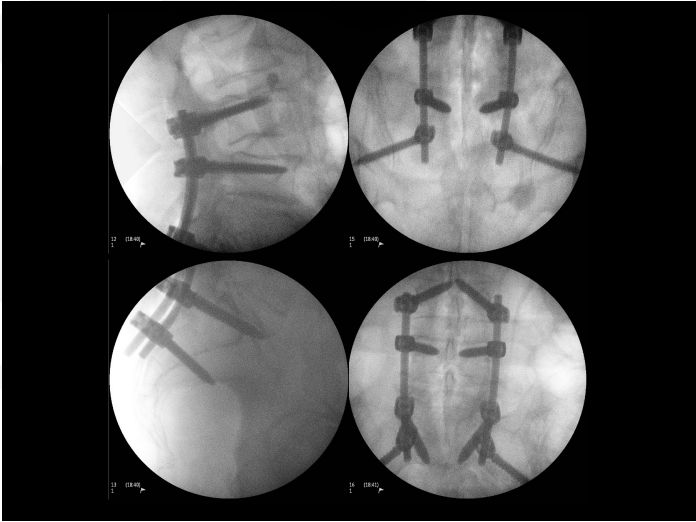
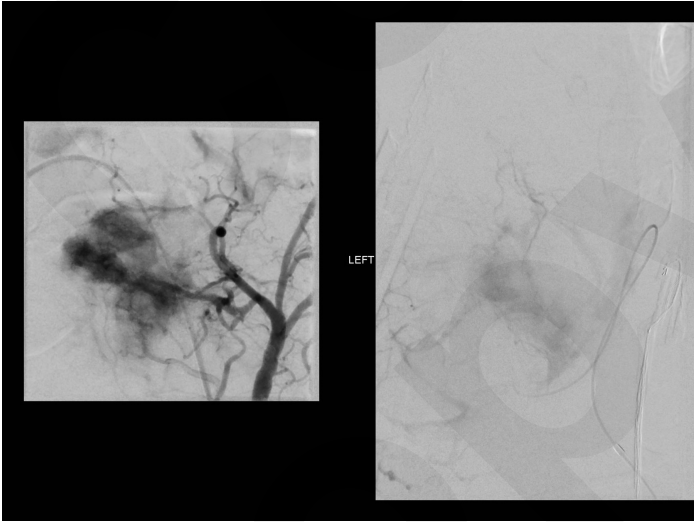
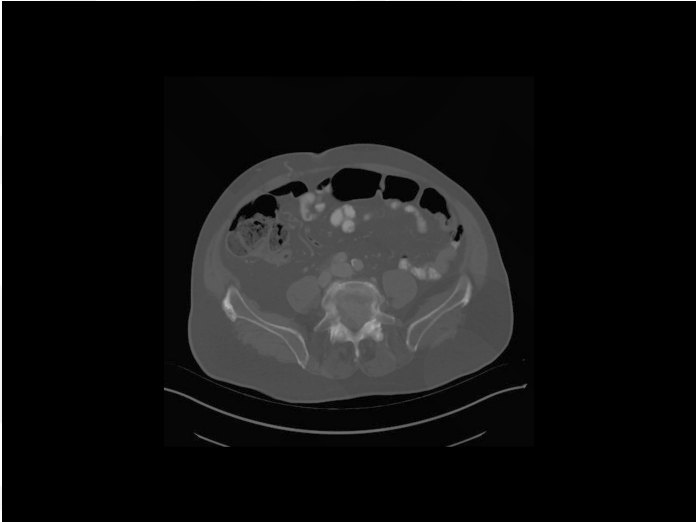
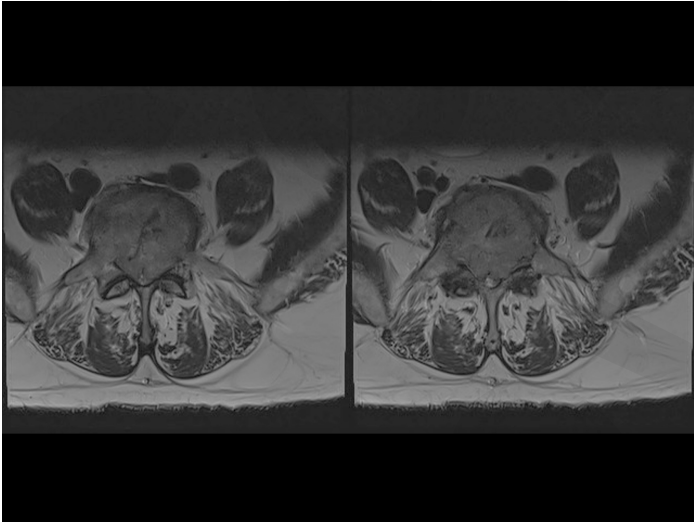
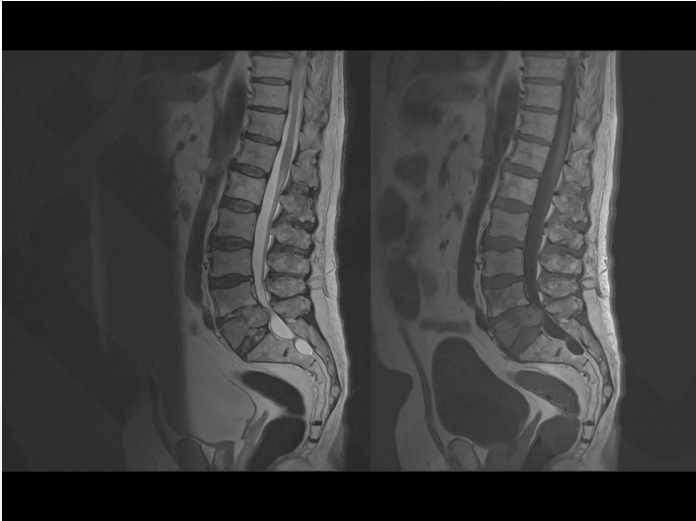
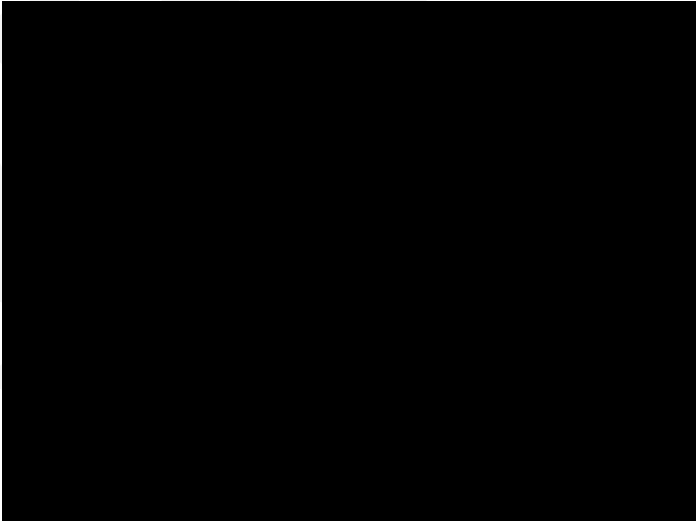
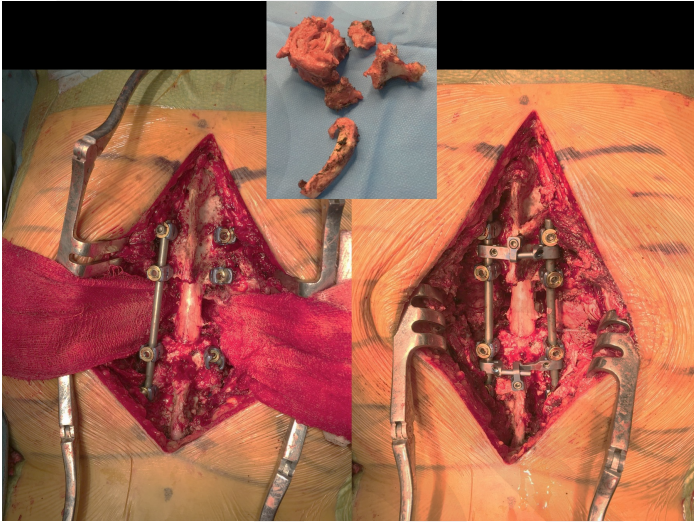
