



○○榮民總醫院出國人員心得報告書提要表

01服務機關名稱	02姓名	03職級	04出國類別	05 心得報告是否公開	
台中榮總骨科部	石承民	主治醫師	國際會議	■公開□限閱(院內公開)	
06國家及進修地點	07出國期間	08返國知識 分享日期	09連絡電話 電子郵件	10所需公費數額 (必填)	
				出國計畫預算	實際使用經費
美國聖地牙哥	106年3月17 日至106年3 月24日	安排中	10chengmin @gmail.com	36816 TWD	36816 TWD

出國報告名稱：參與美國2017年度骨科研究學會年會

內容提要：

職於106年於美國聖地牙哥參與2017年美國骨科醫師研究學會年會，並發表壁報論文。

直屬主管審查意見：

二級主管複評值：(註四)

人事室/醫企室(企劃組)

單位主管審查意見：

一級主管複評值：(註四)

會辦單位

主任秘書審查意見：

主任秘書複評值：(註四)

副院長審查意見：

副院長複評值：(註四)

院長批示：

院長複評值：(註四)

備註：

- 一、表內04「出國類別」欄就「考察」、「進修」、「研究」、「實習」或「其他」公務有關活動擇一填入。
- 二、表內10「所需公費數額」欄之填寫概以新台幣折算。
- 三、本表限繳時間：公費出國者，請於返國後一個月內。應繳交提要表、審核表、出國報告等文件。
- 四、各級醫師因公出國連續一個月以上者(1)出國期間暫以其上限標準及工作獎金差假規定計發，返院評核

結果未達75分者按計發規定分月辦理追扣。(2)奉院長核定後，請影送醫企室(績效組)存辦。

五、依據輔導會要求：05 心得報告應勾選公開，若勾選限閱(院內公開)應於內容提要欄敘明理由。

## 出國報告電子檔規格

### 一、檔案格式

採 word (\*.doc) 或 pdf 檔案。

### 二、版面設定

A4直式橫書。

### 三、封面格式及設定（請參照範例）

項目①：細明體20號加粗，靠左對齊

項目②：細明體26號加粗，置中對齊

項目③：細明體14號，置中對齊

### 四、內文設定

採細明體12號。各項標題採細明加粗，字體大小不限。

### 五、相片處理

為避免出國報告內容因相片檔案過大，致影響上傳速度，相片解析度以低解析度處理為原則。

### 六、附件處理

國外攜回之重要文件相關資料，不涉著作權的部分，得影印掃描成 pdf 檔，附加於正文之後成為完整之電子文書，同時上載至資訊網。

### 七、其他注意事項

(一) 心得報告結構：**封面、摘要、目次、本文、附錄**，加註頁碼。

1、**摘要**：下方列出關鍵字（至少一組），摘要約200-300字。

2、**本文**：依序為目的、過程、心得、建議事項（包括改進作法）。

(二) 出國報告題目名稱應能表達出國計畫主旨。

(三) 出國人員眾多無法於封面盡列時，得以代表人員等表示，但必須另詳列清單於報告內。

①

出國報告（出國類別：國際會議）

②

比較單節經椎間孔椎體融合術應用不同之職  
入器材質之臨床及影像學分析

③

服務機關：台中榮民總醫院骨科部

姓名職稱：石承民主治醫師

派赴國家：美國

出國期間：106年3月17日至106年3月24日

報告日期：106年4月25日

## 摘要（含關鍵字）

職於2017年3月19至3月22日於美國加州聖地牙哥參與2017年美國骨科醫師研究學會年會並發表”比較單節經椎間孔椎體融合術應用不同之植入器材質之臨床及影像學分析”之壁報論文。主要內容講述本院近兩年來施行單節椎體融合術應用不同之植入器，其分組之臨床結果。其結果證實融合成敗主要為術中是否有良好之植骨，而植入器之材料選擇於臨床結果未有顯著的差異。此原因可能為本研究設計之樣本數不足，及追蹤時間尚短。未來有待更進一步的追蹤與驗證。

註：椎體融合術；單節；多孔鈦金屬

## 本文參考格式：

### 目次

#### 一、目的

本次參與美國2017年美國骨科醫師研究學會年會，主要目的有二，其一是與各國骨科學者分享本院施行單節經椎間孔融合手術之臨床經驗。其二則是希望藉由參與此世界級之重要年會，能擷取新知，並將最新的治療方針帶回本院，傳達給科內醫師，並裨益中部地區的廣大民眾。

