

出國報告（出國類別：開會）

2023 捷克全球脊椎醫學會(Global Spine Conference) 年會暨發表論文心得

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派赴國家：捷克

出國期間：2023/05/30-2023/06/05

報告日期：2023/06/12

摘要

職被全球脊椎醫學會 2023 年會接受發表的論文編號 576，摘要主題: 「Single Spinejack in each fractured vertebra is feasible to achieve a significant fracture reduction and corresponding satisfactory outcome by proper strategy of placing Spinejacks」收錄 2018 年 1 月至 2020 年 12 月，通過將單個 Spinejack 應用於骨折椎體進行了椎體成形術。41 名 46 節椎骨骨折的患者。男 12 例，女 29 例，平均年齡 70.5 歲。平均 BMD 為 -2.87。每個骨折椎體僅應用一個 Spinejack 進行椎體成形術，影像學評估明顯復原椎體高度和後凸角度，臨床症狀 SF-36 問卷評估有顯著改善。

論文編號 636，摘要主題: 「Preservation of neurological function justified anterior corpectomy with reconstruction in treating patients of thoracolumbar spinal metastatic tumors」，27 例胸腰段脊柱轉移癌患者接受前路椎體切除暨重建，術後平均生存時間為 16 個月，3 例術後狀態仍為 Frankel A，其餘患者均達到至少 1 級 Frankel 分級改善。即使壽命無法延長，患者在死亡前無腰痛症狀，生活質量改善。

關鍵字：Spinejack、椎體成形術、脊柱轉移癌、前路椎體切除

目次

一、目的.....	4
二、過程.....	4
三、心得及建議.....	10
附錄.....	12

一、目的

全球脊椎醫學會為全球脊椎醫學界三大學會之一，其影響力相較於北美國脊椎醫學會、歐盟脊椎醫學會毫不遜色，規模盛大更勝於日本脊椎醫學會，在脊椎疾病的治療及手術居於全球領先的地位，特別是新研發用品和器材上市時程常先於其他區域。會中將有世界各國脊椎科醫師及專家學者，能於會中發表論文有助本院骨科部聲望的提高，並學習新知。

二、過程

2023/05/30

112年5月29日18:00由高雄出發，取道桃園機場，因為現今尚無台灣直飛捷克的航班，因此於奧地利維也納國際機場接續轉乘火車，前往捷克布拉格，已經是5月30日下午五點。

2023/05/31

到達捷克布拉格，住宿飯店安頓後，再前往捷克國際會議中心。完成註冊報到手續，確認論文發表場地，發現電子版議程節目手冊疏漏本人姓名，主動連絡主辦單位後，獲得補正。

2023/06/01

6月01日早上搭乘地下鐵於 Florenc 轉往 Vyšehrad 國際會議中心，會議中心除了場地寬敞，各種會議必備設施及用品皆很齊全，讓每位參加者都可以輕易參與和利用。因應世界潮流的環保意識抬頭，改變以往每位參加者都發放一大袋會議相關資料的做法，實踐保護地球永續環境的理念，避免浪費紙張和增加垃圾量，會議相關資料都電子化，以 APP 方式提供，僅發一本簡易版議程節目手冊。附有連結交通方式的路面電車和多線公車巴士。當然，便利的大眾交通運輸是成為受歡迎會議中心的必備條件。

本屆全球脊椎醫學會主辦的研討會，包括當今眾多討論的主題，內視鏡微創手術技法研發、新式骨材研發、人工智慧電腦導航，及各種微創手術器械研發。會議內容主要領域包括骨折、創傷、脊椎運動醫學、脊椎腫瘤醫學與感染治療、基礎研究。基礎研究包括骨材研發、生物力學、抗生素應用、基因與感染。從各種面向探討脊椎疾病及創傷的診斷和治療，各項專題討論均為實際臨床問題的研究和決策。本日議程如下：

