出國報告（出國類別：國際會議）

2018 年雅加達國際神經外科論壇國際會議

服務機關：臺中榮民總醫院
姓名職稱：神經醫學中心 鄭文郁醫師
派赴國家：印尼
出國期間：107 年 5 月 2 日至 107 年 5 月 7 日
報告日期：107 年 7 月 4 日

摘要

1. 頸椎退化病變性是相當常見的退化性關節疾病。 頸椎退化性脊髓病變在老年人群中很常見,其臨床特徵表明存在脊髓壓迫和功能障礙,常見臨床症狀為感覺異常、行動不便、下半身癱瘓、步態僵硬、手腳動作失去靈巧性、廣泛性無力、或頻尿、尿失禁等。 多節性頸椎退化性脊髓病變之治療,在臨床上主要以手術治療為主。
2. 手術方式分為前位手術,後位手術及合併手術治療。
3. 以證據基礎和臨床經驗之角度,探討對病患達到疾病治療之最好方式。
4. 結論:脊髓的手術減壓適用於確定的多節性頸椎退化性脊髓病變之頸椎病患者。

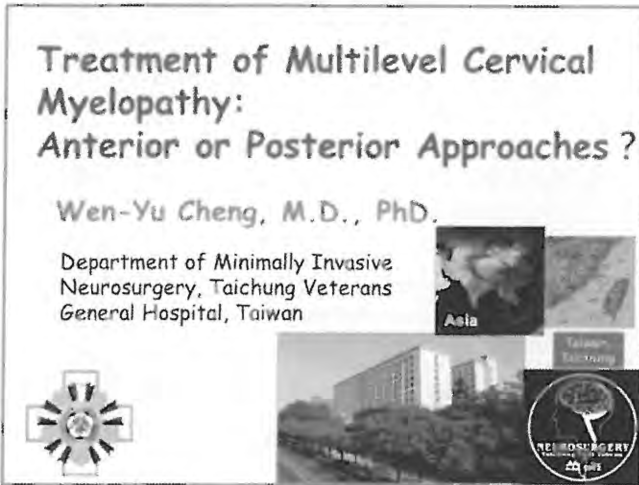
關鍵字:多節性頸椎退化性脊髓病變, 前位手術, 後位手術

一、目的

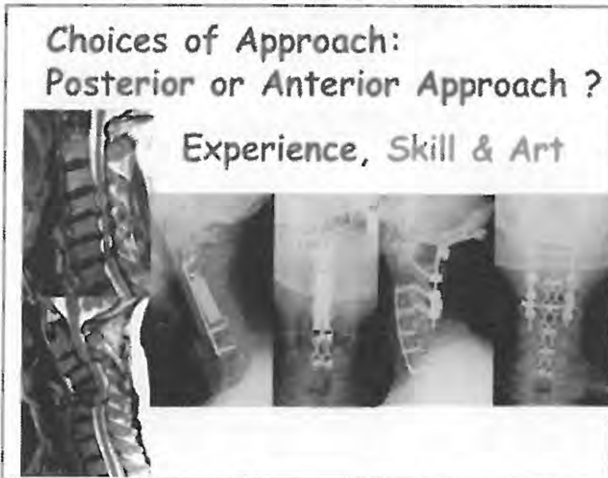
1. 介紹多節性頸椎退化性脊髓病變的病患手術選擇的適應症及手術技巧。
2. 介紹本院治療成果。

