

Marriott Hotel – Milan, Italy, June 18 – 21 2014

Computer Assisted Orthopaedic Surgery

14th Annual Meeting of
CAOS – International
Program

Honorary President: *Paolo Cherubino*

President: *Norberto Confalonieri*



Under the patronage of:



**Società Italiana di Ortopedia
e Traumatologia**



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e Traumatologi Ospedalieri d'Italia**

14th Annual Meeting of International Society for Computer Assisted Orthopaedic Surgery

Welcome to our 14th C.A.O.S. Meeting Milan Italy, June 2014



Dear Friends,

The 14th Annual Meeting of the International Society for Computer Aided Orthopaedic Surgery (CAOS) will be held in Milan, Italy, from 18 to 21 of June, 2014.

It is a great honour and pleasure that the Executive Board and the Assembly of our Association have decided to hold the 14th annual meeting in Milan.

I am proud to invite you to attend this gathering of surgeons, biomechanics engineers, companies and researchers, who are the world's leading experts in the fields of computer and robotic assistance in orthopaedic and traumatology surgery.

A special feature of this event will be the combined sessions with the most important Italian and European scientific associations: S.I.O.T. (Italian Society Orthopaedic and Traumatology), E.H.S. (European Hip Society) and S.I.G.A.S.C.O.T. (Italian Society Knee, Arthroscopy, Sport, Cartilage and Orthopaedic Technology partner of E.S.S.K.A. and E.K.A.).

A special pre-congress event will be held on Wednesday 18th June, with a lot of Educational Re-live surgeries and mini-debates about the most controversial aspects of these surgical procedures with computer and robotic tools.

There will be an Exhibition and Presentations of the most important Companies involved in this field with workshops, talks and video-surgeries about the new products and technologies.

Milan is the financial capital of Italy, the power engine of the Italian economy, a great combination of culture, art, fashion, unforgettable Italian food & wine, nightlife and unique way of life. Milan moves at a fast pace but also offers relaxing breaks, with mountains, lakes and golf courses nearby. Just outside the city the beautiful Lake Como is waiting for you. We are organizing special events for the social programme with many cultural, gastronomic and fashion Italian surprises.

I hope that this CAOS meeting will be a great occasion for fruitful collaboration and the development of long-lasting relationships between clinical and basic research and a most memorable stay for you and your families in Milan.

I am very glad to welcome you all in Milan, Italy!

Norberto Confalonieri M.D.
Orthopaedic Surgeon
President of CAOS – International 2014

President of CAOS - ITALY & Conference Chairman

Norberto Confalonieri

Milan, Italy

Program Committee

Brian Davies, London, UK
Chairman Program Committee 2014

Norberto Confalonieri

Milan, Italy

Tony Hodgson

Toronto, Canada

Branislav Jaramaz

Pittsburgh, USA

Leo Joskowicz

Jerusalem, Israel

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Philippe Merloz, France
Chairman award committee 2014

André Bauer, Spain

Philippe Cinquin, France

Brian Davies, Great Britain

Scott Delp, USA

Anthony DiGioia, USA

Branislav Jaramaz, USA

Leo Joskowicz, Israel

Stéphane Lavallée, France

Lutz-Peter Nolte, Switzerland

Frédéric Picard, UK

Klaus Radermacher, Germany

David Stulberg, USA

Nobuhiko Sugano, Japan

Russell Taylor, USA

C.A.O.S. ITALY

Wednesday, June 18, 2014

08.20 Welcome and Introduction
N. Confalonieri

SOME OTHERS ASPECTS (8'+2' discussion)

Chairmen: **G. M. Calori, S. Bignozzi**

08.30 MIS in the Hip Surgery: The Brexis Short-Stem

C. Cucciniello, F. Lonati, D. Duci, F. Curti, C. Borsotti

08.40 Potentialities of wearable augmented reality in orthopaedics

P. Parchi, N. Piolanti, L. Andreani, F. Cutolo, C. Freschi, S. Mascioli, M. Ferrari, M. Lisanti

08.50 Management of long bone complex deformities with the computer-assisted ortho-suv frame[®] hexapod external fixation system

B. Bertani, L. Pedrotti, G. Tuvo, S. Lucanto, F. De Rosa, R. Mora

09.00 Computer- assisted navigation systems in oncological spine surgery

S. Bandiera, S. Colangeli, A. Gasbarrini, G. Barbanti Brodano, S. Terzi, R. Ghermandi, M. Girolami, S. Boriani

09.10 Computer-assisted surgery: a teacher of TKAs

F. Conteduca, R. Iorio, D. Mazza, G. Bolle, A. Redler, L. Valeo, A. Ferretti

ACL AND HIP (8'+2' discussion)

Chairmen: **F. Benazzo, A. Piccioli**

09.20 Reliability of a smartphone app in diagnosis of ACL rupture

L. Valeo, R. Iorio, D. Mazza, A. Ferretti

09.30 The influence of tunnel tibial slope on postoperative knee laxity after ACL reconstructions

C. Signorelli, T. Bonanzinga, N. Lopomo, A. Grassi, F. Raggi, G.M. Marcheggiani Muccioli, M. Marcacci, S. Zaffagnini

09.40 Risultati clinici e radiografici a breve termine, dell'impianto della protesi monocompartimentale mediale con tecnica robotizzata MAKO RIO System

P.G. Perazzini, P. Sembenini, A. Marangon, F. Alberton

09.50 Intraoperative validation of the accuracy of limb length and offset measure with BrainLab Navigation system compared to standard radiology and clinical measurements.

A prospective comparative study

L. Orlandini, V. Meroni, O. Consonni, M. Ulivi, V. Sansone

UKR (8'+2 di discussion)

Chairmen: **F. Catani, R. D'Anchise**

- 10.00 Artroprotesi totale di anca con metodica MAKO-RIO (MAKOplastica): la nostra esperienza
P.G. Perazzini, A. Marangon, P. Sembenini, F. Alberton
- 10.10 MAKO robotic arm system (MAKOplasty) Unicompartmental Lateral Knee Arthroplasty using the MAKO robotic arm system (MAKOplasty)
G. Franceschi, D. Bertolini, C. Khabbazè, A. Rovini, R. Nardacchione
- 10.20 Is there any benefit in varus-valgus stability using navigation in unicompartmental knee arthroplasty? A kinematic assessment
N. Confalonieri, S. Bignozzi, A. Manzotti
- 10.30 Early experience with prenavigation and with a new system of navigation in unicompartmental and total knee replacement: pros and cons
M. Denti, C. Bait, A. Quaglia, E. Prospero, P. Volpi

BIOMECHANICS – KINEMATICS (8'+2 discussion)

Chairmen: **C. Frigo, S. Giannini**

- 10.40 Automatic landmark processing from bone surface in knee surgery based on resection guides specific to patient anatomy
P. Cerveri, M. Marchente, N. Confalonieri, A. Manzotti, G. Baroni
- 10.50 Patello-femoral joint tracking in navigated total knee arthroplasty
C. Belvedere, A. Ensini, A. Leardini, A. Feliciangeli, S. Giannini
- 11.00 Post-operative assessment of the efficacy of Modern surgical technologies for total knee replacement
A. Leardini, C. Belvedere, A. Ensini, S. Tamarri, M. d'Amato, S. Giannini
- 11.10 Patient-specific instrumentation in total knee arthroplasty
A. Ensini, C. Belvedere, A. Leardini, S. Tamarri, P. Barbadoro, S. Giannini

