Approach and Proxima: Is it the perfect marriage?  
Presentation, Learning Center Graz, Austria
- 19.04.2007 Cadaverworkshop on MicroHip/ Proxima  
Learning Center Graz, Austria
- 27.03.2007 Live Surgery: Direct Anterior  
Presentation: Independent long term Radiological Review of fully Hydroxiapatite  
Coated Stem  
Intelligent Surgery Hip Course, Cannes, France
- 26.03.2007 Direct Anterior Approach: Surgical Overview  
Intelligent Surgery Hip Course, Cannes, France
- 16.03.2007 Direct Anterior Video Technique – Without a Fracture Table, Transforming  
Orthopedics

# MARKUS C. MICHEL, MD

Park City, USA

- 15.03.2007 MicroHip Technique and Results  
Park City, USA
- 14.03.2007 The MicroHip Technique, Presentation  
New York, USA
- 03.03.2007 Modération: Les nouveaux implants  
26ème Journée Orthopédique, Brussels, Belgium
- 03.03.2007 La voie mini-invasive antérieure: MicroHip  
26ème Journée Orthopédique, Brussels, Belgium
- 26.01.2007 Presentation of the preliminary results in Proxima THR, Early user meeting  
Alst, Belgium
- 25.01.2007 Presentation: Risk factors for the implantation of the Proxima stem. Developer meeting.  
Alst, Belgium
- 22/23.1.2007 Evaluation of Ci-Hip.  
Hamburg, Germany
- 18.01.2007 International Learning Center: Core Faculty meeting.  
Leeds, GB
- 15.01.2007 Video Interview for the JnJ shareholder conference, USA  
The development of the MicroHip technique
- 12.12.2006 Presentation: MicroHip and Proxima: Is it the perfect marriage?  
Zermatt, Switzerland
- 01.12.2006 Presentation on: The use of the Harmonic scalpel in minimal invasive hip surgery,  
Hamburg, Germany
- 05.10.2006 Live Surgery: MicroHip with Corail  
International Learning Centre; Geneva Switzerland
- 04.10.2006 The future of minimal invasive hip surgery: MicroHip  
International Learning Centre; Geneva Switzerland
- 29.09.2006 Presentation and Workshop on MicroHip  
94. Jahrestagung der Vereinigung Mittelrheinischer Chirurgen  
Bonn, Germany

# MARKUS C. MICHEL, MD

- 25.09.2006 Presentation and Surgery: Technique of MicroHip  
Nantes, France
- 22.09.2006 MicroHip-Technik und erste Resultate  
Schweizerische Gesellschaft für Orthopädie, Luzern, Switzerland
- 21.09.2006 Live Surgery: MicroHip and Corail/Pinnacle  
Brussels, Belgium
- 20.09.2006 Presentation: MicroHip technique and first results  
Brussels, Belgium
- 15.09.2006 Schweizerischer Schmerzkongress:  
Die Behandlung der Kniegelenksarthrose  
Nottwil, Switzerland
- 12.09.2006 Presentation: MicroHip and Proxima: The perfect Marriage?  
Valencia, Spain
- 13.09.2006 Live Surgery: MicroHip and Proxima XL/ASR  
Valencia, Spain
- 11.09.2006 Cadaverworkshop on MicroHip Proxima  
Geneva, Switzerland
- 10.09.2006 Swiss Television: Modern Techniques in TKR  
Zurich, Switzerland
- 03.09.2006 The Future of Total Hip Arthroplasty  
Japanese Learning Center, Bangkok, Thailand
- 02.09.2006 MicroHip Cadaverworkshop  
Japanese Learning Center, Bangkok, Thailand
- 02.09.2006 Latest Development in MI Surgery MicroHip  
Japanese Learning Center, Bangkok, Thailand
- 01.09.2006 MicroHip Cadaverworkshop (high potential)  
Japanese Learning Center, Bangkok
- 24.08.2006 Minimal Invasive Hüftchirurgie: MicroHip  
Langenthal, Switzerland
- 11.08.2006 A direct anterior approach for Total Hip Replacement: MicroHip  
Brisbane, Australia
- 09.08.2006 A direct anterior approach for Total Hip Replacement: MicroHip

