5th Annual Meeting of the International Society for Computer Assisted Orthopaedic Surgery

Helsinki, Finland
June 19-22, 2005

Conference Chairman

Dietrich Schlenzka, M.D., Ph.D.
ORTON Hospital, Helsinki, Finland

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The Following CME Credits will be Awarded

To be completed…	

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Sunday, June 19, 2005

9:00 Registration

13:30 Welcome and introduction to the 5th Annual Meeting
Dietrich Schlenzka

Session I – Soft Tissue Consideration in Total Knee Replacement

Chairmen: James B. Stiehl and Joel M. Bach

14:00 Soft tissue balancing for navigated TKA
S. Hakki

14:10 Influence of everted and subluxed patella in ligament balancing of TKR
C. Lüring, T. Hüfner, D. Kendoff, L. Perlick, H. Bäthis, J. Grifka

14:20 Evolution in ligament balancing surgical technique for TKR – from historical gap measurement via today's force controlled gap-balancing to tomorrows patients individual joint stability
P. Ritschl, R. Fuiko, F. Machacek Jr.

14:30 Rotational alignment after navigated TKA
S. Wirth, T. Schneider, N. Biasca

14:40 TKR and ligament balance by CAS
C.C. Castelli, F. Barbieri, V. Gotti

14:50 In-situ evaluation of a force-measuring device for assistance in ligament balancing during knee arthroplasty
D. Crottet, J. Kowal, S.A. Sarfert, H. Bleuler, L.-P. Nolte, L. Dürselen

Session II – Unicompartmental Knees

Chairmen: S. David Stulberg and Antony J. Hodgson

15:00 Mini-invasive implantation of a unicompartmental knee prosthesis – towards a new instruments philosophy?
J.-Y. Jenny, C. Boeri

15:10 Hands-on robotic unicompartmental knee replacement – a prospective randomized controlled clinical investigation of the Acrobot® System
J.P. Cobb, J. Henckel, P. Gomes, S.J. Harris, M. Jakopec, B.L. Davies

15:20 Mini-invasive implantation of a unicompartmental knee prosthesis might decrease the accuracy despite the use of a navigation system
J.-Y. Jenny, C. Boeri

15:30 Accuracy in arthroplasty – a three-dimensional CT based measurement study
J. Henckel, J.P. Cobb, S.J. Harris, M. Jakopec, F.M. Rodriguez y Baena, B.L. Davies

Break

15:40 COFFEE BREAK

Session III – Novel Aspects of Surgical Planning

Chairmen: Teija Lund and Klaus Radermacher

16:10 An innovative multi-sensorial environment for pre-operative planning of total hip replacement
D. Testi, C. Zannoni, N.G. Tsagarakis, D. Neiberg, G.J. Clapworthy, M. Viceconti

16:20 A new orthopedic implant management tool for computer assisted planning, navigation, and simulation – from implant CAD files to a standardized XML-based implant database
S. Sagbo, G. Zheng, B. François, F. Langlotz, C. Vangenot, L.-P. Nolte

16:30 3D visualization using fluoroscopic images acquired in virtual fluoroscopy
G. Chami, J.Ward, A. Mohsen, R. Phillips

16:40 Basic experiments on milling of bone cement in RTHR
M. Hahndorff, W. Lauer, M. Neuss, M. de la Fuente, D.C. Wirtz, K. Radermacher

16:50 Software requirements evolution in CAOS applications – a case study
G. Douta, C. Schenkel, D. Schmedes, C. Schaffrath, O. Nierstrasz, F. Langlotz

Session IV – Statistical Shape Modeling

Chairmen: Nubuhiko Sugano and Gábor Székely

17:00 Bone morphing vs freehand localization of anatomical landmarks – consequences on the reproducibility of TKA
N. Perrin, E. Stindel, C. Roux

17:10 Feasibility of ultrasound-initialized bone morphing – early experiences and evaluation of a computer-assisted surgical technique
H. Talib, K. Rajamani, J. Kowal, M. Styner, M.A. Gonzalez Ballester

17:20 A two-level method for building a statistical shape atlas
C. Wu, P.E. Murtha, A.B. Mor, B. Jaramaz

17:30 Validation studies of anatomical structure morphing
K. Rajamani, H. Talib, M. Styner, M.A. Gonzalez Ballester

17:40 Sex: does it matter (in the construction of a statistical atlas of the hemi-pelvis)?
P.E. Murtha, A.B. Mor, C. Wu, B. Jaramaz

17:50 COCKTAIL RECEPTION AT THE POSTER AND INDUSTRIAL EXHIBITIONS

20:00 END OF DAY 1

Monday, June 20, 2005

8:00 Introduction to the day
Seppo Seitsalo

Session V – Computer Assisted Spinal Surgery

Chairmen: Philippe Merloz and Ramin Shahidi

8:15 Osteoid osteoma of the spine treated by combined computer-assisted and gamma probe-guided high-speed intralesional drill excision
B.J. van Royen, H.C. Baayen, R.J. Pijpers, P.I. Wuisman