	Room 1	Room 2	Room 3	Room 4
	Congress Opening			
08:00-08:30	Opening Symposium: Contemporary concepts in spinal surgery			
08:30-10:00	Break			
10:00-11:00	Endoscopy in spine surgery	Adult deformity 1	Machine learning and augmented reality	Challenges in cervical spinal trauma
11:00-12:00	Spinal trauma	Biological therapies	Surgical biomechanics 2	Cervical arthroplasty
12:00-13:30	Industry Lunch Symposia			
13:30-14:30	Symposium hosted by the AO Spine Knowledge Forum Trauma: Complex spine trauma controversies and treatment	Symposium: Gunshot wounds to the spine: Lessons learned and the next step	Symposium: Spotlight on osteoporotic spine surgery	Symposium: Non-fusion surgery for AIS
14:30-15:30	Surgical techniques for the lumbar spine	Surgical outcomes	Infections in spine surgery	Treatment updates in thoracolumbar trauma
15:30-16:00	Break			
16:00-17:00	MIS lateral approach	Adult deformity 2	Surgical complications 1	Cervical myelopathy
17:00-18:00	Symposium hosted by APSS: Learn from experts: Surgical video sessions from Masters	Symposium hosted by NASS: Choosing the right surgical approach: Both patient and surgeon factors matter	Symposium hosted by EUROSPINE: Spinal oncology	Symposium hosted by DWG: The narrow spinal canal C1-C7
18:00-18:30	Networking Event: Welcome Reception and Awards Ceremony (Exhibition)			

本日職參加的研習重點在於「成人的脊椎變形」。手術治療適用於部分採取保守治療無效的患者。手術的目標是恢復脊柱平衡，減輕背部和腿部疼痛，解除神經壓迫（減壓），進行節段性的脊柱融合和穩定性重建。

1. 不適合長時間手術患者，可應用微創減壓手術。
2. 在更嚴重的情況下，需要切除部分脊椎進行矯形手術。應用骨鉤或螺釘由金屬棒矯正部分脊柱變形(圖 1)，進行融合手術。矯正後的脊柱比手術前彎度小，但是手術後 3-6 個月內，很可能出現脊柱兩側肌肉張力強度改變，一側痠軟、另一側緊繃疼痛，有些人不適感甚至長達一年。初期需多休息，配合使用藥物減輕症狀。其中有少數患者可能出現肌肉調整適應不良，遺留軀幹不平衡，行走需以助行器輔助。
3. 進行脊椎矯正（截骨）手術，有一定風險。部分專業脊椎外科學術文獻發表後路矯正手術可能導致平均出血量 600-6000CC，神經功能受影響約 15-25%。若並用和前路椎體重建手術，有可能引發泌尿系統器官或肺部呼吸功能損傷的併發症，發生率與手術醫師經驗有關。

2023/06/02

本日議程如下：



	Room 1	Room 2	Room 3	Room 4
07:00-08:00				Symposium: Women in spine surgery breakfast
08:00-09:00	Symposium hosted by the AO Spine Knowledge Forum Spinal Cord Injury: Updated guidelines for the management of acute spinal cord injury	Symposium hosted by the AO Spine Knowledge Forum Tumor: Real World Spine Oncology: A global case-based discussion	Symposium: The evidence behind endoscopic spine surgery: An honest overview by KOLs	Symposium hosted by AO Spine Knowledge Forum Degenerative: ACDF and Cervical Arthroplasty Updates
09:00-10:00	Novel surgical approach for lumbar spine pathologies	Contemporary cervical surgery	Contemporary surgery for adolescent deformity	Complexities in primary spine tumors
10:00-10:30	Break			
10:30-11:30	Lumbar surgical outcomes	Clinical basic science	Management of primary spinal infections	Outcomes in spine tumor patients
11:30-12:30	Degenerative lumbar—novel solutions	Spinal imaging	Surgical biomechanics 1	Current management of metastatic spinal disease
12:30-14:00	Industry Lunch Symposia			
14:00-15:00	Symposium: Minimally invasive approaches for adult spinal deformity: Tips, tricks, and limitations	Symposium hosted by the AO Spine Knowledge Forum Degenerative: Adopting new technologies into your daily practice	Symposium hosted by the AO Spine Knowledge Forum Tumor: Spine oncology: Emerging technologies creating the OR of the future	Symposium: Frailty and spine surgery
15:00-16:00	Break			
16:00-17:00	Minimally invasive spine surgery	Adolescent deformity	Surgical complications 2	Complex cervical surgery
17:00-18:00	Symposium hosted by the Brazilian Spine Society: Adult spinal deformity management	Symposium hosted by EANS: From cranio-spinal to cervico-thoracic junction	Symposium hosted by CCOS: Special spinal surgery techniques and related problems	Symposium: How machine learning prediction models work and how it may change your spine surgery practice in the coming years