# MARKUS C. MICHEL, MD

SWITZERLAND

Melbourne, Australia

- 08.08.2006 A direct anterior approach for Total Hip Replacement: MicroHip  
Sidney, Australia
- 08.08.2006 Live Surgery: Total Hip Replacement with the MicroHip Approach  
Wagga Wagga, Australia
- 22.07.2006 My experience with computer assisted surgery in total knee replacement  
Intelligent Hip and Knee Surgery Course (Incorporating tissue sparing techniques)  
Midrand, South Africa
- 22.07.2006 Corail: The Clinical Results  
Intelligent Hip and Knee Surgery Course (Incorporating tissue sparing techniques)  
Midrand, South Africa
- 21.07.2006 MicroHip Surgery; Mini Anterior Approach  
Intelligent Hip and Knee Surgery Course (Incorporating tissue sparing techniques)  
Midrand, South Africa
- 03.07.2006 A direct anterior approach for Total Hip Replacement: MicroHip  
Aarau, Switzerland
- 30.06.2006 The MicroHip approach: Technique and clinical results  
20years anniversary meeting of Corail; Lyon, France
- 23.06.2006 A direct anterior approach for Total Hip Replacement: MicroHip  
European Hip Society, Antalya, Turkey
- 22.06.2006 Live Surgery: Total Hip Replacement with the MicroHip Approach  
Garmisch, Germany
- 30.05.2006 A direct anterior approach for Total Hip Replacement: MicroHip.  
International Learning Center, Graz, Austria
- 30.05.2006 Presentation of a live transmission from Switzerland on the MicroHip approach  
International Learning Center, Graz, Austria
- 30.05.2006 Workshop on the Anatomy an Technique for Anterior MI THR: MicroHip  
International Learning Center, Graz, Austria
- 24.05.2005 A direct anterior approach for Total Hip Replacement: MicroHip  
International Learning Center, Adelaide, Australia
- 22.05.2006 MicroHip: A new anterior minimal invasive approach to the hip joint (Presentation)

# MARKUS C. MICHEL, MD

SWITZERLAND

Shoushu, China

- 22.05.2006 MicroHip: A new anterior minimal invasive approach to the hip joint (Live Surgery)  
Shoushu, China
- 21.05.2006 MicroHip: A Minimally Invasive Procedure for Total Hip Replacement Surgery. A  
Modified Smith-Peterson Approach  
Shanghai, China
- 16.05.2006 A direct anterior approach for Total Hip Replacement: MicroHip  
Bangkok, International Asian Learning Center
- 16.05.2006 Presentation of a live transmission from Switzerland on the MicroHip approach  
Bangkok, International Asian Learning Center
- 16.05.2006 Workshop on the Anatomy and Technique for Anterior MI THR: MicroHip  
International Asian Learning Center, Bangkok
- 12.05.2006 MicroHip: A Minimally Invasive Procedure for Total Hip Replacement Surgery. A  
Modified Smith-Peterson Approach  
International Symposium, Kratovice, Poland
- 11.05.2006 MicroHip: The anterior minimal invasive approach to the Hip (Presentation)  
Current Topics in Total Hip Replacement  
London, England
- 11.05.2006 Rapid Rehabilitation Hip Programs (Chair)  
Current Topics in Total Hip Replacement  
London, England
- 04.05.2006 Most Recent Development in MI Hip Surgery: MicroHip  
Corail Learning Centre, Annecy, France
- 27.04.2006 Workshop on the Anatomy and Technique for Anterior MI THR: MicroHip  
Paris, France
- 20.04.2006 The Future of Navigation in Orthopedic Surgery  
Jacksonville, USA
- 10.04.2006 Presentation on a minimal invasive approach to the Hip  
Testing of new Ultrasonic operation tools  
Cincinnati, USA
- 06.04.2006 MicroHip: A new anterior minimal invasive approach to the hip joint (Presentation)  
Manhattan/NY, USA

## MARKUS C. MICHEL, MD

- 20.03.2006 Workshop on MicroHip for international surgeons  
Anatomic Institute of Prof. Fasel, Geneva, Switzerland
- 03.03.2006 Proxima and MicroHip: Is it the perfect marriage?  
Presentation, Proxima lounge meeting  
Hamburg, Germany
- 02.03.2006 Workshop on MicroHip at the International Learning Center  
Hamburg, Germany
- 01.03.2006 Live Operation: THR with MicroHip  
International Learning Center, Hamburg, Germany
- 01.03.2006 MicroHip: latest development in Total Hip Replacement (Presentation)  
International Learning Center, Hamburg, Germany
- 18.02.2006 MicroHip: A new anterior minimal invasive approach to the hip joint. Presentation at  
the national orthopedic congress of Greece  
Tessaloniky, Greece
- 02.02.2006 Workshop on MicroHip  
International Learning Center, Brussels, Belgium
- 01.02.2006 MicroHip: latest development in Total Hip Replacement (Presentation)  
International Learning Center, Brussels, Belgium
- 29.01.2006 EMAT Navigation in THR (Video production)  
Hamburg, Germany
- 26.01.2006 The Future of Hip Surgery  
ISM06, Lisbon, Portugal
- 08.12.2006 Most Recent Development in MI Hip Surgery: MicroHip  
Corail Learning Center, Annecy, France
- 17.11.2006 Workshop on MicroHip at the International Learning Center  
Hamburg, Germany
- 16.11.2006 Live Operation: THR with MicroHip  
International Learning Center, Hamburg, Germany
- 16.11.2006 MicroHip: Latest development in Total Hip Replacement (Presentation)  
International Learning Center, Hamburg, Germany
- 27.10.2005 Most Recent Development in MI Hip Surgery: MicroHip.  
Corail Learning Center, Annecy, France
- 28.09.2005 Workshop on MicroHip at the International Learning Center