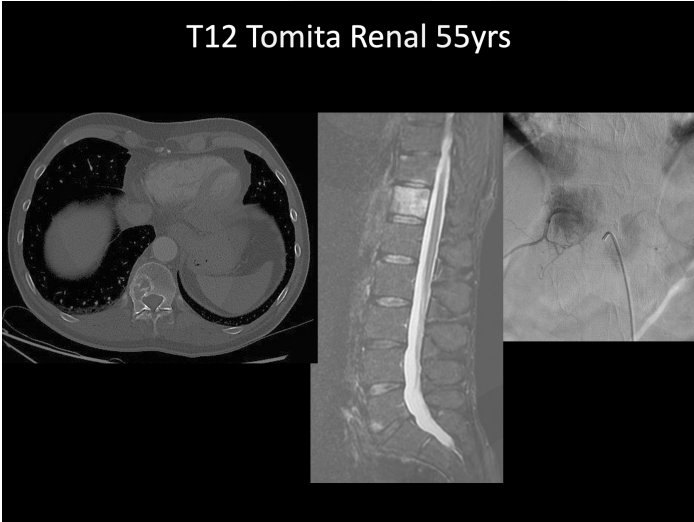
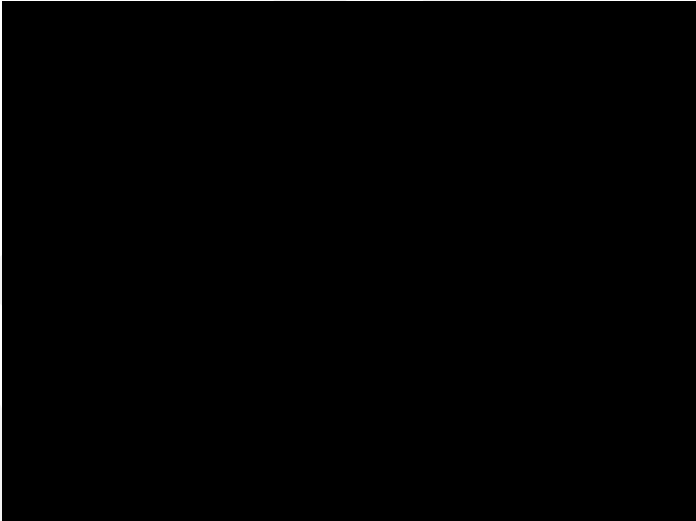
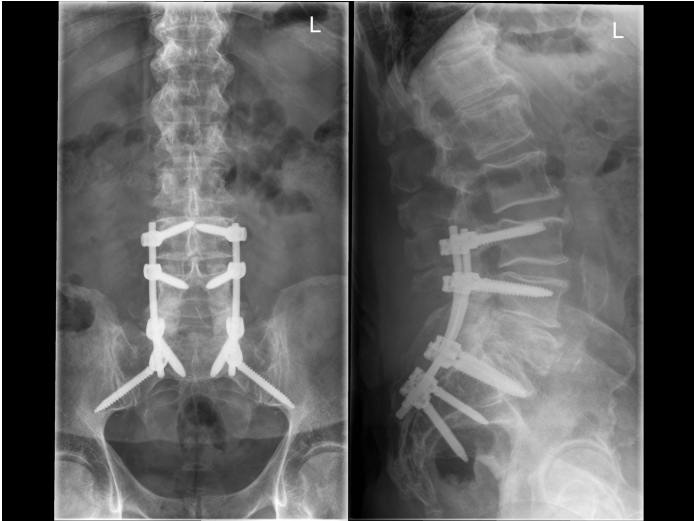
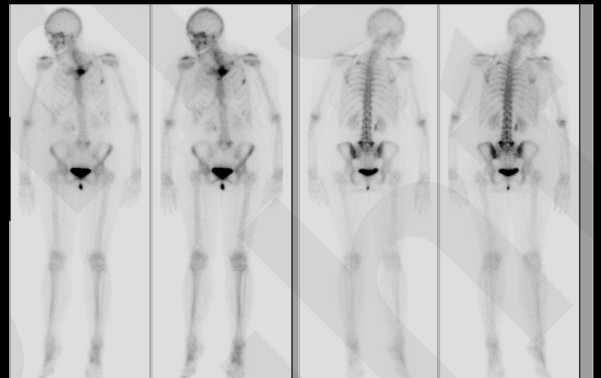
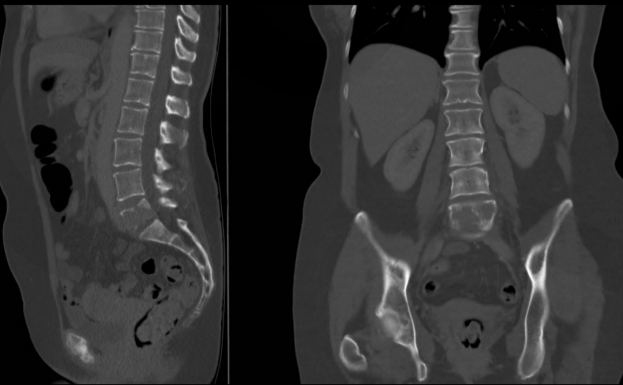
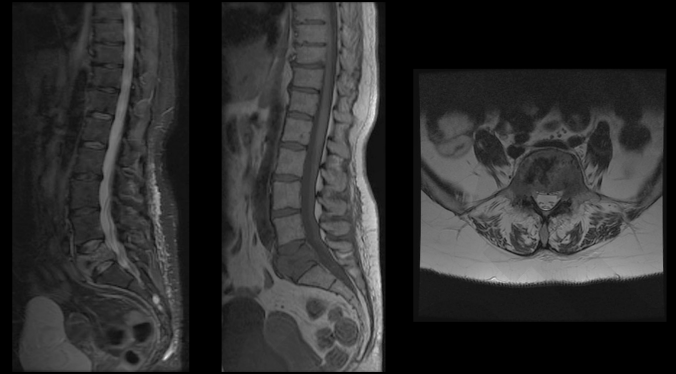
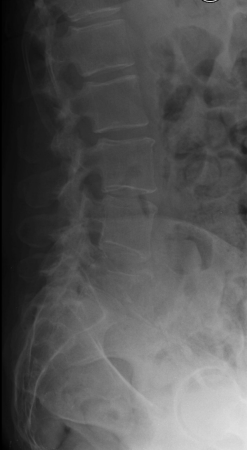