TKA (8'+2 discussion)

Chairman: **V. Calvisi, G.V. Mineo**

- 11.20 Patient Specific Instruments is really usefull? Prospective study of 50 pre-navigated total knee replacement
C. Chemello, G. Costacurta

- 11.30 Three different cruciate sacrificing TKA designs: no intraoperative kinematic differences and no clinical differences at 2 years follow up
S. Bignozzi, S. Zaffagnini, I. Akkawi, T. Marko, D. Bruni, F. Colle, M. Marcacci
- 11.40 Comparative study on pre intra and post-operative assessment of the mechanical axis in knee arthroplasty performed with a computerised navigation system
A.M. Molinar Min, F. Amberti, D. Agosta, W. Vogel
- 11.50 CT evaluations in 15 TKAs using Patient Specific Instruments. Our experience
V. De Santis, A. Burrofato, R. D'Apolito, C. De Ieso, D. A Santagada, A. Cipriani, F. Ferrara, N. Magarelli
- 12.00 Outcomes of computer navigated SCORE[®] highly congruent mobile-bearing TKA at minimum 5 years follow-up
A. Todesca, L. Garro, M. Penna, H.J. Bejui
- 12.10 Computer Assisted Total Knee Arthroplasty: A Medium 2.5 Years Follow-up of 200 Cases
D. Notarfrancesco, A. Lamberti, F. Aquino, A. Zara, L. Russo
- 12.20 Validazione del software pinless Alignment Verification Workflow Knee 25 Brainlab e del sistema DASH in protesi totale ginocchio eseguita con tecnica computer assistita
M. Ulivi, V. Sansone
- 12.30 Navigazione computerizzata, mini invasività e design delle protesi nella chirurgia sostitutiva articolare del ginocchio
S. Santamaria

12.40 – 13.50 **Light Lunch and Assembly of CAOS ITALY**

PRE - CONGRESS DAY

Wednesday, June 18, 2014

Chairmen: *B.L. Davies, F. Picard*

14.00 Introduction to CAOS - **N. Sugano**

14.20 - 18.00 Educational Re-live surgery

MINI-DEBATES

Videosurgery+ Personal experience (12') + Discussion [6']

14.20 **TKR:**

Robot - **E.K. Song**

Navigation - **D. Saragaglia**

Discussion

14.50 **TKR:**

E-libra - **F. Bernetti**

Orthopilot – **S. Hakki**

Discussion

15.20 **PSI:**

TAC – **R. Harvey**

RMN – **E. Thienpont**

Discussion

15.50 **Knee Prosthesis:**

PSI – **A. Toms**

Navigation – **J.Y. Jenny**

Discussion

16.20 **UKR Robots:**

Mako – **M. Conditt**

Blue Belt Technologies, Inc - **B. Jaramaz**

Discussion

16.50 **THR:**

Hip Sextant – **S. Murphy**

Computer – **J. Lazovic**

Discussion

17.20 **THR:**

Robot – **D. Padgett**

Navigation – **K. Deep**

Discussion

17.50 Close Remaks - **A. Ferretti**

CAOS - International Annual Meeting *Thursday, June 19, 2014*

07.00 Registration and Coffee Breakfast (Exhibition Area)

07.45 Introduction to the 14^o Annual Meeting - ***N. Confalonieri, B. Davies***

SESSION 1: *UNI*

Chairmen: *A. Ajeya, S. Bignozzi*

08.00 The accuracy of a robotically-controlled freehand sculpting tool for unicondylar knee arthroplasty

F. Picard, J. Lonner, B. Hamlin, J. Smith, P. Rowe, P. Riches, A. Deakin

08.10 The learning curve of a novel handheld robotic system for unicondylar knee arthroplasty

A. Gregori, F. Picard, J. Bellemans, J. Lonner, R. Marquez, J. Smith, A. Simone, B. Jaramaz

08.20 Short-term outcomes of robotic-arm assisted bicompartamental knee arthroplasty

C. Tamam, J.F. Plate, M. Augart, T.M. Seyler, S. Von Thaeer, J. Allen, G.G. Poehling, R.H. Jinnah, M.A. Conditt

08.30 Handheld Robot-Assisted Unicondylar Knee Arthroplasty: A Clinical Review

F. Picard, A. Gregori, J. Bellemans, J. Lonner, J. Smith, D. Gonzales, A. Simone, B. Jaramaz

SESSION 2: *Osteotomy And Femoral Acetabular Impingement*

Chairmen: *D. Saragaglia, E. De Momi*

08.40 Results of Navigational Open Wedge High Tibial Osteotomy Compared with Conventional Cable Technique

H. Park, E. Song, J. Seon, K. Lee, C. Park, H. Kim, G. Kim

08.50 Determinants of Femoral Head Displacement after Rotational Acetabular Osteotomy for Hip Dysplasia

M. Takao, T. Nishii, T. Sakai, H. Yoshikawa, N. Sugano

09.00 Effect of medial opening wedge high tibial osteotomy on intraarticular knee and ankle contact surface pressures

E. Suero, Y. Sabbagh, R. Westphal, N. Hawi, M. Citak, F. M. Wahl, C. Krettek, E. Liodakis

09.10 The effect of tibial rotation during high tibial osteotomy on the contact pressures in the knee and ankle joints

N. Hawi, E. Suero, Y. Sabbagh, R. Westphal, M. Citak, F. Wahl, C. Krettek, E. Liodakis

- 09.20 Navigated acetabular reorientation during periacetabular osteotomy
a computer-assisted Cadaver Study
T. M. Ecker, M. Puls, J. D. Bastian, M. J. B. Keel, M. Tannast, L. Liu, G. Zheng, K. A. Siebenrock
- 09.30 In vitro evaluation of functional hip center method detection using only tibial tracker for
computer assisted tibial osteotomy surgery
Z. Dib, G. Dardenne, N. Poirier, P. Huet, C. Lefevre, E. Stindel
- 09.40 3D Ultrasound-Guided Femoroacetabular Impingement Surgery: A Cadaver Study
L.L. Buchan, J.C. Doucette, I. Hacihaliloglu, R.E. Ellis, M.K. Gilbert, D.R. Wilson
- 09.50 A comprehensive computational framework to diagnosis and plan Femoroacetabular
impingement
L. Liu, P. Haefeli, T. Ecker, K. Siebenrock, L.P. Nolte, G. Zheng