# MARKUS C. MICHEL, MD

SWITZERLAND

Brussels, Belgium

- 27.09.2005 Live Operation: THR with MicroHip  
International Learning Centre, Brussels, Belgium
- 27.09.2005 MicroHip: Latest development in Total Hip Replacement (Presentation)  
International Learning Center, Brussels, Belgium
- 17.09.2005 A new anterior approach to the Hip: MicroHip (Presentation)  
Current Topics in Hip Surgery  
Brussels, Belgium
- 01.08.2005 Live Surgery: Total Hip Replacement with the MicroHip approach  
Pretoria, South Africa
- 31.07.2005 State of the art in Navigated Knee Surgery (Presentation)  
The Minimal Invasive Approaches to the Hip Joint; an Overview (Presentation)  
Pretoria, South Africa
- 30.07.2005 MicroHip: Latest development in Total Hip Replacement  
(Campsite Presentation), South Africa
- 29.07.2005 Navigation in TNR  
(Campsite Presentation), South Africa
- 27.07.2005 Latest Developments in THR: MicroHip  
Meeting on MI approaches to the Hip, Los Angeles, USA
- 07.07.2005 A new anterior approach to the Hip: MicroHip (Presentation)  
International Learning Center, Brussels, Belgium
- 07.07.2005 Workshop on MicroHip at the International Learning Center  
Brussels, Belgium
- 02.06.2005 A new minimal invasive anterior approach to the Hip: MicroHip (Presentation)  
International Learning Center, Lisbon, Portugal
- 12.05.2005 A new minimal invasive anterior approach to the Hip: MicroHip (Presentation)  
International Learning Centre, Hamburg, Germany
- 18.03.2005 Live Surgery: Total Hip Replacement with the MicroHip approach  
Interlaken, Switzerland
- 17.03.2005 Minimal invasive anterior Hip Surgery (Presentation)  
Interlaken, Switzerland

# MARKUS C. MICHEL, MD

SWITZERLAND

17.03.2005      The Minimal Invasive Approach to the Hip Joint; an Overview (Presentation)  
Interlaken, Switzerland

## 5. CURRICULUM 1977-2012

### A) AWARDS

MANRHYE FOUNDATION AWARD, 3.9.93

Société Internationale de Chirurgie Orthopédique et de Traumatologie  
19th World Congress SICOT93, Seoul, 28.8.-3.9.1993

### B) PUBLICATIONS

1. Genge M., Schneider E., Michel M.C., Genge H. and Perren S.M.  
Hochauflösende Telemetrie-Anlage für statische Belastungsmessungen.  
Proceedings European Telemetry Conference, Döring-Druck,  
Braunschweig, 288-296, (1988)
2. Thurnheer U., Novak A., Michel M.C., Ruchti Ch., Jutzi H. ,Weiss M  
Septische Melioidose nach Aufenthalt im indischen Subkontinent  
Schweizerische Medizinische Wochenschrift, 118, 558-564 (1988)
3. Marchesi D., Michel M.C., Schneider E. Aebi M.  
Fixation transpediculaire ventrale de la colonne lombaire: Verification experimental d'un  
nouveau system de vissage.  
Revue de Chirurgie Orthopédique (1988)
4. Marchesi D., Michel M.C., Schneider E., Aebi M.  
Experimental verification of direction finder for anterior transpedicular fixation of the lower  
thoracic and lumbar spine.  
Orthopedic Transactions J Bone Joint Surg. 12 (2), 476 (1988)
5. Schneider E., Genge M., Michel M.C., Bräm W., and Perren S.M.  
Instrumented interlocking nail for telemetrized load determination in the human femur.  
Orthopedic Transactions, J Bone Joint Surg. (1989)
6. Genge M., Schneider E., Michel M.C., Genge H.,Perren S.M.  
Multi-channel telemetry system for load measurements in intramedullary nails.  
In: Bergmann et al (etds.) Implantable telemetry in orthopedics. Free University Berlin, pp.  
133-136 (1990)