二、過程

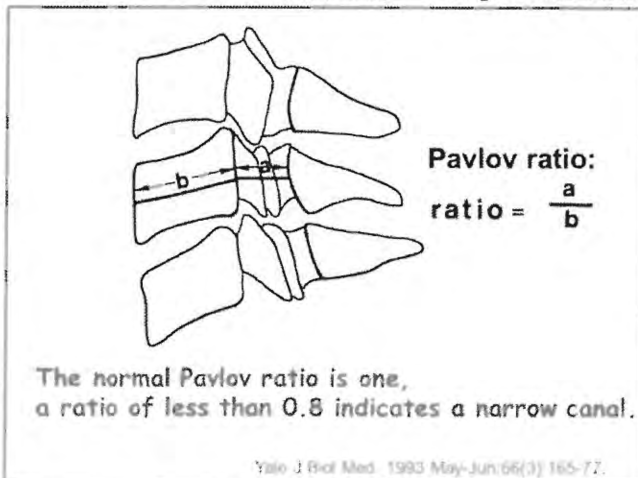
1. 口頭論文發表多節性頸椎退化性脊髓病變治療之臺中榮總經驗。

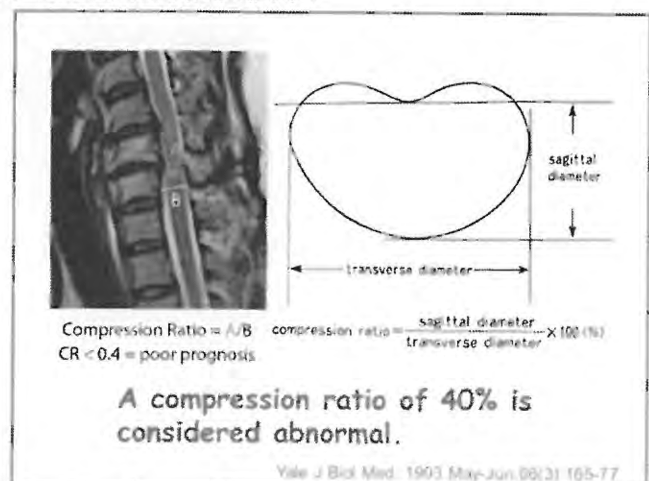


2. 過程
   (1) 式分為前位手術,後位手術及合併手術治療，手術之選擇須以證據基礎和臨床經驗之角度,對病患達到疾病治療之最好方式。



   (2) Pavlov ratio 小於 0.8; Compression ratio 小於 40%表示脊椎腔狹小:



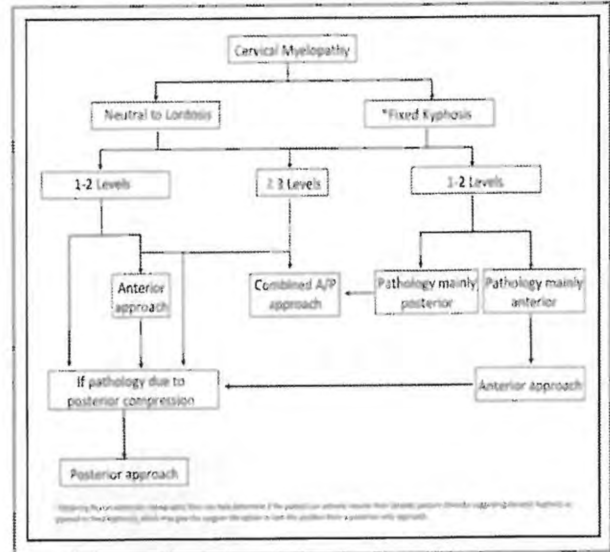


(3) 治療術式選擇概念

Simplified Treatment Algorithm for CSM

	1 or 2 levels of compression	3+ levels of compression
> 10 rigid Kyphosis	③ Anterior alone (ACDF/corpectomy /hybrid)	⑤ Combined AnteroPosterior •Anterior to correct kyphosis/decompress •Posterior to Decompress
< 10 rigid kyphosis		④ Posterior alone Laminoplasty vs Laminectomy + Fusion

John Hopkins NS



(4) 結論：脊髓的手術減壓適用於確定的多節性頸椎退化性脊髓病變之頸椎病患者，所以針對病患手術方式的選擇就相對重要，如何改善手術技巧及減少併發症，也是未來努力的方向。

會議議程

	SS 13 Coding JKN for Spine Cases	SS 14 Miscellaneous
14.15 – 15.20	Friendly and Simple Room Moderator: Muhammad Firdaus Soemarya & Yudi Yuwono Wiwoho	Happy Room Moderator: David Tandian & Ferry Senjaya
14.15 – 14.25	Kebijakan JKN Terkait Klaim - Kayun	Our Surgical Strategy for Thoracic Out Syndrome Yasuhiro Nakajima (Japan)
14.25 – 14.35	Factors of Pending Claim in JKN Spine Cases Muhammad Firdaus Soemarya	Decision Making in Brachial Plexus Surgery Ferry Senjaya
14.35 – 14.45	Coding JKN for Spine Case in Type B Hospital Yudi Yuwono Wiwoho	Supraclavicular Approach in Thoracic Outlet Syndrome Amird Mu'min
14.45 – 14.55	Roadmap of Preparation and Reclassification of New Tarif of JKN for Neurospine Indonesia Joni Wahyuhadi	Lumbar Lysis of Epidural Adhesions Stephanus Gunawan
14.55 – 15.05	Spine Fusion Procedure in BPJS Era Bayu Dewanto	Discussion
15.05 – 15.20	Discussion	
15.20 – 15.45	Keynote Lecture and Closing Friendly and Simple Room Moderator: Djoko Riadi & Junichi Mizuno (Japan)	
15.20 – 15.35	Surgical Approach to Lumbar Degenerative Diseases - Junichi Mizuno (Japan)	
15.35 – 15.45	Closing Remarks - Chairman of INSS, Eko Agus Subagio	
15.45 – 16.00	Coffee Break	

