8ème Réunion de l'Association France Japon d'Orthopédie

Mes chers Collègues et amis,

A l'occasion du 8e Congrès AFJO, je suis très fier et très heureux de vous accueillir ici à Kyoto, ville ancienne et riche de 10 siècles d'histoire.

La France est un pays très cher à mon cœur car j'y ai appris quantité de choses lors de mon séjour en tant que jeune boursier du gouvernement français. Je considère la France comme mon 2ème pays natal, puisque bon nombre de mes amis et grands maîtres y résident.

L'apprentissage de nouvelles techniques et connaissances, ainsi que la vie « à la française » m'ont apporté énormément tant sur le plan professionnel que personnel. Cela a surtout enrichi ma façon de vivre aujourd'hui au Japon.

Le congrès AFJO se déroule tous les 2 ans entre la France et le Japon et a comme objectif d'approfondir les échanges culturels et amicaux, au-delà du développement scientifique dans le domaine de l'orthopédie française et japonaise.

En tant que Président de ce Congrès, j'ai donc grand plaisir de recevoir, avec nos membres japonais, les nombreux participants français.

J'ai cependant l'immense regret de noter l'absence du Docteur Charles Picault qui était véritablement le pilier et le moteur de notre association. Il nous a malheureusement quitté l'année dernière et nous le regrettons tous beaucoup.

J'essaie d'assumer avec tous mes efforts mon rôle, afin de pouvoir répondre aux dernières volontés du Docteur Charles Picault.

Depuis le 7e Congrès AFJO qui s'est déroulé à Grenoble il y a 2 ans, j'ai préparé ce congrès avec le soutien et le conseil de nombreux confrères.

J'ai reçu 33 communications au total, dont 20 pour la France et 13 pour le Japon, parmi lesquelles j'ai choisi 9 sujets pour le symposium : *« Recent Minimaly Invasive Surgery in France and Japan »*.

J'attends cordialement les présentations dans ces vastes domaines et j'ai demandé au Professeur Merloz de nous préparer une conférence spéciale sur le thème *« Minimaly Invasive Surgery and Navigation System »*.

Nous attendons avec impatience de pouvoir découvrir une idée et une conception dans ce domaine « à la française », certainement différente de la version des anglo-saxons.

Pour notre dîner de Gala, nous avons réussi à louer le SHO-REN-IN, un domaine exceptionnel construit sur les vestiges de temple dont les propriétaires sont depuis des générations issues des familles impériales.

Nous espérons vivement que vous allez passer une excellente soirée de Congrès, en admirant ces magnifiques jardins qui apportent calme et repos.

Nous souhaitons sincèrement que vous gardiez un bon souvenir de ce congrès à Kyoto, ancienne ville impériale.

Chers collègues et confrères, merci infiniment pour votre participation et votre attention.

ご挨拶

第8回AFJOを千年の都京都において開催できることを大変光栄に、またうれしく思います。私にとってフランスは、フランス政府留学生として青年期に多くのことを学んだ特別の国であり、多くの師と友人の住む第二の故国です。斬新な知識や技術とともに、いかに生きるべきかを学んだフランスでの生活は、現在の私の生き方の基盤となっています。

フランスと日本との間で2年ごとに開催されるAFJOは、両国の整形外科医が医学の進歩だけでなく文化的な交流と親睦を深めることを目的に開催されます。このAFJOの議長として、日本の会員の先生方と共に多くのフランス人会員をお迎えできることを、この上もなく光栄に思います。ただひとつ残念に思うのは、本会の牽引役であったピコー先生が昨年ご逝去され、今回日本にお迎えできないことです。先生のご遺志に答えることができるよう、精一杯自分の役目を果たしたいと思います。

２年前のグルノーブルでの第７回本会以来、多くの先生方のご指導とご援助のもと、現在まで準備を進めてきました。フランスから20題、日本から13題の計33題の演題を応募いただきました。そのうち９題をシンポジウム「日仏両国における最小侵襲手術の現況」（Recent Minimally Invasive surgery in France and Japan）としました。広い領域からの演題がならび、発表を心待ちにしております。特別講演としてAFJOフランス側会長のメルローズ教授に、「最小侵襲手術とナビゲーション」（Minimally invasive surgery and navigation system）の講演をお願いしました。アングロサクソンとは一味ちがったフランスの考え方や発想に触れることができるのではないかと楽しみにしています。

夕食会は代々皇族の方が門主をつとめられる門跡寺院である青蓮院をお借りすることができました。粗食ではありますが、心づくしの料理を準備しました。会議の夕べのひと時を、すばらしい庭園を眺めながら身体と心を休めていただければと願っております。

至らぬことも多く、十分なおもてなしもできませんが、古都京都での会議を有意義にお過ごしいただければ幸いです。

Président du 8ème Congrès de l'AFJO
第８回日仏整形外科合同会議議長
Dr. Yoshihiro SEMOTO

瀬本喜啓

A l'attention de tous les participants et accompagnateurs

Au nom du Président de la SOFJO et du Président exécutif du comité préparatif du 8e Congrès de l'Association France - Japon d'Orthopédie (AFJO) présidé par le Docteur SEMOTO, j'ai le plaisir de vous accueillir tous, participants français et collègues japonais. Merci d'être venus si nombreux.

Je garde vraiment d'excellents souvenirs de chacun des congrès AFJO, depuis le 1e à Paris jusqu'au dernier à Grenoble en 2003.

Ces rencontres permettent aux orthopédistes français et japonais de mieux se connaître et de découvrir chacun des 2 pays visités.

En plus d'un échange culturel important, ces échanges médicaux ont joué un très grand rôle dans le développement des traitements orthopédiques.

La 8e édition du Congrès AFJO se déroule pour la deuxième fois à Kyoto.

J'espère que cela permettra à nombre d'entre vous de renouer avec d'anciennes amitiés et à vous tous de faire de nouvelles connaissances qui renforceront davantage les liens orthopédiques entre nos deux pays.

Le moi de Mai est l'une des plus belles saisons à Kyoto. La ville est splendide, décorée partout par les bourgeons et les fleurs. Je souhaite que vous profitiez pleinement cette ville riche de mille ans d'histoire, en dehors de notre rassemblement scientifique.

会議参加者ならびに同伴者の皆様に

瀬本喜啓先生が主催される第８回日仏整形外科合同会議（AFJO）にご参加のフランスならびに日本の多くの方々を、本会議の準備委員長ならびに日仏整形外科学会（SOFJO）会長として、心から歓迎いたします。

これまでのこの合同会議を振り返ってみますと、第１回のパリから第７回のグルノーブルまで、どの会議も思い出として鮮やかに蘇ってきます。この会議でフランスと日本の整形外科医が、お互いの国を知り、人を知り、文化を知り、そして医学的な交流を通じて整形外科医療の向上に果たしてきた役割は大きかったと思います。今回の第８回合同会議は京都で行なわれる２回目の会合ですが、旧交をあたため、新しい知己をつくり、両国の整形外科医のつながりがより深められるものと期待しております。

５月は若葉、青葉や花々によって、京都が最も美しく彩られる季節の一つです。学術集会以外にも、この千年の都を十分お楽しみいただくことを願っています。

Président de l'Association France Japon d'Orthopédie
Président de l'Organisation du 8ème Congrès de l'AFJO
日仏整形外科学会会長
第 8 回日仏整形外科合同会議組織委員長
Pr. Toshinobu ONOMURA

T. Onomura　小野村敏信

Program

8ème Réunion de l'Association France Japon d'Orthopédie

Date May 6,7,8 2005

Place KYOTO INTERNATIONAL COMMUNITY HOUSE
2-1 Torii-cho, Awataguchi, Sakyo-ku, Kyoto
Tel 75-752-3010 Fax 75-752-3510

Friday	May 6, 2005 Congress
Saturday	May 7, 2005 Congress
Sunday	May 8, 2005 Official Tour (NARA)

Congress President Y. SEMOTO

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Honorary President	K. SHICHIKAWA	
President	T. ONOMURA	Ph. MERLOZ
Vice President	A. KOBAYASHI	D. GAZIELLY
General Secretary	Y. SEMOTO	
Secretary	H. OHASHI	O. RAY
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Treasurer		P. WICART
Members		J.P. COURPIED
		J. CATON
		J. COTTALORDA

Contact Keiko GIRIN

sous le patronage de
" Japanese Orthopedic Association "
" Société Franco-Japonaise de Médecine "

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Membre	K. SHICHIKAWA	A. KOBAYASHI
	Y. SEMOTO	H. OHASHI
	I. YUGUE	K. FUJIWARA
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Comité financier

Président	M. OCHI	
Membre	S. TAKAHASHI	K. AOKI

Program of 8th AFJO

Thursday May 5th 2005

Preparation for Medical Exhibition	13:00 ~ 19:00
Registration and preliminary Meeting for Speakers	17:00 ~ 19:00
Business Meeting : Circular Room (Westin Miyako Hotel Kyoto)	18:00 ~ 19:00
Welcome Cocktail (Westin Miyako Hotel Kyoto)	19:00 ~

Friday May 6th 2005

Opening Address 9:30 ~ 9:40

Y. Semoto, T.Onomura

Hip Joint 9:40 ~ 10:30

Moderator : J.Caton (France), T.Kubo (Japan)

1. Tripolar cup for total hip arthroplasty – an experimental dislocation test –
   O.Guyen, P.Prabhahar, Q.Chen, F.Schultz, K-N.An, J.Bejui-Hugues, D.J.Berry (LYON)

2. In vitro study of a tripolar hip implant range of motion
   O.Guyen, P.Prabhahar, Q.Chen, F.Schultz, K-N.An, J.Bejui-Hugues, D.J.Berry (LYON)

3. Instability after total arthroplasty of the hip
   J.P.Courpied (PARIS)

4. Total hip replacement with all alumina bearings in patients under 30 years of age
   L.Sedel, G.Biette, R.Nizard, P.Bizot, F.Lemonne (PARIS)

5. Femur revision in total hip with massive bone allograft and custom made prosthesis
   L.Sedel (PARIS)

Fracture 10:30 ~ 11:10

Moderator : M.Scarlat (France), T.Hoshi (Japan)

6. Correct lag screw positioning for the Gamma Nail
   – development of the targeting device for insertion –
   M.Tokunaga, J.Tokunaga, A.Kobayashi (FUKUOKA)

7. Elderly non displaced femoral neck fractures and initially non operative treatment – results –
   J-C.Bel, G.Herzberg (LYON)

8. Trochanteric fractures of old elderly in France – SoFCOT report –
J-C.Bel, L.Pidhorz, R.Bertin, F.Jacquot, H.Pichon, F.Dubrana, J.Allain, P.Bonnevialle, J-M.Féron (LYON)

9. Ender nailing in open fractures of the tibial shaft
N.Kuga, H.Hagihara (SASEBO)

Hand and Elbow 11:10 ~ 11:40

Moderator : D.Hannouche (France), M.Murakami (Japan)

10. Sonography for monitoring reduction of distal radial fractures
N.Kodama, S.Imai, Y.Matsusue (OTSU)

11. Use of the modified Kapandji Index for clinical assessment of rheumatoid hand
T.Hojo, D.Tokunaga, H.Okumura, H.Fujiwara, T.Kubo (KYOTO)