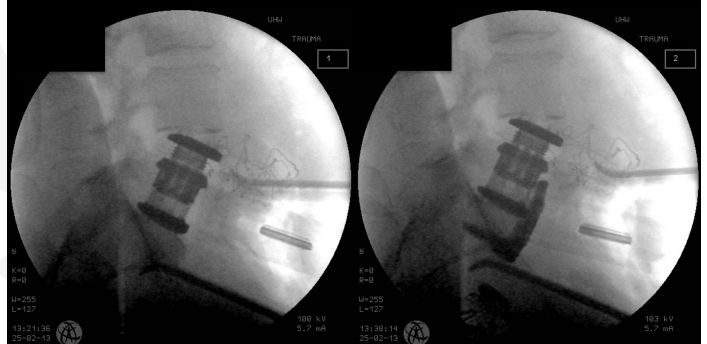


Breast Mets 45yrs



- Ideas...
- L5 severe pain pathological collapse body only
- Unable sit up let alone stand
- No obvious mets elsewhere
- Tumour with a good prognosis
- How would you do it if she had DXT first...

Plan for the lordosis at LSJ...



2 years post op



NICE



Direct decompressive surgical resection in the treatment of spinal cord compression caused by metastatic cancer: a randomised trial

Roy A Patchell, Philip A Tibbs, William F Regine, Richard Payne, Stephen Saria, Richard J Krynicki, Mohammed Mohiuddin, Bryan Young

Eur Spine J (2013) 22:1383–1388
DOI 10.1007/s00586-012-2635-y

ORIGINAL ARTICLE

Effect of timing of surgery on neurological outcome and survival in metastatic spinal cord compression

N. A. Quraishi · T. S. Rajagopal · S. R. Manoharan ·
S. Elsayed · K. L. Edwards · B. M. Boszczyk

Conclusions Our results show that surgery should be performed sooner rather than later. Furthermore, earlier surgical treatment within 48 h in patients with MSCC resulted in significantly better neurological outcome. However, the timing of surgery did not influence length of hospital stay, complication rate or patient survival.

VOLUME 34 · NUMBER 3 · JANUARY 20, 2016

JOURNAL OF CLINICAL ONCOLOGY

ORIGINAL REPORT

Survival and Clinical Outcomes in Surgically Treated Patients With Metastatic Epidural Spinal Cord Compression: Results of the Prospective Multicenter AOSpine Study

Michael G. Fehlings, Anick Nater, Lindsay Tetreault, Branko Kopjar, Paul Arnold, Mark Dekutoski, Joel Finkelstein, Charles Fisher, John France, Ziya Gokaslan, Eric Massicotte, Laurence Rhines, Peter Rose, Arjun Sahgal, James Schuster, and Alexander Vaccaro

Neuro-Oncology 15(10):1413–1419, 2013.
doi:10.1093/neuonc/not101

NEURO-ONCOLOGY

Surgical resection of epidural disease improves local control following postoperative spine stereotactic body radiotherapy