8:25 Computer-assisted navigation is safe and accurate in sacroiliac screw insertion: a report of the technique and first clinical cases
J. Kasurinen, T. Laine, T. Lund, D. Schlenzka

8:35 Navigated pedicle instrumentation in the thoracic spine with the Iso-C^{3D} – is the precision satisfactory?
J. Franke, L.-P. Nolte, K. Wendl, J. von Recum, A. Wentzensen, P.A. Grützner

8:45 Endoscope based hybrid-navigation system for minimally invasive ventral-spine surgeries
R.U. Thoranaghatte, G. Zheng, F. Langlotz, L.-P. Nolte

8:55 CT-fluoro merge using Vectorvision and Stealth Station compared to fluoroscopy for insertion of pedicle screws using minimal invasive percutaneous techniques – is the accuracy adequate?
S. Eiskjær, C. Perlick, S. Nielsen

9:05 Image-guided percutaneous vertebroplasty using electromagnetic tracking
V. Watson, N.D. Glossop, A. Kim, D. Lindisch, H. Zhang, K. Cleary

Session VI – Osteotomies of the Hip and Lower Extremity

Chairmen: Martin Krismer and Frank Langlotz

9:15 Intraoperative ultrasound navigation to determine the mechanical leg axis
P. Keppler, J. Kozak, H.-P. Tümmler, L. Kinzl

9:25 Computer-assisted hip osteotomy surgery with near real-time biomechanical feedback
M. Armand, R. Armiger, G. Chintalapani, X. Liu, R. Szczepanowski, S. Feng, D. Minhas, R. Taylor, J. Lepisto

9:35 Computer assisted double osteotomy for severe genu varum – first results about 11cases
D. Saragaglia

9:45 Computer assisted spherical osteotomy with a curved-bladed Tuke Saw
T. Koyama, N. Sugano, T. Nishii, H. Miki, Y. Sato, H. Yoshikawa

9:55 Navigated open wedge high tibia osteotomy – advantages and disadvantages in comparison to the conventional technique in a cadaver study
T. Hüfner, S. Hankemeier, D. Kendoff, G. Wang, G. Zheng, C. Krettek

10:05 Computer assisted optimization of correction osteotomies on lower extremities
E. Schkommodau, P. Belei, A. Frenkel, B. Recknagel, K. Radermacher

10:15 Computer assisted range of motion prediction in normal and impinging hips
M. Kubiak-Langer, M. Tannast, S.B. Murphy, K.A. Siebenrock, F. Langlotz

Poster Session, Part 1

10:30 COFFEE BREAK AND POSTER PRESENTATIONS
Posters 1-11 were rated "Special Posters" indicating an exceptional quality of this work.

1) What can go wrong in CAOS
A.M. DiGioia III, D. Davidson, B. Jaramaz

2) Single vs. multi-fiber ligament model – an in vivo kinematics analysis
E. Chen, R.E. Ellis

3) Consequences of the femoro-tibial replacement on the femoro-patellar kinematics – an intra-operative in vivo study
E. Stindel, G. Guillard, J.-L. Briard, N. Perrin, J. Savean, C. Roux

4) Intra-operative registration of the knee kinematics by a navigation system – a pilot study
J.-Y. Jenny, C. Boeri

5) Evaluation of proximal femur bone mineral density using digitalized plain X-ray radiography of the hip
I. Ilsar, A. Hareven, I. Leichter, A.J. Foldes, Y. Mattan, M. Liebergall

6) Computer assisted planning for hip resurfacing replacement surgery
S.J. Harris, A.R.W. Barrett, M. Jakopec, W. Dandachli, J.P. Cobb, B.L. Davies

7) Variations in acetabular anatomy – application to a pelvic atlas-based image-free navigation system
P.E. Murtha, M. Hafez, B. Jaramaz, A.M. DiGioia III

8) Special demands for pedicle screw insertion in dynamic stabilization of the lumbar spine – clinical accuracy of manual technique, CT based navigation technique, and fluoroscopic navigation technique
T. Mattes, T. Kocak, W. Puhl

9) Reliability study of the CT based system for range of motion calculation within the native hip joint
M. Kubiak-Langer, M. Tannast, S.B. Murphy, K.A. Siebenrock, F. Langlotz

10) The Accuracy of femoral anteversion determined by navigated ultrasound
S. Klein, A. Otto, J. Kozak, L. Kinzl, P. Keppler

11) Accurate calibration method for intraoperative ultrasound
C. Wehrle, J. Kozak, P. Keppler

12) Osteochondral lesions of the talus – clinical experience in navigated Iso-C^{3D} based drilling
K. Wendl, J. van Recum, A. Wentzensen, P.A. Grützner

13) An alternative method for calculation of femoral rotation using image guided surgery
R.N. de Steiger, A. Leung