Coffee Break and POSTERS SESSION Part 1

- 10:00 *S1-S5 Were rated "SPECIAL POSTERS" indicating an exceptional quality of this work. Posters will be presented in five sessions, during which the authors of the respective session's posters will be present at the poster booths. However, all posters and special posters of all sessions will be on display during the entire time of the meeting.*
- S1) Is there any benefit in varus-valgus stability using navigation in unicompartmental knee arthroplasty? A kinematic assessment
N. Confalonieri, S. Bignozzi, A. Manzotti
- S2) Unicompartmental knee arthroplasty versus total knee arthroplasty. Are we able to create the forgotten joint?
H.A. Zuiderbaan, C. Ismael, S. Khamaisy, R. Thein, S. Paul, A. Pearle
- S3) Validation of patient specific surgical guide for pelvic osteotomy
T. Sakai, T. Hanada, T. Murase, M. Takao, T. Nishii, H. Yoshikawa, N. Sugano
- S4) Tool bracing for performance improvement in simulated femoral neck osteoplasty
J. Kooyman, Y. Po Liu, M. Gilbert, A.J. Hodgson
- S5) Potentialities of wearable augmented reality in orthopaedics
P. Parchi, N. Piolanti, L. Andreani, F. Cutolo, V. Ferrari, M. Ferrari, M. Lisanti
- S6) Repeatability analysis of manual segmentation for high resolution and low resolution MRI images of hip joints
X. Kang, D. R. Wilson, A. J. Hodgson
- S7) The stress distribution between prosthesis and bone interface in 10 total knee replacement models during squatting position: a finite element study
P. Sriphirom, C. Siramanakul
- S8) Short-term results of patient-specific total knee arthroplasty compared with conventional technique
E. Song, J. Seon, H. Park, K. Lee, C. Park, H. Kim, B. Na

- 1) Mid-term results of 29 computer-assisted osteotomies for genu valgum deformity.
D. Saragaglia, B. Chedal-Bornu
- 2) Patient Specific instrumentation for Complex Orthopaedic Surgery – A report of 2 cases
K.S. Leung, N. Tang, K.L. Liu, L.H. Hung, C.S. Chui
- 3) Fragment mobility of the acetabulum in periacetabular osteotomy performed through the pararectus approach – a navigated cadaver feasibility study
T.M. Ecker, J.D. Bastian, L. Liu, G. Zheng, M. Tannast, P. Haefeli, M.J.B. Keel, K.A. Siebenrock
- 4) Investigation of acetabular sector angle by three-dimensional computed tomography in curved peracetabular osteotomy (CPO)
S. Nakasone, T. Yamauchi, H. Horizono, F. Kanaya
- 5) Unicompartamental lateral knee arthroplasty using the MAKO robotic arm system (MAKOplasty)
G. Franceschi, D. Bertolini, C. Khabbazè, A. Rovini, R. Nardacchione
- 6) Change of unaffected limb gait pattern after unilateral total knee arthroplasty
D.H. Ro, G.H. Moon, K.Y. Chung, Y. Cho, Y. Lee, S. Kim, S. Lee, M. C. Lee
- 7) Primary mechanical stability of unicondylar knee replacement implants
H.G. Wells, A. Thomson, P.E. Riches
- 8) Two year survivorship of robotically guided unicompartamental knee arthroplasty
T. Coon, M. Roche, A. Pearle, J. Douchis, T. Borus, F. Buechel
- 9) Quantifying the soft tissue envelope during varus/valgus test in cadaveric specimens
A.A. Adewumi, P.J. Rowe
- 10) 500 consecutive robotic arm assisted medial UKA: an outpatient procedure that consistently increases ROM
F. F. Buechel
- 11) Robotic arm assisted UKA: the Makoplasty Experience
A. Ranalletta, C. Ranalletta
- 12) Early experience with prenavigation and with a new system of navigation in unicompartamental and total knee replacement: pros and cons
M. Denti, C. Bait, A. Quaglia, E. Prospero, P. Volpi
- 13) Effect of navigation on posterior slope of Oxford unicompartamental knee replacements in low volume surgeons
G.K.M. Pemmaraju, A. Thomas, J.J. Malal, S. Deshpande

ROOM 2:

SESSION 3: *Tecnichal Innovation*

Chairmen: *E. Stindel, L. Nolte*

- 11.00 The Aspherical Hip: An In-Vitro Study
S. Zakani, J. Rudan, R. E. Ellis
- 11.10 The influence of the native, ruptured and reconstructed Medial Patellofemoral Ligament (MPFL) to 3D-Patella-Tracking. Development of a dynamic knee-simulator using an industrial robot and an optical tracking system
V.R. Hofbauer, J. Glasbrenner, T. Bittrich, C. Kusters, D. Rosenbaum, M.J. Raschke
- 11.20 Ultrasound-based automatic registration for minimally invasive orthopedic surgery
H.E. Fakhfakh, G. Llort-Pujol, C. Hamitouche, E. Stindel
- 11.30 Design and validation of a smart knee brace to measure varus-valgus stability
C.P. Bell, P. A Meere, I. Borukhov, P.S. Walker
- 11.40 Automated laser registration for computer assisted orthopaedic surgery
S. V. Joshi, P. Rowe
- 11.50 Accuracy of a visible spectrum single camera drill mounted tracking system for knee arthroplasty
N. Smith, V. Stankovic, P.E. Riches

LUNCH BREAK and Combined Session CAOS and SIGASCOT

(Italian Society of Knee Surgery, Arthroscopy, Cartilage, Sport Trauma and Orthopaedic Technologies-European Society Sport traumatology Knee and Arthroscopy)

Chairmen: *P. Adravanti, N. Confalonieri*

Discussants *P. Randelli, S. Zaffagnini*

- 12.00 CAOS and research - *F. Rodriguez Y. Baena*
- 12.12 Navigation in kinematic assessment - *S. Zaffagnini*
- 12.24 Navigation and TKR - *J. Y. Jenny*
- 12.36 Navigation and osteotomies - *D. Saragaglia*
- 12.48 Robot and TKR: lights and shadows - *J.A. Koenig*
- 13.00 New Trends in knee reconstruction - *F. Picard*
- 13.12 Discussion

SESSION 4: TKR1: PSI and Kinematic

Chairmen: *A. Amis, W. Bargar*

- 13.30 Preoperative kinematic navigation for surgical approach choice in TKR
R. Hart
- 13.40 Patient specific instruments for Total Knee Arthroplasty: A Novel Technique with an Open Platform
M.A. Hafez
- 13.50 Does Implant Design Influence the Accuracy of Patient Specific Instrumentation in Total Knee Arthroplasty?
N. Goyal, A. Patel, M. Yaffe, M. Luo, S. D. Stulberg
- 14.00 Intra-operative analysis of the kinematic behavior of a total knee replacement by a navigation system. Initial experience and further development
J. Y. Jenny, Y. Diesinger, F. Firmbach
- 14.10 Do different PSI Software programs produce similar preoperative plans when applied to a single implant system?
S. D. Stulberg, N. Goyal
- 14.20 On the unreliability of collateral stability assessment in knee arthroplasty with the knee locked in screw home position. A kinetic – kinematic mechanical study
P.A. Meere, C.P. Bell, I. Borukhov, P. Rathod, P.S. Walker
- 14.30 Improvement of semi-automated 3D kinematic measurement of total knee arthroplasty from X-ray fluoroscopic images
T. Yamazaki, R. Kamei, T. Tomita, Y. Sato, H. Yoshikawa, K. Sugamoto
- 14.40 Accuracy of CT-based custom-made surgical templating instrumentation for patella resection in total knee arthroplasty – in vitro study
T. Tomita, K. Futai, K. Iwamoto, Y. Kii, D. Kiyotomo, K. Yamamoto, T. Murase, H. Yoshikawa, K. Sugamoto
- 14.50 Comparison of the kinematic behaviour of a total knee replacement with either floating platform with posterior cruciate retaining or rotating platform with posterior cruciate substitution with an intra-operative navigation system
J.Y. Jenny