SYMPOSIUM untuk Dokter Umum
Sabtu, 5 Mei 2017 di Hotel Harris Kelapa Gading
Symposium Penanganan Penyakit Tulang Belakang untuk Dokter Umum
Trendy Room

07.00 – 08.00	Registrasi
08.00 – 10.00	Pembukaan oleh Ketua PERSPEBSI JAYA Dr. dr. Wawan Mulyawan, SpBS, SpKP, AAK Sesi 1 Moderator: dr. Heri Aminudin, SpBS (K) & dr. Astri Avianti, SpBS
08.00 – 08.30	Diagnosis Penyakit Tulang Belakang Dr. dr. Tiara Aninditha, SpS(K) Staf Pengajar Departemen Neurologi, FKUI, RSUPN Dr. Cipto Mangunkusumo, Jakarta
08.30 – 09.00	Imaging Pada Penyakit Tulang Belakang dr. Rahmad Mulyadi, SpRad(K) Staf Pengajar Departemen Radiologi, FKUI, RSUPN Dr. Cipto Mangunkusumo, Jakarta
09.00 – 09.30	Algoritma Nyeri Tulang Belakang dr. Mahdian Nur Nasution, SpBS Arti Bedah Saraf di Klinik Nyeri Tulang Belakang
09.30 – 10.00	Diskusi
10.00 – 10.15	Coffee Break
10.15 – 12.15	Sesi 2 Moderator: dr. Made Agus Mahendra, SpBS & dr. Mahdian Nur Nasution, SpBS
10.15 – 10.45	Kegawatan Penyakit Tulang Belakang Non Trauma Dr. dr. Mohammad Saekhu, SpBS(K) Koordinator Neurospine Departemen Bedah Saraf, RSUPN Dr. Cipto Mangunkusumo, Jakarta
10.45 – 11.15	Tatalaksana Pasien pada Cidera Spinal Dr. dr. Wawan Mulyawan, SpBS, SpKP, AAK Pusat Neurospine, Bunda Brain and Spine Center, Jakarta
11.15 – 11.45	Rehabilitasi Medik pada Penyakit Tulang Belakang dr. Luh Karunia Wahyuni, SpKFR(K) Kepala Departemen Rehabilitasi Medik, RSUPN Dr. Cipto Mangunkusumo, Jakarta
11.45 – 12.15	Diskusi
12.15 – 12.30	Penutupan
12.30 – 13.30	Makan Siang

The 1st Jakarta International Neurosurgery Forum (JINeF)
in conjunction with
The 1st Congress of Indonesian Neurospine Society and
4th Indonesia Spine Update
May 4th - 5th, 2018, Harris Hotel, Kelapa Gading, Jakarta

LOOKING TO THE BEST AND FURIOUS: SPINE HEALTH FOR BETTER QUALITY OF LIFE

SYMPOSIUM Day 1
Friday, 4th May 2018, Harris Hotel Kelapa Gading

07.00 - 08.00	Re-Registration
08.00 - 08.45	Friendly and Simple Room Opening Ceremony Speech by: 1. Chairman of Organizing Committee - Wawan Mulyawan 2. Congress Chairman of Indonesian Neurospine Society - Mohamad Saekhu 3. President of Indonesian Neurosurgical Society (INS) - Abdul Hafid Bajamal Inauguration of Indonesian Neurospine Society by President of Indonesian Neurosurgical Society (INS) Chairman of Indonesian Neurospine Society, Eko Agus Subagio Speech by Vice Governor of DKI Jakarta - Sandiaga Uno
08.45 - 10.00	Plenary Lecture 1 Friendly and Simple Room Neurospine: Past, Present and Future Moderator: Eko Agus Subagio & Wawan Mulyawan
08.45 – 09.00	Strategi Pengembangan dan Pendidikan Kompetensi Neurospine di Indonesia - Setyo Widi Nugroho
09.00 – 09.15	Strategi Pengembangan dan Pendidikan Kompetensi Neurosurgical di Indonesia - Abdul Hafid Bajamal
09.15 – 09.30	Perkembangan Bedah Saraf Tulang Belakang di Indonesia - RM. Padmosantjojo
09.30 – 09.45	Bioethics in Neuro Spinal Patient Care - Andi Asadul Islam
09.45 – 10.00	Spinal Instrumentation and Patient Safety - Endro Basuki
10.00 – 10.15	Coffee Break
10.15 – 11.15	Plenary Lecture 2 Friendly and Simple Room Moderator: Djoko Riadi & Taufan Budi Setyolaksono
10.15 – 10.30	Image-Guided Spinal Surgery and Robotics in MIS: Where are we Now? Chung-Chyi Shen (Taiwan)
10.30 – 10.45	Endoscopic Access to the Ventral Thoracic Spine: PETD vs Thoracoscopy - Jun Ho Lee (South Korea)
10.45 – 11.00	Minimally Invasive Spine Surgery for Thoracolumbar Spine Trauma: How to Select Cases? Shankar Gopinath (USA)
11.00 – 11.15	Microscope-assisted Minimally Invasive Keyhole Surgery with a Tubular Retractor System for Intraspinal Tumors: 388 Cases Report - Chunmei Chen (China)
11.15 – 13.30	Friday Pray & Lunch
13.30 – 14.30	Plenary Lecture 3 Friendly and Simple Room Moderator: Wiryawan Manusubroto & Mahdian Nur Nasution
13.30 – 13.45	Cervical Facet Fractures: When should we Operate? - Shankar Gopinath (USA)
13.45 – 14.00	The Feasibility of Optimal Surgical Result Prediction According to the Centre of Rotation Shift after Multilevel Cervical Total Disc Replacement - Jun Ho Lee (South Korea)
14.00 – 14.15	Biomechanics in Lumbar Fusion Surgery - Eko Agus Subagio