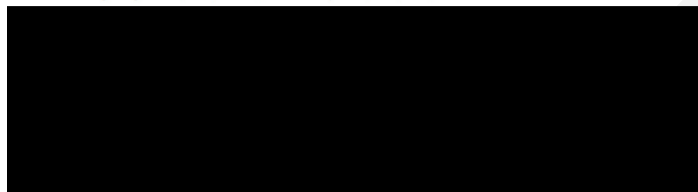
Ameen Al-Omar, Laura Masucci, Laurence Masson-Cote, Mikki Campbell, Eshetu G. Atenafu, Amy Parent, Daniel Letourneau, Eugene Yu, Raja Rampersaud, Eric Massicotte, Stephen Lewis, Albert Yee, Isabelle Thibault, Michael G. Fehlings, and Arjun Sahgal



Prognosis in Patients With Symptomatic Metastatic Spinal Cord Compression

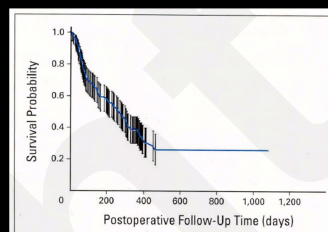
Survival in Different Cancer Diagnosis in a Cohort of 2321 Patients

Soren Schmidt Morgen, MD,* Casper Lund-Andersen, MD,* Claus Falck Larsen, MD, DMSci, MPA,†
Svend Aage Engelholm, MD, DMSci,‡ and Benny Dahl, MD, PhD, DMSci*



Survival and Clinical Outcomes in Surgically Treated Patients With Metastatic Epidural Spinal Cord Compression: Results of the Prospective Multicenter AOSpine Study

Michael G. Fehlings, Anick Nater, Lindsay Tetreault, Branko Kopjar, Paul Arnold, Mark Dekutoski, Joel Finkelstein, Charles Fisher, John France, Ziya Gokaslan, Eric Massicotte, Laurence Rhimes, Peter Rose, Arjun Sahgal, James Schuster, and Alexander Vaccaro



The Pathology



- Prostate / Breast / Myeloma / Lymphoma
- Thyroid / Renal may be solitary - ?Mx aggressively
- Bladder / Rectum / Colon / Uterus / Liver / Gallbladder
- Lung / Melanoma / Oesophagus / Stomach / Pancreas / Sarcoma

2015

The Oncologist®

Symptom Management and Supportive Care

The Metastatic Spine Disease Multidisciplinary Working Group Algorithms

ADAM N. WALLACE,^a CLIFFORD G. ROBINSON,^b JEFFREY MEYER,^c NAM D. TRAN,^{d,e,h} AFSHIN GANGI,ⁱ MATTHEW R. CALLSTROM,^j SAMUEL T. CHAO,^k BRIAN A. VAN TINE,^f JONATHAN M. MORRIS,^l BRIAN M. BRUEL,^k JEREMIAH LONG,^g ROBERT D. TIMMERMAN,^m JACOB M. BUCHOWSKI,ⁿ JACK W. JENNINGS^a



Evaluation of the relevance of surgery in a retrospective case series of patients who underwent the surgical treatment of a symptomatic spine metastasis from lung cancer

Fahed Zairi¹ · M  lodie-Anne Karnoub¹ · Marie-H  l  ne Vieillard² ·
Alkis Bouras¹ · Paulo Marinho¹ · Mohamed Allaoui¹ · Patrick Devos³ ·
Richard Assaker¹

- Median survival 2.1 months

Conclusion A strict patient selection is required to limit the iatrogenic effect of surgery, which may alter the quality of life of these frail patients with limited life expectancy.

Research Paper
Clinical & Experimental Metastasis
January 2014, Volume 31, Issue 1, pp 47-55

First online: 03 September 2013

Prolonged survival following aggressive treatment for metastatic breast cancer in the spine

Patricia L. Zadnik, Lee Hwang, Derek G. Ju, Mari L. Groves, Jackson Sui, Alp Yurter, Timothy F. Witham, Ali Bydon, Jean-Paul Wolinsky and 2 more

Characteristics of Patients Who Survived < 3 Months or > 2 Years After Surgery for Spinal Metastases: Can We Avoid Inappropriate Patient Selection?

Jorrit-Jan Verlaan, David Choi, Anne Versteeg, Todd Albert, Mark Arts, Laurent Balahaud, Cody Bunker, Jacob Maciej Buchowski, Chung Kee Chung, Maarten Hubert Coppes, Hugh Alan Crockard, Bart Depreitere, Michael George Fehlings, James Harrop, Norio Kawahara, Eun Sang Kim, Chong-Suh Lee, Yee Leung, Zhongjun Liu, Antonio Martin-Benloch, Eric Maurice Massicotte, Christian Mäkelä, Bernhard Meyer, Wilko Paul, Naïr A. Qunishi, Yasuki Tokuhashi, Katsuro Tomita, Christian Ulbricht, Michael Wang, and F. Camhur Oner

ACR Appropriateness Criteria® Metastatic Epidural Spinal Cord Compression and Recurrent Spinal Metastasis

Expert Panel on Radiation Oncology–Bone Metastases:

Simon Shek-Man Lo, MB, ChB, FACR¹; Samuel Ryu, MD,² Eric L. Chang, MD,³ Nicholas Galanopoulos, MD,⁴ Joshua Jones, MD,⁵ Edward Y. Kim, MD,⁶ Charlotte D. Kubicky, MD, PhD,⁷ Charles P. Lee, MD,⁸ Peter S. Rose, MD,⁹ Arjun Sahgal, MD, FRCPC,¹⁰ Andrew E. Sloan, MD, FACS, FAANS,¹¹ Bin S. Teh, MD, FACR,¹² Bryan J. Traugber, MD,¹³ Catherine Van Poznak, MD,¹⁴ and Andrew D. Vassil, MD¹⁵

Scoring

Karnofsky Performance Status (KPS)

100%	Normal, no complaints, no disease
90%	Capable normal activity, few symptoms or signs disease
80%	Normal activity some difficulty, some symptoms signs
70%	Caring for self, not capable normal activity or work
60%	Requiring some help, able most personal tasks
50%	Requires help often, requires frequent medical care
40%	Disabled, requires special care and help
30%	Severely disabled, requires hospital admission, no risk death
20%	Very ill, urgent admission, supportive measures or treatment
10%	Moribund
0%	Death