職參加重點為退化脊椎疾病與手術治療的議程。脊椎手術成功率非可完全準確預測，任何手術皆有風險存在，風險分為 2 大類：一類為患者自身身體健康好壞，若患者原先身體狀況已有多重疾病，則手術及麻醉的風險會面臨高於一般患者；二為手術技術和術後照護的相關影響，以受過良好脊椎手術訓練的醫師而言，該患者所需手術內容屬常見性手術，而術後照護相關於手術複雜性，因此，若未發生患者原有疾病的併發症，則受術照後並不複雜。對大部分患者而言，術後第 4 天有 9 成以上即可開始下床活動，拆線則於術後 10 日執行，術後需穿用長背架 4 個月，作為加強保護。因此，一般非負重之工作，可於術後 6 週開始恢復。然而，經歷脊椎手術後，不適宜繼續從事粗重或需經常彎腰的工作。經歷此行內固定骨融合脊椎手術，手術部位於必定遺存局部緊繃感受，術後 3 個月會逐漸適應，以致不影響日常活動。即使術前症狀皆已改善，手術部位兩側肌肉仍可能留存微酸感受，但不至於需經常服藥治療。

各種手術方式選擇如下：1.椎間融合：主要保持原先脊柱結構的負重分佈 2.後外側融合：更簡單的手術過程來達到穩定 3.周圍融合（PLF + 椎間融合）：提供最安全的穩定性的融合手術。必定有其術後的續發症：1.相鄰椎間盤退變的早期發展，2.導致鄰近節段早期發生不穩定或椎管狹窄，3.融合區域的僵硬感覺。因此非手術療法仍具相當的重要性，探討內容臨床應用性很高。

2023/06/03

本日議程如下

Program at a Glance
Saturday, June 3, 2023



	Room 1	Room 2	Room 3	Room 4
08:00-09:00	Symposium hosted by the AO Spine Knowledge Forum Trauma: What motivates treatment decisions in neurologic intact thoracolumbar burst fractures?	Symposium hosted by the AO Spine Knowledge Forum Deformity: High grade spondylolisthesis	Symposium hosted by the AO Spine Knowledge Forum Spinal Cord Injury: Degenerative cervical myelopathy: Current concepts and future perspectives	Symposium hosted by the AO Spine Knowledge Forum Degenerative: Degenerative Spondylolisthesis: Advances in treatment
09:00-10:00	Paper sessions 3	Early onset scoliosis and non fusion techniques	Cervical SCI: Improving patient care	Novel technologies and robotics
10:00-10:30	Break			
10:30-11:30	MIS complications and challenges	Adult deformity 3	Complications and outcomes in spine tumor patients	Novel surgical technologies
11:30-12:30	Symposium: Avoiding complications in spine surgery	Symposium hosted by the AO Spine Knowledge Forum Deformity: Adequate clinical assessment for ASD patients, including the AO ASD profile	Symposium hosted by the Cervical Spine Research Society	Symposium: How I do it: Challenging endoscopic spinal surgical techniques explained by experts
12:30-12:45	Closing Ceremony			
12:45-13:45	Closing Symposium: Minimally Invasive Spine Surgery			

PROGRAM KEY

- Paper sessions
- Symposia
- Precourses
- Breaks and Industry Lunch Symposia
- Networking

AO Spine Members-only sessions. These sessions are for members only. Join AO Spine today at: www.aospine.org/membership 

今天參加的會議主題是脊椎手術併發症。

並非每一位成人脊椎疾病患者都需要手術治療。事實上，對於絕大多數沒有明顯症狀者，是可以採用簡單的措施，比如定期觀察，止痛藥和運動。運動的目的是加強腹部和背部核心肌肉的力量和提高柔韌性。對於因炎症或神經受壓引起的持續性腿痛或其他症狀，可以通過如硬膜外麻醉，神經阻滯或小關節藥物注射方法進行暫時減緩疼痛。注射目的是診斷和治療。根據患者對注射藥物的反應，以幫助確定他們的疼痛發生的部位。脊椎手術風險及併發症發生率不可忽視，高齡患者恢復較慢。醫生根據每位患者的需求制定手術方案。當需要進行大手術時（手術時間大於 8 小時），手術可分期進行，時間間隔為 5-7 天。使用電腦輔助導航系統和各種形式的脊髓和神經監測可能有助於提高手術的精度和準確度。最新的手術技術進展包括通過微創螺釘植入手術以減少對人體的損傷以及使用生長激素，加速脊柱融合過程。因此，患者充分了解手術的利弊以後，與醫師共商決策，為手術做好充分準備後，將能獲得良好的手術結果，符合患者對手術的合理期待，恢復生活品質。

2023/06/04

因為需於奧地利維也納國際機場才有飛回台灣航班，因此上午由布拉格啟程前往奧地利維也納，火車需搭乘約近五小時，因此於隔日 2023/06/05，方能搭上飛回台灣的班機。自 11:30 起飛，回到高雄已是 6 月 6 日早上 05:30。在行李轉盤前等候多時，取得行李後，搭捷運前往桃園高鐵站，搭乘高鐵順利回到高雄。