三、心得

台中榮總神經外科從 1990 年開始發展微創手術,與傳統開放式手術相比，微創手術方法可以更快、更安全，並且能縮短恢復時間，對肌肉和軟組織的創傷較少。從此次的會議中，我們可以看到國際上各國進步，不論是手術或者是硬體上的發展，有很多值得我們學習的。雖然目前印尼在頸椎手術技術和設備上不及台灣,但是其發展微創脊椎手術之精神值得敬佩。

人才的培育在未來也十分重要，在此次會議上，我看到很多印尼的年輕醫師的報告，對微創手術充滿熱誠和創新。台灣在環境影響下，大部分年輕醫師對此領域有興趣, 但對於較困難之手術則望而卻步，對未來是一大隱憂，所以如何改善日益惡化的醫療環境，使更多年輕醫師投入此領域，是須要大家一起共同努力的。目前台中榮總微創性神經外科，定期和學會舉辦教育訓練，希望在人才培育方面，盡一點微薄之力。

四、建議事項

1. 透過論文發表方式，增進國內及國際交流，提供台中榮總經驗，亦可了解其他國際間專家的治療狀況，相互交流，使治療上與世界同步。
2. 多鼓勵年輕醫師參與學術活動及論文發表，對人才的培育有所助益。除此之外，希望醫院能提供協助舉辦手術訓練班,使年輕醫師在上刀前,有接受一些手術訓練,也可增加其開刀的自信心和興趣。
3. 醫院鼓勵短期進修，對於新技術的學習很有幫助，是一個很好的政策，也是對於促進台中榮總和國際知名專家交流的良好方式。所謂活到老學到老，即使是資深醫師，也須多充實自己，才有更多的能力指導年輕一輩的醫師。
4. 增設手術設備及特殊器械，提高手術安全性和精準度。因為神經外科是重裝備學科，且手術十分精細，為提高病人安全及成功率，如何在有限的經費中增設手術的設備十分重要，也希望未來能和國際並駕齊驅。
5. 醫學中心應該是發展困難手術，針對特殊領域，希望醫院給予支持，成立專業治療團隊，使台中榮總成為有特色的醫院。例如：想到頸椎的治療，就想到台中榮總。

附錄：口頭論文報告檔案

Treatment of Multilevel Cervical Myelopathy: Anterior or Posterior Approaches ?

Wen-Yu Cheng, M.D., PhD.

Department of Minimally Invasive Neurosurgery, Taichung Veterans General Hospital, Taiwan

Incidence of Cervical Myelopathy

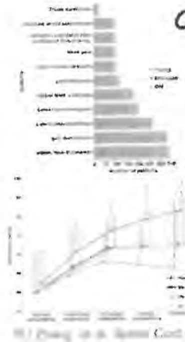
- Cervical spondylotic myelopathy is the most common type of cord lesion affecting **middle-aged and elderly populations.**
- Most common in **7th decade** of life
- More common in **men** than women (~ 2:1)

Clinical Presentation

- Patient usually **over 60 years of age**
- Myelopathy in **younger patients** usually associated with disc pathology, trauma, or inflammatory disease
- **Acute presentation** secondary to a fall or trauma often has features of central cord syndrome:
  - ✓Motor more than Sensory
  - ✓Upper more than Lower
  - ✓Distal more than Proximal

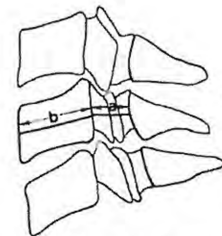
Choices of Approach: Posterior or Anterior Approach ?