Revised Tokuhashi Score

General condition:	Points:
Poor (KPS 10-40%)	0
Moderate (50-70%)	1
Good (80-100%)	2
No. extra-spinal bone mets:	
≥3	0
1-2	1
0	2
No. mets in vertebral body:	
≥3	0
1-2	1
0	2
Mets to major internal organs:	
Unremovable	0
Removable	1
None	2
Primary site of cancer:	
Lung, osteosarcoma, stomach, bladder, oesophagus, pancreas	0
Liver, gallbladder, unidentified	1
Others	2
Kidney, uterus	3
Rectum	4
Thyroid, breast, prostate, carcinoma	5
Palsy:	
Complete (Frankel A or B)	0
Incomplete (Frankel C or D)	1
Normal (Frankel E)	2
Score:	
0-8 Prognosis < 6 months	
Conservative treatment	
7 Palliative surgery	
9-11 Prognosis > 6 months	
Palliative surgery	
12-15 Prognosis > 1 year	
Excisional surgery	

Scoring System			Prognostic Score	Treatment Goal	Surgical Strategy
Point	Prognostic factors				
	Primary tumor	Visceral mets.*			
1	slow growth (breast, thyroid, etc.)	solitary or isolated	2	Long-term local control	Wide or Marginal excision
			3		
2	moderate growth (kidney, uterus, etc.)	multiple	4	Middle-term local control	Marginal or Intralesional excision
			5		
4	rapid growth (lung, stomach, etc.)	un-treatable	6	Short-term palliation	Palliative surgery
			7		
			8	Terminal care	Supportive care
			9		
			10		

* No visceral mets. = 0 point. ** Bone mets. including spinal mets.

Van der Linden Score

Symptomatic spinal mets, no neurological deficit, no fracture / instability, renal and melanoma excluded, treated with radiotherapy alone – PROGNOSIS:

Karnofsky score:	80-100 (2 points) 50-70 (1 point) 20-40 (0 points)
Primary Tumour:	Breast (3 points) Prostate (2 points) Lung (1 point) Other (0 points)
Visceral Metastases:	No (1 point) Yes (0 points)
Score:	
0-3	Mean survival 4.8 months (3.8-5.7) median 3
4-5	Mean survival 13.1 months (11.3-14.8) median 9
6	Mean survival 18.3 (15.2-21.4) median 18.7

Modified Bauer Score

Spinal mets, no fracture

Score 1 for each of following:

No visceral metastases
No lung cancer
Primary tumour: breast, kidney (lymphoma, myeloma)
Solitary skeletal metastasis

Score:

0-1 Supportive care, no surgery
median survival 4.8 months
2 Short term palliation, dorsal surgery
median survival 18.2 months
3-4 Middle term local control, ventral-dorsal surgery
median survival 28.4 months

Prognostic Factor	Category	Score
Type of tumour	Myeloma/lymphoma	9
	Breast cancer	8
	Prostate cancer	7
	Other tumours	4
Other Bone Metastases*	No	8
	Yes	2
Visceral Metastases*	No	8
	Yes	2
Tumour diagnosis to MESCC	>15 months	7
	≤15 months	4
Ambulatory status pre-treatment	Ambulatory	7
	Non-ambulatory	3
Time to develop motor deficits before treatment	>14 days	8
	8–14 days	6
	1–7 days	3

* At time of radiotherapy

Score	6 month OS	1 year OS	Median OS (months)*
21–25	4%	0%	2
26–30	11%	6%	5
31–35	48%	23%	7
36–40	87%	70%	25
41–45	99%	89%	62

* Estimated OS: overall survival

Spinal Instability Neoplastic Score (SINS)

Location:	Points:
Junctional (Occiput-C2, C7-T2, T11-L1, L5-S1)	3
Mobile spine (C3-6, L2-4)	2
Semi-rigid (T3-10)	1
Rigid (S2-5)	0
Pain relief with recumbency and / or pain with movement / loading spine:	
Yes	3
No (occasional pain, not mechanical)	1
Pain free lesion	0
Bone lesion:	
Lytic	2
Mixed (lytic / blastic)	1
Blastic	0
Radiographic spinal alignment:	
Subluxation / translation	4
De novo deformity (kyphosis / scoliosis)	2
Normal alignment	0
Vertebral body collapse:	
> 50%	3
<50%	2
No collapse > 50% body involved	1
None of above	0
Posterolateral spine involvement: (facet, pedicle or costovertebral joint fracture or Replacement by tumour)	
Bilateral	3
Unilateral	1
None	0

Spine 2011

≥7 = op

Table IV. Oswestry Spinal Metastasis Risk Index (OSRI)

Characteristic	Description	Score*
Primary tumour	Slow growth	1
	Moderate growth	2
	Rapid growth	4
Very rapid growth	Lung	5
	General condition (KPS [†])	
	Good	0
	Moderate	1
	Poor	2

* total score is sum of the two sub-scores. Scoring for general condition has been reversed compared with the revised Tokunashi scoring system to obtain an index of risk

† KPS, Karnofsky Performance Status

Table V. Median survival time in each risk category. The calculation of the Brookmeyer-Crowley 95% confidence interval (CI) was based on log-transformed interval

Risk index	n	Median survival time (95% CI) (mths)	85 th centile of survival time (mths)
1	47	23 (12 to 36)	69
2 or 3	82	6 (4 to 9)	30
4 or 5	43	4 (3 to 5)	12
6	16	2 (1 to 3)	6
7	11	1 (1 to 2)	2



The Spine Journal 15 (2015) 1738–1743



Clinical Study

The surgical management of metastatic spinal tumors based on an Epidural Spinal Cord Compression (ESCC) scale

Nasir A. Quraishi, FRCS (T&O), LLM^{a,*,2}, George Arealis, MD, PhD^a,
Khalid M.I. Salem, FRCS (T&O), DM^a, Sanjay Purushothamdas, FRCS (T&O)^a,
Kimberly L. Edwards, BSc (Hons), MMedSci (distinction), PhD^b,
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^bCentre for Sports Medicine, University of Nottingham, Queens Medical Centre, Derby Rd, Nottingham, NG7 2UH, UK