三、心得及建議

(一)心得

1. 在會議期間後，遇到中山醫大曾醫師與中國醫大陳醫師。彼此談起各自醫院對員工出國參加學術會議的獎勵措施，各醫院皆設有同仁參加學術會議的獎勵措施，提升同仁士氣，也能有效增進院內研究發表風氣。
2. 參加國際性學術會議，應是投資報酬率相當高的學習和研發活動。同仁於國際性學術會議發表研究心得，對於自我視野擴展及專業領域水準提升極有幫助，也可增加高雄榮民總醫院的國際能見度。
3. 受限於健保總額預算制度，發展新醫療技術與設備所費不貲。利用他國的研發心得做基礎，可以減少出其研發經費支出。有效的獎勵措施鼓勵同仁主動出擊與他國專家交流，參加國際性學術會議，可以於最短時間內欣賞最多創新研發，有利本院臨床研究應用和發展。

(二)建議

1. 目前本院以有論文發表為獎助前提，應為合理獎勵辦法。畢竟包含註冊費、機票交通費、和膳宿費，費用不低。有論文發表，才給予補助，有效發揮獎助經費的效益。然而名額有限，主治醫師、住院醫師、十二職類醫事人員、和行政人員總人數不算少，若有被核定的補助員額未能及時實現原先發表計畫，建議及早釋出予其他有需求人員。
2. 針對住院醫師建議給予額外考量，因為往年補助名單少見住院醫師，住院醫師是本院的人才來源，藉由鼓勵措施發現研發人才，實際有效，小投資卻培養真人才。
3. 資深主治醫師具備豐富臨床經驗及研究發表能量，可以發揮領頭羊的角色效果，如果院方經費尚未足夠，建議補助註冊費或機票交通費，擇一補助。讓努力的人都可以確定受到獎勵。

附錄

附錄 1-出席證明

附錄 2-簡報

附錄 3-參加會議佐證照片

附錄 1



Single Spinejack in each fractured vertebra is feasible to achieve a significant fracture reduction and corresponding satisfactory outcome by proper strategy of placing Spinejack.



Chien-Jen Hsu | Professor | Department of Orthopaedics, Kaohsiung Veterans General Hospital, Taiwan

INTRODUCTION

> Bilateral placement of Spinejacks into a vertebra for kyphoplasty was originally suggested by the manufacture company.
 > Considering medical expense, we therefore intended to investigate the surgical complications and clinical outcomes for patients undergoing kyphoplasty with one single Spinejack in each fractured vertebra.

MATERIALS & METHODS

> 45 patients underwent kyphoplasty with one single Spinejack placed into each fractured vertebra from January 2018 to December 2020.
 > The Spinejack was placed into the more collapsed side by examining the MR images.
 > Considering high risk for cement leakage through fractured pedicle, the placement of Spinejack was therefore shifted to the other pedicle.
 > The Spinejacks were placed across the midline or at least touching the midline of vertebra (Figure 1) for effective reduction bilaterally.
 > A vending trocar (Figure 1) was routinely inserted at the other side for decompression while injecting the cement. The fluidity of cement was attenuated by extending the setting of cement if we decided to inject cement through the side of Spinejack first. Otherwise, we started to inject cement initially through the trocar to fill the less comminuted side for preventing early leakage outside the vertebra.
 > The following supplement of cement depended on the distribution of cement filling through alternative injection of cement bilaterally under the guide of c-arm image intensifier.
 > We usually stopped cement injection if the filling of cement realized or approached the pre-operative plan.

LITERATURE CITED

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RESULTS

> 41 patients with 46 fractured vertebrae (Table 1) were investigated except 4 patients without follow-up more than 12 months.
 > The average clinical score of SF-36 improved from 52 to 81 (Table 2) in the final follow-up at the OPD or by the telephone inquiry. However, the average SF-36 score reached 87 in case of excluding three patients with unsatisfactory outcomes.
 > 3 patients reported poor outcomes that were re-operated because of new vertebral fracture.
 > The radiographic assessment demonstrated an average 40% restoration of supposed height of fractured vertebra. (Figure 2)
 > The average reduction of kyphotic angle is 11 degrees. (Figure 2)
 > 3 patients developed loss of reduction more than 25% but only one was re-operated by mini-invasive instrumentation. (Figure 3)

Table 1: Demographic characteristics

Characteristic	n (%)
Gender	
Male	12 (29.3)
Female	29 (70.7)
Age	
Mean (SD)	67.9 (10.4)
Range	45-84
Level	
T12	1
T11	1
T10	2
T9	4
T8	4
T7	4
T6	4
T5	4
T4	4
T3	4
T2	4
T1	4