## MARKUS C. MICHEL, MD

7. Schneider E., Michel M.C., Genge M., Perren S.M.  
Loads acting on a telemetrized interlocking nail.  
In: Bergmann et al (etds.) Implantable telemetry in orthopedics. Free University Berlin, pp. 221-227 (1990)
8. Schneider E., Michel M.C., Genge M., Wyder D.  
In vivo load measurements by means of an instrumented interlocking nail.  
Proceedings 7th Meeting European Society of Biomechanics  
J.of Biomechanics 24(6),463, (1991)
9. Marchesi D., Michel M.C., Lowery G., Aebi M.  
Direction finder for anterior transpedicular fixation of the lower thoracic and lumbar spine.  
Spine (in press)
10. Michel M.C., Zysset P.K., Hayes W.C.  
Fatigue behavior of trabecular bone.  
J.B.J.S. Proceedings of the 37th Annual Meeting Orthopedic Research Society (1991)
11. Michel M.C., Genge M., Schneider E., Perren S.M.  
Loading history of an interlocking nail subsequent to fracture treatment.  
J.B.J.S. Proceedings of the 37th Annual Meeting Orthopedic Research Society, 141, (1991)
12. Michel M.C., Genge M., Witschger P.M.  
Biotelemetry Anlage für statische und dynamische Messungen am Menschen.  
Proceedings European Telemetry Conference, Döring-Druck, Braunschweig, 425-434 (1992)
13. Michel M.C., Genge M., Zuber K., Witschger P.M., Schneider E., Perren S.M.  
Monitoring of fracture healing in vivo on a human femur.  
Proceedings IIX Meeting of the European Society of Biomechanics, J. of Biomechanics ( in press )
14. Michel M.C., Guo X.E., Gibson L.J., McMahon T.A., Hayes W.C.  
Fatigue behavior of trabecular bone  
Proceedings IIX Meeting of the European Society of Biomechanics  
J. of Biomechanics (in press )
15. Michel M.C., Genge M.,Witschger P.M.  
Fast 15-channel micro-telemetry for implantation in man: Report and results of the first implantation in a human femur.  
Proceedings XII International Symposium on Biotelemetry,

Ancona, Italy, August 31 to September 5, 1992  
Editrice Universitaria Litographia felici, Pisa: 420-425

16. Genge M., Witschger P.M., Michel M.C.  
Fast 15-channel micro-telemetry for implantation in man:  
Philosophy and Technology  
Proceedings XII International Symposium on Biotelemetry,  
Ancona, Italy, August 31 to September 5, 1992  
Editrice Universitaria Litographia felici, Pisa: 425-426
17. Michel M.C., Genge M., Witschger P.M., Perren S.M.  
The effect of dynamisation to an interlocked intramedullary nail: In vivo measurements of  
load during consolidation of a femoral fracture.  
Orthopedic Transactions of the 39th Annual Meeting of the Orthopedic Research Society,  
San Francisco, California, 15.-20.2.1993
18. Michel M.C., Guo X.E., Gibson L.J., McMahon T.A., Hayes W.C.  
Compressive fatigue behavior of bovine trabecular bone  
J. of Biomechanics 26 (4/5) 453-63 (1993)
19. Michel M.C., Zysset P.K., Angst M.P.  
Compressive creep behavior of trabecular bone  
Proceedings 3rd conference of the EORS, Paris, 19.4.-20.4.93  
J. of Biomechanics ( proceedings)
20. Schneider E., Michel M.C., Genge M., Zuber K., Ganz R., Perren S.M.  
Loads acting in an intramedullary nail during fracture healing in the human femur  
J. of Biomechanics 34 (2001) 849-857