14) Biomechanical analysis of strength of fixation of tracker devices to bone in computer navigated joint replacement arthroplasty
K. Deep, B. Donnelly, G.A. Tevelan, R. Crawford

15) A modified new reference clamp for minimal invasive navigated operations
M. Citak, M. Kfuri Jr., D. Kendoff, J. Geerling, C. Krettek, T. Hüfner

16) Fully automated computer algorithm for calculating articular contact points with application to knee biomechanics
A. Wolf, B. Jaramaz, P.E. Murtha

17) Mini snake robot for orthopaedic interventions
A. Wolf, H. Choset, A. Degani

18) Mini bone-attached robot for joint arthroplasty
A. Wolf, B. Jaramaz

19) TSA CT-based navigation protocol – preliminary results
P. Kilian, M.E. Bellemare, L. Carat

20) Computer-assisted ankle joint arthroplasty using bioengineered autografts
R. Sidler, M.A. Gonzalez Ballester, M. Styner, L.-P. Nolte, N. Südkamp, W. Köstler

21) Knee osteophytes have little influence on the coronal ligamentous balancing during total knee replacement
J.-Y. Jenny, C. Boeri, L. Schneider

22) The effect of sequential soft tissue release in TKR – a computer aided model
C. Lüring, T. Hüfner, D. Kendoff, H. Bäthis, L. Perlick, J. Grifka

23) Gap balancing in robot assisted total knee arthroplasty
J.K. Seon, E.K. Song, T.R. Yoon, J.Y. Lee, Y.S. Lee

24) Varus and valgus stress before and after TKR – what is right?
F.J. Picard, A. Gregori, P. Marin

25) Influence of navigated soft tissue balancing on the height of the so called joint line
U. Clemens, K. Fujiwara, R.K. Miehlke

26) Soft tissue tightening in the intact and prosthetic knee – in-vitro analysis with a navigation system
C. Belvedere, A. Ensini, A. Leardini, S. Giannini, F. Catani

27) How can the Ceravision system guide to achieve the ligament balance in total knee arthroplasty?
H. Wu, S. van Driessche, D. Blanquaert, D. Goutallier

28) Imageless navigation of unicompartmental knee arthroplasty – first impressions
R. Zini, G. Ponzetto, P. Pirani, S. d'Ercole

29) One-year clinical results of image-guided and conventional Oxford unicompartmental knee replacement
B. Ma, D. Watson, J. Rudan, R.E. Ellis

30) Limitation of preoperative templating of femoral components on plain radiographs – rotational evaluation with synthetic X-rays on ORTHODOC
T. Hananouchi, N. Sugano, N. Nakamura, T. Nishii, H. Miki, H. Yoshikawa

31) Three dimensional evaluation of the patello-femoral joint using MRI
T. Kobayashi, D. Kaneko, M. Matsunaga, K. Nemoto, A. Sugihara, Y. Aoki

32) Three-dimensional biomechanical analysis of acetabular osteotomy for preoperative planning
R. Armiger, M. Armand, J. Lepistö, X. Liu, K. Tallroth, R. Taylor

33) The effect of a laterally elevated wedged insole on the locus of the dynamic loading axis of the knee during gait
H. Kawakami, N. Sugano, K. Yonenobu, H. Yoshikawa, A. Hattori, N. Suzuki

34) Computer assisted preoperative planning and cup positioning in total hip arthroplasty
J.-N.A. Argenson, S. Parratte, X. Flecher, S. Lavallée, P.H. Valloton

35) Stereoscopic visualization and six-degrees-of-freedom interaction in preoperative planning of total hip replacement
D. Testi, M. Diegoli, M. Petrone, C. Zannoni, M. Viceconti

36) 3-dimensional femoral anteversion measurement using the volumetric femoral neck center and the posterior femoral plane in ORTHODOC
Y.S. Lee, T.R. Yoon, S.H. Oh, J.K. Seon, E.K. Song, J.S. Kim

37) Load related trabecular architecture variations in the scapular glenoid – modeling and validation
D. Lim, R. Seliktar

38) A simple method to determinate the pelvic tilt through a radiographically linear measurement to enhance the navigation
G. Grappiolo, G. Burastero, G. Moraca, L. Spotorno

39) Stress distribution visualization on pre- and post-operative virtual hip joint
A. Maciel, S. Sarni, R. Boulic, D. Thalmann

40) Mutual information based musculo-skeletal tumor marking – an anatomical based approach
S.A. Sarfert, A. Kurth, K.A. Siebenrock

41) A natural and intuitive 3D planner for orthopaedic surgery
S. Richards, J.A. Stewart, J.F. Rudan, D.R. Pichora

42) Automated preoperative 3D planning for multi-component implants based on leg length evaluation in total hip arthroplasty using CT data – pilot study
Y. Kagiyama, M. Nakamoto, M. Takao, Y. Sato, N. Sugano, Y. Tada

43) Preliminary experiments of full-length planner in CAOS of lower limb fracture therapy
W. Liu, T. Wang, L. Hu, J. Wei, J. Wang, M. Wang