Coffee Break and POSTERS SESSION Part. 2

- 15:00 *S6-S10 Were rated "SPECIAL POSTERS" indicating an exceptional quality of this work. Posters will be presented in five sessions, during which the authors of the respective session's posters will be present at the poster booths. However, all posters and special posters of all sessions will be on display during the entire time of the meeting.*
- S9) Accuracy of three-dimensional preoperative templating in total hip arthroplasty using navigation
T. Fujishiro, S. Hayashi, N. Kanzaki, S. Hashimoto, M. Kurosaka
- S10) The Learning Curve Associated with Robotic-Assisted Total Hip Arthroplasty
J.M. Redmond, A. Gupta, J.E. Hammarstedt, A. Petrakos, C. E. Stake, B.G. Domb
- S11) Does Robotic-Assisted Computer-Navigation Affect Acetabular Cup Positioning in Total Hip Arthroplasty in the Obese Patient? A Comparison Study
J.M. Redmond, A. Gupta, J.E. Hammarstedt, A. Petrakos, C.E. Stake, B.G. Domb
- S12) The effect of femoral neck anteversion on foot progression angle
H. Hamada, S. Tamura, M. Takao, H. Miki, A. Hattori, N. Suzuki, K. Yonenobu, N. Sugano
- S13) Accuracy of combined anteversion in THA with the stem first technique using image-free navigation
S. Fukunishi, S. Nishio, T. Fukui, Y. Fujihara, S. Okahisa, S. Yoshiya
- S14) Revision total hip arthroplasty using imageless navigation with the concept of combines anteversion
J. Chang, I. Kim, A. Bajaj, J. Yoo
- 14) Reduction of the dose of ionising radiation in navigated transpedicular screw placement
R. Hart
- 15) Sensitivity analysis of geometric and dynamic variables of the scoliotic spine on the computation of intervertebral efforts
G. Abedrabbo, O. Cartiaux, P. Fiset, M. Raison, P. Mahaudens, C. Detrembleur, M. Mousny
- 16) Clinical Comparison of Navigation Assisted
T. Wei, L. Yajun, J. Peihao
- 17) Intraoperative 3D Navigation
L. Yajun, T. Wei, L. Bo, L. Qin, Z. Guilin, S. Yuzhen
- 18) The New concept of Clinical Application
T. Wei, L. Yajun, L. Bo, H. Lin, L. Zhiyu, Y. Qiang, S. Yuqing, H. Da, X. Yonggang, S. Yuzhen

- 19) Three-dimensional assessment of the mechanical axis crossing point of the knee joint line in the weight-bearing standing position in healthy elderly subjects
A. Arumi, T. Sato, S. Watanabe, O. Tanifuji
- 20) Three dimensional analysis revealed that a tapered wedge cementless Accolade TMZF stems contacted femoral canals at medial and distal zones
K. Tokunaga
- 21) Three-dimensional analysis of forearm deformity in congenital radioulnar synostosis
M. Nakasone, S. Nakasone, C. Futenma, M. Kinjo, K. Horikiri, T. Kinjo, F. Kanaya
- 22) Development of a smart tool based on human intention estimation for accurate and fast operation
P. Yen, S. Hung
- 23) Assessment of skin markers in the lower limb for navigation surgery - A fresh-frozen cadaver study
S. Hung, P. Yen, G.F. Tseng
- 24) Evaluation of a six-dof electromagnetic tracker
E. Lugez, D.R. Pinchora, S.G. Akl, R.E. Ellis
- 25) Semi-automatic 3D quantifications of vertebral fracture restoration based on CT data
J.A. Richolt, G. Le Pennec, X. Barreau
- 26) Insertion accuracy of acetabular cup placement using a smartphone in a cadaveric study
H. Kurosaka, S. Fukunishi, S. Nishio, T. Fukui, Y. Fujihara, S. Okahisa, S. Yoshiya
- 27) Master-slave robot-assisted fracture reduction: a preliminary study in long bone shaft
H. Wei, L. Hong, W.J. Qiang
- 28) TLEMSafe: a European project to improve predictability and success of severe musculoskeletal surgery
P. Jutte, V. Carbone, V. Weerdesteyn, L. Vigneron, M. Damsgaard, R. Sitnik, T. Feilkas, N. Verdonschot
- 29) Applying bracing to orthopaedic surgery: reducing drill plunge depth with a damper-based bracing device
J. McIvor, A.J. Hodgson
- 30) Design of a less-obtrusive flexible optical tracker for computer assisted orthopaedic surgery
M. Semple, A. Hodgson
- 31) Fluoroscopic radiographic markers for measuring tibial torsion based on computed tomography reconstructed radiographs – an accuracy and feasibility study
Y.A. Weil, D. Hakimian, A. Khoury, M. Liebergall
- 32) Feasibility study of a new semi-automatic detection method of joint penetration during triple-screw internal fixation for femoral neck fracture
A. Englebert, O. Cartiaux

- 33) A development of coded infrared LED pattern technology for real-time instrument localization
P. Yuan Lee, S. Yang, M. Hu, H. Lin, M. Wang
- 34) An approach for minimal invasive insertion of pedicle screws using a navigated robotic assistance system
S. Sahm, H. Roth, D. Scale, A. Von Schilling, G. Winkler, U. Spetzger, J. Wahrburg
- 35) Practical Guide to plan and evaluate
O. Cartiaux, B.G. Franca
- 36) Evaluation of bone deformity on accuracy of a computer-assisted guidance system for total knee arthroplasty
L.D. Angibaud, R.A. Liebelt, B. Gao, X. Silver, S. Gulbransen

Combined Session CAOS and SIOT (Italian Society of Orthopaedic and Traumatology)

“WHY COMPUTER ASSISTANCE IS NOT SO POPULAR?”

Chairman: *P. Cherubino, N. Confalonieri*

Moderators and discussants: *F. Falez, A. Masini*

15.40 ***G. Rivkin and M. Liebergall***

15.55 ***P. Regazzoni***

16.10 ***N. Ehrke, M. Immerz***

16.25 Discussion

SESSION 5: THR (planning and outcomes) and SPINE

Chairmen: *Tian Wei, E. Anglin*

- 16.50 Is leg traction test reliable as a measure of leg length and offset in total hip arthroplasty?
M. Takao, T. Nishii, T. Sakai, H. Yoshikawa, N. Sugano
- 16.55 The incidence of noise in computer assisted total hip replacement with ceramic on ceramic bearing and risk factors analysis
K. Deep, C. Siramanakul, V. Mahajan
- 17.00 Factors related to disagreement in implant size between preoperative CT-based planning and implants used in total hip arthroplasty
T. Ogawa, M. Takao, T. Sakai, T. Nishii, N. Sugano

- 17.05 Radiographic Parameters Correlate with Change in Sagittal Pelvic Tilt after Hip replacement
J.D. Maratt, C. Esposito, K. M. Carroll, S.A. Jerabek, D.J. Mayman
- 17.10 Preliminary validation study of the accuracy of cup orientation using the EOS imaging system as Measured by CT
A. Thomas, W.S. Murphy, J.H. Kowal, S.B. Murphy
- 17.15 Robot-assisted spine surgery for improved safety: a prospective case-matched analysis
N. Lonjon, E. Chan-Seng, V. Costalat, B. Bonnafoux, M. Vassal, J. Boetto, F. Segnarbieux
- 17.20 A Robot Assisted Surgical System
T. Wei, H. Xiaoguang, L. Yajun, F. Mingxing, L. Bo, S. Yuqing, H. Da, X. Yonggang
- 17.25 End of the day
N. Confalonieri