Experience, Skill & Art

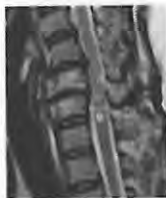


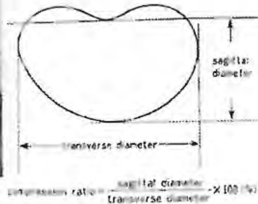
Cervical Myelopathy

1. The severity of CSM increased with increasing **age**.
2. Age was **inversely** correlated with recovery.
3. **Six months** post operation was the prime time for the recovery of spinal cord function.



The normal Pavlov ratio is one, a ratio of less than 0.8 indicates a narrow canal.





Compression Ratio = A/B

CR < 0.4 = poor prognosis

compression ratio = sagittal diameter / transverse diameter × 100 (%)

A compression ratio of 40% is considered abnormal.

Poor prognostic indicators

1. Progression of signs and symptoms.
2. Presence of myelopathy for six months or longer.
3. Compression ratio approaching 0.4 or transverse area of the spinal cord of 40 square millimeters or less.
4. Improvement is unusual with nonoperative treatment and almost all patients progressively worsen.

The Goal of Spinal Surgery

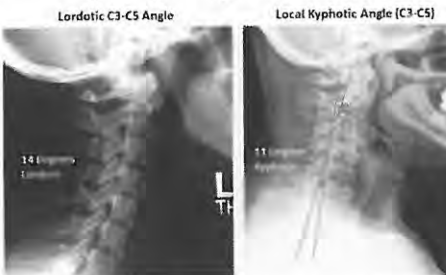
- **Decompression**
  - ✓Discectomy, Corpectomy
  - ✓Laminectomy, laminoplasty
  - " Decompression from the compression site "
- **Stability**
  - ✓Fusion
  - ✓Instrumentation
  - ✓Arthroplasty

Simplified Treatment Algorithm for CSM

	1 or 2 levels of compression	3+ levels of compression
> 10 rigid Kyphosis	③ Anterior alone (ACDF/corpectomy /hybrid)	⑤ Combined AnteroPosterior •Anterior to correct kyphosis/decompress •Posterior to Decompress
< 10 rigid kyphosis		④ Posterior alone Laminoplasty vs Laminectomy + Fusion

John Hopkins NS

Cervical spine sagittal alignment (local kyphotic angle)



>13 degrees kyphosis is a contraindication of posterior decompression

John Hopkins NS

Postoperative K-line conversion from negative to positive is independently associated with a better surgical outcome after posterior decompression with instrumented fusion for K-line negative cervical ossification of the posterior ligament

Masao Koda · Takeo Furuya · Junya Saito · Yasushi Ijima · Mitsuhiro Kitamura · Seiji Ohtori · Sumihisa Orita · Kazuhide Inage · Tetsuya Abe · Hiroshi Noguchi · Toru Funayama · Hiroshi Kumagai · Kosei Miura · Katsuya Nagashima · Masashi Yamazaki

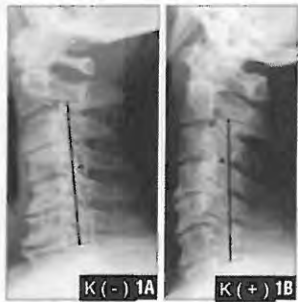
Abstract

Purpose

Methods

Results

Conclusion



The K-line is a straight line from the midpoints of the spinal canal at C2 and C7

Conclusion

- **ADF is one of the suitable surgical treatments for K-line (-) OPLL.** However, adequate management of ADF-specific perioperative complications is needed.
- **LMP should not be used for K-line (-) cervical OPLL.**
- Both ADF and PDF are applicable for K-line (-) OPLL according to indications set by each institute and surgical decisions.
- **LMP or PDF is a possible alternative procedure for K-line (+) OPLL.**
- Postoperative K-line conversion from (-) to (+) is a factor independently associated with a better surgical outcome.

European Spine Journal pp 1-8 Masao Koda

Anterior Approach

- Anterior cervical discectomy fusion (**ACDF**)
- Anterior cervical corpectomy fusion (**ACCF**)
- Anterior cervical discectomy with **ADR**

Advantages of Anterior Approach

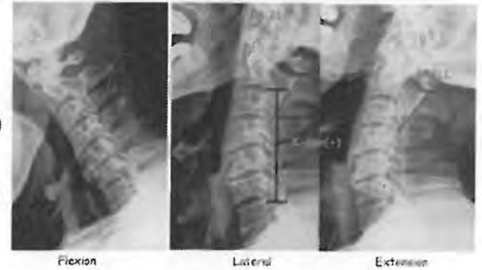
- **Directly decompression**
- **Correct kyphosis** and reconstruct cervical alignment
- Relieve cord compression which is caused by cervical kyphosis
- **Restore the height** of the decompressed segments
- **Prevent further degeneration** and neurological deterioration over the fused segments