44) Advanced arthroscopy training simulator – insightMIST©
C. Illana Alejandro, J. Potti Cuervo, P.F. Navarro, J.M. Fernández Fernández-Arroyo, L. Pastor Pérez

45) 3-D planning and virtual X-ray evaluation in hip arthroplasty for instability
M.J. Seel, M. Hafez, K. Eckman, B. Jaramaz, D. Davidson, A.M. DiGioia III

Spine

46) Computer assisted pedicle screw fixation – clinical experience with a newly developed software
P.S. John

47) Comparison of two different navigation systems for spinal instrumentation – an experimental study
J. Geerling, M. Citak, D. Kempe, S. Haschemi-Fard, C. Krettek, T. Hüfner

48) Computer assisted minimal invasive IS joint arthrodesis
F.T. Gebhard, P. Keppler, M. Arand

Novel Technology for CAOS Systems

49) Open architecture haptics simulator for robot-assisted surgery
J.Mª Sabater, J.Mª Azorín, N. García

50) Heat generation and temperature distribution in human cortical bone drilling
A. Murariu, J.P. Turiel, J.C. Fraile

51) Development of robotic model of external fixator for bone deformity correction of mal-unioned lower extremity
Y.H. Kim, S.M. Joo

52) Magnetic attachment of optical reference arrays to reduce the incidence of error caused by pin movement
R.L. Thornberry

53) Possible effects of artifacts on the Iso-C^{3D} navigation
M. Citak, D. Kendoff, J. Geerling, V. Look, C. Krettek, T. Hüfner

54) The Hiploc – an innovative device to transfer the Lewinneck reference system into the surgical field
E. Stindel, C. Lefevre, B. Faguer, R. Gerard, P. Merloz

55) Development of a new miniaturized robotic device for the removal of femoral bone cement
M. Hahndorff, M. de la Fuente, D.C. Wirtz, K. Radermacher

Osteotomies

56) Computer assisted high tibial osteotomy in clinical routine – a prospective study
J. von Recum, K. Wendl, L.-P. Nolte, G. Wang, A. Wentzensen, P.A. Grützner

57) Navigation guided high tibial osteotomy – is it worth the effort?
F. Maurer, G. Wassmer

58) Does computer-assisted navigation increase the precision of the high tibial osteotomy?
R. Wiehe, U. Becker, G. Bauer

59) Arthroscopic assisted CT-free navigation guided medial open wedge high tibial osteotomy
K.W. Cheung, S.H. Yung, K.H. Chiu

60) CT-fluoro based registration for minimally invasive hip surgery
M. Haimerl, F. Grünschläger, A. Oschinski, T. Stahelin, G. Tuma

61) Taylor spatial frame in limb reconstruction surgery – review of 100 cases
I.S. McFadyen, F.P. Monsell, J.A. Livingstone, M.L. Jackson, M.B. Rogers, R.M. Atkins

62) Short-term clinical results of image-guided periacetabular osteotomy
B. Ma, W. Long, J. Yach, J. Rudan, R.E. Ellis

63) Computer assisted high tibial osteotomy
F.T. Gebhard, P. Keppler, J. Kluzik, G. Maier, L. Kinzl

Podium Discussion – CAOS - Its Past, Present, and Possible Future

Moderator: Brian L. Davies

12:00 CAOS: To know where it is going we need to know where it has been and where it is now
S.D. Stulberg

Smart Instruments for Orthopaedic Surgery
L.-P. Nolte

Further Participants: A. Bauer and T. Laine

Break

13:00 LUNCH BREAK AND GENERAL ASSEMBLY OF CAOS-INTERNATIONAL

Session VII – Accuracy of Surgical Navigation

Chairmen: Rolf K. Miehlke and Stéphane Lavallée

14:30 The impact of fixation type and location on tracker stability in navigated THA – a cadaver study
E. Mayr, J.-L. Moctezuma de la Barrera, M. Krismer, M. Nogler

14:40 Accuracy of CT based navigation of tumors in the pelvis
M. Thaler, E. Mayr, A. Prassl, M. Krismer, J-L. Moctezuma de la Barrera, M. Nogler

14:50 Accuracy of the Medtronic Treon Plus CAOS system
J.B. Stiehl, D.A. Heck

15:00 The accuracy of (registration of) the trans-epicondylar axis in computer assisted surgery
E. van der Linden-vd Zwaag, E.R. Valstar, R.G.H.H. Nelissen

15:10 Ultrasound acquisitions for minimally invasive knee surgery using morphometric models –an accuracy analysis
P. Kilian, M.-E. Bellemare, C. Plaskos