Received 21 April 2014; revised 11 January 2015; accepted 20 March 2015



The Spine Journal 15 (2015) 1554–1562



Clinical Study

Improved patient selection by stratified surgical intervention: Aarhus Spinal Metastases Algorithm

Miao Wang, MD, PhD^{a,*}, Cody E. Bünger, MD, DMSc^a, Haisheng Li, MD, PhD^a,
Ming Sun, MD PhD^a, Peter Helmig, MD, PhD^a, Gilava Borhani-Khomani, MS^a,
Chun S. Wu, MD, PhD^b, Ebbe S. Hansen, MD, DMSc^a, David Choi, FRCS, PhD^c,
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Received 29 May 2014; revised 20 February 2015; accepted 7 March 2015



The Spine Journal 14 (2014) 2691–2700



Clinical Study

Primary Spinal Tumor Mortality Score (PSTMS): a novel scoring system for predicting poor survival

Zsolt Szövérfi, MD, Aron Lazary, MD, PhD, Árpád Bozsódi, MD, István Klemencsics, MD,
Péter E. Éltés, MD, Péter Pál Varga, MD*

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Development of a Prognostic Survival Algorithm for Patients with Metastatic Spine Disease

Nuno Rui Paulino Pereira, MD, Stein J. Janssen, MD, Eva van Dijk, BSc, Mitchel B. Harris, MD, Francis J. Hornicek, MD, MS, PhD, Marco L. Ferrone, MD, and Joseph H. Schwab, MD, MS

Surgical Candidate

ANY OF THE FOLLOWING:

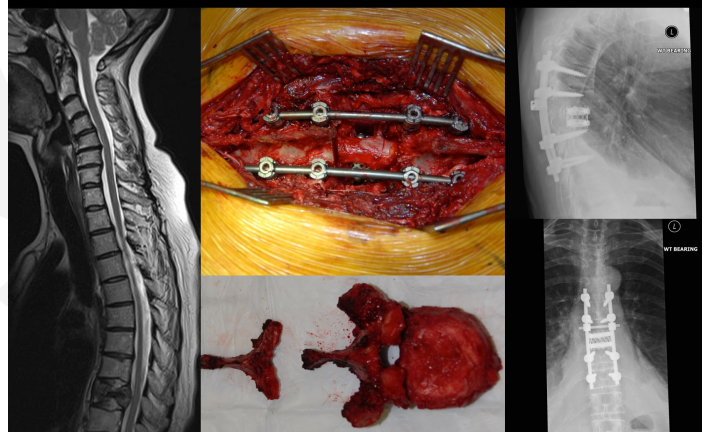
- Progressive / impending neurological deficit
- Spinal instability / collapse / deformity
- Paralysed <24hours
- Intractable pain (including paralysed >24 hours)
- Need histological confirmation
- Growing tumour resistant to non-operative measures
- Relapse after / deterioration during radiotherapy
- Reached spinal cord radiotherapy tolerance