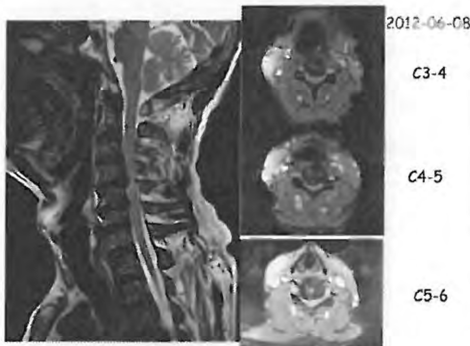
Disadvantages of the Anterior Approach

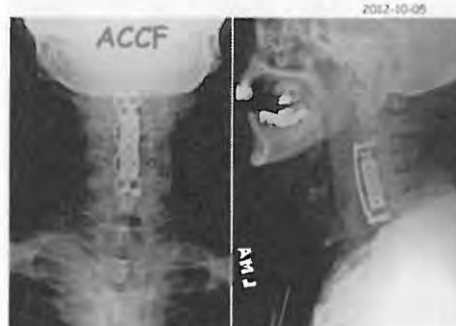
- requirement for meticulous **surgical technique**
- **longer surgery time**
- greater intraoperative haemorrhage
- potential complications of **dural injury** and instrumented fusion such as **pseudarthrosis**
- adjacent level spondylotic degeneration (**ASD**)
- **graft dislodgement**
- The risk of **dysphagia**, **recurrent laryngeal nerve injury**, dysphonia, dyspnoea, **esophageal fistula**, impairment of laryngeal, or other pericervical organs

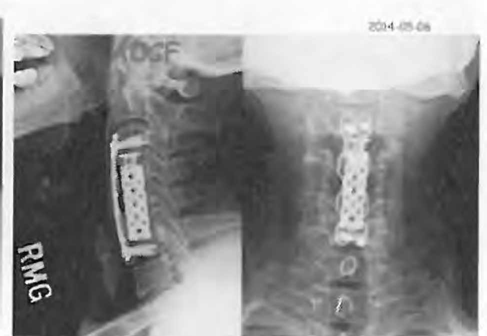
Case 1: 66 y/o male with neck pain with radiation to bilateral upper limbs for 4 months

Dx: OPLL with Myelopathy



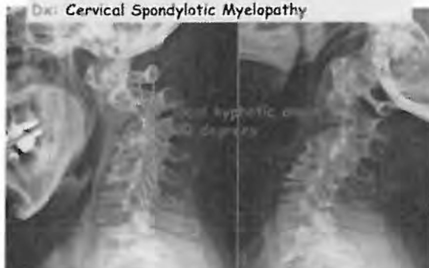


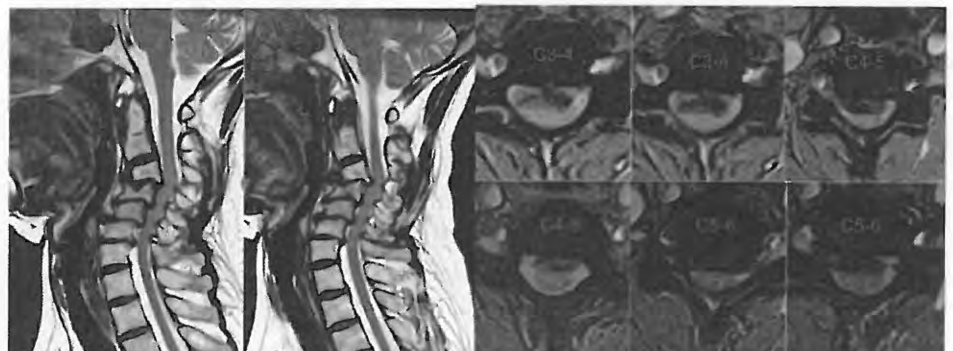


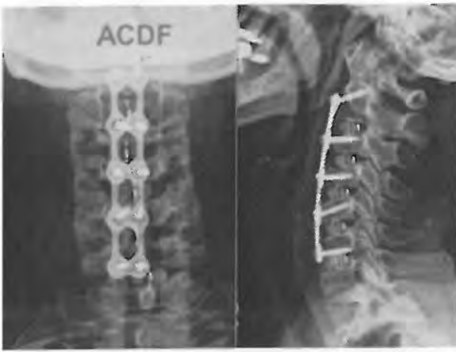


Case 2: 68 y/o male with neck pain with radiation to bilateral upper limbs for 3 years and unstable gait for 5 months