Educational Workshops, Part 1

15:20 COFFEE BREAK

Workshop 1
Sponsored by Biomet Europe

Workshop 2
Sponsored by DePuy iOrthopaedics

Workshop 3
Sponsored by Plus Orthopedics AG

17:30 END OF DAY 2

Tuesday, June 21, 2005

8:00 Introduction to the day
Seppo Santavirta

Session VIII – Computer Aided Trauma Care

Chairmen: Tobias Hüfner and Randy E. Ellis

8:15 Fixing peritrochanteric fracture with Gamma nails with fluoro-navigation – a comparative study of operative procedures of two different designs
K.S. Leung, N. Tang

8:25 Surface-matching can predict dislocation parameters of fracture fragments and might improve alignment in fractures of the femoral shaft
T. Gösling, S. Winkelbach, R. Westpfahl, T. Hüfner, F. Wahl, C. Krettek

8:35 A new optical system for measuring fracture healing at external fixators
J. Burger, S. Kussmaul, L. Claes

8:45 Navigated intraoperative clinical test for kinematic assessment of ACL graft behavior
S. Zaffagnini, S. Martelli, S. Bignozzi, N. Imakiire, M. Marcacci

8:55 Ultrasound guided scaphoid pinning
M. Beek, C. Peters, P. Abolmaesumi, T. Chen, R. Sellens, D. Pichora

9:05 Anterior cruciate ligament reconstruction using knee joint laxity measurements and a bendable ligament model
P. Colombet, M. Allard, C. Granchi, C. Plaskos, S. Lavallée

9:15 Table-mounted vs. bone-mounted reference frame attachment in navigation-assisted orthopedic surgery
I. Ilsar, Y. Weil, R. Mosheiff, L. Joskowicz, A. Peyser, M.Liebergall

Round Table – Computer Assisted Traumatology – More than Prototypes?

Moderator: David M. Kahler

9:25 Participants: P.A. Grützner, C. Krettek, M. Liebergall, K.S. Leung

Computer Assisted Spine Surgery – Live Transmission from the Operating Room at ORTON, Helsinki

Moderator: Dietrich Schlenzka

10:00 Operating Surgeons: T. Lund and T. Laine

Poster Session, Part 2

10:30 COFFEE BREAK AND POSTER PRESENTATIONS
Posters 64-74 were rated "Special Posters" indicating an exceptional quality of this work.

64) Fluoroscopy-based navigation system for ACL reconstruction using theoretical AP-view and lateral-view images
C.C. Wu, C.S. Tseng, H.M. Lee, S.T. Hung

65) Cone beam CT for image guided surgery – pre-clinical investigation in tibial plateau fractures
A. Khoury, J.H. Siewerdsen, C.M. Whyne, D.J. Moseley, H.J. Kreder, D.A. Jaffray

66) Fluoroscopy-based rigid registration for image guided spine surgery
X. Zhang, G. Zheng, L.-P. Nolte

67) Semi automated and non invasive determination of bone landmarks using a navigated US
J. Kozak, C. Wehrle, M. Wittek, P. Keppler

68) Development of a computer-assisted, motorized injection device for high viscous materials
M. Löffel, J. Kowal, S. Band, P. Heini, J. Burger, L.-P. Nolte

69) Femoral rotation and balanced flexion gap using navigation system and hydraulic knee analyzer
P.C. Graf, S.-P. Dominati, T. Ledoux

70) Standardized evaluation of accuracy of conventional and navigated cup placement
R.G. Haaker

71) Imageless navigation in minimally invasive total hip replacement with a posterior approach – excellent clinical results and radiographic alignment
M.L. Swank

72) Variation in pelvic position during total hip arthroplasty
M. Tannast, A. Murphy, G. Zheng, K.A. Siebenrock, F. Langlotz

73) Zero-dose C-arm navigation reducing intraoperative radiation
M. de la Fuente, P. Belei, F. Portheine, D.C. Wirtz, K. Radermacher

74) Minimal access total knee arthroplasty using a miniature robot and a new side milling technique
C. Plaskos, P. Cinquin, S. Lavallée, A.J. Hodgson

75) Measuring the tunnel positioning of an ACL replacement with a navigation system – comparison with X-ray measurements
J.-Y. Jenny, L. Schneider, C. Boeri

76) ACL reconstruction with OrthoPilot system – correlations between the computer data and the X-rays measurements – a study with 50 cases
J.-C. Panisset, F. Boux de Casson

77) Kinematic analysis of two different tunnel orientations in double-bundle ACL reconstruction
S. Zaffagnini, S. Martelli, S. Bignozzi, N. Imakiire, M. Marcacci

78) Tunnel placement in computer assisted anterior cruciate ligament surgery
M. Bhattacharyya, B. Gerber

79) Navigated measurement of the tibial rotation after ACL reconstruction
R. Meller, D. Kendoff, B. Zelle, T. Hüfner, F. Fu, C. Krettek

ACL Reconstruction

80) Computer-assisted auto-frame navigation system for distal locking of tibial intramedullary nails – a preliminary report on clinical application
J. Wang, L. Hu, M. Wang, T. Wang, C. Zhao, W. Liu

81) A sound-guided 3D navigation system for tibial intramedullary interlocking nail distal locking screws fixations
S.S. Hung, M.Y. Lee, C.H. Kuo