CAOS - International Annual Meeting

Friday, June 20, 2014

07.45 Registration and Coffee Breakfast (Exhibition Area)

SESSION 6 : TKR Outcomes

Chairmen: *M. Hafez, S. Lavallée*

- 08.00 The mobile bearing insert can reduce the patello-femoral contact pressure in total knee arthroplasty with CT-based navigation system
K. Takayama, T. Matsumoto, N. Shibanuma, H. Muratsu, T. Matsuzaki
- 08.10 How does laxity after single radius total knee arthroplasty compare with the native knee?
N.C. Hunt, K.M. Ghosh, A.P. Blain, K.K. Athwal, S.P. Rushton, L.M. Longstaff, A.A. Amis, D.J. Deehan
- 08.20 CAS vs Patient matched total knee replacement: X-ray and CT-scan evaluation
F. Mancuso, P. Di Benedetto, V. Cainero, R. Gisonni, A. Beltrame, A. Causero
- 08.30 Three different cruciate sacrificing TKA designs: no intraoperative kinematic differences and no clinical differences at 2 years follow up
S. Bignozzi, S. Zaffagnini, I. Akkawi, T. Marko, D. Bruni, F. Colle, M. Marcacci
- 08.40 Where does all the time go in computer assisted surgery?
D.R. Lionberger, P.P. Talati
- 08.50 Which tibial tray design achieves maximum coverage and ideal rotation: anatomic, symmetric, or asymmetric? An MRI-based study
S.D. Stulberg, N. Goyal
- 09.00 Complications resulting from tracker pin-sites in computer navigated total knee replacement
A. Thomas, G. Pemmaraju, S. Deshpande

SESSION 7: THR (navigation) Trauma

Chairmen: *N. Sugano, G. Zheng*

- 09.10 Evaluation of Ultrasound-based Navigation System with CT in total hip arthroplasty
N. Taki, N. Mitsugi, Y. Mochida, M. Aratake, H. Ota, K. Shinohara, T. Saito
- 09.20 Accuracy and precision of acetabular component placement with imageless navigation in obese patients
A.S. McLawhorn, K. Durham Weeks, D. Nam, P.K. Sculco, D.J. Mayman
- 09.30 Reproduction of femoral offset in Navigated Hip arthroplasty – How accurate are we?
P. Ellapparadja, V. Mahajan, K. Deep

- 09.40 The safe zone for acetabular component orientation in hip arthroplasty
W.S. Murphy, J.H. Kowal, S.B. Murphy
- 09.50 Does computer navigation in total hip arthroplasty better restore native combined anteversion?
G. Li, T. Tsai, D. Dimitriou, Y. Kwon
- 10.00 Targeting a new safe zone – a step in the development of patient-specific component positioning in hip arthroplasty
A.S. McLawhorn, P.K. Sculco, K. Durham Weeks, D. Nam, D.J. Mayman
- 10.10 Three dimension fluoroscopy-based navigation for dorsal percutaneous instrumentation in traumatic vertebral fractures
P. Merloz, S. Ruatti, A. Moreau Gaudry, E. Chipon, C. Dubois, J. Tonetti, M. Milaire, G. Kerschbaumer
- 10.20 Haptic interface for computer-assisted patient specific preoperative planning in orthopedic fractures surgery
I. Kovler, L. Joskowicz, Y. Weil, J. Salavarrieta
- 10.30 Accuracy of image-guided iliosacral screw placement using a hybrid operating theater
P.H. Richter, A. Schicho, F. Gebhard

Coffee Break and POSTERS SESSION Part 3

- 10:40 *S11-S14 Were rated “SPECIAL POSTERS” indicating an exceptional quality of this work. Posters will be presented in five sessions, during which the authors of the respective session’s posters will be present at the poster booths. However, all posters and special posters of all sessions will be on display during the entire time of the meeting.*
- S15) Automatic landmark processing from bone surface in knee surgery based on resection guides specific to patient anatomy
P. Cerveri, M. Marchente, N. Confalonieri, A. Manzotti, G. Baroni
- S16) Accuracy of stem alignment is affected by stem design and surgical approach
S. Hayashi, T. Fujishiro, S. Hashimoto, N. Kanzaki, M. Kurosaka
- S17) EOS Imaging is Accurate for Preoperative Total Hip Arthroplasty Templating
A.S. McLawhorn, J.D. Maratt, K.M. Carroll, D.J. Mayman
- S18) Accuracy of cup positioning, COR Restoration and achieving desired hip length and offset following robotic THA
S.A. Jerabek, K. Carroll, J.D. Maratt, D.J. Mayman, D.E. Padgett
- S19) Influence of computer-assisted leg length and offset measurements on implant features in total hip arthroplasty
M.M. Schneider, P. Koenen, T. Brockamp, M. Frohlich, A. Wafaisade, M. Balke, B. Bouillon, H. Bathis

- S20) How consistent is the 3D orientation of orthopods – a study of tal targeting and given orientation most commonly practiced
K. Deep, M.S. Khan, A.H. Deaking, R. Abboud
- 37) A simulation study of Burch-Schneider cage 3D templating for acetabular bone defects
K. Uemura, M. Takao, T. Sakai, T. Nishii, N. Sugano
- 38) A 40 mm head significantly improves range of motion compared to a 28 mm head in total hip arthroplasty using CT-based Navigation system
K. Tsuda, K. Haraguchi, J. Koyanagi, S. Takahashi, R. Sugama, K. Fujiwara
- 39) The Effect of anterior capsule on stability and range of motion in computer assisted total hip replacement with posterior approach: a cadaveric study
P. Sriphirom, A. Vejjajiva
- 40) Adjustment of leg length discrepancy using two different types of imageless navigation software in THA
F. Higuchi, S. Fukunishi, S. Nishio, Y. Fujihara, Y. Takeda, T. Fukui, S. Yoshiya
- 41) Intraoperative validation of the accuracy of limb length and offset measure with BrainLab Navigation system compared to standard radiology and clinical measurements. A prospective comparative study
L. Orlandini, V. Meroni, O. Consonni, M. Ulivi
- 42) Variation in Cup Orientation using Conventional Cup Alignment Techniques as Measured by CT
W.S. Murphy, J.H. Kowal, S.B. Murphy
- 43) EBRA is more accurate than crosstable lateral radiographs when compared to intraoperative measurement of acetabular version
P.K. Sculco, A.S. McLawhorn, D.J. Mayman
- 44) Do patients with unilateral Crowe 4 developmental dysplasia of the hip have femurs of equal length?
J. Kim, S. Tamura, M. Takao, T. Sakai, T. Nishii, H. Yoshikawa, N. Sugano
- 45) Does obesity affect cup position in computer navigated total hip arthroplasty
K. Deep, M. S. Khan, A.H. Deakin, V. Mahajan
- 46) A semiactive retractor holder for minimally invasive hip arthroplasty: a concept study
D. Putzer, S. Klug, M. Haselbacher, E. Mayr, M. Nogler
- 47) Is navigation in THR the way forward to avoid limb length discrepancy
P. Ellapparadja, V. Mahajan, K. Deep