Dx: *Cervical Spondylotic Myelopathy*





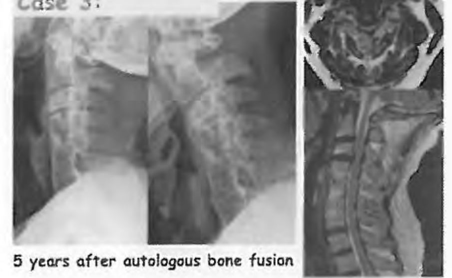


Consequences of Fusion
Adjacent segment disease (ASD)

The incidence of revision surgery
Long-term follow- up studies

- Hilibrand et al. (7%),
- Ishihara et al. (6%),
- Li et al. (6.7%),
- King et al. (2.5%)

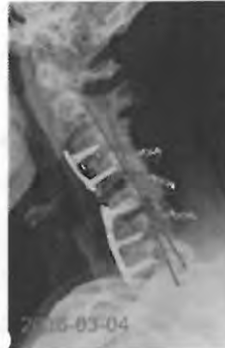
Hilibrand AS, et al. Spine J. 2004;4(6 Suppl):190S-4S
Ishihara H et al. Spine J. 2004;4(6):624-8.
Li et al. Journal of Orthopaedic Surgery and Research (2016) 11:5
King Jr JT. ET AL Neurosurgery. 2009;65(6):1011-22.



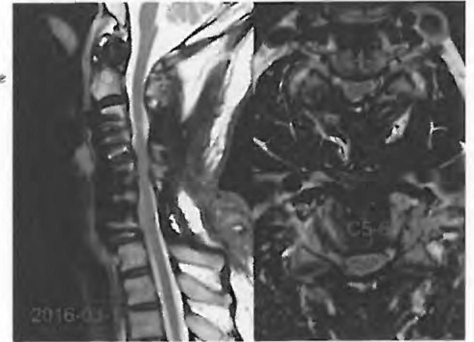
Case 4: Chen X X, 56 y/o, Male

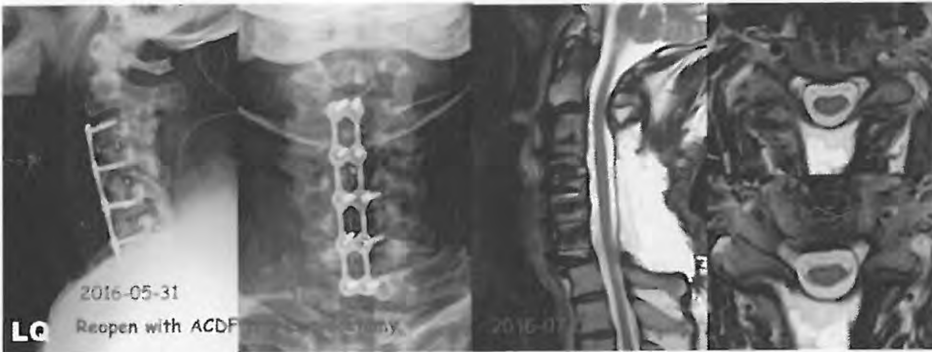
1. Unstable gait for one year
2. Neck pain with radiation to bilateral upper limbs for 2 years
3. ACDF C5-6,6-7 for 2 years,
   ACDF C3-4 for 1 year,
   Laminoplasty C3-7 for 6 months

S/S: Myelopathy and spastic gait
muscle power: grade 4, 4 limbs
muscle atrophy: L't upper limbs



local kyphotic angle 14 degrees





Posterior approach

- Laminectomy alone
- Laminectomy with fusion
- Laminoplasty

Posterior decompression +/- fusion

- Preferred if extent of decompression is **more than 4 vertebral levels**
- Significant **posterior contribution to stenosis**
- **If good cervical lordosis**, then favor **laminoplasty** over laminectomy and fusion
- Cervical kyphosis or decision already made to perform fusion, favor laminectomy and fusion

Disadvantages of the posterior approach

- Do not remove the anterior compressive pathology
- Wound complications is higher
- Patients often complain of neck pain

Posterior approach

Laminectomy alone
many complications

- ✓ segmental instability,
- ✓ postlaminectomy kyphosis,
- ✓ perineural scar formation,
- ✓ loss of cervical motion,
- ✓ delayed neurologic deterioration

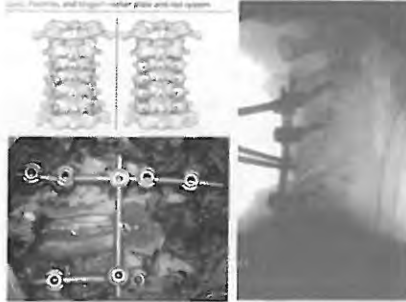
Posterior approach

Laminectomy with fusion

the most popular instruments are modern lateral mass and pedicle screw fixation

- ✓ to stabilize the residual structure and prevent postlaminectomy kyphosis.
- ✓ to allow reliable new bone formation around a stable scaffold