12. Surgical management of complex fracture-dislocation of the elbow joint
D.Hannouche, C.Hamou, A.Raould, R.Nizard, L.Sedel (PARIS)

Lunch 11:40 ~ 13:00

Spine 13:00 ~ 13:40

Moderator : Ph.Merloz (France), I.Yugue (Japan)

13. Efficiency of total disc replacement arthroplasty in the treatment of chronic low back pain
B.Ilharreborde, E.Olivier, P.Guigui (CLICHY)

14. Sagittal balance of the spine and degenerative spondylolisthesis
B.Ilharreborde, E.Morel, E.Hoffmann, R.Vialle, L.Rillardon, P.Guigui (CLICHY)

15. Des études portées sur transpedicular kyphoplasty en utilisant HA block pour compression fracture causé par ospeoporosis
A.Okawa (TOKYO), H.Matsuzaki, T.Nishimura, M.Oshima, M.Hoshino, Y.Tokuhashi

16. Failed percutaneous Laser disc decompression
– a multi-center questionnaire survey on university-hospitals basis in the Kinki district of Japan –
R.Kosaka, T.Yonezawa, T.Onomura, M.Abe (OSAKA)

Knee Joint 13:40 ~ 14:20

Moderator : L.Sedel (France), M.Yasuma (Japan)

17. Subjective evaluation of surgical treatment for patellar instability
T.Ait Si Selmi, S.Lustig, E.Servien, Ph.Neyret (LYON)

18. HERMES patello-femoral prosthesis

J.H.Caton (LYON)

19. Middle-Term results of autogenous osteochondral graft transplantation for osteonecrosis of the knee

Y.Matsusue (OTSU), G.Yoshikawa, M.Kikkawa, Y.Nakagawa

20. Diffused type pigmented villonodular synovitis treated by arthroscopic resection – case report –

Y.Otsuka, M.Kobayasi, Y.Nagaya, H.Goto, M.Nozaki, T.Otsuka (NAGOYA)

Coffee Break 14:20 ~ 14:40

Surgical Navigation 14:40 ~ 15:20

Moderator : T.Ait Si Selmi (France), S.Takahashi (Japan)

21. Computer-assisted surgical navigation using fluoroscopy – clinical use in spine surgery –

Ph.Merloz, H.Vouaillat, J.Troccaz, A.Eid, J.Tonetti, S.Plaweski (GRENOBLE)

22. Importance of ergonomics and efficiency for computer-assisted spine surgery – clinical results 1999-2003 (97 patients) and prospects –

Ph.Merloz, C.Huberson, J.Tonetti, H.Vouaillat, A.Eid, S.Plaweski (GRENOBLE)

23. Comparison of navigation oriented cup setting angle with radiographic measurement after THA

F.Inori, H.Iwaki, H.Ohashi, K.Takaoka (OSAKA)

24. Computer-assisted navigation in total knee replacement – results of an initial experience in fifty five patients –

A.Durandeau, T.Fabre (BORDEAUX)

Coffee Break 15:20 ~ 15:40

Special Lecture 15:40 ~ 16:20

Moderator : Y.Semoto (Japan)

"Minimally invasive surgery and navigation system"

PRESIDENT de l'AFJO FRANCE Ph.Merloz (GRENOBLE)

Assembly of AFJO 16:20 ~ 16:30

T.Onomura, P.Merloz

Assembly of SOFJO 16:30 ~ 16:40

Banquet at "Sho-ren-in" temple (a historic building and garden) 18:30 ~

Saturday May 7th 2005

Registration 9:00 ~ 9:30

Symposium 1 : Recent Minimally Invasive surgery in France and Japan 9:30 ~ 10:50

Moderator : J.P.Courpied (France), H.Ohashi (Japan)

25. Percutaneous insertion of a proximal humeral nail for fractures
– results and assessment of the shoulder function –
M.M.Scarlat, B.Redreau (TOULON)

26. Minimally invasive surgery for cubital tunnel syndrome
Y.Taniguchi, M.Yoshida, E.Miyamoto, S.Iwata, T.Kitano (WAKAYAMA)

27. Minimally invasive surgical treatment of wrist osteoporotic fractures with an injectable phosphate calcium cement and K wires
P.Liverneaux (ROCHEFORT SUR MER)

28. Scaphoid percutaneous osteosynthesis using fluoroscopic navigation – experimental study –
P.Liverneaux (ROCHEFORT SUR MER)

29. Minimally-invasive spine surgery using real-time MRI navigation
S.Takahashi, M.Tanaka, Y.Saruhashi, Y.Matsusue (OTSU)

Coffee Break 10:50 ~ 11:10

Symposium 2 : Recent Minimally Invasive surgery in France and Japan 11:10 ~ 12:20

Moderator : A.Durandeau (France), T.Sakamaki (Japan)

30. Accuracy of implant positioning using specific angled instrumentation in posterior minimal invasive approach – prospective series of 73 total hip arthroplasties –
T.Ait Si Selmi, S.Lustig, S.Dojcinovic, Ph.Neyret (CALUIRE)

31. Minimal invasive ceramic hip via posterior approach
L.Sedel, R.Nizard (PARIS)

32. Minimum invasive anterior approach to total hip arthroplasty without using any traction tables
K.Oinuma, H.Shiratuchi, Y.Saito, K.Michinaga (FUNABASHI)

33. Evaluation of total hip arthroplasty with mini-incision using press-fit acetabular components
K.Kaneko, O.Obayashi, A.Mogami, T.Muta, I.Morohashi, H.Iwase (SHIZUOKA)

Closing Address 12:30 ~ 12:40

K.Shichikawa

Social Program

Friday May 6th 2005.....Kyoto **Sunday May 8th 2005.....Nara**

Abstracts

1. Tripolar cup for total hip arthroplasty – an experimental dislocation test –

Olivier Guyen, Prashanth Prabhahar, Qingshan Chen, Frederic Schultz, Kai-Nan An, Jacques Bejui-Hugues, Daniel J. Berry
Hopital Edouard Herriot Pavillon T, LYON

INTRODUCTION:

Successful outcomes using a tripolar implant (large inner diameter acetabular cup and bipolar femoral component) for total hip arthroplasty instability have been reported. No biomechanical assessment has been yet reported for such implants. We performed an experimental dislocation test to compare a tripolar with a conventional implant.

METHODS:

A tripolar implant (22 mm head diameter) was compared with a conventional one (22 and 28 mm head diameter), using the same femoral stem. Vertical compressive forces were applied to the femoral stem mounted to a MTS® machine. The acetabular cup was mounted on a motor-driven rotating table via an air-bearing table and could self-adjust its position in the transverse plane. The rotating table was continuously rotated in the coronal plane. Test was stopped when the prosthesis reached the point of dislocation and sagittal rotation angle was recorded.

RESULTS:

According to the orientation of the stem in the transverse plane (simulating ante- or retroversion), impingement with the cup might occur. Without any impingement a shear dislocation was observed for both the conventional and tripolar cups. The tripolar cup axisymetrical rim design (greater than hemispheric) provides a limited increase of the angle before dislocation compared with conventional hemispheric implants. Lever-out dislocation due to impingement occurred earlier compared with the shear dislocation. Tripolar cup can dramatically increase the lever-out dislocation angle up by 16.5 degrees.

CONCLUSION:

Tripolar implant is efficient to prevent dislocation in vitro because the outer diameter of the intermediate component increases the "head" size. In vivo, a greater efficiency should be expected with soft tissues.

2. In vitro study of a Tripolar hip implant range of motion

Olivier Guyen, Prashanth Prabhahar, Qingshan Chen, Frederic Schultz, Kai-Nan An, Jacques Bejui-Hugues, Daniel J. Berry
Hopital Edouard Herriot Pavillon T, LYON

Introduction:

To investigate successful outcomes using tripolar implants for total hip arthroplasty instability we compared the in vitro range of motion to impingement of a tripolar cup and a conventional cup.

Methods:

In order to assess the range of motion to impingement of a tripolar hip implant (22 mm head) and a conventional cup (22 and 28 mm head), we designed a three-dimensional motor driven protractor in which a full pelvis and a proximal femur were mounted. A digitizer arm allowed assessing proper orientation of the implants (45 degrees of cup lateral opening, 20 degrees of cup anteversion, and 0 degree of stem anteversion neutral varus/valgus). The same femoral stem was used for both implants. Impingement was detected using conductive foil.

Results:

Range of motion provided by the 22 mm head tripolar implant is greater than with 22 mm and 28 mm heads conventional cups in any direction and a transition from bony to prosthetic impingement was observed. At 90 degrees flexion and 20 degrees adduction, the tripolar implant provides 19 degrees of internal rotation and the 22 mm conventional cup 5 degrees. At 10 degrees external rotation, the maximum extension is 60 degrees for the tripolar cup, and 40 degrees for the 22 mm head conventional cup.

Discussion/Conclusion:

Tripolar implant improves range of motion to impingement when compared with conventional 22.2 and 28 mm femoral head implants, as they increase the effective head size and head-neck ratio. Despite the extremes of motion measured may exceed what occurs in vivo, tripolar implants can dramatically increase the range of motion and delay prosthetic impingement in situations at risk for dislocation.

3. Instability after total arthroplasty of the hip

J.P. COURPIED
COCHIN University Hospital, PARIS

Subluxations and prosthetic dislocations are grouped under this heading. 2 mechanisms and 4causes of prosthetic instability can be identified. Mechanisms are cam (or pivot) effect and femoral head separation. Causes are: poor positionning or alteration of the prosthetic components, fibrous or osseous obstacle, modification of architecture (excessive medialisation of the hip, shortening of the femoral neck…), deficiency in the periarticular muscles . Direction of instability depends of the surgical approach but is more often posterior. The circumstances of the prosthetic instability allow us to consider which of these possible cause is responsible and plan our approach accordingly.

EARLY INSTABILITIES:

these are dislocations or episodes occuring during the first two months after the total arthroplasty. One must check that there is no trochanteric detachment if lateral approach has been used and take measurements of the prosthetic components.In case in poor positionning the only solution is surgical. If nothing abnormal is noticed, the cause is a temporary muscular deficiency that can be treated by a 4 week long plaster bermuda immobilisation in conjunction with isometric exercises for the peri-articular muscles. When these early dislocations are recurrent, they could be caused by a cam effect through abnormal contatc between the femoral metaphysis and the neighbouring soft tissues or residual acetabular osteophytes; revision is required.

SECONDARY INSTABILITIES:

These occur between two months and five years after the operation. All the causes that have been enumerated so far can be found here. When the dislocations are recurrent, they are either due to a poor positinning of the components, excessive medialisation of the joint or shortening of the femur, or cam effect through heterotopic ossification; the only solution is revision surgery to correct the defect. If no cause is present, physiotherapy should be tried and if this fails, revision surgery will be needed to obtain better muscle tension by lowering the trochanter. It is possible to use a retentive socket (double cup mobility) or an asymetrical socket by adjunction of a polyethylene rim.

LATE INSTABILITIES:

They can be caused by muscular deficiency due to old age. If physiotherapy fails, with repeated dislocation, revision surgery is necessary using a retentive socket or an asymmetrical socket. The other possible cause is wear of the rim of the acetabular cup (responsible for subluxation becoming dislocation). Revision surgery is then necessary.