#### 二、過程

本次年會為四天的研討會，主辦方為美國骨科醫師研究學會，但由於本年會接續在北美骨科醫學會後，因此參與的人來自世界各地，參與者的互動非常熱烈及頻繁。

第一天報到後，展開的是重點的 fracture repair 及 cartilage repair 的演講，大會邀請的講者都是世界各國在這領域的大師，當然也不乏有年輕的研究學者。我第一天的行程幾乎都在這兩個會議中度過，因為裡面很多的研究都是目前的大趨勢。

第二天我主要參與的會議聚焦於人工關節的探討，包括最新的材質討論，力學分析，也有部分講者將重點放在退化性關節炎的成因與藥物治療策略。這課程對於臨床醫師相當實用。

第三天是兩梯壁報論文交接的日子，我的壁報安排在第二梯次，因此今天早上我利用一個早上的時間，將第一梯的感興趣的壁報作深度的閱讀。由於是世界級的學會，儘管是壁報論文也是相當有深度，其中不乏很多預計投稿高級基礎研究期刊的初步研究內容。因為論文數量高達數千之譜，無法一一研讀，甚為可惜。下午參與了有關脊椎

的研討會，也了解了最新的治療理論，一樣獲益良多。

第四天進行壁報論文의 口頭解說，歐美先進國家的壁報論文與國內有些差異，大多的學會會要求發表作者必須在特定時間接受來觀看壁報的學者提問並回答。我們的”比較單節經椎間孔椎體融合術應用不同之職入器材質之臨床及影像學分析”壁報也獲得了許多參展者的興趣，與各國學者討論自己的研究，是相當有趣的體驗。第四日我主要在各大展場參觀，也看到了很多新的骨材，以及研究器材。目前科內將重點放在科學研究上，今天的行程對於我未來的研究頗有幫助。

### 三、心得

這次參加2017年美國骨科醫師研究學會年會，讓我對於脊椎矯正的治療方式有很大的改觀。香港一位年輕學者針對年輕型脊椎側彎進行血液的分析，發現某些特定的激素會導致脊椎側彎，這是相當前瞻且有意義的研究。我們每天在開刀房裡只懂的手術，或許未來的哪一天，脊椎側彎是可能被預測甚至可能藥物治療。除此之外，國外的手術方式一直在精進，身為臨床醫師，固定的參與國際學會，掌握國際脈絡，適時的更新觀念，才是病患之福。

### 四、建議事項（包括改進作法）

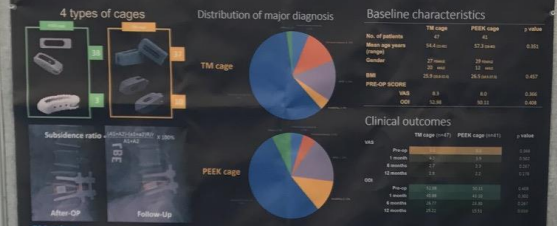
這次參觀國外會議，對比於國內醫學會，發現國內醫學會在舉辦上，仍有許多加強的空間，國外利用3C軟體大幅縮短了註冊的時間，並且可利用app通知參與的會員，所有展廳的最新演講資訊，讓我們不會錯過任何一個大師分享經驗，台灣號稱資訊王國，可是在醫療會議這個領域，確實相當落後。這次的經驗有助於未來本院舉辦國際研討會或大型國內會議的參考。

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### Clinical and radiographic outcomes in single-level transforaminal lumbar interbody fusion with polyetheretherketone or porous tantalum cages

ORS Cheng-Min Shih, Cheng-Hung Lee  
Department of Orthopaedic Surgery, Taichung Veterans General Hospital

**Introduction**  
The modulus of elasticity of porous tantalum (TM) cage was close to the cancellous and subchondral bone, and its friction coefficient was higher than other cage materials. The porous structures of TM cage act as a scaffold to provide bone ingrowth. A review of published papers demonstrated the bone fusion rate of TM cage was about 90% to 100%. However, there is a paucity of such research about comparison of clinical and radiographic outcomes between polyetheretherketone (PEEK) cages and porous tantalum cages in transforaminal lumbar interbody fusion (TLIF). In this study, we compared the surgical results including the clinical and radiographic outcomes of TM and PEEK cages in a comparable patient collective that was operated under identical operative settings.