## C) ABSTRACTS

1. Marchesi D., Michel M.C., Schneider E., Aebi M.  
Experimental verification of direction finder for anterior transpedicular fixation of the lower thoracic and lumbar spine.  
34th Orthopedic Research Society, Las Vegas, 1988
2. Schneider E., Genge M., Michel M.C., Wyder D., Perren S.M., Bräm W  
Instrumented interlocking nail for in vivo implant load measurements.  
6th Meeting European Society of Biomechanics, 16 (1988)
3. Marchesi D., Michel M.C., Schneider E., Aebi M.  
Experimental verification of direction finder for anterior transpedicular fixation of the lower thoracic and lumbar spine.  
Orthopedic Transactions J Bone Joint Surg. 12 (2), 476 (1988)
4. Marchesi D., Michel M.C., Schneider E., Aebi M.  
Experimentelle Nachprüfung eines Zielgeräts für die ventrale transpediculäre Fixation der thorako-lumbalen Wirbelsäule.  
8. Kongress der Schweizerischen Gesellschaft für Orthopädie,  
Crans-Montana, 8. - 11. Juni (1988)
5. Schneider E., Genge M., Michel M.C.  
Invitro Messung der Implantatbelastung beim Verriegelungsmarknagel für das Femur.  
Osteosynthese International, Gerhard Küntscher-Kreis, Wien (1989)
6. Schneider E., Genge M., Michel M.C., Bräm W., and Perren S.M.  
Instrumented interlocking nail for telemetrized load determination in the human femur.  
35th Orthopedic Research Society , New Orleans (1989)
7. Zuber K., Genge M., Michel M.C., Wespe R.  
In vivo Implantation eines Telemetrie-Verriegelungsmarknagels  
Unfallchirurgie, Frankfurt am Main, 28.-30.9. (1990)
8. Michel M.C., Schneider E., Genge M.  
The effect of posture and physiotherapy on the loads acting on an interlocking femoral nail.  
XVIII World Congress SICOT 90, 185, (1990)
9. Schneider E., Michel M.C., Genge M., Perren S.M.  
Determination of the in vivo load by means of an instrumented

# MARKUS C. MICHEL, MD

interlocking femoral nail.

Proceedings First World Congress of Biomechanics, 220, (1990)

10. Schneider E., Michel M.C., Genge M., Wyder D.  
Invivo load measurement by means of an instrumented interlocking nail.  
7th Meeting European Society of Biomechanics, A 44, (1990)
11. Michel M.C., Genge M., Schneider E., Perren S.M.  
Loading history of an interlocking nail subsequent to fracture treatment.  
37th Annual Meeting Orthopedic Research Society, 141, (1991)
12. Michel M.C., Zysset P.K., Hayes W.C.  
Fatigue behavior of trabecular bone.  
37th Annual Meeting Orthopedic Research Society, 156, (1991)
13. Michel M.C., Genge M., Witschger P.M.  
Biotelemetrie Anlage für statische und dynamische Messungen am Menschen.  
European Telemetry Conference, Garmisch-Partenkirchen, Germany, 12. - 14. 5. 92
14. Michel M.C., Genge M., Zuber K., Witschger P.M., Perren S.M.  
In vivo Monitorisierung der Belastung am Femur; Verriegelungsmarknagel.  
50. Jahreskongress der Schweizerischen Gesellschaft für Orthopädie, Lausanne,  
p. 62, 17.-20.6.92
15. Steffen T.B., Michel M.C., Jakob R.P.  
Bestimmung der korrekten Kreuzbandinsertionspunkte im Röntgenbild - Ein individueller Test  
am Computer.  
50. Jahreskongress der Schweizerischen Gesellschaft für Orthopädie, Lausanne,  
p.72, 17.-20.6.92
16. Michel M.C., Genge M., Zuber K., Witschger P.M., Schneider E., Perren S.M.  
Monitoring of fracture healing in vivo on a human femur.  
Proceedings IIX Meeting of the European Society of Biomechanics, p.134  
Rome, Italy, 21-24.6.1992
17. Michel M.C., Guo X.E., Gibson L.J., McMahon T.A., Hayes W.C.  
Fatigue behavior of trabecular bone  
Proceedings IIX Meeting of the European Society of Biomechanics, p.43  
Rome, Italy, 21-24.6.1992