In conclusion, the most frequent causes of instability after total hip arthroplasty are (certainly) poor positionning of the prosthetic components and deficient muscular tension, either by damage related to the approach or by excessive excision of too much bone, or by uneven reconstruction of the hip. A precise diagnostic is imperative in order to determine the necessity and scope of revision surgery.

4. Total hip replacement with all alumina bearings in patients under 30 years of age

L. Sedel, G. Biette, R. Nizard, P. Bizot, F. Lemonne
Hôpital Lariboisière, PARIS

Alumina on alumina sliding couple were designed to address the problem of macrophagic reaction to wear debris. As young and active patients are more susceptible to wear sliding components made of regular material, we considered interesting to look at our results in a specially young age population.

Materials and methods :

Among a population of more than 3500 total hips implanted with an all alumina bearings couple we selected 101 consecutive prosthesis implanted in 75 patients aged less than 30 years . These prostheses were implanted from September 1979 to July 2002.

Avascular necrosis was the more frequent aetiology : 56 cases (39 steroid induced) , followed by inflammatory diseases : 13, postrauma : 8 , sequellae of infection in the newborn 7 , and of epiphysiolysis in 6 , miscellaneous in 101 (sickle cell anaemia , tumours , agenesis of the femur) .

76 hips in 56 patients (24 females , 32 males) could have had more than 2 years follow-up and represent the material of this study. Mean age at implantation was 24.1(13.2-30.7)..

Regarding the implanted material , the stem (Ceraver Osteal*) were cemented 59 times and uncemented in 17. there was 5 different alumina socket fixation : 8 bulky cemented , 23 bulky cementless, 6 with a screw in titanium cup and an Aalumina liner , 13 press fit titanium shell covered with a titanium mesh , and 23 comparable but with an outer surface rough and covered with hydroxyapatite. Alumina head was always 32 mm in diameter and all prostheses had an alumina on alumina couple ;

Fifty one hips were primary , 25 had had some previous surgical procedure and 10 had had some sepsis.

Results :

Mean follow-up was 7.1 year (0,27 to 18.64 years). One patient (2 hips) deceased before 2 years , 5 were lost to follow-up mainly due to their foreign location and could not be traced. 69 were followed more than two years. 60 were not revised , 9 were revised 3 to 18 years after the index operation (mean 9 years). Socket revisions were performed 9 times , in two the femur was revised as well (one for sepsis , the other one at 18 years). Over the 9 socket revision , two had had before revision a car accident resulting in acute loosening of the socket. Regarding the 60 hips still in place , clinical results (regarding Postel Merle D'Aubigné rating system) was excellent or very good ((16 to 18)) in 55 , good (12 to 15) in 4 and fair or bad for 1. Fifty three had some physical activities including running in 29. Three were pregnant without problems.

Roentgenographic results , 7 had some radio lucent lines , one was complete . On the femur side, 10 had limited osteolytic lesion always on cemented stem and in zone 7 (Gruen). Fifty two were classified A (no clinical nor radiological pending problems, 5 were classified B (no clinical but some radiological evolution , 2 classified C (some clinical problems not related to the prosthesis and no radiological problem , and 1 classified D (impending failures not reoperated).

Discussion and conclusion :

In a difficult series of patients under the age of 30 years , the results of alumina on alumina total hip were relatively satisfactory. Most of the failures were related to socket fixation system that was markedly improved during the last period. Socket revision were relatively easy and limited to this component.

5. Femur revision in total hip with massive bone allograft and custom made prosthesis

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After many revision of femoral stem failures , bone lacking needs to address some specific answers.

Some surgeon advocate the use of custom made prosthesis using a complete metallic or partial metallic plus polyethylene reconstruction of the femoral diaphysis.

Since 10 years we preferred to replace the bone loss by a composite prosthesis using massive allograft obtained from bone bank and a special long stem cemented . During the first years we asked for custom made prosthesis , Since two years we have special designed long stems with two diameters and 4 length for each.

Stem are cemented . Usually we put also some composite granules made of Hydroxyapatite and btricalcium phosphate.

This short series of 12 cases includes 4 massive tumour excision : 6 males and 6 females , we discuss the technique , the indications and the results regarding bone union , muscle attachment on thre greater trochanter.

6. Correct lag screw positioning for the Gamma Nail
– development of the targeting device for insertion –

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Introduction

Proper lag screw positioning in the femoral head is the most important factor in a successful Gamma nailing in order to minimize the postoperative complications originating from the standard surgical techinique. Our retrospective study of postoperative complications related to implant positioning revealed that varus deformities or screw "cutout" resulted primarily from incorrect positioning of the lag screw, even when the fractures were satisfactorily reduced. A significantly high complication rate occurred when the lag screw was positioned in the superoanterior or superoposterior area of the femoral head. We ,independently, developed a targeting device to assist in proper positioning of the lag screw both on the AP and lateral images of the C-arm, even when less experienced surgeons performed the operation. The device is called the "OneShot Guide"

We use the gamma nail in treatment of the trochanteric fractures from 1992. From 1998, we started to utilize the OneShot Guide. We experienced that sometimes it took long time to penetrate the cortical bone with the guide wire or the guide wire bend slightly because of the hardness of the cortical bone, we missed the correct posision even when the OneShot Guide was utilized. Moreover from 2004, after determination of the position of the guide wire, we penetrate the cortical bone of the femur which is the insertion of the guide wire with 5.5mm drill.

Material and method

We investigated 218 trochanteric fractures treated with the Gamma nail. Subjects were devided into three groups; Group unguided, 81 cases underwent osteosynthesis using the Gamma nail. Group guided, 104 cases were treated with the use of the OneShot Guide. Group predrilled, after determination of the point with the OneShot Guide, 33 cases were performed predrilling.

We examined the postoperative positioning of the lag screw in AP and lateral plain roentgenogram, operating time and irradiation time. For assessment of the position of the lag screw, the femoral head was divided into 3 part, superior, middle and inferior in AP view, and also divided into 3 part, anterior, middle and posterior in lateral view. We regarded inferior-middle and middle-middle as the ideal position of the lag screw.

Results

In the unguided group, only 79.0% of the lag screws were positioned in the ideal area. The rate of the ideal insertion of the lag screw in the guided group and the predrilled group were 92.7% and 97.0% respectively. The average operative time was 47.3minutes in the predrilledgroup

and 52 minutes in guided group. The average irradiation time was 370 seconds in the predrilled group and 271 seconds in the guided group.

Conclusion

We strongly recommend use of the OneShot Guide to achieve proper lag screw positioning and to reduce the postoperative complications originating from the standard surgical technique.

ガンマネイル手術における OneShot Guide の有用性

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【目的】

ガンマネイル手術ではラグスクリュー刺入位置が最も重要であることに異論はない。ラグスクリュー刺入位置が不良であれば内反変形やカットアウトなどの合併症が生じることが報告されている。当院では1992年より大腿骨転子部・転子下骨折に対してガンマネイルを使用している。1998年に正確にラグスクリューを刺入するためにOneShot Guide（OSG）を開発し，2004年からはさらに精度を上げる目的でプレドリル法を併用したので報告する。

【対象および方法】

対象は1992年よりガンマネイルを用いて骨接合術を施行した218例である。OSGを使わずに手術した81例を非OSG群とした。OSGを使用した104例をOSG群とし，プレドリルを施行した33例をPD群とした。現在の手術手技は，ラグスクリューガイドワイヤーを刺入する前にOSGで刺入位置を決定し，大腿骨外側骨皮質に5.5mmドリルでプレドリルする。再度OSGで方向と深度を確認して，ガイドワイヤーを刺入し，通常通りにリーミングしてラグスクリューを刺入する。単純X線2方向でのラグスクリュー挿入位置，OSG群とPD群では手術時間，術中X線照射時間を検討した。尚，ラグスクリューの位置を前後像で上・中・下，側面像で前・中・後に9分割し，前後像にて中および下，かつ側面像にて中を至適位置とした。

【結果および考察】

ラグスクリューが至適位置に挿入されたのはPD群では33例中32例（97.0%），OSG群は104例中96例（92.3%），非OSG群では81例中64例（79.0%）であり有意差を認めた。平均手術時間はPD群で47.3分，OSG群で52分であった。平均術中X線照射時間はPD群が370秒，OSG群は261秒であった。OSGを使用しさらにプレドリルを併用することで，より正確にラグスクリューを刺入でき，術後合併症の予防に有用である。

7. Elderly non displaced femoral neck fractures and initially non operative treatment – results–

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Aims:

Elderly non displaced femoral neck fractures treatment: difficult challenge. Initial functional treatment common, results: indistinct.

Patients:

Prospective, longitudinal study (2000-2002); 35 non displaced femoral neck fractures; age: 83 ± 9, female: 89%; Garden I (30), GII (5); Pauwels I (22), PII (13). Associated: neurological, psychiatric diseases (32%), medical (68%). Initial Katz, ASA, Parker, mental scores, place of live, walking ability registered.

Method:

Functional treatment (stay in bed 10 days, then walking without weight bearing until day 45th). X-Ray/10 days. When displacement: hip arthroplasty achieved.

Results:

Secondary displacement: 23 (65%): 5 (Day 1-D10), 8 (D11-D20), 8 (D21-D30), 2 (D31-D40). 3/23: surgery declined, 20/23: hip arthroplasty. Displacement rate correlated with initial grading (Garden I + Pauwels I: 63%, GII + PII: 75%, GII + P I: 75%, GII + PII: 100%), not with ages.

Discussion:

Bibliographic data: false innocuity even when radiographic criteria respected (fracture line direction, bone quality). Concomitant diseases increase secondary displacement risk. Oldest one: no data reported.

Conclusion:

High displacement rate (65%): think about functional treatment results for elderly non displaced femoral neck fractures. Improved success criteria respected: insufficient for these. Failure increases morbidity and decreases secondary treatment results (expensive longer recovery delay). Medical ethics, economic fields concerned. Delete functional treatment for these patients.

8. Trochanteric fractures of old elderly in France

– SoFCOT report –

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Patients:

Prospective, longitudinal study (2002); 455 trochanteric hip fractures; age: 88 ± 5 (80-105); women: 84%, hip arthritis associated: 10%. Really trochanteric fractures: 90% (simple: 52%, complex: 38%), subtrochanteric: 10%.

Methods:

Surgical treatment: 97%: [extra medullary internal fixation (dynamic hip screw): 36%, intra medullary (trochanteric nail): 56%, hip arthroplasty: 5%], functional (not displaced or contra-indicated): 3%.

Results:

Radiological healing: 3 months: 85%, >6: 97%. Complications: General: 1st month: 12%, 1st -3rd: 8%; Local: 1st: 4%, local infection: 1%, 1st-3rd: <1%. New surgical procedures: 1st month <0.5%, 1st-3rd: 3%, 3rd-6th: 3%. Clinical results: Post-operative weight bearing: uncertain. 6th month after fracture: alive: 72% (dead: 28%, non-surgically treated: twice). Katz, mental, Parker, walking scores, live place, demonstrated dependence increase. >6th month: common mortality.

Discussion:

Intra/extra capsular hip fractures ratio increases after 80. These: older, more dependant and help demanding. Hip arthritis inflates hip fracture risk. No division trochanteric/sub trochanteric fractures. Success points technical procedures demonstrated by randomised studies: dynamic hip screws (stable fractures), trochanteric nails (unstable). Hip prosthesis (arthritis; poor bone).