**Objectives**  
Compare subsidence condition, fusion rate, and clinical outcome between PEEK and tantalum cage used in TLIF procedures.

**Methods**  
The modulus of elasticity of porous tantalum (TM) cage was close to the cancellous and subchondral bone, and its friction coefficient was higher than other cage materials. The porous structures of TM cage act as a scaffold to provide bone ingrowth. A review of published papers demonstrated the bone fusion rate of TM cage was about 90% to 100%. However, there is a paucity of such research about comparison of clinical and radiographic outcomes between polyetheretherketone (PEEK) cages and porous tantalum cages in transforaminal lumbar interbody fusion (TLIF). In this study, we compared the surgical results including the clinical and radiographic outcomes of TM and PEEK cages in a comparable patient collective that was operated under identical operative settings.

**Results**  
The baseline characteristics of patients were demonstrated as Table 1. There were 41 cases implanted with TM cage (group 1), and 41 cases with PEEK cage (group 2). In the clinical research, there were no statistical differences of intra-operative blood loss and surgical time (the blood loss and surgical time of group 1 were 430ml and 232 minutes; the group 2 were 482ml and 230 minutes). The VAS was comparable of the two groups, but the group 2 was superior in ODI than group 1 at one-year follow-up (Table 2). There were no statistical differences in fusion rate and the average subsidence ratio at one-year follow-up (the fusion rate and average subsidence ratio of group 1 were 93.9% and 0.70%; in group 2 were 92.4% and 0.79%). The risk factors of nonunion and subsidence ratio were analyzed and the statistical results demonstrated the failed fusion was highly correlated with aging; the average age of fusion group was 54.6 year-old, the nonunion group was 70.5 year-old, the correlation coefficient was 0.214, p=0.003. The subsidence ratio was negative correlated with body height, the correlation coefficient was -0.358, p=0.002.

**Discussion**  
Our study demonstrated that the cage materials were not influenced the subsidence ratio and failed fusion. Literature review revealed the one-year fusion rate of PEEK cages was 60.70%. However, in our study, the fusion rate of PEEK cage was 92.4%, and the result was comparable to TM cage. We suggested that appropriate cleaning of the endplates for bone fragment resection and reduce massive morsellized impinging bone graft for the disc space before cage implanting were critical for successful interbody fusion. Our study revealed the major risk factor of failed fusion was aging; it may be related to the decreasing of bone formation. The subsidence rate was negative correlated with body height, the average body height of our patients with subsidence ratio more than 55% was 154 cm, and that of the others was 161 cm. We supposed it may be due to an overlying cage. The main limitations of this research include its retrospective design, small sample size, and interval shorter follow-up period.

**Conclusion**  
If an adequately prepared disc space and sufficient morsellized bone graft were available, we concluded that clinical and radiographic outcomes of unilateral foraminotomy treated with single-level TLIF were similar in these two cages.

### Long-term results of a prospective study of anterior posterior decompression with laminoplasty for the treatment of cervical myelopathy

Department of Orthopaedic Surgery, Tokyo Medical University  
Takashi Hirai, Toshitaka Yoshi, Satoru Egawa, Atsuo

**Study Design**  
A single-institution, prospective comparative study.

**Objective**  
The prospective study has compared the long-term outcomes of anterior decompression with those of anterior decompression for general operative myelopathy. The purpose of this study was to clarify whether there is any difference in the long-term clinical and radiologic outcomes between anterior decompression with fusion (ADF) and laminectomy (LAM) for the treatment of cervical myelopathy (CM).

**Materials and Methods**  
**Patients and methods**  
This study is a prospective, comparative, single-institution trial of two surgical procedures for the treatment of CM. The study was carried out with the approval of the Institutional Ethics Committee of Tokyo Medical University. Cervical myelopathy cases were patients with cervical myelopathy caused by spinal cord compression caused by cervical disc herniation and spondylosis. The study included a total of 100 patients who underwent anterior decompression with fusion (ADF) or laminectomy (LAM) for the treatment of cervical myelopathy. The patients were divided into two groups: ADF group (n=50) and LAM group (n=50). The patients were followed up for 10 years. The clinical and radiologic outcomes were compared between the two groups.