# MARKUS C. MICHEL, MD

18. Michel M.C., Genge M., Witschger P.M.  
Fast 15-channel micro-telemetry for implantation in man: Report and results of the first implantation in a human femur.  
XII International Symposium on Biotelemetry, Ancona, Italy, 31.8-5.9.92 (on invitation)
19. Genge M., Witschger P.M., Michel M.C.  
Fast 15-channel micro-telemetry for implantation in man: Philosophy and Technology  
XII International Symposium on Biotelemetry, Ancona, Italy, 31.8-5.9.92 (on invitation)
20. Steffen T.B., Michel M.C., Jakob R.P.  
Bestimmung der korrekten Kreuzbandinsertionspunkte im Röntgenbild - Ein individueller Test am Computer.
21. Michel M.C., Genge M., Witschger P.M., Perren S.M.  
The effect of dynamisation to an interlocked intramedullary nail: In vivo measurements of load during consolidation of a femoral fracture.  
39th Annual Meeting of the Orthopedic Research Society,  
San Francisco, California, 15.-20.2.1993
22. Zysset P.K., Angst M.P., Michel M.C., A.Curnier  
Compressive creep behavior of trabecular bone  
3rd conference of the EORS, Paris, 19.4.-20.4.93
23. Michel M.C., Zysset P.K., Angst M.P.  
Creep behavior of trabecular bone  
XIV<sup>th</sup> International Society of Biomechanics, Paris, 4.7.-8.7.93
24. Michel M.C., Genge M., Witschger P.M., Perren S.M.  
In vivo longterm measurements of the dynamisation-effect in an interlocking femoral nail by a 8-channel biotelemetry system; p. 216  
19th World Congress SICOT93, Seoul, 28.8.-3.9.1993
25. Michel M.C., Genge M., Witschger P.M., Perren S.  
MAHNRYE FOUNDATION AWARD  
In vivo longterm measurements of the dynamisation-effect in an interlocking femoral nail by a 8-channel biotelemetry system; p. 307  
19th World Congress SICOT93, Seoul, 28.8.-3.9.1993
26. Schneider E., Michel M.C., Genge M., Zuber K., Ganz R., Perren S.M.  
Loads acting in an intramedullary nail during fracture healing in the human femur



J. of Biomechanics 34 (2001) 849-857

## D) PRESENTATIONS

- 08.10.88 Experimentelle Nachprüfung eines Zielgeräts für die ventrale transpediculäre Fixation der thorako-lumbalen Wirbelsäule.  
Weiterbildungskurs Verband Schweizerischer Anatomie-Pathologie Präoperatoren, Bern, Schweiz
- 13.09.90 The Effect of Posture and Physiotherapy on the Loads Acting on an Interlocking Nail.  
SICOT 90, Montreal, Canada
- 21.09.90 The telemetrized interlocking femoral nail  
Beth Israel Hospital, Harvard University, Boston, USA
- 05.05.91 Loading History of an Interlocking Femoral Nail Subsequent to Fracture Treatment;  
37th Annual Meeting Orthopedic Research Society, Anaheim, California.
- 05.05.91 Fatigue Behavior of Trabecular Bone  
37th Annual Meeting Orthopedic Research Society, Anaheim, California.
- 14.02.92 In vivo Telemetrie-Anlagen am Menschen: Entwicklung, Applikation, Resultate.  
Fortbildungsveranstaltung: Labor für Experimentelle Chirurgie, Davos
- 13.05.92 Biotelemetrie Anlage für statische und dynamische Messungen am Menschen.  
European Telemetry Conference, Garmisch-Partenkirchen, Germany, 12. - 14. 5. 92
- 19.06.92 In vivo Monitorisierung der Belastung am Femur; Verriegelungsmarknagel.  
50. Jahreskongress der Schweizerischen Gesellschaft für Orthopädie, Lausanne, 17.-20.6.92
- 22.06.92 Monitoring of fracture healing in vivo on a human femur.  
IIX Meeting of the European Society of Biomechanics  
Rome, Italy, 21-24.6.1992
- 24.06.92 Fatigue behavior of trabecular bone  
IIX Meeting of the European Society of Biomechanics

# MARKUS C. MICHEL, MD

Rome, Italy, 21-24.6.1992

04.09.92 Fast 15-channel micro-telemetry for implantation in man:  
Report and results of the first implantation in a human femur.  
XII International Symposium on Biotelemetry, Ancona, Italy, 31.8-5.9.92

16.02.93 The Effect of Dynamisation to An Interlocked Intramedullary Nail:  
In Vivo Measurements of Load During Consolidation of a Femoral  
Fracture  
39th Annual Meeting of the Orthopedic Research Society,  
San Francisco, California, 15.-20.2.1993

05.07.93 Creep behavior of trabecular bone  
XIV<sup>th</sup> International Society of Biomechanics,  
Paris, 4.7.-8.7.93

31.8.93 In vivo long term measurements of the dynamisation-effect in an  
interlocking femoral nail by a 8-channel biotelemetry system.  
19th World Congress SICOT93, Seoul, 28.8.-3.9.1993

31.8.93 MANRYE FOUNDATION AWARD  
In vivo long term measurements of the dynamisation-effect in an  
interlocking femoral nail by a 8-channel biotelemetry system.  
19th World Congress SICOT93, Seoul, 28.8.-3.9.1993