Conclusion:

Surgery for all trochanteric fractures. Don't separate trochanteric/sub trochanteric. Prognostic: rather poor (mortality rate, functional outcomes), depending on initial functional score and dependence. Modern internal fixation reliable. Arthroplasty should be considered.

9. Ender nailing in open fractures of the tibial shaft

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This is a retrospective nonrandomized study of 16 open tibial shaft fracture patients that were treated with Ender nailing. The fractures were classified using Gastilo classification and AO classification. All type I fractures were treated within 2 days after injury, and type II and III fractures were nailed following irrigation and debridement within 6 hours after injury. Fifteen fractures united. The average time to union was 34.4 weeks, from 17 weeks to 60 weeks. One of type IIIB, A3 fracture developed nonunion, which required secondary intramedullary nailing with bone grafting after 19 months of initial injury. No major complications including infection, apparent malunion and shortening was occurred. Valgus deformity less than 10° occurred in 6 cases, mostly in A3 fractures. Minimal shortening less than 10mm occurred in 6 cases, mostly in B2 and B3 fractures. Ender nailing is less invasive, safe and effective for all type of open fractures, but it should be used with caution for transverse fractures and severe comminuted fractures because of high possibility of nonunion and shortening.

脛骨骨幹部開放骨折に対するEnder法

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1994年より2004年までにEnder法で治療した脛骨骨幹部開放骨折20例の内，follow-upできた16例についての治療結果を報告する。骨折型はGastilo分類とAO分類で評価した。Gastilo I型では受傷後2日以内にEnder法を行い，II型，III型では受傷後6時間以内に徹底したdebridementを行った後にEnder法を行った。術後感染例はなかった。骨癒合したのは15例で骨癒合期間は17週から60週，平均34.4週だった。偽関節例は1例，Gastilo IIIB型，AO分類A3で初回手術の19ヶ月後に髄内釘による再固定，骨移植を行ったが3cmの短縮を残した。10°以上の変形癒合や1cm以上の短縮はみられなかったが，10°未満の変形はAO分類A3に，1cm未満の短縮はB2，B3に高頻度に起こった。Ender法は低侵襲な上，II型III型の開放骨折にも優れた骨癒合率をもたらすが，横骨折や高度粉砕骨折では偽関節や変形，短縮の合併症の率が高くなるので注意を要する。

10. Sonography for monitoring reduction of distal radial fractures

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Purpose :

Closed reduction and cast immobilization are employed in the primary treatment of most distal radial fractures under the conventional radiographic techniques. Radiation-free ultrasonography was often used for the evaluation of soft tissue injuries. It also provides the clear bone alignment. We tried the use of radiation-free ultrasonography to make reduction of distal radial fractures. In this study we evaluated the reliability and accuracy of sonography in comparison with that of conventional radiography.

Methods :

Sonographically guided closed reduction was performed in 10 consecutive wrists with an acute distal radial fracture. The efficacy of this method was evaluated and compared with that of conventional radiographic techniques.

Results :

The sonographic images delineated the fractures as accurately as did the conventional radiographs. There was no significant difference between the sonographs and radiographs in all parameters measured.

Conclusions :

Sonography is an effective tool for real-time monitoring of the reduction of distal radial fractures. It is an accurate, simle, and radiation-free method as one of the option to treatment of distal radial fractures.

橈骨遠位端骨折に対するエコーガイド下整復法

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目的

転位のある橈骨遠位端骨折に対しては一般的に，まず透視下に徒手整復を行うことが多い。今回我々は転位のある橈骨遠位端骨折に対し，透視を使用せず，エコーガイド下に整復を試みたので，その結果について報告する。

対象

2003 年 4 月から 2004 年 5 月に橈骨遠位端骨折にて当科を受診した 10 例 10 関節である。

方法

まず単純X線２方向撮影後，エコーにて橈骨骨折部を背側，掌側，橈側より描出する。次いで chinese finger-trap による牽引，および徒手的操作を加え，骨折部を整復し，その後外固定を行う。外固定後X線撮影を行う。

結果

整復前，整復後とも，X線とエコーによる転位距離に有意差はなく，X線と同様の描出が可能であった。

考察，結論

エコーガイド下整復法は，従来の透視下整復法と同様にリアルタイムに骨折部の評価および整復の評価が可能で，被爆も回避でき，有用であると考えられる。

11. Use of the modified Kapandji Index for clinical assessment of rheumatoid hand

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Purpose:

The purpose of this study was to determine the utility of the modified-Kapandji index (MKI) for clinical assessment of rheumatoid hands and fingers.

Methods:

The subjects consisted 134 hands in 67 patients (64 females, 3 males) with rheumatoid arthritis who had hand and finger deformities. Classification of the hands and fingers with swan-neck deformities (Nalebuff), buttonhole deformities (Nalebuff), and thumb deformities (Stein) was performed. The MKI including the scale of finger flexion and extension and the total opposition test was calculated for each patient. The correlations between MKI and the joint space narrowing score (Sharp) on plain X-rays of the hand, scores of activities of daily living (ADL) by the Japanese Societies for Surgery of the Hand (JSSH), and visual analogue scale (VAS) of hand function were determined.

Results:

Types of swan-neck deformities were as follows: type I-20%, type II-5%, type III-7%, and type IV-6%. Stages of buttonhole deformities were as follows: stage 1-1%, stage 2-1%, and stage 3-8%. Deformities of the thumb were as follows: type I -40%, type II- 7%, type III- 2%, type IV-4%, type V- 0% and type VI- 7%. MKI was significantly correlated with the Sharp joint narrowing score, JSSH ADL score, and VAS for hand function.

Conclusions:

MKI would be a useful and convenient functional evaluation method of the hand function of rheumatoid hand.

Modified Kapandji Index を用いた RA 患者の手の機能評価

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【目的】

関節リウマチ(RA)患者の手の簡便な機能評価としてのModified Kapandji Index（MKI）の有用性について検討した。

【方法】

RA患者67例134手に対して，NalebuffおよびSteinの分類，MKI，Sharpスコア，日本手の外科学会ADL機能評価（日手会スコア），手指機能のVisual Analogue Scale（VAS）を調査した。

【結果および考察】

手指のスワンネック変形はNalebuff 分類type Ⅰ: 20%, Ⅱ: 5%, Ⅲ: 7%, Ⅳ: 6% であり，ボタン穴変形の程度はNalebuff stage Ⅰ: 1%, Ⅱ: 1%, Ⅲ: 8% であった。また，母指の変形は，Stein分類 type Ⅰ: 40%, Ⅱ: 7%, Ⅲ: 2%, Ⅳ: 4%, Ⅴ: 0% であった。MKIは，Sharpスコア，日手会スコア，VASとの間に有意に相関を認め，RA手の機能評価の簡便で有用な方法である。

12. Surgical management of complex fracture-dislocation of the elbow joint

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Introduction

Complex fracture-disclocations of the elbow are notoriously difficult to treat. Ten consecutive patients with a complex fracture-dislocation of the elbow or a persistent posterior dislocation were treated with a uniform surgical management inclusive of restoration of the radio-capitellar contact, repair of the coronoid process, and application of an articulated external fixator to allow early concentric mobilization.

Methods

There were 6 men and 4 women, with an average age of 49 years (range, 27-67). The mechanism of injury was a fall from a height in 9 patients and a motor vehicle accident in 1. Three patients had a posterior Monteggia pattern injury (2 type-IIa, 1 type-IId with a synchronous comminuted fracture of the trochlea), 4 a terrible triad pattern injury, 1 a Mason 4 radial head fracture and 2 a persistent posterior dislocation 3 weeks after the initial trauma. Overall, 7 patients had fracture of the radial head, and 6 had fracture of the coronoid process. The radial head was reduced and internally fixed in 1 case and replaced with a metal prosthesis in 4. The coronoid process was internally fixed or reconstructed in all cases. Transosseous reattachment of the lateral collateral ligament complex was performed in 4 cases. The comminuted fracture of the trochlea was reconstructed with an iliac crest.

Results

One patient died from an unrelated complication. Fixator pin infection occurred in 1 patient and heterotopic ossifications in 4. One patient sustained a fracture of the ulna that required open reduction and internal fixation. At an average follow up of 12 months, stability of the elbow joint was maintained in all patients. The average arc of ulno-humeral motion was 89 degrees, and the average arc of pronosupination was 145 degrees. The average Mayo score was 87,5 with 4 excellent, 4 good, and 1 fair outcome.

Discussion and Conclusion

In this series, the application of an external fixator that permits early rehabilitation while maintaining concentric stability and reduction of the ulno-humeral joint led to satisfactory functional outcomes.

13. Efficiency of total disc replacement arthroplasty in the treatment of chronic low back pain

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INTRODUCTION:

Management of patients suffering from chronic low back pain remains controversial. The goal of this prospective randomized multicenter study is to compare full prosthetic disc arthroplasty and functional rehabilitation.

MATERIALS AND METHODS:

97 patients presenting chronic low back pain due to primary degenerative discopathy or postnucleotomy syndrome were randomized. Following criteria were mandatory for inclusion: Oswestry score over 50%, no spondylolisthesis on standard radiographs, Modic I discopathy on MRI and positive discography. Functional evaluation was performed with the Oswestry disability questionnaire, with the french SF 36 health survey and with a self-questionnaire taking into account anxiety and depression (GHQ28). Low back pain and radiculopathy were also assessed by a visual analogue scale. Patients were randomized for rehabilitation with daily physical exercise or total disc replacement with SB Charite III prosthesis. After 6 months of follow-up, functional outcome was assessed again, and a percentage change in Oswestry Disability Index score inferior to 25 % led to propose surgical treatment. Clinical outcome was assessed 12 months after the definitive treatment for all patients.

RESULTS:

6 months after inclusion, mean Oswestry scores for the conservative group and for the prosthesis group were 43,7 % and 13 % ($p<0,001$) respectively. 52,2 % of the patients in the first group had returned to work versus 78 % in the other one ($p=0,022$). Considering the change in Oswestry index, 26 patients were orientated toward disc arthroplasty. At the latest follow-up, mean Oswestry score was 30 % in the rehabilitation group and 13,2 % in the prosthesis one ($p<0,001$). Two early complications occurred after surgical treatment: one hematoma and one luxation of the implant polyethylene nucleus.

CONCLUSION:

In this study, total disc replacement arthroplasty seems to be more efficient than rehabilitation in the management of very specific cases of chronic low back pain.

14. Sagittal balance of the spine and degenerative spondylolisthesis

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INTRODUCTION:

The pathophysiology of degenerative spondylolisthesis remains controversial. The goals of this study were to study spinal and pelvic parameters of sagittal balance in patients operated for degenerative spondylolisthesis, compare them to healthy patients, and try to improve the understanding of this spinal disease.

MATERIALS AND METHODS:

70 patients were included, and underwent standing lateral radiographs including the head, the spine and the pelvis. After digitalization, the following parameters were measured using SpineView softwear: pelvic incidence, pelvic version, sacral slope, lumbar lordosis, thoracic kyphosis, sagittal tilt at T9 and S1-S2 angle. Two types of analysis were performed: an univariate analysis to characterize parameters distribution and a multivariate analysis to detail their relations, to define spinal sagittal imbalance in patients with degenerative spondylolisthesis, and to compare their values to those obtained in healthy patients.