Figure 2: Measurement of reduction

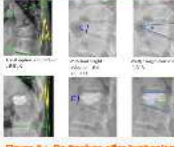


Table 2: Results of reduction by Kyphoplasty

Parameter	+90%	+25%	Average
Vertebral height restoration (%)	0.22	0.23	0.26(54)
Restoration of kyphotic angle (°)	0.26	0.16	0.21
Kyphotic angle reduction (°)	0.11	0.12	0.11
Loss of reduction (%)	0.12	0.12	0.12(24)

Figure 1: Tips of placing Spinejack

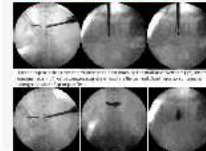
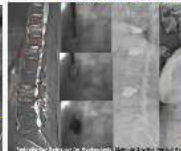


Figure 3: Re-fracture after kyphoplasty treated by percutaneous instrumentation



Figure 4: 78-year-old woman slip kyphoplasties with good BAV



CONCLUSIONS

> Although the original recommendation from the manufacture company was placing Spinejacks through bilateral pedicle into a fractured vertebra, kyphoplasty by applying only one single Spinejack for each fractured vertebra achieved a satisfactory reduction of vertebral collapse in this study. (Figure 4)
 > The strategy for placing one single Spinejack included choosing more collapsed side without destruction of pedicle, better across the midline, injecting cement through Spinejack priority, ceasing injection as preoperative planning.
 > The clinical outcomes assessed by SF-36 questionnaire demonstrated a significant improvement in addition to evident reduction of vertebral height and kyphotic angle.
 > Considering cost-effectiveness of Spinejack-augmented kyphoplasty, one single Spinejack was feasible to achieve satisfactory outcomes clinically and radiologically.



CONFLICTS OF INTEREST

No disclosure for Conflict of Interest

FURTHER INFORMATION

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Preservation of neurological function justified anterior corpectomy with reconstruction in treating patients of thoracolumbar spinal metastatic tumors



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INTRODUCTION

> The choices of managements are controversial for metastatic tumor of thoracolumbar spine due to the diversity of patient condition and un-predictable prognoses.
 > We intended to investigate outcomes of anterior corpectomy with reconstruction for metastatic tumor of thoracolumbar spine.

MATERIALS & METHODS

> 27 cancer (Table 1) patients with thoracolumbar spinal metastases (Figure 1) undergoing anterior corpectomy with reconstruction combining posterior instrumentation (Figure 2) from Jan 2010 to Dec 2019.

Table 1: Demographic characteristics

Characteristic	n (%)
Gender	
Male	12 (44.4)
Female	15 (55.6)
Age	
Mean (SD)	67.9 (10.4)
Range	45-84
Level	
T12	1
T11	1
T10	2
T9	4
T8	4
T7	4
T6	4
T5	4
T4	4
T3	4
T2	4
T1	4

Table 2: Post-operative course

Parameter	Mean (SD)
Post-operative course (days)	24 (10.4)

RESULTS

> No surgical complications required further surgical management (Table 2)
 > Except 3 patients remaining Frankel A as pre-operative status, the other patients achieved at least one Frankel grade improvement.
 > The average hospital days were 24 days. (Table 3)
 > Neither dislodgement of mesh cage nor screw loosening was disclosed
 > No neurological deficit of both lower extremities developed before their mortalities.
 > The mean survival time was 16 months with SF-36 questionnaire improvement from 52 to 80 postoperatively.
 > No re-hospitalization was caused by operation-related situation except hospice care.



Table 3: Post-operative follow-up

Parameter	Mean (SD)
Post-operative course (days)	24 (10.4)
Survival time (months)	16 (10.4)
Quality of life (SF-36)	80 (10.4)

CONCLUSIONS

> Tumor excision by anterior vertebrectomy eliminates the compression on spinal cord directly. Motor and sensory function of lower extremities were therefore preserved.
 > Back pain and scoliosis were relieved by posterior instrumentation. However, patients with evident progression of muscle weakness pre-operatively could not achieve neurological recovery.
 > The vertebral reconstruction after vertebrectomy provided anterior support to achieve at least a mid-term effect of construct stability. Consequently, the patients regained symptom-free lives before their mortalities.
 > Even the life expectancy cannot be extended, posterior instrumentation and anterior vertebrectomy with reconstruction improved the life quality for cancer patients with spinal metastases.
 > Considering preservation of neurological function, anterior corpectomy deserves a recommendation for patients of thoracolumbar spinal metastatic tumor with incomplete neurological deficit.



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