16.11.93 Kompressionsneuropathien der oberen Extremität  
Fortbildungsprogramm Handchirurgie Inselspital Bern

12.03.94 Traumatische Läsionen des Karpus I  
Fortbildungsprogramm Handchirurgie Inselspital Bern

10.05.94 Traumatische Läsionen des Karpus II  
Fortbildungsprogramm Handchirurgie Inselspital Bern

04.06.94 Scaphoidfrakturen: Diagnose und Therapie  
Fortbildungsprogramm Zieglerspital Bern

Multiple presentations in Europe and USA to the following topics:  
Hip- and Knee Replacements, primary TKR and THR, Hip Arthroscopy  
from 1995 to 2002

- 01.10.97 München: Knieendoprothetik: Mobile Bearing
- 01.10.97 München: Soft Tissue Balancing in TKR
- 30.10.98 Visana Bern: Simultane Knieendoprothetik
- 26.08.99 Sulzer Medical: Von der Arthrose zur Hüftarthroskopie. Die Orthopädie an der Schwelle zum 3. Jahrtausend
- 03.12.00 Methacarpalefrakturen: Konservative und operative Therapie  
Schloss-Symposium: Leistenschmerz  
Limbusläsion und Hüftarthroskopie
- 07.06.02 Pressekonferenz Hirslanden: Orthopädische Chirurgie auf höchstem Niveau:  
Kosteneinsparung durch Hightech und Teambildung
- 22.08.03 Centerpuls: Von der minimal invasiven Hüftchirurgie bis zum Endoprothetischen Ersatz.  
Hands-on Demonstration der CLS Hüftprothese
- 08.09.03 RSZ Top aktuell: Sportverletzungen

## E) POSTERS

1. Marchesi D., Michel M.C., Schneider E., Aebi M.  
Experimental verification of direction finder for anterior transpedicular fixation of the lower thoracic and lumbar spine.  
Orthopedic Research Society, 34th Annual Meeting, Atlanta, 1.-4.2. (1988)
2. Schneider E., Genge M., Michel M.C., Bräm W., and Perren S.M.  
Instrumented interlocking nail for telemetrized load determination in the human femur.  
35th Orthopedic Research Society, Las Vegas (1989)
3. Zysset P.K., Angst M.P., Michel M.C., A. Curnier  
Compressive creep behavior of trabecular bone  
3rd Conference of the EORS, Paris, 19.4. - 20.4.93
4. Midterm results on MicroHip:  
An extension table free anterior procedure without restrictions  
EFCOT, Vienna 2009

5. Abnutzungsmuster bei Kopf-Konus-Verbindungen von Hüftendoprothesen Florian Witt<sup>1</sup>, Nicholas E. Bishop<sup>1</sup>, Marcel Rütschi<sup>2</sup>, Markus Michel<sup>3</sup>, Michael M. Morlock<sup>1</sup>
  3. Workshop „Neue Horizonte für metallische Biomaterialien“, 2013

## F) VIDEO

1. The telemetrized nail (1990), Author: M.C. Michel, Maurice E. Müller Foundation Bern
2. Hip Arthroskopie (2001): Technique, Clinics, Indications  
Authors: M.C. Michel, P. Witschger  
Maurice E. Müller Foundation Bern
3. Minimal invasive Hip-Resurfacing using the MicroHip technique  
EFCOT 2008

## G) CHAIRS

- actual          recent chairs are listed under „Actual activities“
- 13.04.2009 Tissue Sparing Solution Instructional Course  
Kiel, Germany
  - 17.10.2008 Tissue Preserving Anterior Approach Hip Replacement  
Ottawa, Canada
  - 13.04.2008 Current Topics in Surface Replacing  
Restoring the Joy of Motion Symposium  
Shanghai, China
  - 14.02.2008 Hip revision with HA coated Implants, HA Coated Implants  
Annecy, France
  - 25.10.2007 Learning Center on Anterior Approaches: Cadaver workshop on MicroHip  
Luxembourg
  - 25.05.2007 International Learning Center on advanced Hip Surgery  
Chennai, India

- 1.05.2006 Rapid Rehabilitation Hip Programs  
Current Topics in Total Hip Replacement  
London, England
- 31.08.1993 Femur Fractures  
19th World Congress SICOT 93, Seoul, 28.8. - 3.9.1993

## H) PUBMED RESULTS

1 J Biomech. 1993 Apr-May; 26(4-5):453-63.

### **Compressive fatigue behavior of bovine trabecular bone.**

Michel MC, Guo XD, Gibson LJ, McMahon TA, Hayes WC.

#### **Source**

M.E. Mueller Laboratory of Biomechanics, University of Bern, Switzerland.

#### **Erratum in**

- J Biomech 1993 Sep;26(9):1144.