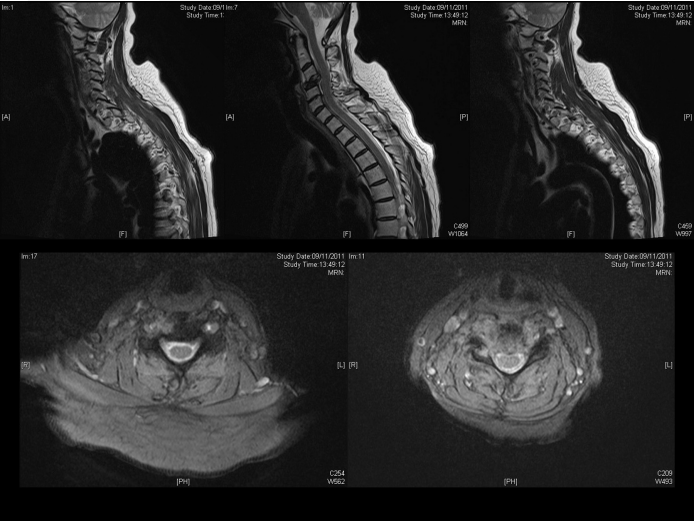
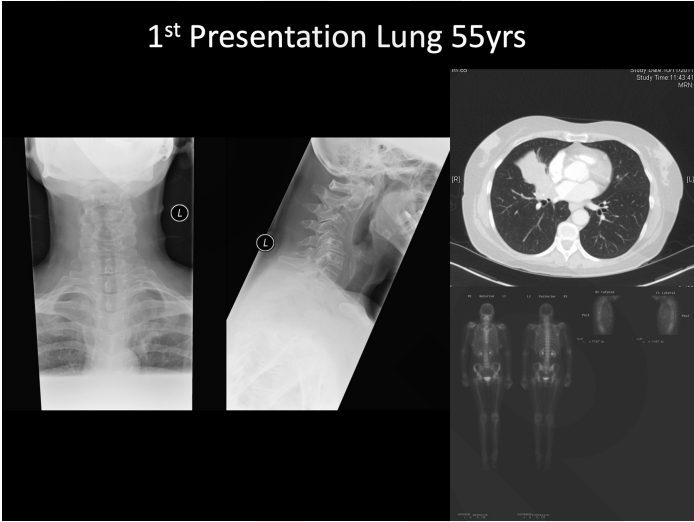
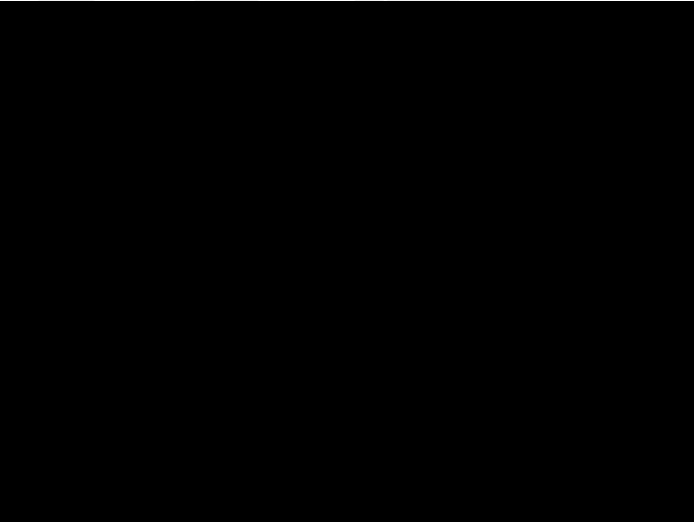
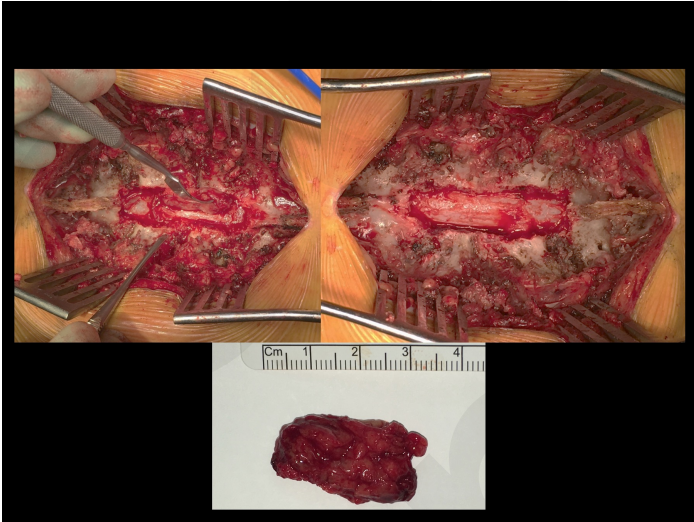
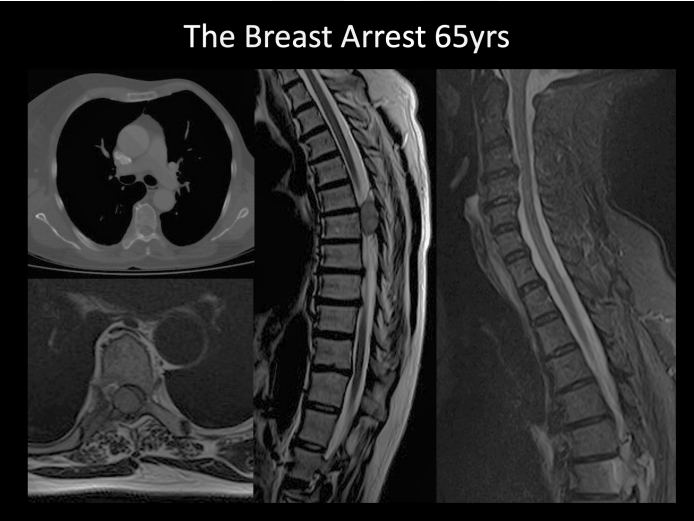
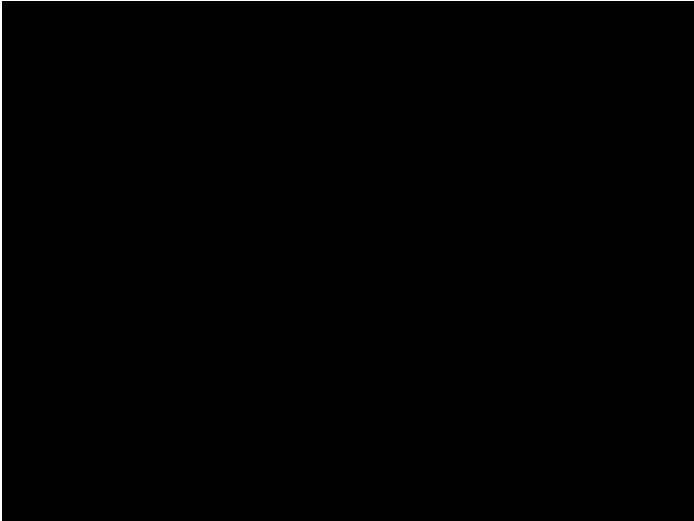
Surgical Candidate