82) Correction of posttraumatic ankle and hind foot deformities with computer assisted surgery (CAS)
J. Geerling, D. Kendoff, M. Citak, T. Hüfner, C. Krettek, M. Richter

83) Intraoperative use of the Iso-C^{3D} in foot and ankle trauma care – preliminary results of the first 101 cases
J. Geerling, D. Kendoff, M. Citak, M. Richter, T. Hüfner, C. Krettek

84) Decreasing of the torsion difference in femur fractures with the use of fluoroscopy based navigation – a preliminary study
J. Geerling, T. Gösling, D. Kendoff, R. Westphal, C. Krettek, T. Hüfner

85) Robot assisted fracture reduction – a cadaver study
T. Gösling, R. Westphal, T. Hüfner, P. Martin, F. Wahl, C. Krettek

86) Surgical tools in navigation –a new parallel drill guide for femoral neck fractures
D. Kendoff, J. Geerling, M. Citak, T. Gösling, C. Krettek, T. Hüfner

87) Intraoperative 3-D imaging of perilunate dislocations – a decision guidance
D. Kendoff, M. Citak, J. Geerling, M. Richter, T. Hüfner, C. Krettek

88) Intraoperative 3-D imaging control of tibial plateau fractures
D. Kendoff, J. Geerling, M. Citak, T. Gösling, T. Hüfner, C. Krettek

89) Economic value and consequences of intraoperative 3-D imaging at calcaneal fractures
D. Kendoff, M. Citak, J. Geerling, M. Richter, C. Krettek, T. Hüfner

Fracture Fixation

90) Computerized hexapod assisted orthopaedic surgery (CHAOS) in the correction of long bone fracture and deformity
R.M. Atkins, J.A. Livingstone, F.P. Monsell, M.L. Jackson, A.H. McLean

91) A novel interface for ultrasound guided percutaneous pinning of fractured scaphoids
C. Peters, P. Abolmaesumi, T. Chen, D. Pichora, R. Sellens

92) Measurement of traction load and torque transferred to the lower extremity during simulated fracture reduction
M. Yuki, S. Masanobu, T. Yuichi, Y. Kazuo, W. Shinichi, S. Nobuhiko

93) Clinical use of virtual fluoroscopy in trauma surgery
P.F. Merloz, H. Vouaillat, A. Eid, S. Blendea, S. Plaweski, J. Troccaz

94) About the benefit of intraoperative 3D-imaging in repairing displaced intraarticular calcaneal fractures – results of a comparative study
A.P. Schmidt, K. Wendl, C.G. Wölfl, P.A Grützner, A. Wentzensen

95) Hip resurfacing with computer navigation – initial experience at The Royal Bournemouth Hospital, UK
H.S. Sandhu, R.G. Middleton

96) A practical reference coordinate system for planning hip resurfacing arthroplasty
W. Dandachli, R. Richards, S. Harris, A. Barrett, J.P. Cobb

97) Comparison between conventional and navigated inserted cups using the OrthoPilot in standardized evaluation X-rays
R.G. Haaker, A. Ottersbach

98) Preliminary report of the navigated THA for dysplastic hip with OrthoPilot
K. Kanesaki, H. Hieda, T. Tamaki, M. Kubo, K. Nagata

99) Highlighting of navigation of the pelvic tilt through an "in-vitro study"
G. Grappiolo, S.-P. Dominati, G. Burastero, L. Spotorno

100) Accuracy and potential pitfalls of fluoroscopy guided acetabular cup placement
M. Tannast, F. Langlotz, M. Kubiak-Langer, U. Langlotz, K.A. Siebenrock

101) Comparison of experience with CT-based and fluoroscopic-based surgical navigation for total hip arthroplasty
S.B. Murphy

102) Minimally invasive surgery and navigation total hip prosthesis
H. Judet

103) The role of navigation-supported minimally invasive total hip replacement in daily practice by means of the SAL device
J.E. Brandenberg, C. de Simoni

104) Non-image based navigation for minimally invasive THR – a feasibility study of cup and stem navigation
T. Mattes, W. Puhl

105) Complete hip navigation in THA – technique and first results with OrthoPilot 2.0
H. Kiefer, A. Othman

106) A novel approach for biomechanical cup positioning in THR
E. Schkommodau, E. Rydlikowski, D.C. Wirtz, K. Radermacher

107) Individual optimization of the individual joint biometry in THR – computer assisted positioning and selection of implant segments in a new modular THR implant system
J.A. Richolt, S. Kammerzell, L. Zichner

108) Is computer assisted surgery worthwhile in high demanding knee replacement? A matched-pairs study
N. Confalonieri, A. Manzotti, K. Motavalli

109) Short term clinical follow-up comparing rotating vs. fixed bearing navigated TKR
C. Lüring, H. Bäthis, F. Oczipka, C. Trepte, L. Perlick, J. Grifka