#### **Abstract**

We studied the fatigue behavior of bovine trabecular bone specimens under stress control using a sinusoidal uniaxial compressive load profile with a frequency of 2 Hz. The stress range was determined from the corresponding initial global platen-to-platen strain range, where the maximum initial strain was between 0.8 and 2.1% and the minimum strain was 0.6%. The local strain distribution was measured on the same type of specimen by affixing glass spheres and photographing them in the unloaded and loaded positions using multiple exposures. The number of cycles to failure (defined as a 5% decrease in secant modulus) was strongly correlated with the initial global maximum strain ( $r^2 = 0.78$ ) and ranged from 20 cycles at 2.1% strain to 400,000 cycles at 0.8% strain. All of the fatigue specimens showed a region of transverse failure approximately 1 mm from the end of the specimen. Microscopic examination of the failure zones revealed two failure modes: a straight transverse brittle-like fracture through the trabeculae, most often found in trabeculae transverse to the loading direction, and buckling-like failure, common in oblique trabeculae, involving bending and splitting. The local strain increased towards the ends of the specimens to a value 2-4 times that in the middle. Modulus degradation with the number of cycles was distinctively different for high-cycle and low-cycle fatigue, suggesting the possibility that both creep and damage

accumulation contribute to fatigue failure of trabecular bone.

PMID: 8478349 [PubMed - indexed for MEDLINE]

1 Hip Int. 2006;16 Suppl 3:40-7.

**MicroHip: A minimally invasive procedure for total hip replacement surgery A modified Smith-Petersen approach.**

Michel MC, Witschger P.

**Source**

Münsingen Orthopedic Centre, Münsingen - Switzerland.

**Abstract**

In this article we present the surgical technique of our anterior minimally invasive approach to the hip joint. This is aligned along an interneural plane and makes the approach truly minimally invasive. This technique is performed in a lateral decubitus position on a normal operating table; there is no need for a specific orthopedic or fracture table. As leg traction is not necessary, this enables the approach to be used routinely. Most of the instruments used for this procedure are standard instruments; only the acetabular reamers and positioners are angulated and specifically designed. The angled instruments (MI minimally invasive) are especially useful when performing hip replacement in obese patients. An excellent view of both the acetabulum and the proximal femur can be obtained through an incision of only 6-8cm, using this MI approach. The approach follows the interval between the tensor fascia lata muscle and the rectus muscle using a section of the anterior iliofemoral approach described by Smith-Petersen. No tendon or muscle is cut or detached. The joint capsule is split and left in place. The hip joint is not dislocated and we perform the osteotomy of the femoral neck in situ. To date we have performed over 500 MicroHip operations. We have not observed any nerve lesions or fractures of the trochanter. Our experience to date shows that the method we have de-veloped allows us to operate reliably on virtually any patient. Preliminary results also show that important factors like length of stay, pain, blood loss and return to work can be reduced significantly. The MicroHip technique is being used by more and more different clinics all over the world and can be applied with success after suitable training.

PMID: 19219819 [PubMed – in process]

1 J Biomech. 2001 Jul;34(7):849-57.

**Loads acting in an intramedullary nail during fracture healing in the human femur.**  
Schneider E, Michel MC, Genge M, Zuber K, Ganz R, Perren SM.

### Source

M.E. Mueller-Institute for Biomechanics, University of Bern, Murtenstrasse 30, CH-3010, Bern, Switzerland. erich.schneider@ao-asif.ch

### Abstract

The form and function of the musculo-skeletal system is closely related to the forces acting in its components. Significant forces are present in the long bones, but their magnitudes have so far only been estimated from mathematical models. Fracture fixation by means of metal implants provides an opportunity to measure the implant-borne forces and to estimate the long bone forces before healing occurs. The load changes during fracture healing may provide additional information. Therefore, a telemetrized, interlocking femoral nail for wireless transmission of forces and moments acting across the fracture site was developed. The design was based on the geometry and material of a 16 mm AO nail with a circular, closed cross-section allowing full protection of the electronic circuits from the body fluids. After careful testing, it was implanted in a 33-year-old patient who had sustained a multifragmentary fracture of the left femur. Measurements at a rate of approx. 0.4 Hz were performed in different patient postures between the 2nd and 26th postoperative week. Significant axial forces and bending moments were measured during several activities such as sitting, unsupported leg elevation and partial weight bearing in a standing position. Forces orthogonal to the nail axis remained small. The reductions of the implant loads due to fracture consolidation were in the order of 50%. Dynamization of the nail did not change the forces. Even though the telemetry system did not allow for dynamic measurements and the results presented here provide data from one subject only, the new information will be useful with respect to implant design, biomechanics of fracture fixation and evaluation of healing progression.

PMID: 11410169 [PubMed – indexed for MEDLINE]