RESULTS:

One of the main characteristic observed in patients with degenerative spondylolisthesis was the high pelvic incidence (62,6° versus 54,7°). This abnormal parameter, inducing hyperlordosis and pelvic retroversion, could play a major role in the degenerative evolution of the spinal functional unit, leading to progressive spondylolisthesis.The most significant factors for T9 sagittal tilt were: pelvic version, pelvic incidence, lumbar lordosis and L4-S1 local lordosis. One third of the patients had an anterior sagittal tilt at T9, essentially due to high lumbosacral kyphosis, one third had a normal T9 sagittal tilt, and one third had a posterior one, because of the thoracic kyphosis associated.

CONCLUSION:

This work provided a good characterization of spinal parameters in patients presenting sagittal imbalance with degenerative spondylolisthesis. It gives a useful tool for analyzing and understanding the constitutive mechanism of this spinal disorder, but also shows the diversity of balance situations, which should be taken into account for therapeutic decisions.

15. Des études portées sur transpedicular kyphoplasty en utilisant HA block pour compression fracture causé par ospeoporosis

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Objectif

On a fait kyphoplasty en utilisant notre original produit, HA Block (fabriqués par PENTAX).

Personne examinée

39examples de Osperoporosis, L'age moyen : 70 ans. On a classé la fracture en 4types : Type Compression, Type Plat, Type Langue, Type Alligator mouth.

Moyen

On a coupé 2 centimètre sous anesthésie générale. On a réduite l'os insérant HA Blok avec insertor spécial.

Conséquence

Pour le pourcentage de vertebral deformity, 58.8% avant la opération, 86.2% juste après la opération, 75.5% suivi. En ce qui concerne, Type Compression et Type Plat sont excellent. Type Langue et Type Alligator mouth sont mauvais.

Concernant, VAS est indiqué 8.5 avant l'opération tandis que 1.8 lors de l'enquête. Aucun cas de complications grave.

骨粗鬆症による圧迫骨折に対する HA Block (ハイドロキシアパタイト) を用いた Transpedicular Kyphoplasty の検討

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【目的】

我々が開発したハイドロキシアパタイトのブロック（HA Block: PENTAX 製）を用いて 3 年前より kyphoplasty（椎体矯正術）を行っている。本法の手技，成績，適応などにつき報告する。

【対象】

骨粗鬆症性圧迫骨折 39 例，平均年齢 70 歳であった。骨折のタイプを圧迫型，扁平型

（偽関節を含む），舌状型，alligator mouth 型の４型に分類し，それぞれ 9 例，24 例，3 例，3 例であった。

【方法】

術式は全身麻酔下にて，背側に約2cmの切開を両側椎弓根上に加え，インサーターを用い HA Block を順次充填して整復した。

【結果】

椎体変形率は術直後 58.8%，術直後 86.2%，調査時 75.6% であり，矯正損失は 12.2% であった。矯正損失は圧迫型，扁平型は良好で，舌状型，alligator mouth 型は不良であった。除痛効果は VAS が術前 8.5 が調査時 1.8 と効果は著明であった。また肺梗塞などの重篤な合併症はなかった。

16. Failed percutaneous Laser disc decompression – a multi-center questionnaire survey on university-hospitals basis in the Kinki district of Japan –

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Percutaneous Laser Disc Dempression (PLDD) is one of minimum invasive techniques to decompress prolapsed intervertebral disc with laser. With an increasing number of patients receiving PLDD in Japan, several case reports with unsatisfactory outcomes have been emerging for the past 5-6 years. To detect the clinical background of failed PLDD, a multi-center questionnaire survey on university-hospitals basis in the Kinki district of Japan was conducted. Clinical data of 74 patients was collected and was retrospectively analyzed. The most common suspected cause of failure was inappropriate preoperative diagnosis and/or indication which included non-contained disc, neglected lateral recess stenosis and segmental instability in 44 of 74 patients. The second major cause of failure was associated with postoperative complications. The complication specific to PLDD procedure was end-plate injury adjacent to the disc with or without bone marrow damage on MRI, which was presumably caused by excessive heat with laser. Fourteen patients were diagnosed unsuccessful in spite of its proper patient selection. An additional salvage surgery was employed for 73% of patients. To achieve a satisfactory outcome of PLDD, special attentions should be paid to adequate preoperative diagnosis, adherence to strict therapeutic indication and precaution for possible complications. Salvage open surgery should not be hesitated, if necessary.

経皮的レーザー椎間板減圧術　成績不良例の検討
―近畿地区 12 大学病院アンケート調査より―

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経皮的レーザー椎間板減圧法(PLDD)は椎間板ヘルニアに対する最小侵襲治療として本邦でも症例数が増加している。一方，その治療結果を不満足として他院を受診するケースが近年問題となっている。PLDD 成績不良例の実態を明らかにするため，治療結果を不満足として近畿地区12大学付属病院を受診した患者について，診療担当医に対するアンケート調査を行った。74例の成績不良例が集計された。担当医から見た成績不良の主な原因は，適応は妥当だが効果なし 14 例，不適切な適応や診断 44 例，合併症によるもの 30例(複数回答)であった。適応の誤りとされた症例の多くは脊柱管狭窄症の合併(18例）や脱出型ヘルニア（15 例）であった。特有の合併症として終板損傷，椎体骨壊死が35例にみられた。PLDD実施にあたっては手技の習熟，適切な照射条件の設定とともに術前病態の正確な把握，適応の遵守，合併症予防の工夫，成績不良例に対する適切な対応が必要である。

17. Subjective evaluation of surgical treatment for patellar instability

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Introduction

The goal is to assess the functional and functional outcome of our surgical management of patellar instability

Material and Methods

This study included 130 patients (174 knees) treatded prospectively, according the "menu à la carte", described by H. Dejour, between 1988 and 1999.

Minimum follow-up after surgery was two years, mean five years (range 24-152 months). The IKDC 1999 subjective evaluation chart was used. This chart has ten items to establishing level of sports activity and functional status of the knee for daily life activities. One hundred ten patients (84.5%) responded to the questionnaire.

Results

Eighty-eight patients were reviewed for clinical assessment and 22 answered to the questionnaire by telephone: 104 patients (94.5%) were satisfied or very satisfied, five (4.5%) were dissatisfied, and one was disappointed. We evaluated results on the basis of pain (37.6% with climate-related pain or discomfort), residual effusion(33.7%), and sensation of blocked knee (15.8%), as well as daily activities (68% with discomfort when kneeling), and sports activities (with level of activity).

The average IKDC score was 77.2 (45.9 – 95.4). There were 10 postoperative dislocations (5.2%). One patient had a postoperative patella baja and a reoperation led to a good result. There was 2 anterior tibial tubercle's fractures and 4 non-unions.

Discussion

The patients'subjective assessment showed that the surgical treatment arising to correct the factors of patellar instability according to the Lyon's management is effective with a good or excellent rate of satisfaction. The quality of these results was directly related to careful individualization of the lesions with systematic analysis of factors leading to patellar instability (trochlear dysplasia, patellar height, quadriceps dysplasia, TT-TG measures, length of the patellar tendon).

18. HERMES patello-femoral prosthesis

J.H. Caton LYON

INTRODUCTION

Patello-femoral arthritis is often very well tolerated; nevertheless, a certain number of these osteo arthritis tend to become disabling, thus requiring treatment, which may be medical or need conservative surgery (tibial tubercle medialisation, joint cleaning, lateral release, patelloplasty, patellectomy, facettectomy, etc.) or prosthetic surgery with total knee prosthesis or patello-femoral joint replacement. Patello-femoral prosthesis will give a better result if the surgeon has at his disposal a good prosthesis, for a good indication allowing him to perform a successful operation. A critical analysis of the literature concerning patello-femoral prosthesis has shown that there are three causes of failures: hitching with uplifting, instability and the evolution of the patello-femoral osteo arthritis towards femoro-tibial arthritis.

MATERIAL AND METHOD

To overcome these different drawbacks, we have developed a patello-femoral prosthesis which, for us, had to be anatomical, without resurfacing, with a femoral bone cut identical to a tri-compartmental prosthesis and allowing one to dispose of a suitable ancillary material. Therefore, a schedule was set up with five essential requirements: first, perfect congruence with a possibility of autocentering of the kneecap; second, a position of the femoral carter in lateral position to stabilize the kneecap; third, the possibility to position laterally the femoral carter in the case of dysplasia or dislocation sequelae; fourth, a femoral carter filling all of the femoral trochlea with absence of resurfacing; fifth, absence of patello-prosthetic and/or trocheo-tibial conflict. This schedule gave rise to the HERMES patello-femoral prosthesis.

RESULTS

The results of the HERMES patello-femoral prosthesis were evaluated at the "Société Française d'Orthopédie" (SOFCOT), in November 2003, revealing a survival rate at 5 years of 96%. Further, a study of 25 prostheses, of which 22 at five years, was carried out in the Department of Daniel GOUTALLIER (MATHIEU G., MD), showing an IKS score as follows: 86% very good and good results for the knee score and 82% very good and good results for the function score.

CONCLUSION

Patello-femoral prostheses can give reliable results identical to a tri-compartmental knee prosthesis provided the following indications are taken into consideration: post-traumatic arthritis, instability with arthritis, chondrocalcinosis but contra-indicating inflammatory arthritis, chondromalacia and patello-femoral arthritis associated with a tibio-femoral arthritis. After 65 years age, in the presence of an isolated patello-femoral arthritis or a chondrocalcinosis, it is possible to place a HERMES type patello-femoral prosthesis.

19. Middle-Term results of autogenous osteochondral graft transplantation for osteonecrosis of the knee

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Repair of the osteochondral lesion of osteonecrosis of the knee is a difficult and controversial issue. We present the middle-term clinical results of autogenous osteochondral grafting for osteonecrosis of the knee.

Twenty patients (22 knees) with at least 2-year follow-up periods were included in this study. The age ranged from 29 to 76 years of age, with a mean of 48. The follow-up period ranged from 2 to 8 years with a mean of 3.5. The cause of osteonecrosis was steroid-induced in 6 and idiopathic in 16. Correction osteotomy was performed in 13 knees at the same time of osteochondral grafting. The clinical results by ICRS cartilage evaluation form were normal in 7, nearly normal in 14, and abnormal in 1 knee. Second-look arthroscopy revealed complete integration in 2/3 of the cases and the others showed partially incomplete integration between the grafts. MRI showed that complete healing of the necrotic lesion was observed in 10 knees and a significant lesion was remained in one knee. In conclusion, autogenous osteochondral grafting can give satisfactory results for the osteonecrosis of the knee if a proper alignment is obtained.