- 48) Computer-assisted total hip arthroplasty: from pre-operative planning to post-operative assessment
J. Schmid, C. Chenes, S. Chagué, P. Hoffmeyer, P. Christofilopoulos, M. Bernardoni, C. Charbonnier
- 49) Sensitivity analysis of biomechanical models for total hip arthroplasty
J. Eschweiler, M. Asseln, P. Damm, G. Bergmann, V. Quack, B. Rath, M. Tingart, K. Radermacher
- 50) Anatomical head ceramic on ceramic total hip arthroplasty – a short term follow-up study
R. K. Sharma
- 51) The differences between combined anteversion of anterior and posterior approach in total hip replacement

ROOM 2:

10.40/11.20 FIRST BOARD EXECUTIVE MEETING

***Combined Sessions: CAOS and EHS* (European Hip Society)**

Chairmen: *L. Zagra, N. Confalonieri*

Discussants: *F. Bassini, J.A. Epinette*

- 11.20 Computer aided surgery for Bernese and other difficult osteotomies
R. Trebse
- 11.30 Navigation in congenital hip dysplasia
H. Ohashi
- 11.40 Computer navigation reduces the complications and enhances function as compared to conventional techniques
K. Deep
- 11.50 Results & Technique for THR using the Mako robot hip system
M. Conditt
- 12.00 Robotic hip replacement – Robodoc results – Are complications and time an issue?
B. Bargar
- 12.10 The use of the transverse acetabular ligament for cup positioning. A randomised controlled trial
G. Meermans, J. Kats, J. Van Doorn
- 12.20 The results of navigation, computer aided and robotic surgery in registries and Interpretation of Register data”
G. Labek
- 12.30 Discussion
- 12.50 Close Remarks ***L. Zagra***

13.00 LUNCH BREAK and GENERAL ASSEMBLY

13.30 LUNCH BREAK and EXHIBITION PRESENTATION...WORK SHOPS (EXHIBITION ROOMS)

Coffee Break and POSTERS SESSION Part 4

- 14.30 S15-S19 Were rated "SPECIAL POSTERS" indicating an exceptional quality of this work. Posters will be presented in five sessions, during which the authors of the respective session's posters will be present at the poster booths. However, all posters and special posters of all sessions will be on display during the entire time of the meeting.
- S21) Mid-high flexion instability in the replaced knee after iatrogenic popliteus tendon injury
N.C. Hunt, K.M. Ghosh, A.P. Blain, K.K. Athwal, S.P. Rushton, L.M. Longstaff, A.A. Amis, D.J. Deehan
- S22) Patient specific guides for total knee arthroplasty. A cadaveric study
S. Dao-Lena, P. Merloz
- S23) Clinical and radiological outcome of CT-based patient-specific cutting-blocks compared to conventional instrumentation in primary total knee arthroplasty: a single center cohort study with a minimum follow-up of 2 years
W. Anderl, L. Pauzenberger, R. Kolblinger, G. Kiesselbach, G. Brandl, B. Kriegleder, B. Laky, E. Scwameis
- S24) Analysis of coronal Prosthetic Alignment in TKA using three different Computer assisted Navigation Systems
H. Sasaki, K. Ishida, N. Shibamura, H. Tateishi, K. Tei, A. Toda, A. Uefuji, K. Takayama, T. Matsumoto, R. Kuroda, M. Kurosaka
- S25) Computer-aided patellar tendon fiber mapping and tracking in navigated total knee arthroplasty. Early in-vivo experiences
C. Belvedere, S. Giannini, A. Ensini, A. Feliciangeli, A. Leardini
- S26) Computer-aided patellar resurfacing in navigated total knee arthroplasty
C. Belvedere, A. Ensini, A. Leardini, S. Tamarri, A. Feliciangeli, S. Giannini
- S27) MRI Analysis of anatomical variation of distal femoral rotational axis and its effect on flexion gap
S. Thati, A. Kaminskas, M. Ganapathi
- S28) Thigh pull test in TKR: equivalent or different than heel push
P.A. Meere, C.P. Bell, I. Borukhov, P. Rathod, P.S. Walker
- 52) The effect of malrotation of tibial component of total knee arthroplasty on tibial insert during squatting. A finite element analysis
K. Osano, R. Nagamine, M. Todo, M. Kawasaki

- 53) Placement of a Femoral Posterior Condylar Trial Component Changes Extension Gap in Navigated Total Knee Arthroplasty Using the Pre-cut Technique
K. Yamada, K. Hoshino, K. Tawada
- 54) Does patient specific guide improve clinical results on TKA?
T. Kawamoto
- 55) Accuracy of digital templating for total knee arthroplasty: a step towards template-directed "patient-specific" instrumentation
S. Jerabek, K.M. Carroll, A.S. McLawhorn, D.J. Mayman
- 56) Preoperative planning using computed tomography for total knee arthroplasty with stem and augment
T. Osamu, Y. Hiroshi, S. Takashi, W. Satoshi, O. Go, E. Naoto
- 57) The effect of posterior tibia slope on the joint gap in posterior cruciate retained knee and posterior cruciate sacrificed knee: an experimental gap analysis on cadaveric study
P. Sriphirom, K. Srisom, K. Pithankukul, A. Vejchaicheva, N. Wanthaphisut
- 58) What is happening to our Knee Alignment?
M. Bayers-Thering, M.J. Phillips, L. Ryan, K.A. Krackow
- 59) CT evaluations in 15 TKAs using Patient Specific Instruments. Our experience
V. De Santis, A. Burrofato, R. D'Apolito, C. De Ieso, D.A. Santagada, A. Cipriani, F. Ferrara, N. Magarelli
- 60) Early outcomes utilizing a first-generation patient-specific TKA implant: a retrospective study
W. Kurtz, R. Sinha, G. Martin, K. Kimball
- 61) Does the use of navigation systems influence our operative procedure in knee arthroplasty?
P. Koenen, M.M. Schneider, M. Strohe, T. Brockamp, M. Frohlich, B. Bouillon, H. Bathis
- 62) Computer-assisted surgery: a teacher of TKAs
F. Conteduca, R. Iorio, D. Mazza, G. Bolle, A. Redler, L. Valeo, A. Ferretti
- 63) Measurement of the knee flexion angle with Smartphone-applications is precise and accurate
J. Y. Jenny, Y. Diesinger
- 64) In vivo kinematics of the mobile-bearing cruciate retaining total knee arthroplasty
I. Keiji, T. Tetsuya, Y. Takaharu, K. Yuuichirou, F. Kazuma, M. Tamaki, M. Takashi, S. Kazuomi
- 65) Measurement of the posterior femoral offset: navigation is more precise than standard X-rays
J. Y. Jenny, Y. Diesinger
- 66) Balancing a total knee replacement with a navigation system
J. Y. Jenny, Y. Diesinger
- 67) Patient-specific templates for total knee replacement. Analysis of the learning curve in an academic department
J. Y. Jenny, Y. Diesinger
- 68) Postoperative 3D analysis based on X-ray images
L. Vignerot, H. Delport, P. Peeters, S. De Boodt

