

CAOS - Symposium

Computer Assisted Orthopaedic Surgery

Final Program



November 30 - December 2, 1995
M. E. Müller Institute for Biomechanics
Department of Orthopaedic Surgery
University of Bern, Switzerland

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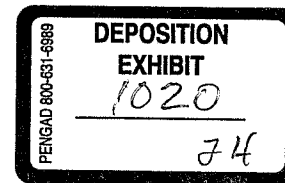
CHAIRMEN

Lutz-P. Nolte, Ph.D.

Division Head
M.E. Müller Institute for Biomechanics
University of Bern

Reinhold Ganz, M.D.

Professor and Director
Department of Orthopaedic Surgery
University of Bern
Inselspital



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INTERNATIONAL FACULTY

Faculty (Final list):

E. Arm, M.Sc.; M.E. Müller Institute for Biomechanics, University of Bern, Bern, CH
R. Ascherl, M.D.; Department of Orthopaedic Surgery, Medical University of Lübeck, Lübeck, D
U. Berlemann, M.D.; Department of Orthopaedic Surgery, University of Bern, Inselspital, Bern, CH
C. Besant, Ph.D.; Imperial College, London, UK
M. Börner, M.D.; BG Clinic, Frankfurt, D
S. Bresina, Ph.D.; AO Research Institute, Davos, CH
B.L. Davies, Ph.D.; Imperial College, London, UK
A.M. DiGioia, M.D.; Center for Orthopaedic Research, Pittsburgh, USA
K.T. Foley, M.D.; Semmes-Murphey Clinic, Memphis, USA
G. Gerig, Ph.D.; Communication Technology Laboratory, ETH-Zentrum, Zürich, CH
J.A. Hipp, Ph.D.; Biomechanics Laboratory, Harvard Medical School, Boston, USA
R. Kikinis, M.D.; Harvard Medical School, Boston, USA
K. Klaue, M.D.; Department of Orthopaedic Surgery, University of Bern, Inselspital, Bern, CH
U.G. Kliegis, M.D.; Radiologic Institute Prüner Gang, Kiel, D
B. Klos, M.D.; Catharina Hospital, Eindhoven, NL
F. Langlotz, M.Sc.; M.E. Müller Institute for Biomechanics, University of Bern, Bern, CH
S. Lavallée, Ph.D.; TIMC-IMAG, Faculty of Medicine, La Tronche, F
S. Murphy, M.D.; Beth Israel Hospital, Boston, USA
C. Pagetti, Ph.D.; Scuola Superiore S. Anna, Pisa, I
K. Radermacher, M.Sc.; Helmholtz-Institute for Biomedical Engineering, RWTH Aachen, Aachen, D
P. Regazzoni, M.D.; Kantonsspital Basel, Basel, CH
M. Sati, M.Sc.; Dept. of Biomedical Engineering, École Polytechnique, Montréal, CAN
G. Schaller, M.D.; Black Forest Endosurgery Institute, Freiburg, D
D. Schlenzka, M.D.; The Invalid Foundation, Helsinki, SF
O. Schwarzenbach, M.D.; Department of Orthopaedic Surgery, University of Bern, Inselspital, Bern, CH
R.H. Taylor, Ph.D.; IBM, T.J. Watson Center, New York, USA
J. Troccaz, Ph.D.; TIMC-IMAG, Faculty of Medicine, La Tronche, F
H. Visarius, Ph.D.; M.E. Müller Institute for Biomechanics, University of Bern, Bern, CH

Wednesday, November 29, 1995

19.00

Pre-registration
Welcome reception

Thursday, November 30, 1995

7.30

Continental breakfast
On site-registration

8.00

Welcome and introduction to the 1st CAOS-Symposium, *R. Ganz, L.P. Nolte*

Session I - Basic Concepts and Principles of CAS I

Chairmen: A.M. DiGioia and J. Troccaz

8.15

Medical image data acquisition and visualization, *G. Gerig*

8.50

Surgical navigation techniques, *L.P. Nolte*

9.25

Registration concepts in CAS, *S. Lavallée*

10.00

Medical robotics in orthopaedics, *R.H. Taylor*

10.35

Discussion

10.50

Coffee break

1st Operation - Computer Assisted Spine Surgery
Moderation: U. Berlemann and H. Visarius
Surgeon: O. Schwarzenbach

11.10

Start of live transmission
A generalized CAOS concept in spine surgery, *H. Visarius*
Clinical aspects of computer assisted spine surgery, *U. Berlemann*

12.50

Group A Lunch

13.50

Group A Workshop

12.50
Discussion

13.20
Lunch

Session II - Clinical Experience with Spine CAS

Chairmen: B.L. Davies and U.G. Kliegis

14.50
A computerized planning and guidance system to aid surgical procedures, *C. Besant*

15.05
Frameless stereotactic guidance of lateral mass screws, *K.T. Foley*

15.20
Early clinical results of image guided pedicle screw insertion, *D. Schlenzka*

15.35
Computer assisted fixation of ilio-sacral fractures, *P. Regazzoni*

15.50
On minimally invasive lumbosacral spinal stabilization, *O. Schwarzenbach*

16.05
Discussion

16.15
Coffee break

Session III - Periphery in CAS

Chairmen: P. Regazzoni and R.H. Taylor

16.35
Intraoperative guided imaging in CAS, *J. Troccaz*

17.00
Multifunctional foot switch control system for minimally invasive surgery devices, *G. Schaller*

17.15
Man-machine interfaces in computer assisted surgery, *H. Visarius*

17.30
Individual anatomical models and a new way of their application in intraoperative guidance, *U.G. Kliegis*

17.45
Stereotactic integrated contouring of orthopaedic implants, *E. Arm*

18.00

Discussion

19.00

Conference dinner

Hands on Workshop - Group A-E

Table instructors with clinical CAOS experience will deliver hands on training using a simulated spine surgery setup. Eight independent CAOS systems for three participants each are available.

Part I

- Introduction and Overview
- Image Acquisition
- Matching
- Visualization (Matching Control)
- Screw Insertion (Realtime Trajectory)

TOTAL Part I: 30 min.

Part II

- Preoperative planning
- Intraoperative guidance (Pedicicle Navigator)

TOTAL Part II: 15 min.

Part III (one system only)

- Implant contouring
- Guidance for cemented hip implant insertion

TOTAL Part III: 15 min.

Friday, December 1, 1995

7.45

Continental breakfast

2nd Operation - Computer Assisted Hip Surgery

Moderation: S. Murphy and L.P. Nolte

Surgeon: R. Ganz

8.15

Start of live transmission

Image based planning and simulation of pelvic osteotomies, *K. Klaue*

Computer guided periacetabular osteotomy, *F. Langlotz*

10.30

Coffee break

Session IV - Basic Concepts and Principles of CAS II

Chairmen: S. Lavallée and D. Schlenzka

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