膝骨壊死に対する自家骨軟骨移植法の中期成績

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膝骨壊死の骨軟骨病変に対する修復は困難で議論の余地の多いところである。我々は，膝骨壊死に対する自家骨軟骨移植の中期成績について報告する。

症例は 20 例（22 膝）で最短 2 年以上の経過観察を行った。年齢は 29 から 76 歳（平均 48 歳），経過観察期間は 2 年から 8 年（平均 3 年 6 ヶ月）でステロイド性が 6 膝で特発性が 16 膝であった。矯正骨切りは骨軟骨移植術と同時に 13 例に行った。1 例が脛骨高原の骨壊死例であった。ICRSの評価による臨床成績は，Normalが 7 膝，Nearly normalが 14 膝で，Abnormal は 1 膝であった。再鏡視時の所見は，約 2/3 が周囲の軟骨との完全な結合が得られ，他は不完全な結合であった。MRIによる評価では壊死部の完全な治癒が10例で得られていたが，1 例に明らかな病変が残存していた。結論として，正しいアライメントが得られれば，膝骨壊死に対する自家骨軟骨移植術は満足すべき成績を示した。除痛効果は VAS が術前 8.5 が調査時 1.8 と効果は著明であった。また肺梗塞などの重篤な合併症はなかった。

20. Diffused type pigmented villonodular synovitis treated by arthroscopic recection : case report

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Pigmented villonodular synovitis (PVNS) is a rare, benign, proliferative disease of the synovial membrane of joints, tendon sheaths, and bursas. Generally, for localized PVNS, Arthroscopic synovectomy is a standard treatment. As for diffused PVNS, Surgical excision has always been performed. Since the diffused type PVNS shows high rate of recurrence, we performed the arthroscopic recection to the knee joint ,diffused type PVNS of our 75 year-old patient 2 years ago. Since then there have had no symptoms of recurrence. This case ,therefore, may challenge the traditional use of surgical excision and calls for more attention towards the use of arthroscopic recection. We report and discuss the case in this presentation.

びまん型色素性絨毛結節性滑膜炎（PVNS）に対し鏡視下手術を施行した１例

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色素性絨毛結節性滑膜炎（PVNS）は比較的稀で良性の増殖性疾患である。一般にびまん型 PVNSは外科的切除術を行なっても再発しやすく，鏡視下切除術は行われることは少ない。

症例は75歳男性　主訴は右膝関節痛。PVNSを疑い診断，治療目的にて関節鏡を行ったところ，毛細血管を伴う黄褐色の絨毛がびまん性に増生していた。病理学的にもPVNSとの回答を得たため，引き続き鏡視下滑膜切除術を施行した。

本症例においては，外科的切除術も考慮したが，術後の著明な機能障害が考えられたため今回は関節鏡視下滑膜切除術を試みた。術後2年の現在，膝関節にROM制限，腫脹等はなく，MRIにても再発は認めず経過良好である。この症例に対し，文献的考察を加えて報告する。

21. Computer-assisted surgical navigation using fluoroscopy
– Clinical use in spine surgery –

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INTRODUCTION:

Mobile fluoroscopic devices are an integral part of the standard equipment used in orthopaedic surgery to provide visual feedback of bone and surgical tool positions. One of the disadvantages of this technique includes the need for continuous radiation exposure for real-time visual control.

CLINICAL RELEVANCE:

This paper describes a computer-assisted surgical navigation system based on fluoroscopic X-ray image calibration and 3D optical localizers (Fluologics system, Praxim, France). This system allows real-time navigation in several X-ray projections simultaneously, with the fluoroscope turned off and removed from the operating field. In spine surgery procedures such as pedicle screw placement, safety and accuracy can be improved thanks to the multiplanar guidance, while radiation exposure of both patient and surgical staff can be significantly reduced [1][3].

MATERIALS and METHODS:

A three-dimensional optical localizer (Polaris system, Northern Digital, Waterloo, Ontario, Canada) is used to track the position and orientation of surgical tools, patient reference, and C-arm image intensifier, within the region of the operating table. Passive reflecting devices embedded into these components allow tracking by the three-dimensional optical localizer. Position and orientation data are transferred to an Surgetics computer workstation (Praxim, France). The C-arm used in this study is an OEC 9600 fluoroscope (OEC Medical system, Courtabeuf, France).

To correct image intensifier distortions and calibrate images, a calibration grid (equipped with passive reflecting devices) is attached rigidly to the image intensifier. The aim of the calibration process is to learn the mapping between image pixels and the “physical” surgical space, so that the computer can generate a virtual projection of the surgeon's tool axis onto the calibrated X-ray views.

In a first step, the surgeon attaches the Dynamic Reference Frame to the patient's vertebra of interest and aligns the optical localizer's cameras optimally. In a second step, the surgeon acquires two single X-ray views from A-P and lateral positions. After calibration of the acquired X-rays by the computer, the fluoroscope is turned off and removed from the operating field.

Finally, the calibrated views are displayed on the workstation screen. A computer-generated projection of the surgeon's surgical tool is also displayed in each view. A real-time navigation in several views simultaneously is now possible. The feasibility of this technique for lumbar pedicle screw insertion was assessed through cadaver trials by Foley et al. [2][3].

RESULTS:

In the first phase of clinical evaluation, the "Fluologics" system was used as an adjunct to our CT image-guided spine surgery system. The accuracy of the system was verified in vivo on twenty patients upon pedicle screw insertion in thoraco lumbar region (T11 – L5). The position and orientation of the implanted screws were assessed postoperatively on CT scans. All the screws (50) were perfectly inserted. No complications were observed with these patients.

DISCUSSION/CONCLUSION:

Currently available computer-assisted orthopaedic systems are generally based on 3D image data sets that are acquired preoperatively with a Computed Tomography (CT) scanner. A fluoroscopy-based computer system can be seen as a complement to a CT-based computer system (CT scans provide full 3D image data, not fluoroscopic images). The advantages over CT-based systems are twofold: instant availability without preoperative preparation (no CT acquisition required) and up-to-date image data of patient anatomy (X-ray images used for navigation are acquired at the beginning of surgical procedure). As compared to standard fluoroscopy, the fluoroscopy-based computer system allows real-time navigation in several X-ray projections simultaneously and reduces significantly radiation exposure of both patient and surgical staff. Finally, the authors believe that this system can also greatly improve on surgical accuracy and safety of other applications in orthopaedics.

22. Importance of ergonomics and efficiency for computer-assisted spine surgery – clinical results 1999-2003 (97 patients) and prospects –

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Background/Objectives:

Computer Assisted Surgery (CAS) systems were introduced in the late 80's in the area of stereotactic neurosurgery in order to assist a surgeon in placing a needle or a probe deep into the brain without direct visualization. The general purpose of CAS technology is to increase accuracy, to reduce morbidity, to offer the possibility of performing minimally-invasive surgery with ease and safety, to reduce X-ray radiation doses, and to improve surgical protocols by allowing consistent post-operative studies. The basic principle of CAS technology is to locate the position (3D) of surgical instruments in the operating field and to display these positions in preoperative CT, MRI, or intraoperative X-ray images. Since the beginning of the 90's, CAS technology has been extended to other applications, such as Spine Surgery. Looking back on their experience in Computer-Assisted Spine Surgery, the authors wish to demonstrate the importance of ergonomics and efficiency for the next generation of CAS systems.

Material and Methods:

Pedicle screw insertion is used for treatment of various disorders such as fractures, scoliosis, spondylolysthesis, or degenerative instabilities. With conventional procedures there are between 10 to 40% of misplaced pedicle screws [1, 2]. Between 1999 and 2003, two navigation systems were used for pedicle screws placement: a CT-based navigation system (Stealth Station, Medtronic) and a fluoroscopy-based navigation system (FluoroNav, Medtronic). 97 patients were operated on with either systems, and 259 pedicle screws were inserted between T4 and L5, in 47 idiopathic scoliosis (123 screws) and 50 fractures, spondylolysthesis, or degenerative instabilities (136 screws) [1]. A cortex penetration evaluation was done with the help of post operative CTs.

Results:

With the CT-based navigation system (79 patients, 201 pedicle screws), 5,9 % (12/201) of the pedicle screws were misplaced (cortex penetration > or = 2mm). With the fluoroscopy-based navigation system (18 patients, 58 pedicle screws), 14% (8/58) of the pedicel screws were misplaced. The results by pathology were the following : For scoliosis, 6,5 % (7/107) of the pedicle screws inserted with the help of the CT-based navigation system and 25% (4/16) of the pedicle screws inserted with the fluoroscopy-based navigation system were misplaced; For fractures, spondylolisthesis, etc. 5.3% (5/94) of the screws inserted with the CT-based navigation system and 9.5% (4/42) of the screws inserted with the fluoroscopy-based navigation system were misplaced. The major drawbacks of fluoroscopy-based CAS systems as compared to CT-based

CAS systems are the variable image quality and most important for scoliosis cases, the absence of real 3D navigation views. From the opposite perspective, the major drawback of CT-based CAS systems as compared to fluoroscopy-based CAS systems is the necessity of a preoperative CT and a time consuming registration (2 to 10 min).

Conclusions:

In order to increase ergonomics and efficiency of Computer-Assisted Spine Surgery, new devices and technologies have been integrated in CAS systems such as wireless surgical tools, flat panel touch screens or sterile touch pads (Medtronic), simplified menus activated solely by a footswitch (Surgetics, PRAXIM)

Regarding the basic principle of CAS systems, i.e., multi-modal data registration, the authors wish to focus the attention on some new technologies that are currently under development or being tested, which they believe will soon replace the existing data registration techniques (currently based on manual data collection directly on patient bone surface) in the next generation of CAS systems, mainly because of their increased accuracy and efficiency, but also because of an easier implementation in the OR.

Based on the use of either a preoperative CT, MRI or a 3D deformable statistical model, 2D/3D registration technology has been developed [2, 3] and is currently being tested in vitro; this technique consists in registration of a preoperative CT, MRI or deformable statistical model with a couple of calibrated intraoperative X-rays. 3D/2.5D registration technology has been developed and tested clinically [4], and consists in registration of a preoperative CT with a set of 2D calibrated ultrasound images acquired intraoperatively. Finally, the recent coming out of 3D fluoroscopic devices [5, 6] should allow surgeons to dispose of 3D models without the need for any data registration at all. All of these new technologies should allow percutaneous pedicle screw placement to be performed in a very near future, and without the need for a preoperative CT scan if statistical models [3, 5] or 3D fluoroscopic devices [5, 6] are used.

First clinical cases using statistical models [3, 5] of lumbar vertebrae and 2D/3D registration technology should be performed in the last months of 2004.

23. Comparison of navigation oriented cup setting angle with radiographic measurement after THA

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We use hip navigation system (Zimmer & Medtronic) for cup setting in THA. In this study, we examined how much difference arises between the indicated angle by navigation system and the post-operative measured angle on X-ray film. We observed 11 hip joints of 11 patients. After operation, we measured abduction angle and anteversion of the cup on X-ray films. For measurement of anteversion, we used Hassan's equation. The difference of abduction angle is 2.0~14.5° (6.0 ± 4.4S.D.) and the difference of anteversion is 1.6~14.9° (7.9 ± 4.9S.D.). From overall results, the distribution of values is larger than expected and we could not help concluding that the indicated angle by navigation system is not reliable. However, focusing on the last 6 cases, the difference of abduction angle is within the range of 2~4° (2.5 ± 0.758S.D.). In these 6 cases, we fixed pelvic antenna by lateral position and performed THA operation with same position. The navigation system has many advantages, thus we have to achieve a reproducible and accurate way to use it.