110) Accuracy measurement of current TKR instrumentation with navigation
E. Andrea, C. Fabio, R. Fulvio, L. Alberto, B. Luca, G. Sandro

111) CAOS assessment of tibial rotation in total knee arthroplasty
J.B. Stiehl

112) Dynamic long-leg mechanical axes tracking – a prospective study on 25 patients – relationship between mechanical axis and knee rotation
F.J. Picard, A. Gregori, P. Martin

113) Image-free navigation system for total knee arthroplasty – determination of accuracy by using preoperative and postoperative CT measurement
D. Tigani, E. Rincari, E. Rimondi, P. Trentani, M. Mastroieni, F. Trentani

114) A framework and parameters for quantitative assessment of bone cutting for TKR
H. Haider, O.A. Barrera

115) Navigated freehand bone cutting for TKR – more experiments with more detailed 3-d quantitative surface comparison to conventional cuts
O.A. Barrera, T.D. Sekundiak, K.L. Garvin, B. O'Brien, H. Haider

116) Ankle torsion would cause varus alignment of the tibia using extramedullary guide in total knee arthroplasty – the necessity of computer navigation system
S. Matsuda, H. Mizu-uchi, H. Miura, H. Higaki, H. Miura, Y. Iwamoto

117) Clinical evaluation of CT-based navigation system for total knee arthroplasty
H. Mizu-uchi, S. Matsuda, H. Miura, R. Nabeyama, K. Okazaki, Y. Iwamoto

118) Differences in patellar tracking between intact and replaced knee with and without patellar resurfacing – an in-vitro study
C. Belvedere, A. Ensini, A. Leardini, S. Giannini, F. Catani

119) A hand-held computer-controlled tool for total knee replacement
T. Devos, P. Martin, F.J.M. Picard, M. Borchers, N. Cabanial, A. Dassier

120) A computer assisted surgical technique for total knee arthroplasty revision
M. Marcacci, L. Nofrini, F. Iacono, S. Bignozzi

121) Adjustable constraints – a novel method for positioning 8-in-1 cutting guides in computer assisted orthopaedic surgery
A.D. Pearle, A. Leroy, C. Granchi, C. Plaskos, S. Lavallée, P. White

122) Computer navigated knee prostheses are too large
E. van der Linden-vd Zwaag, E.R. Valstar, R.G.H.H. Nelissen

123) A comparative study of minimally invasive computer assisted total knee replacement (MICA TKR) and conventional open computer assisted total knee replacement (CAT KR)
S.K. Chauhan, M. Ather, D. Lucas

124) MIS meets CAOS – early experiences and results in MIS TKJR
A.C, Gregori, G. Holt

125) CAS enabled minimally invasive TKA – better clinical results and better alignment than mechanical instruments
M.L. Swank

126) Minimally invasive, computer-assisted TKR – the use of percutaneous 2-pin fixation
S.B. Murphy

127) Factors affecting the accuracy of minimally invasive total knee arthroplasty
S.D. Stulberg, L. Koyonas, S. McCusker, M. Granieri

Total Knee Replacement

Minimally Invasive Total Knee

Presidential Guest Lecture

12:00 Pär Slätis

Break

13:00 Lunch Break

Session IX – Registration

Chairmen: Norberto Confalonieri and Leo Joskowicz

14:00 A novel 3D ultrasound to bone surface registration technique using the unscented Kalman filter
M. Hedjazi Moghari, P. Abolmaesumi

14:10 Robust registration in robotic assisted unicompartmental knee arthroplasty – the region-based point acquisition protocol
F.M. Rodriguez y Baena, A.R.W. Barrett, J.P. Cobb, J. Henckel, M. Jakopec, B.L. Davies

14:20 A system for ultrasound-guided computer-assisted orthopaedic surgery
T. Chen, P. Abolmaesumi, R.E. Ellis, D. Pichora

14:30 Validation of fluoroscopic registration in surgical navigation of total hip arthroplasty
J.B. Stiehl, D.A. Heck, B. Jaramaz

14:40 Using anatomical models and fast rendering algorithms for C-arm pose recovery and cone-beam tomographic reconstruction of bone anatomy
O. Sadowsky, K. Ramamurthi, J.L. Prince, R.H. Taylor

Educational Workshops, Part 2

14:50 COFFEE BREAK

Workshop 4
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Workshop 5
Sponsored by DePuy iOrthopaedics

Workshop 6
Sponsored by BrainLAB AG

17:00 END OF DAY 3

Conference Banquet

18:15 Bus Transfer to Hotel Kalastajatorppa
19:00 CAOS Banquet
Presentation of the Maurice E. Müller Award for Excellence in Computer Assisted Surgery
Inauguration of the new CAOS-International President
Invitation to the 6th Annual Meeting of CAOS-International in Montreal, Canada

Wednesday, June 22, 2005

8:00 Introduction to the day
Teija Lund

Session X – Hip Resurfacing

Chairmen: Stephen B. Murphy and Branislav Jaramaz

8:15 Computer-assisted pre-operative planning for hip joint-preserving surgery
M.J. Kang, H. Sadri, N. Magnenat-Thalmann