Lateral Mass Screws



Posterior approach

Laminoplasty

As an alternative to laminectomy, laminoplasty is a simpler procedure and is now more common

- ✓ laminoplasty was shown to have a lower incidence of complications
- ✓ superior clinical outcomes based on objective and subjective evaluation (Heller 2001)
- ✓ Laminoplasty may reduce the rate of postlaminectomy kyphosis in contrast with laminectomy alone (Kamioka 1989)
- ✓ adjacent segment degeneration without restricting cervical range of movement (Shaffrey 1999)
- ✓ preserves posterior structures excluding partial ligamentum flavum resection (Mitsunaga 2012)

Laminoplasty

Unilateral open-door technique

Bilateral open-door technique

Case5: Wu X X, 66 y/o, male

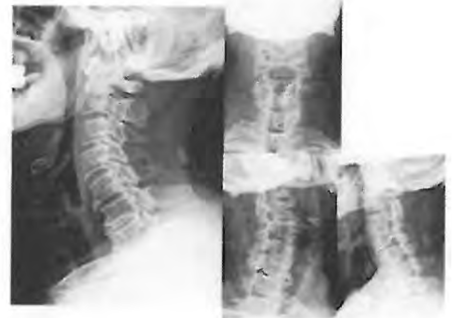
1. Neck pain with radiation to bilateral upper limbs for 2 years and unstable gait for 3 months
2. Lhermitte's sign (+)

   Hoffman's sign of right hand (+),DTR, (+++).

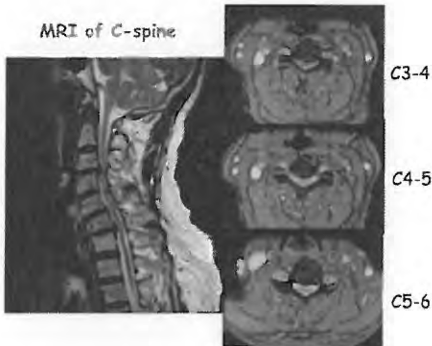
   Sensory impairment : C4,C6;

   Muscle power: R/L : Gr: 4/4

Dx: Multilevel CSM



MRI of C-spine

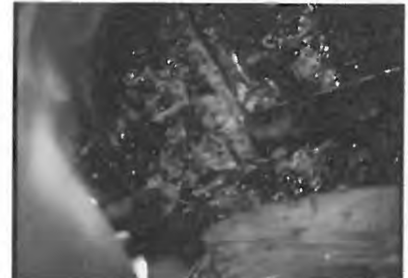


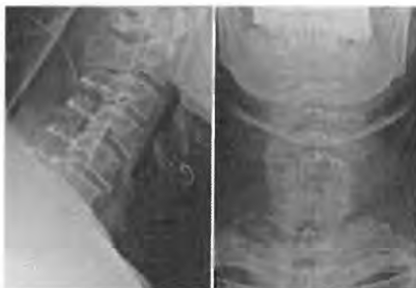
Laminoplasty:

unilateral open-door technique

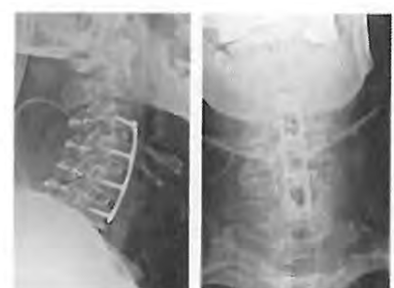
Laminoplasty:

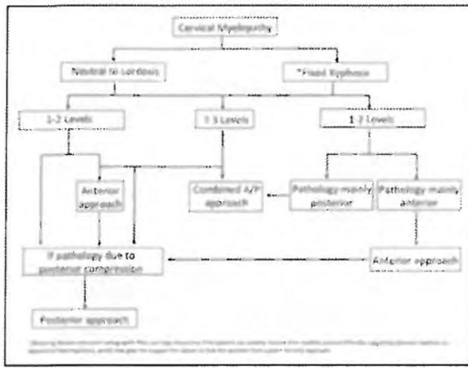
unilateral open-door technique





ACDF (3 months later)





Take-home messages

- *Cervical spondylosis and canal stenosis are common in the elderly population*
- Clinical features of cervical myelopathy indicate the presence of spinal cord compression and dysfunction
- The natural history of this condition is variable
- Surgical decompression of the spinal cord is indicated for patients with established cervical myelopathy