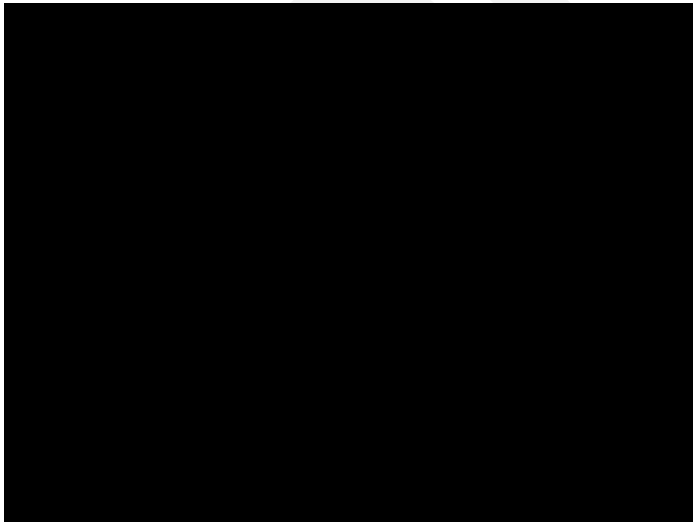
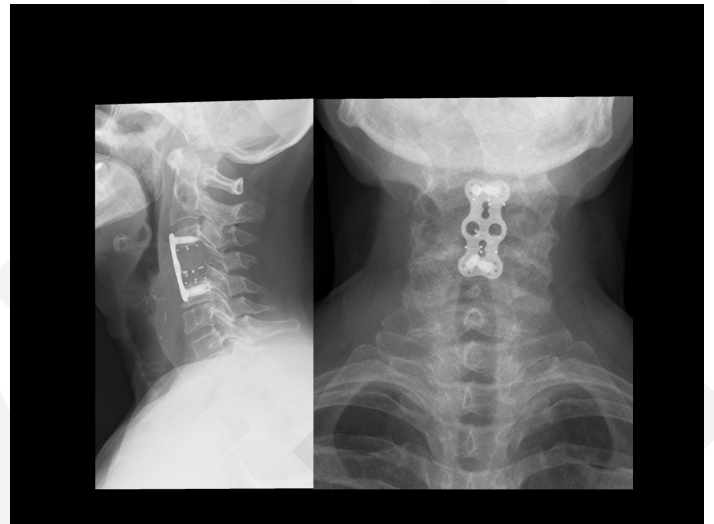
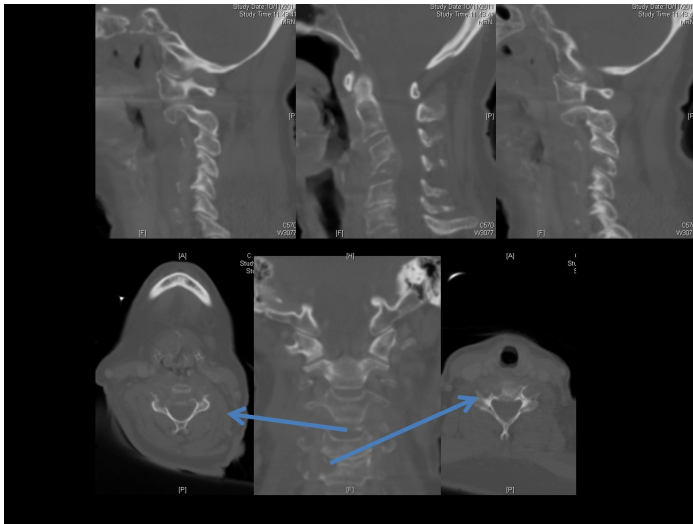
AND ALL OF THE FOLLOWING:

- Prognosis >3-4/12
- Patient willing to have surgery
- Surgery is technically possible

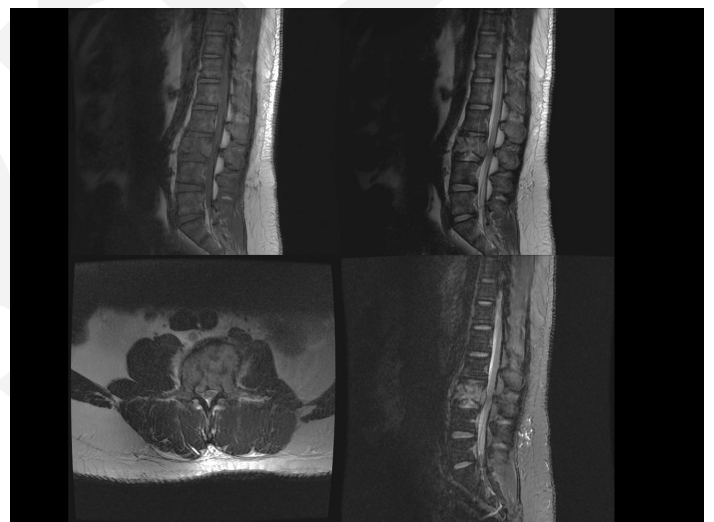
T9 Tomita Urachal Tumour 45yrs



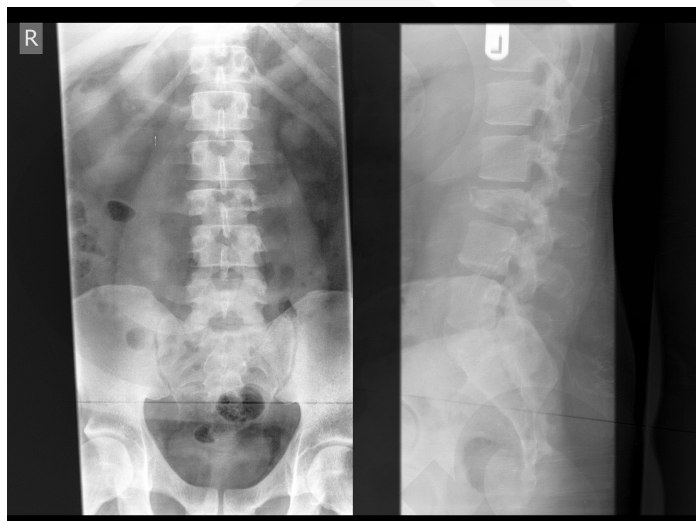
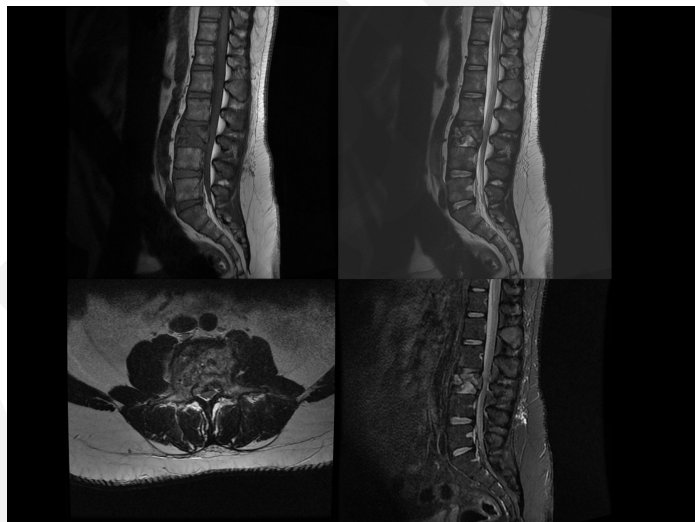




- 30 year old man
- Insidious onset low back pain
- Gradually worsening
- Unable to stand up



- Still getting worse
- 6 weeks later
- Biopsy x2 negative
- Rpt MRI



- Discussed at MDTM
- What now...
- Young man something nasty going on...