- 69) Outcomes of computer navigated SCORE highly congruent mobile-bearing TKA at minimum 5 years follow up
A. Todesca, L. Garro, M. Penna, J. Bejui Hugues
- 70) Comparisons of kinematics during stair motion in single radius total knee arthroplasty: cruciate retaining vs. substituting designs
Y. Kij, T. Tomita, T. Yamazaki, K. Iwamoto, K. Futai, T. Yamashita, H. Yoshikawa, K. Sugamoto
- 71) The lateral flexion gap narrow than medial flexion gap in valgus knee is it true? A retrospective study reviews 81 cases in computer assisted total knee replacement
P. Sriphirom, N. Wanthaphisut
- 72) The first result of a clinical rehearsal for robotic assisted fracture surgery
S. Joung, C.W. Park, C.W. Oh, I.L. Park
- 73) Computer assisted orthopaedic surgery guided by damage control for pelvic fractures in polytrauma patients: preliminary results of 39 patients
J. Wang, C. Zhao, Y. Su, L. Zhou, L. Hu, T. Wang, M. Wang
- 74) Management of long bone complex deformities with the computer-assisted ortho-suv frame hexapod external fixation system
B. Bertani, L. Pedrotti, G. Tuvo, S. Lucanto, F. De Rosa, R. Mora

SESSION 8: Others Joint And Oncology

Chairmen: **E. Thienpont, G. Ferrigno**

- 15.30 Pre-designed corrective osteotomy guide in total ankle arthroplasty for adjusting loading axis of whole lower-extremities: in rheumatoid arthritis cases
M. Hirao, H. Tsuboi, S. Akita, M. Matsushita, S. Ohshima, Y. Saeki, T. Murase, J. Hashimoto
- 15.40 Comparing a novel 3D-CT reconstruction method to conventional 2D approaches for evaluating glenoid implant and screw position for reverse shoulder arthroplasty
G. Venne, M. Pickell, D.R. Pichora, R. Bicknell, R.E. Ellis
- 15.50 A patient-specific measurement technique to model the kinematics of the Shoulder in tennis players
C. Charbonnier, S. Chagué, F.C. Kolo, A. Laderman
- 16.00 Validation of a virtual implant planning system (VIPS) in distal radius fractures
S.Y. Vetter, I. Muhlhauser, J. Von Recum, P.A. Grutzner, J. Franke
- 16.10 Use of patient specific instrument for tarsal coalition resection in adolescents
S. De Wouters, S. Traore, K.T. Duy, P. Docquier
- 16.20 A reproducible technique for 3D kinematics analysis of the scapulo-thoracic motion during elevation of the arm in the scapular plane
X. Ohl, P.Y. Lagacé, F. Billuart, N. Hagemester, O. Gagey, W. Skalli

- 16.30 Accuracy of patient-specific instrumentation for bone tumor resection within pelvis: 1st study of 11 patients
L. Paul, O. Cartiaux, G.A. Odri, F. Gouin
- 16.40 Pelvis Tumor Resection: 3D preoperative planning and navigation validation using a virtual specimen
L.E. Ritacco, F. Milano, G.L. Farfalli, L.A. Aponte-Tinao
- 16.50 Curettage of grade one chondrosarcoma in the long bones; a retrospective analysis of treatment assisted with fluoroscopy versus computer assisted surgery
J.G. Gerbers, P.C. Jutte

SESSION 9: TKR clinical outcomes / ACL

Chairmen: **M. Marcacci, P. Meere**

- 17.00 Ligament-specific Navigation-assisted Gap Balance Technique with Minimum Follow-up Eight Years
K. Lee, E. Song, J. Seon, H. park, C. Park, H. Kim, Y. Seol
- 17.10 Lower post-operative D-dimer level in navigation-assisted TKA than conventional TKA - a prospective randomized control study
K. Siu, J. Ko, F. Wang, C. Wang, W. Chou
- 17.20 Total knee replacement at 10-year follow-up: computer-assisted system versus conventional instrumentation
A. Ensinj, M. d'Amato, A. Feliciangeli, P. Barbadoro, C. Belvedere, A. Timoncini, A. Leardini, S. Giannini
- 17.30 An RCT to compare component placement in navigated TKA using original and streamlined registration processes
N.C. Sciberras, M. Almustafa, B.R.K. Smith, A.H. Deakin, D.J. Allen, F. Picard
- 17.40 Evaluation of a new computer guidance system – new sites
G. Giordano, J. Ginther, B. Stulberg, S. Polakovic, N. Hohl
- 17.50 “A la carte” ACL reconstruction. Pre-operative laxity evaluation or intra-operative navigated measurements?
J. Y. Jenny, Y. Diesinger
- 18.00 End of the day
N. Confalonieri

PARALLEL SESSION 15.30/16.20 : Technical Innovation 2

Chairmen: *C. Frigo, T. Hodgson*

- 15.30 Hybrid closed-loop control of laser osteotomy based on optical coherence tomography and ablation induced acoustic emission: a preliminary study
Y. Zhang, H. Woern
- 15.40 Fully automatic hip CT segmentation by combining random forest regression based landmark detection with atlas-based segmentation
C. Chu, C. Chen, L. P. Nolte, G. Zheng
- 15.50 2D/3D SSM reconstruction method based on Robust Point Matching
M. Valenti, E. De Momi, W. Yu, G. Ferrigno, G. Zheng
- 16.00 Towards perforation pattern analysis of drilling femur bone using vibration signal
H. Ren, K. Wong, C. Feng, Z. Yang
- 16.10 Development of a patient-specific musculoskeletal model of the knee for clinical application and kinematic validation based on in-vivo measurements
M. Asseln, G. Al Hares, J. Eschweiler, K. Radermacher
- 16.20 Accuracy of an adjustable patient specific guide for acetabular alignment
M. Akbari Shandiz, J. R. Mackenzie, S. Hunt, C. Anglin
- 16.30 Hip osteoarthritis vs. healthy subjects: a comparison of hip, pelvis and lower limb
S. Bendaya, J.Y. Lazennec, C. Anglin, R. Allena, N. Sellam, P. Thoumie, W. Skalli
- 16.40 Robust measurement of natural Acetabular orientation from AP radiographs using articulated 3D shape and intensity models
M. Ehlke, T. Frenzel, H. Ramm, H. Lamecker, C. Perka, M. Akbari, Shandiz, C. Anglin, S. Zachow

19.00 CAOS International Banquet.....

Attendance to the banquet requires booking in advance. Seats can be booked and paid online at www.caos-international.org/2014/. A limited number of seats may still be available at the registration desk on-site.

The Banquet will feature the following highlights:

- President greetings, thanks and introduction
N. Confalonieri
- Presentation of the M.Muller Award for Excellence in Computer Assisted Surgery
Kamal Deep
- Introduction of the new CAOS International President
A. Hodgson
- Invitation to the 15th Annual Meeting
A. Hodgson

Special Italian Events and Performances

CAOS - International Annual Meeting Saturday, June 21, 2014

08.00 Registration and Coffee Breakfast (Exhibition Area)

SESSION 10: *THR psi and robotics*

Chairmen: *J.D. Chang, B. Davies*

08.30 Comparison between robotic-assisted and manual implantation of primary cementless total hip arthroplasty; minimum ten years follow-up results

N. Nakamura, N. Sugano, T. Sakai, I. Nakahara

08.40 Robot-assisted short stem total hip arthroplasty: a prospective randomized controlled trial

Y. Park, Y. Moon, S. Lim, D. Kim, I. Yeo

08.50 Robotic assisted total hip replacement: improved radiographic and clinical outcomes compared with manual techniques at minimum 1 year follow-up

R. Illgen, M. Conditt

09.00 Patient-specific instrument for acetabular cup orientation: accuracy analysis in a pre-clinical study

T. Hananouchi, E. Giets, J. Ex, H. Delport

09.10 Clinical accuracy of the Hip-Sextant Navigation System as Measured by Post-operative CT

W.S. Murphy, J.H. Kowal, S.B. Murphy

SESSION 11: *UNI*

Chairmen: *C.C. Castelli, B. Jamaraz*

09.20 Does Navigation System Have Any Advantages in Uni-Knee Arthroplasty Compared with Conventional Technique in Long Term Results?