ナヴィゲーション（NAVI）を用いた臼蓋カップ設置角度の検討

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我々の施設ではTHAの際に臼蓋側のみNAVIを用いてカップの設置を行っている。今回 2004 年 11 月より NAVI（Medtronic）を用いて THA が行われた 11 患者 11 股関節を対象とし，術中に示された角度と術後XPでのカップの外方開角と前開き角を比較し角度にどれ位の差が生じているかを検討した。外方開角の差は 2 ～ 14.5 °(6.05 ± 4.43S.D.）に分布し，前開き角の差は 1.6 ～ 14.9 °(7.93 ± 4.91S.D.）に分布し大きな角度誤差とばらつきが生じていた。これら全例のデータからではNAVI によるカップ設置角度は信頼性に欠けると考えられたが，外方開角の差について最後の 6 例に限って調べると 2 ～ 4 °(2.5 ±0.76S.D.）に収まった。これは最初から最後まで側臥位でアンテナ設置から手術まで行うよう手順を変更したことによると考えられる。今後も症例数をふやして検討していく。

24.Computer-assisted navigation in total knee replacement
– Results of an initial experience in fifty five patients –

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Malalignment of the mechanical limb axis is thought to be an important factor affecting patient outcome and resulting in prosthetic loosening.

In previous studies, a post-operative limb axis within a range of ± 3° varus/valgus was found to be associated with a lower rate of aseptic prosthetic loosening.

The conventional implantation technique fails in up to 30% of cases in restoring a mechanical limb axis within a range of ± 3° of varus or valgus.

The aim of this prospective study was to analyse the accuracy of component orientation and post-operative leg alignment when using a CT free module navigation system (Vector Vision Brainlab).

Materials and methods

Primary TKA was performed on 50 patients ; 33 women and 15 men were included. The mean age was 70,6 (range 48-88 years) and the mean pre operative deviation of leg axis was 6,3° ± 5,1.

The system creates an adapted bone model of the specific patient's anatomy and offers a planning proposal for component orientation. Axial limb alignment and component orientation were evaluated by a pre and post operative full lengh weight-bearing radiographs.

Results

The average deviation from the neutral leg axis was 1,6° (range 3° valgus to 4° varus). The frontal plane alignment was found within a range of ± 3° in 46 cases.

Computer-assisted TKA gives a better correction of alignment of the leg potential benefits in long-term outcome require further investigation.

25. Percutaneous insertion of a proximal humeral nail for fractures – results and assessment of the shoulder function –

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The purpose of this study is the assessment of the shoulder function after a proximal humeral nail insertion for trauma, using a minimal invasive approach.

Material and methods: 22 patients had osteosynthesis for proximal humeral fractures using the "Telegraph" Nail. 15 patients underwent percutaneous osteosynthesis. The indication for the percutaneous procedure was determined at the per-operative control under fluoroscopy when the fracture was reducible by external manoeuvres. 12 of the fractures involved the surgical neck and 3 fractures were three-part fractures of the proximal humerus. The proximal interlocking was made using two screws in all the cases. The distal static interlocking was made with a single screw in all the cases.

All the patients followed a standardised rehabilitation protocol including early mobilisation and passive and active assisted muscular activity. The shoulder function was assessed using the Simple Shoulder Test (SST) and the Constant score. The mobility was assessed using the flexibility ratio described by Harryman as compared to the opposite healthy arm. The patients were assessed at 6, 12, 26 and 52 weeks after surgery.

Results: All the fractures showed consolidation within 6 weeks. Two fractures united with internal rotation and presented at controls with limited external rotation. Stable results were obtained at an average of 3 months. Return to previous activities was possible between 8 and 10 weeks after surgery in all the cases excepting two. In one case subacromial conflict between the nail and the rotator cuff was due to malpositioning of the proximal part of the nail and of the screws and required early removal and cuff repair. Average forward elevation was 12O°±25°. Average external rotation was 45°±15°. The SST score reached an average of 8.2/12 within 6 months and practically was unchanged at 12 months for all the series. The pondered Constant score was 76.7/1OO at six months. All the patients were improved after surgery.

Conclusion and discussion: The percutaneous insertion of a proximal humeral nail for shoulder fractures is a minimally invasive alternative to heavy open surgery. The results are acceptable for the patients and stable in time. The advantage of minimal bleeding and short hospital stay recommend this technique in all the cases when reduction is possible without opening, as showed by the fluoroscopy.

26. Minimally invasive surgery for cubital tunnel syndrome

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Introduction

We perform simple decompression without an endoscope and only using a 1.5-3.0 cm skin incision for cubital tunnel syndrome. We report our results with this technique.

Patients and Methods

Thirty-nine elbows in 35 patients with cubital tunnel syndrome were treated by simple decompression. There were 26 men and nine women, with a mean age of 57 (range, 35-87) years. There were 22 right and 17 left elbows, and according to McGowan's criteria, five elbows were classified preoperatively as grade I, 14 as grade II, and 20 as grade III. The mean follow-up period was 20 months (range, 4-37). Radiographs of 23 of the 39 elbows showed mild or moderate osteoarthritic changes, but none of these patients experienced any symptoms of osteoarthritis. Nine patients had diabetes mellitus and eight had habitual dislocation of the ulnar nerve on both the affected and unaffected sides.

Results

Clinical results were evaluated as excellent for eight elbows, good for 18, fair for 11, and poor for two. A subcutaneous haematoma developed in one elbow.

Conclusions

Simple decompression through a small skin incision can be recommended for the treatment of cubital tunnel syndrome, if the indication is appropriate.

肘部管症候群に対する最小侵襲手技による治療

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【目的】

今回我々は当科で行っている最小侵襲による小皮切単純尺骨神経剥離術の治療成績について報告する。

【対象】

症例の内訳は，男 26 例，女 9 例，年令は 35 ～ 87 歳，平均 57 歳，患側は右側 22 肘，左側 17 肘であった。術後追跡期間は 4 カ月から 3 年 1 カ月，平均 1 年 8 カ月であった。

【手術手技および後療法】

手術は 1.5cm から 3cm の皮膚切開を加え進入する。皮下を展開したのち，tendinous arch，筋膜を切開し尺骨神経を同定し，尺骨神経の単純剥離を行う。日常生活，軽作業は術翌日より許可し，作業労働者の職場への復帰は，術後 2 週間より開始した。

【結果】

術前病期は，McGowan 分類により病期Ⅰが 5 肘，病期Ⅱが 14 肘，病期Ⅲが 20 肘と評価された。治療成績は，8 肘が優，18 肘が良，11 肘が可，2 肘が不可と判定された。

【まとめ】

小皮切単純神経剥離術は最小侵襲，安全であり，術後早期に職場復帰が可能である。さらに，従来法と同様の治療成績が期待でき，症例を限定すれば，推奨できる術式である。

27. Minimally invasive surgical treatment of wrist osteoporotic fractures with an injectable phosphate calcium cement and K wires

Philippe Liverneaux
Rochefort sur mer

World wide incidence of osteoporotic distal radius fractures increases, due notably to increased life expectancy. The treatment of osteoporotic distal radius fractures uses usually intrafocal K-wires, as Kapandji proposed. But complications remain frequent, especially secondary displacement. The goal of this study is to decrease secondary displacement ratio by adding to to the K-wires an injectable phosphate calcium cement to fill the posterior comminution.

Six postmenopausal osteoporitic females (mean age 78 years) have been operated on for an distal radius fracture with posterior displacement. After external reduction, 3 K-wires were introduced into the fracture percutaneously. Then, a percutaneous orifice was created across the tip of the radial styloid using a trocar tipped stylet pushed along its bisectrix until it reached the medial cortical of the radius without perforating it.

A 20 mg dose of calcium phosphate cement Cementek LV® was prepared and introduced into a injection syringe to which the stylet had been adapted. The injection was subsequently carried out using a fluoroscope to check the progress of the cementoplasty. The cementoplasty of the distal radius was stopped either when cement leakage was seen or when the operator judged the filling to be satisfactory.

Mean follow-up was 1 year. Two Reflex sympathetic dystrophy were seen, and in one case it was impossible to remove the K-wires. Three anterior cement leaks were resorbing in a few months, without any trouble. Mean volume of cement injected was 200 mm3. The result was similar to other technics, in terms of mobility, strength, and radiological index.

Our results show that adding phosphate calcium cement to Kapandji technique does not provoke any complication by itself. The leaks do not reject the use of the cement, because they were resorbed. It is possible to improve the method by curettage in the distal radius to increase the amount of injected cement.

28. Scaphoid percutaneous osteosynthesis using fluoroscopic navigation : experimental study

Philippe Liverneaux
Rochefort sur mer

The scaphoid fractures are sometimes difficult to diagnostic and it is even more difficult to do an acceptable osteosynthesis. Recent progress of the osteosynthesis material, which is miniaturized, the generalization of the initially percutaneous ways, and the widening of the operational indications to the not moved fractures, however let persist of complications. In this context, the computer assisted surgery (CAS) could become a way of research to be explored. To apply it to the scaphoide, it is initially necessary to immobilize the unit "wrist hand fingers" in a device adapted to make an inderformable solid of it. Then it is necessary to choose the correct configuration with the CAS system. The pedicular fluoroscopic navigation, which is apparently close to scaphoid screwing, was retained for this study. The goal of this study is to define the osteosynthesis bases of the scaphoid with CAS.

A fresh anatomical subject divided at the elbow joint was prepared at laboratory DETERCA of the university Bordeaux 2. The solid "wrist hand fingers" was immobilized in extension and ulnar slope of the wrist by a device malleable, stable and radio transparent. The CAS system used was the fluoroscopic navigation whose first time consisted of a calibration of the surgical instruments and inderformable solid system "wrist hand fingers" by three-dimensional optical localization system. The stitching was simulated using a gauged stylet. When the axis and the lengh of the screw were virtually given, stitching was carried out under guidance of the virtual images of the computer's screen, without the assistance of the fluoroscopy. Finally the canulated screw was installed on the stitching pin. Screwing was stopped when the screw reached the intra osseous virtually predetermined length. A conventional control of fluoroscopy made it possible to be ensured of the good screw's positioning.

Our results seem to show that it is possible to screw a scaphoid without conventional fluoroscopy, by using the fluoroscopic navigation system. The procedure was led without difficulty, apart from the need of calibrating the navigation tools one by one. The solid immobilization device, although having potentially micro mobility, did not cause false route.

However, our technique cannot be employed at the moment in live human surgery. It's limits are of geometrical nature "two images available in two plans", data processing "non-specific software dedicated", instrumental "instrument calibration, micro mobility of the immobilisation device", and live surgery "no current validation on a fractured scaphoide".

Meantime, the principle of the development of a scaphoidal's percutaneous osteosynthesis's procedure by CAS can only bring advantages: reduction in the learning curve, widening of the indications, comfort in the technique, reduction in the errors of synthesis, reduction in the exposure to x-rays in the current state, the surgical procedure, the holding hand's fixture, the navigation system and the software of retiming are transposable short term only for the moved fractures.

29.Minimally-invasive spine surgery using real-time MRI navigation

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We report clinical applications of minimally-invasive spine surgery using an MRI navigation system. The hardware is an open-configuration 0.5T MR scanner. Real-time MR images were obtained intraoperatively while the image planes were controlled by surgeons with use of an optical tracking system. Four cases of intradural cysts, 2 extramedullary and 2 intramedullary, were treated with aspiration under real-time MRI navigation. Thoracoscopic guidance was also combined in one case of thoracic spinal cord cyst. In 3 cases, the cyst was successfully aspirated without opening the spinal canal. In one case, the cyst could not be aspirated percutaneously and the treatment was converted to an open surgery which could successfully resolve the condition, while intraoperative MR images helped to confirm the cyst morphology during operation. We experienced no local or general complications. MRI navigation is a useful and innovative tool for minimally-invasive spine surgery, and can be considered prior to more invasive surgery.