**Results**  
The clinical and radiologic outcomes were compared between the two groups. The ADF group showed significantly better long-term clinical and radiologic outcomes compared to the LAM group. The ADF group had a significantly higher fusion rate and lower subsidence rate compared to the LAM group. The ADF group also had a significantly higher long-term clinical outcome compared to the LAM group.

**Conclusion**  
The ADF group showed significantly better long-term clinical and radiologic outcomes compared to the LAM group. The ADF group had a significantly higher fusion rate and lower subsidence rate compared to the LAM group. The ADF group also had a significantly higher long-term clinical outcome compared to the LAM group.









## MONDAY MEETING HIGHLIGHTS

MONDAY

7:00 AM – 6:00 PM  
**Registration Open**  
City-Side Corridor

7:30 AM – 8:30 AM  
**SESSION:**  
**Muscle**  
Room 7AB

7:30 AM – 9:00 AM  
**Industry Connect: A**  
**Conversation with the FDA**  
Room 2

7:30 AM – 9:00 AM  
**WORKSHOPS:**  
**Taper Corrosion in THA:**  
**Clinical Impact and**  
**Applying the Best**  
**Evidence into Practice**  
Room 6A

**Bone Marrow Lesions —**  
**What Lies Beneath?**  
Room 6CF

**Scaffolds, Bioreactors**  
**and Biologics in**  
**Orthopaedic Research**  
Room 6B

**Current Status and Future**  
**Needs of Pediatric**  
**Orthopaedic Pharmacology**  
Room 5AB

9:15 AM – 10:15 AM  
**SPOTLIGHT SESSION:**  
**ACL Repair**  
Room 6B

**SESSIONS:**  
**Modulating Fracture Healing**  
Room 6A

**Arthroplasty – Wear**  
**and Osteolytes**  
Room 5AB

**Spine Implants**  
Room 7AB

**NIRA PRESENTATION:**  
**Cartilage, Meniscus**  
**and Osteoporosis**  
Room 6CF

10:00 AM – 5:30 PM  
**Innovation Central Open**  
Sails Pavilion Innovation Theater

10:30 AM – 11:00 AM  
**TA Instruments—ElectroForce**  
**Techniques Workshop**  
Sails Pavilion Innovation Theater

11:15 AM – 12:15 PM  
**SESSIONS:**  
**Hip and Knee Arthroplasty –**  
**Kinematics and Function**  
Room 5AB

**Osteocytes Biology**  
Room 6A

**Poster Teaser Session I**  
Room 7AB

**SPOTLIGHT SESSION:**  
**Novel Targets in OA**  
Room 6CF

**NIRA PRESENTATION:**  
**Tendon, Ligament, Muscle**  
**and Trauma**  
Room 6B

12:15 PM – 1:15 PM  
**PROFESSIONAL**  
**ADVANCEMENT SESSION:**  
**Networking Across Global**  
**Boundaries**  
West Terrace

12:15 PM – 2:15 PM  
**Lunch Provided**  
Sails Pavilion

1:15 PM – 1:45 PM  
**Innovation Theater: Micro**  
**Photonics, Inc.**  
Sails Pavilion Innovation Theater

2:15 PM – 3:15 PM  
**SESSIONS:**  
**Cartilage Matrix Proteins**  
Room 6CF

**Infection and Inflammation**  
Room 6B

**Hip and Knee Arthroplasty –**  
**Clinical Outcomes**  
Room 5AB

**Spine: Imaging Mechanics**  
**and Kinematics**  
Room 7AB

**SPOTLIGHT SESSION:**  
**Ligament and Tendon**  
**Engineering**  
Room 6A

3:30 PM – 4:30 PM  
**ORS Keynote Speaker:**  
**Jennifer Doudna, PhD**  
Room 6CF

4:45 PM – 5:00 PM  
**Innovation Theater:**  
**Zwick USA**  
Sails Pavilion Innovations Theater

5:00 PM – 6:15 PM  
**ORS General Session and**  
**Presidential Address**  
Room 6CF

6:30 PM – 8:00 PM  
**Research Interest Group:**  
**Articular Cartilage Repair**  
Room 5AB