J. Seon, E. Song, H. Park, K. Lee, C. Park, H. Kim, Y. An

09.30 Clinical results from a RCT Comparing Robotic Surgical Assistance and Manual Unicompartmental Knee Arthroplasty

M. Blyth, A. MacLean, I. Anthony, P. Rowe, B. Jones

09.40 Kinematic walking assessment comparing robotic-assisted and conventional unicompartmental knee arthroplasty

A. Motesharei, P. Rowe, M. Blyth, B. Jones, A. MacLean, I. Anthony

09.50 Improving outcomes of lateral unicompartmental knee arthroplasty with robotic-assisted surgery

M. Augart, J.F. Plate, T.M. Seyler, M. Akbar, V. Ewerbeck, D.N. Bracey, S. Von Thaeer, G.G. Poehling, R.H. Jinnah, M.A. Conditt

Coffee Break AND POSTERS Session Part 5

- 10:00 S20-S23 Were rated "SPECIAL POSTERS" indicating an exceptional quality of this work. Posters will be presented in five sessions, during which the authors of the respective session's posters will be present at the poster booths. However, all posters and special posters of all sessions will be on display during the entire time of the meeting.
- S29) Navigation system for arthroscopic anterior cruciate ligament reconstruction - New 2D-3D Image registration method using arthroscopic images
S. Watanabe, T. Sato, G. Omori, R. Nakamura, Y. Shiga
- S30) Three-dimensional analysis of acute scaphoid fracture displacement
Y. Schwarcz, Y. Schwarcz, E. Peleg, L. Joskowicz, R. Wollstein, S. Luria
- S31) Making a diagnosis system of scoliotic by respirometry
H. Murayama, K. Kato, A. Yuji
- S32) The importance of 2mm and 2 degrees in Total Knee Balancing
P.S. Walker, P.A. Meere, C.P. Bell
- S33) Robot-assisted versus conventional total knee replacement: a systematic review
A. Mahmood, M. A. Bashir, G. Kumar
- S34) Complications resulting from trackers
A. Thomas, G. Pemmaraju, S. Deshpande
- S35) Fast Accurate Procedure for accurate identifying the Current pose of an IntramedullaryNail
H. Esfandiari, S. Amiri, D. Lichti, C. Anglin
- 75) Kinematic navigation for the evaluation of the stability of the knee at least 2 years after the ACL reconstruction
R. Hart
- 76) A prototype of surgical robotic system for anterior cruciate ligament reconstruction
M. Kim, S. Lee, K. Kim, S. H. Park, J. Kim, S. Jung
- 77) Reliability of a smartphone app in diagnosis of ACL rupture
L. Valeo, R. Iorio, D. Mazza, A. Ferretti
- 78) The influence of tunnel tibial slope on postoperative knee laxity after ACL reconstruction
C. Signorelli, T. Bonanzinga, N. Lopomo, A. Grassi, F. Raggi, G.M. Marcheggiani Muccioli, M. Marcacci, S. Zaffagnini
- 79) Towards Asian-specific statistical humerus implants
H. Ren, K. Wong, S. Sim, K. Wu
- 80) Computer Assisted Navigation system oncological Spine Surgery
S. Bandiera, S.Colangeli, A.Gasbarrini, G. Barbanti Brodano, S.Terzi, R. Ghermandi, M. Girolami, S. Boriani

- 81) Computer assisted total knee arthroplasty: a medium 2.5 years follow-up of 200 cases
D. Notarfrancesco, A. Lamberti, F. Aquino, A. Zara, L. Russo
- 82) Clinical outcome of patient specific instrumentation total knee arthroplasty
S. Thati, G. Kainth, M. Ganapathi
- 83) TKA strategy based on trochlea groove invariance
Y. Vanderschleiden, F. Leitner
- 84) Deep Dished highly congruent tibial insert in CR-TKA
D. Bruni, I. Akkawi, F. Colle, G.F. Raspugli, S. Bignozzi, S. Zaffagnini, F. Iacono, M. Marcacci
- 85) Evaluation of bone deformity on alignment discrepancies during total knee arthroplasty using an image-free computer-assisted guidance system
L. D. Angibaud, R. A. Liebelt, B. Gao, X. Silver
- 86) Effect of repetitive training practices using an image-free computer-assisted guidance system on cognitive and technical skills
L.D. Angibaud, R.A. Liebelt, B. Gao, X. Silver
- 87) Introducing Monitored Real-Time Patient-Specific Technique for Total Knee Arthroplasty
B.N. Stulberg, L.D. Angibaud, J.D Zadzilka
- 88) Quantitative accuracy assessment of pedicle screw insertion in spine surgery: initial study using Artis Zeego II intraoperative imaging robotic system
A. Boutchichi, J. Boulanger, X. Banse, O. Cartiaux
- 89) Local differences in the alignment of knees in the Northwest of England.
S. Sampath, B. Tigar
- 90) Three dimensional Virtual Surgery and Customised smart guides for open wedge HTO
K. Oh, M. Trabish
- 91) Remote Rehabilitation after TKR using visualisation and monitoring techniques
M. Ayode, A. H. Deakin, K. Deep, T. E. Howe, L. Baillie
- 92) Risk Analysis and Usability evaluation of the zero-dose-c arm navigation system for application in Lumbar Interventions
A. Janss, M. Fuente, A. Ladenburger, M. Strake, K. Radermacher

ROOM 2:

10.00/11.00 SECOND BOARD EXECUTIVE MEETING

SESSION 12: TKR *miscellaneous*

Chairmen: *D. Stulberg, A. Leardini*

- 11.00 Computer navigated ligament balancing assessment in total knee replacement
J.B. Stiehl
- 11.10 Robot-assisted Total Knee Arthroplasty with Minimum Follow-up Nine years Compared with Conventional Total Knee Arthroplasty
C. Park, E. Song, J. Seon, H. Park, K. Lee, H. Kim
- 11.20 Comparative Study of Robotic Total Knee Arthroplasty: Measured Resection vs Gap Prediction Technique
H. Kim, E. Song, J. Seon, H. Park, K. Lee, C. Park, S. Na
- 11.30 Functional comparisons between conventional mechanical alignment and shapematch kinematic alignment in TKA via video-fluoroscopy and EMG
A. Leardini, A. Ensini, C. Belvedere, S. Tamarri, P. Barbadoro, M. D'Amato, S. Giannini
- 11.40 A Novel Method for Accurate Determination of Knee Prosthesis sizing in TKA Navigation
A. Boyer, C. Hamad, F. Bertrand, S. Polakovic, S. Lavallée

12.00 **SCIENTIFIC AWARDS CEREMONY**
B. Davies

12:15 **INVITATION TO THE 15^o ANNUAL MEETING**
A. Hodgson

12.25 **CLOSING REMARKS**
N. Confalonieri

B. Davis

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