MRI ナビゲーションを用いた脊髄の最小侵襲手術

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開放型MRとナビゲーション機能を備えたIVMR手術室において行なった脊髄の最小侵襲手術について報告する。MR機器は0.5 T縦開放型で，二つのコイル間に二人の術者が患者を挟んで対面して手術操作を行なうことができる。ナビシステムとして，頭上に赤外線カメラがあり，発光ダイオードを備えたハンドピースを術野で操作することにより，任意の面のリアルタイムMR画像をモニター画面で見ることができる。胸腔鏡との併用も可能であった。これまで硬膜内髄外嚢腫２例，髄内嚢腫２例に対して，IVMRナビ下の嚢腫穿刺を行なった。4 例中 3 例で穿刺が成功し嚢腫縮小または消失が確認された。1例は経皮的穿刺が不成功で，その場で切開手術に切り替えたが，術中に嚢腫形状を確認することができ，嚢腫縮小と症状軽快を得た。合併症は無かった。MRナビゲーションは脊椎脊髄の低侵襲治療に有用であり，侵襲的手術の前に考慮してよい先進治療である。

30. Accuracy of implant positioning using specific angled instrumentation in posterior minimal invasive approach: prospective series of 73 total hip arthroplasties

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Materials and methods

73 THA were performed in 72 patients, through a small modified posterior incision, with a specific angled instrumentation, from June 2003 to November 2004 by one surgeon (TASS). There were 40 males, mean age was 59 (25 – 83) and body mass index was 26,0 + 4.6 (14.1 – 40.7) kg/cm2. Aetiologies shown common distribution in patient requirering primary THA: osteoarthritis 54, necrosis 13, rhumatoid arthritis 6. Corail® uncemented full HA coated femoral stem coupled with Lagoon® uncemented HA coated cup (Depuy Johnson & Johnson) were used. All patient but 3 (95%) had immediate full weight bearing.

Results

Mean initial incision length was 62 mm (SD: 10) (45 to 80), and at the end of the procedure. Mean peroperative blood loss was 402 milliliters (SD: 265). Mean post operative blood loss from drainages was 545 (SD: 283). 42 patients (58%) received blood transfusion (mean 1.3; ranging from 1 to 3).

Mean pain score was 2.6 (SD: 2.0) in recovery room. It then ranged from 2.6 (SD: 1.8) at D1 to 1.0 (SD: 1.5) at D5. Harris score at 6 weeks was 85.0 (SD 10.1) versus 54.7 (SD 18.4) preoperatively.

Two patients required additional cup fixation (one acetabular medial wall fracture and one cup instability in dysplasia). There were no wound healing related problems. There was one vertical 3 cm crack distal to the stem diagnosed on post op x-ray. There were no vascular or neurologic injuries. There were no sceptic complications. One early dislocation occurred in a 78 year old patient after hospital discharge. No complication required reoperation.

Cup and stem positionning were available in all cases. Cup abduction was 43.9° (SD 6.2); anteversion 16.8° (SD 6.0). Hip centre restitution was achieved 93.3% within 5 mm. Stem alignment was 1.0° varus (SD 1.9). Femoral offset was restored in 88.3% within 10mm. Global hip offset restitution was achieved within 10mm in 83.3%. There was no limb length discrepancy over 8mm.

Conclusion

The use of specific instrumentation appears safe and reliable. Nevertheless, minimal invasive THA remains a demanding procedure, with possibly higher local complication rate. In our opinion, one must tie the patient selection, use a specific instrumentation and proceed with a familiar single incision in small approaches.

31. Minimal invasive ceramic hip via posterior approach

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Since 2 years we regularly utilised a very small (5 to 9 cm) posterior approach . It is a modification of the regular technique. No special instruments or tools were used. Details concerned skin incision , position of the patient , reaming of the acetabulum , preparation of the femur. In young patients we implant cementless socket and stem with all alumina bearings , in elderly we implant cemented stem and cemented plain polyethylene socket.

Over more than 150 total hips implanted , early results show no increase in complication rate, dislocation less than 2%, no infection .

Accuracy of stem and socket positioning are discussed.

Limited bleeding , early weight bearing , decreased pain are the major issues apart from aesthetic considerations.

32. Minimum invasive anterior approach to total hip arthroplasty without using any traction tables

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Introduction

It has been believed that a specialized traction table (Judet table) is necessary for minimally invasive anterior approach for the total hip arthroplasy (THA). However, we have performed THA on a standard surgical table since April in 2004. The purpose of this presentation is to report clinical results and to discuss our procedure.

Materials and methods

We studied the results of 28 THAs for patients with osteoarthritis between April and Dec in 2004. The patient is placed in the supine position on the standard surgical table. Our approach is a short version of the Smith-Peterson.

Results

The mean blood loss was 295 ml. The mean operation time was 89 min. The mean time to walk 50 meters or more with T-cane was 8.5 days postoperatively. There were one lateral cutaneous femoral nerve injury, one subsidence of the stem and one fracture of the proximal femur. All of complications occurred in the first ten cases. We found that the resection of all attachment to the femur allowed the easy preparation of the stem. There has been no complication since we improved the technique.

Conclusion

The authors confirmed that MIS anterior approach was safely performed on a standard surgical table.

牽引手術台を用いない最小侵襲前方進入法による人工股関節置換術

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【はじめに】

人工股関節置換術（以下THA）に際し，最小侵襲の股関節前方進入法では，特殊な牽引手術台（Judet table）を必要とする。われわれは，2004年4月以後，通常の手術台を用いてTHAを施行してきた。今回，その結果と手術法の問題点，改良点につき報告する。

【対象と方法】

対象は，2004 年４月より 12 月までに当院にて施行した THA 28 関節，全例，変形性股関節症である。当院での前方進入法 は，short Smith-Peterson approach で，仰臥位にて通常の手術台を用いて行った。

【結果】

平均手術時間89分，術中出血量295ml，Ｔ字杖歩行で50m以上独歩可能時期は術後平均8.5日であった。手術合併症として，１例に外側大腿皮神経麻痺，１例に術後早期のステム沈み込み，１例に大腿骨亀裂骨折が発生した。全例，初期の１０症例に発生した。大腿骨骨からの全周性の関節包剥離を加えることで，大腿骨側の操作が容易となることが判明し，これ以降は，特記すべき合併症は発生していない。

【結論】

最小侵襲前方進入法は，通常の手術台でも，十分可能な手術進入法である。

33. Evaluation of total hip arthroplasty with mini-incision using press-fit acetabular components

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The initial solid fixation of an uncemented acetabular component affects the amount of bone ingrowth.

In recent years, the development of uncemented components has attempted to improve these problems.

We started to use press-fit type acetabular cup from June 1996.

One hundred and forty-five hips in clinical experience leads to its initial stability.

We also started mini-incision technique from November 1999, using special apparatus with press-fit acetabular components to minimize the blood loss and early rehabilitation.

One hundred and fourteen hips in mini-incision experience made satisfactory results. However, excessive skin incision may occur some complications.

The aim of our clinical and experimental study is to assess the most suitable degree of under-reaming and setting cup angle of the bony acetabulum for the implantation of an uncemented porous coated components.

The powerful fixation can be achieved by making the reaming size smaller by about 2 mm than the cup.

Furtheremore, we developed the forcing apparatus that prevents vertical positioning of the cup, and we also produce the system that attaches the

pressure sensor device to evaluate the strength for enough fixation force.

小皮膚切開によるプレスフィットカップ人工股関節置換術の検討

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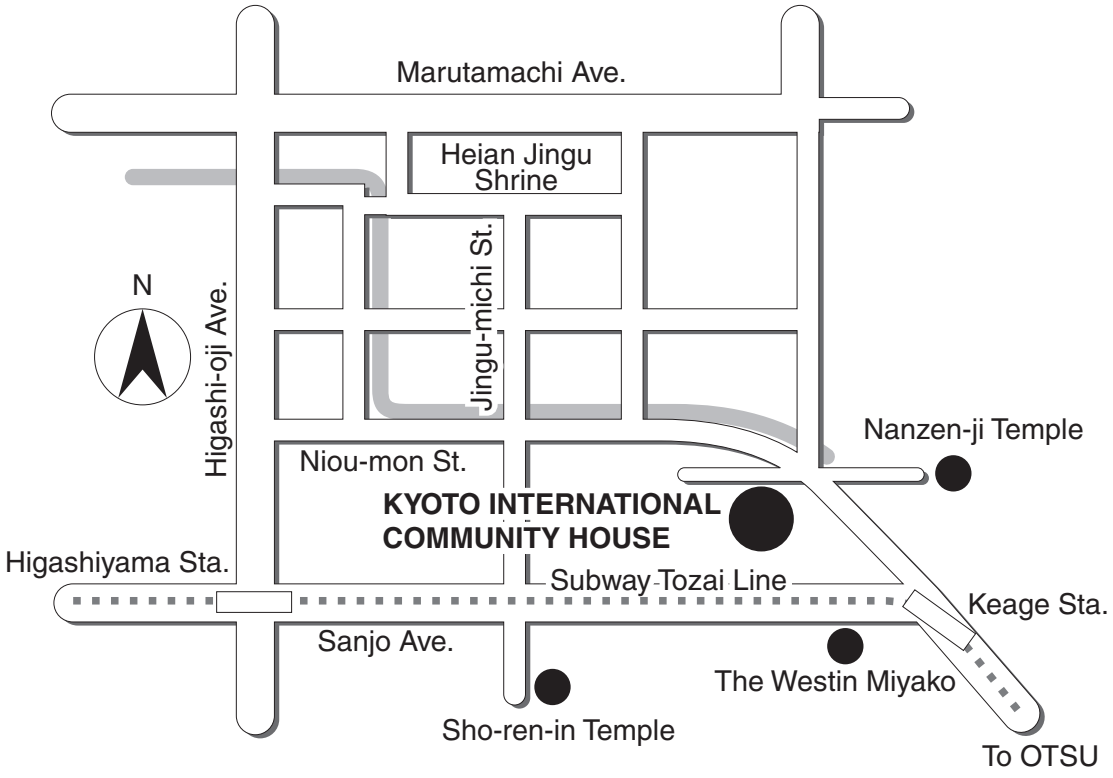
1999 年 6 月より小皮膚切開による人工股関節置換術を行っている。

1999年11月からは小皮膚切開用の手術器具を導入し，2004年12月までにプレスフィットカップを使用した人工股関節置換例は 114 関節となった。今回臨床成績に加え，その手術手技の要点・小皮膚切開用開創器やカップの固定実験さらに定量的な固定を目的とした治具の開発についても報告する。

プレスフィットカップは 2 mmアンダーリーミングで臨床上満足できる初期固定性が得られることが，これまでの経験から解っている。しかし，初期固定性に不安かないわけではなく，実際にはスパイクやスクリュウの固定を併用する症例もある。そこで，リーミング径を変化させた場合やスパイクやスクリュウ固定の追加が，初期固定力に以下に影響を与えるかをバイオメカニカルに検討した。また，手術中に定量的に固定力を測定

する方法を考案し，さらに小皮膚切開を用いての人工股関節置換術の要点や開創器についても述べる。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Heian Jingu Shrine
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Nanzen-ji Temple
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