6:30 PM – 8:00 PM  
**Research Interest Group:**  
**Growth Factors**  
Room 3

6:30 PM – 9:00 PM  
**ORS Women's Leadership**  
**Forum Reception**  
Bayside Corridor

## SUNDAY MEETING HIGHLIGHTS

7:00 AM – 6:00 PM  
**Registration Open**  
 City-Side Corridor

7:00 AM – 11:30 AM  
**ORS Clinical Research Forum**  
 Room 2

7:15 AM – 8:50 AM  
**ORS International Section of Fracture Repair Business Meeting**  
 Room 7AB

8:00 AM – 11:30AM  
**ORS Meniscus Section Meeting**  
 Room 8

8:00 AM – 10:45 AM  
**ORS Tendon Section Meeting**  
 Room 3

8:00 AM – 11:30 AM  
**ORS Spine Section Meeting**  
 Room 5AB

8:00 AM – 11:30 AM  
**ORS Orthopaedic Implants Section Meeting**  
 Room 4

9:00 AM – 11:30 AM  
**ORS International Section of Fracture Repair Meeting**  
 Room 7AB

9:00 AM – 11:30 AM  
**ORS Preclinical Models Section Meeting**  
 Room 1B

12:00 PM – 1:00 PM  
**SESSIONS:**  
**Fracture Repair**  
 Room 6A

**Tendon Repair and Regeneration**  
 Room 6B

**Foot and Ankle**  
 Room 7AB

**SPOTLIGHT SESSIONS:**  
**Cartilage Repair**  
 Room 6CF

**Joint Replacement Registries**  
 Room 5AB

1:15 PM – 2:15 PM  
**SESSIONS:**  
**Cartilage Repair and Stem Cells**  
 Room 6CF

**Diagnostic Imaging**  
 Room 7AB

**SPOTLIGHT SESSION:**  
**Meniscal Cell Biology**  
 Room 6B

**NIRA PRESENTATIONS:**  
**Bone**  
 Room 6A

**Joint Arthroplasty and Spine**  
 Room 5AB

2:45 PM – 4:15 PM  
**PROFESSIONAL ADVANCEMENT SESSION:**  
**Launching and Navigating a Successful Career as a Clinician-Scientist**  
 Room 7AB

**WORKSHOPS:**  
**Research Gaps in Care of Hip Fracture**  
 Room 6A

**Osteoarthritis: From Bench to Bedside and Back**  
 Room 6CF

**Additive Manufacturing in Orthopaedics— Current State of the Art, Future Trends, and Regulatory Oversight (Part I: Scientific Workshop)**  
 Room 6B

**Instability in Total Knee Arthroplasty: Where are We Now and Where Do We Need to Go?**  
 Room 5AB

4:30 PM – 5:30 PM  
**HANDS-ON WORKSHOP**  
**Additive Manufacturing in Orthopaedics—3D Printing in Orthopaedics Presented by Materialise (Part II: Technology Based Workshop)**  
 Room 2

4:30 PM – 5:45 PM  
**ORS Excellence in Orthopaedics Awards Session**  
 Room 6CF



## TUESDAY MEETING HIGHLIGHTS

7:00 AM – 6:00 PM  
**Registration Open**  
 City-Side Corridor

7:00 AM – 7:45 AM  
**ORS Business Meeting**  
 Room 7AB

8:00 AM – 9:30 AM  
**PROFESSIONAL  
 ADVANCEMENT SESSIONS:**  
**Negotiating for Success**  
 Room 2

**Commercializing Your Idea:  
 What You Need to Know**  
 Room 7AB

**WORKSHOPS:**  
**Driving Vascularization:  
 The Key to Bone Repair**  
 Room 6A

**Functional Properties of  
 Chondrocytes in Articular  
 Cartilage Using Optical  
 Imaging to Scanning  
 Probe Microscopy**  
 Room 6CF

**Drug Resistance:  
 New Challenges and  
 Opportunities in  
 Biomaterials-Associated  
 Orthopaedic Infection**  
 Room 6B

**PRP Enigma — Biology  
 and Clinical Use**  
 Room 5AB

9:00 AM – 11:30 AM  
**Innovation Central Open**  
 Sails Pavilion

10:00 AM – 10:30 AM  
**Innovation Theater: AMTI**  
 Sails Pavilion Innovation Theater