8:25 The Tubes™ system for minimally invasive computer assisted hip resurfacing surgery
A.R.W. Barret, J.P. Cobb, M. Jakopec, S.J. Harris, F.M. Rodriguez y Baena, B.L. Davies

8:35 Automatic detection of femoral neck axis for hip resurfacing surgeries
H. Müller, B. Bracke, R. Dick

8:45 Biomechanical and geometrical consequences of femoral resurfacing component placement
C. Anglin, J. Tonetti, K. Beadon, A.J. Hodgson, N.V. Greidanus, C.P. Duncan

8:55 Computer aided hip resurfacing arthroplasty
W.J. Long, J. Rudan, R.E. Ellis

Session XI – General Aspects of Computer Assisted Total Hip Replacement

Chairmen: P.S. John and Yoshinobu Sato

9:05 Tissue-preserving computer-assisted total hip arthroplasty – faster recovery and lower complication rate without compromising accuracy of cup orientation
S.B. Murphy, M. Tannast

9:15 Comparison between robotic-assisted system and manual implantation of primary cementless total hip arthroplasty – a short-term result
N. Nakamura, N. Sugano, T. Nishii, H. Miki, A. Kakimoto, M. Yamamura

9:25 Computer-assisted femoral head resurfacing
K.B. Inkpen, M. Shekhman, C. Anglin, N.V. Greidanus, J. Tonetti, B.A. Masri, A.J. Hodgson, C.P. Duncan, D.S. Garbuz

9:35 Computer-assisted navigation in the acetabular component positioning in total hip joint replacement – a randomized controlled clinical study
J. Kasurinen, S. Varjonen, M. Ylikoski, J. Lepistö

9:45 Higher accuracy of cup positioning by using an image-free navigation system
T. Kalteis, L. Perlick, H. Bäthis, M. Handel, J. Grifka

9:55 Prediction of individual hip joint motion and impingement – a validation study using surgical navigation
M. Tannast, M. Kubiak-Langer, F. Langlotz, R. Ganz, K.A. Siebenrock, S.B. Murphy

Break

10:05 Coffee Break

Session XII – General Aspects of Computer Assisted Total Knee Replacement

Chairmen: Justin P. Cobb and Sandra Martelli

10:30 Navigated versus hand-guided total knee arthroplasty
R. Rosiek, B. Stöckl, E. Mayr, M. Nogler, M. Krismer

10:40 Functional impact of navigation assisted minimally invasive total knee arthroplasty
E.K. Song, J.K. Seon, T.R. Yoon, J.Y. Lee, S. M. Rowe, C.I. Hur

10:50 Process optimization for shorter operation times in navigated TKA – a comparison between navigated and manual procedures
H.-J. Walde, T.A. Walde, D. Burgdorf

11:00 Computer-assisted arthroplasty versus conventional jig-based/hand-guided techniques – a systemic review
L.S.S. Foo, M. Samuel

11:10 Rotational alignment in total knee replacement using CT-less navigation
M. Pleser, O Wörsdörfer

11:20 Very low dose computer tomography (CT) based planning and outcome measurement in knee arthroplasty
J. Henckel, J.P. Cobb, S.J. Harris, F.M. Rodriguez y Baena, A.R. Barrett, B.L. Davies

11:30 Preoperative versus intraoperative assessment of landmarks in navigated TKA – a regression and correlation analysis
M. Oberst, C. Bertsch, S. Würstlin, U. Holz

Scientific Awards Ceremony

11:40 Best clinical podium presentation award
Sponsored by Aesculap

Best technical podium presentation award
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Best clinical poster presentation award
Sponsored by ORTON Invalid Foundation

Best technical poster presentation award
Sponsored by Aesculap

Closing

12:00 Closing remarks
D. Schlenzka

12:15 ADJOURN

Meeting of the ASTM International Subcommittee F04.05

Computer Assisted Orthopaedic Surgical Systems

The subcommittee is working on a draft standard practice for the Measurement of Positional Accuracy of Computer Assisted Orthopaedic Surgical Systems. This first, and fundamental, baseline document will provide a protocol for measuring accuracy across all image and non-image based systems. The group decided to standardize accuracy measurements first since defining a way to compare the accuracy of various systems using a common protocol will provide a fundamental basis for the review of different technologies and their application to various tasks, and open the way to system comparison. Joel Bach, Ph.D., an assistant professor at the University of Colorado Health Sciences Center and Colorado School of Mines, is chairing the task group that will develop this standard.

Interested parties are welcome to join this meeting and participate in the ASTM International standards development activity on CAOS.

Room "Baltic", 2nd Floor, Wednesday, June 22; 12:30 – 17:30

Venue Information

Venue

Marina Congress Center
Katajanokanlaituri 7
00160 Helsinki
Finland

During the Meeting

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