10:30 AM – 11:30 AM  
**SESSIONS:**  
**Bone OA and Microbiome**  
 Room 6CF

**Tendon and Ligament  
 Biology**  
 Room 6B

**Hip Reconstruction**  
 Room 5AB

**Spine Pathogenesis  
 and Therapeutics**  
 Room 7AB

**SPOTLIGHT SESSION:**  
**Fracture Healing**  
 Room 6A

11:45 AM–12:45 PM  
**Biomaterials, Biomechanics  
 and Bio-Imaging in  
 Orthopaedics Research  
 Interest Group**  
 Room 7AB

11:45 AM – 1:15 PM  
**PROFESSIONAL  
 ADVANCEMENT SESSION:**  
**Understanding the NIH –  
 Opportunities and  
 Collaboration**  
 Room 3

**Job Connect**  
 Room 8

1:30 PM – 2:30 PM  
**SESSIONS:**  
**Bone Matrix**  
 Room 6A

**OA Pathogenesis and  
 Molecular Targets**  
 Room 6CF

**Knee – Ligament  
 and Mechanics**  
 Room 5AB

**Disc Biology and Engineering**  
 Room 7AB

**SPOTLIGHT SESSION:**  
**Stem Cells and Bone Repair**  
 Room 6B

2:00 PM – 5:00 PM  
**Innovation Central Open**  
 Sails Pavilion

2:45 PM – 3:45 PM  
**SESSIONS:**  
**Bone Therapeutics**  
 Room 6A

**Mechanotransduction**  
 Room 6CF

**Biomaterials and  
 Tissue Regeneration**  
 Room 6B

**Knee Kinematics and  
 Computational Modeling**  
 Room 5AB

**SPOTLIGHT SESSION:**  
**Disc Repair**  
 Room 7AB

4:00 PM – 4:30 PM  
**Scanco MicroCT  
 Techniques Workshop**  
 Sails Pavilion Innovation Theater

4:45 PM – 5:45 PM  
**ORS Debate: Will  
 Regenerative Medicine  
 Make Orthopaedic Implants  
 Obsolete in Our Time?**  
 Room 6CF

6:00 PM – 8:00 PM  
**Networking Event for Early  
 Career Investigators  
 Connecting for Collaboration**  
 West Terrace

## WEDNESDAY MEETING HIGHLIGHTS

7:00 AM – 6:00 PM  
**Registration Open**  
City-Side Corridor

7:30 AM – 9:00 AM  
**WORKSHOPS:**  
**Cross-talk Opportunities  
Between Developmental  
Biology and Tissue  
Engineering**  
Room 6A

**The Infected Implant in  
Orthopaedic Reconstruction**  
Room 6B

**Advances in Identifying  
Early OA**  
Room 5AB

**HANDS-ON WORKSHOP:**  
**Introduction to Performing  
Skeletal Muscle Mechanics  
Measurements with a  
Hands-On Workshop**  
Room 7AB

9:15 AM – 10:15 AM  
**ORS Achievement Awards &  
2017 Inauguration Ceremony**  
Room 6CF

10:00 AM – 4:00 PM  
**Innovation Central Open**  
Sails Pavilion

11:15 AM – 12:15 PM  
**SESSIONS:**  
**Shoulder**  
Room 6CF

**Soft Tissue Regeneration**  
Room 6B

**Poster Teaser Session II**  
Room 7AB

**SPOTLIGHT SESSIONS:**  
**Bone Mechanobiology**  
Room 6A

**Big Data in Orthopaedics**  
Room 5AB

12:15 PM – 1:15 PM  
**PROFESSIONAL  
ADVANCEMENT SESSION:**  
**Writing a High  
Impact NIH Biosketch**  
Room 8

12:15 PM – 2:15 PM  
**Lunch Provided**  
Sails Pavilion

2:15 PM – 3:15 PM  
**SESSIONS:**  
**Osteoporosis**  
Room 6A

**Upper Extremity**  
Room 6CF

**Meniscus Engineering  
and Repair**  
Room 5AB

**Late Breaking Session**  
Room 7AB

**SPOTLIGHT SESSION:**  
**Tumor Animal Models**  
Room 6A

3:45 PM – 6:00 PM  
**2016 Research Highlights**  
Room 6CF

