

Community-Based Primary Palliative Care Community of Practice Series 3

Procedural management of complex pain: Nerve blocks, vertebral augmentation, radiotherapy



Facilitator: Dr. Nadine Gebara

Guest Speakers: Dr. Roger Smith, Dr. Eric Massicotte & Dr. Michael Yan

Date: February 21, 2024

Territorial Honouring



The Palliative Care ECHO Project

The Palliative Care ECHO Project is a 5-year national initiative to cultivate communities of practice and establish continuous professional development among health care providers across Canada who care for patients with life-limiting illness and their families.

Stay connected: www.echopalliative.com

The Palliative Care ECHO Project is supported by a financial contribution from Health Canada. The views expressed herein do not necessarily represent the views of Health Canada.



LEAP Core

- Interprofessional course that focuses on the essential competencies to provide a palliative care approach.
- Taught by local experts who are experienced palliative care clinicians and educators.
- Delivered online or in-person.
- Ideal for any health care professional (e.g., physician, nurse, pharmacist, social worker, etc.) who provides care for patients with life-threatening and progressive life-limiting illnesses.
- Accredited by the CFPC and Royal College.



Learn more about the course and topics covered by visiting

www.pallium.ca/course/leap-core

Objectives of this Series

After participating in this series, participants will be able to:

- Augment their primary-level palliative care skills with additional knowledge and expertise related to providing a palliative care approach.
- Connect with and learn from colleagues on how they are providing a palliative care approach.

Overview of Sessions

Session #	Session Title	Date/ Time
Session 1	Communication: Part 1	Oct 25, 2023 from 12:30-1:30pm ET
Session 2	Communication: Part 2	Nov 29, 2023 from 12:30-1:30pm ET
Session 3	Managing the last hours of life	Dec.20, 2020 from 12:30-1:30pm ET
Session 4	Palliative care for the structurally vulnerable	Jan 24, 2024 from 12:30-1:30pm ET
Session 5	Procedural management of complex pain: Nerve blocks, vertebral augmentation, radiotherapy	Feb 21, 2024 from 12:30-1:30pm ET
Session 6	Terminal Delirium and Palliative Sedation	Mar 27, 2024 from 12:30-1:30pm ET
Session 7	Creative art therapy in palliative care	Apr 24, 2024 from 12:30-1:30pm ET
Session 8	What in store for Palliative Care in Canada: policy, advocacy and implementation	May 29, 2024 from 12:30-1:30pm ET
Session 9	Grief and Bereavement: Beyond the Basics	June 26, 2024 from 12:30-1:30pm ET

Welcome & Reminders

- Please introduce yourself in the chat! Let us know what province you are joining us from, your role and your work setting
- Your microphones are muted. There will be time during this session when you can unmute yourself for questions and discussion.
- You are welcome to use the chat function to ask questions and add comments throughout the session
- This session is being recorded and will be emailed to registrants within the next week.
- Remember not to disclose any Personal Health Information (PHI) during the session
- This 1-credit-per-hour Group Learning program has been certified by the College of Family Physicians of Canada for up to **9 Mainpro+** credits.

Disclosure

Relationship with Financial Sponsors:

Pallium Canada

- Not-for-profit
- Funded by Health Canada

Disclosure

This program has received financial support from:

- Health Canada in the form of a contribution program
- Generates funds to support operations and R&D from Pallium Pocketbook sales and course registration Fees

Facilitator/ Presenters:

- Dr. Nadine Gebara: Nothing to disclose
- Dr. Roger Smith: Nothing to disclose
- Dr. Eric Massicotte: Nothing to disclose
- Dr. Michael Yan: Nothing to disclose

Disclosure

Mitigating Potential Biases:

- The scientific planning committee had complete independent control over the development of course content

Introductions

Facilitator:

Dr. Nadine Gebara, MD CCFP- PC

Clinical co-lead of this ECHO series

Palliative Care Physician at Toronto Western Hospital, University Health Network

Family Physician at Gold Standard Health, Annex

Panelists:

Dr. Haley Draper, MD CCFP- PC

Clinical co-lead of this ECHO series

Palliative Care Physician at Toronto Western Hospital, University Health Network

Family Physician at Gold Standard Health, Annex

Dr. Roger Ghoche, MDCM CCFP-PC, MTS

Palliative Care and Rehabilitation Medicine, Mount Sinai Hospital- Montreal

Jill Tom, BSN CHPCN ©

Nurse Clinician for palliative Home Care

Mount Sinai Hospital, Montreal

Introductions

Panelists (continued):

Elisabeth Antifeau, RN, MScN, CHPCN(C), GNC(C)

Regional Clinical Nurse Specialist (CNS-C), Palliative End of Life Care

IH Regional Palliative End of Life Care Program

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Spiritual Care Provider

Support Team

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Palliative Care ECHO Project Manager, Pallium Canada

Introductions

Guest Speakers:

Roger Smith, MB ChB, FRCSE

Neuroradiologist, Assistant Professor
Departments of Medical Imaging and Neurosurgery
Co-Director Multidisciplinary Metastatic Spine Clinic
University Health Network

Eric M. Massicotte MD, MSc, MBA, FRCSC

Associate Professor University of Toronto,
Staff Neurosurgeon, University Health Network
Co-Director, Multidisciplinary Metastatic Spine Clinic
Medical Director, Back & Neck Program Altum Health

Michael Yan, MD MPH FRCPC DABR

Radiation Oncologist, Radiation Medicine Program
Clinician-Investigator, Princess Margaret Cancer
Centre, University Health Network
Assistant Professor, Department of Radiation
Oncology, University of Toronto

Procedural Management of Complex Pain

Multi-Disciplinary Metastatic Spine Clinic (TW-MMSC)

Eric M. Massicotte, MD, MSc, MBA, FRCSC
Associate Professor, University of Toronto
Co-Director, MMSSC

Roger Smith, MB ChB, FRCSE
Assistant Professor, University of Toronto
Co-Director, MMSSC

Michael Yan, MD, MPH, FRCPC DABR
Assistant Professor, University of Toronto
Clinician Investigator

Traditional Model of Care

Member Cen

ent Policy & Research

ne Definitions Who is inc

Discipl

Select a d

Choose" to view its definition:

Discipline

Select discipline from drop down list

Discipline

✓ Neuroradiology

Choos

Discipline

Neuroradi
imaging and
Diagnostic

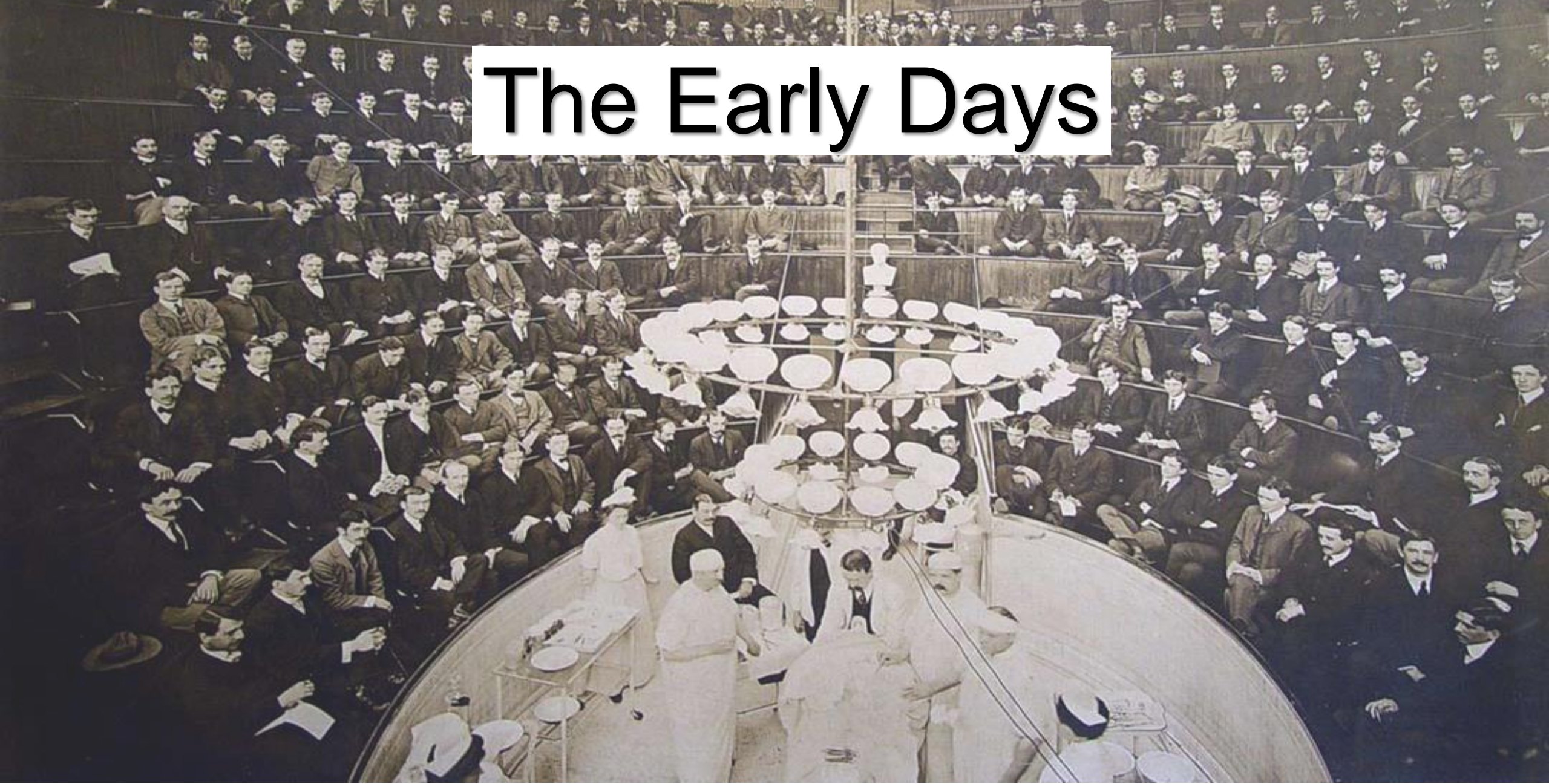
- Orthopedic Surgery
- Otolaryngology - Head and Neck Surgery
- Pain Medicine
- Pediatric Emergency Medicine
- Pediatric Hematology/Oncology
- Pediatric Radiology
- Pediatric Surgery
- Pediatrics

Note: The dir
have been ap
College webs

ize and diagnose disease through radiology. This subspecialty field includes areas such as
inal cord, head, neck, and organs of special senses in adults and children. It is a subspecialty of

individual credentialed as being qualified within the discipline. For information on disciplines that
(new Areas of Focused Competence), please visit the [Information by Discipline page](#) on the Royal

The Early Days



Modern Operating Suite



Characteristic	Score
Spine location	
Junctional (occiput–C2, C7–T2, T11–L1, L5–S1)	3
Mobile spine (C3–C6, L2–L4)	2
Semirigid spine (T3–T10)	1
Rigid spine (S2–S5)	0
Mechanical or postural pain	
Yes	3
No (occasional pain but not mechanical)	1
Pain-free lesion	0
Bone lesion quality	
Lytic	2
Mixed lytic/blastic	1
Blastic	0
Radiographic spinal alignment	
Subluxation/translation present	4
De novo deformity (kyphosis/scoliosis)	2
Normal alignment	0
Vertebral body involvement	
>50% collapse	3
<50% collapse	2
No collapse, with >50% of the body involved	1
None of the above	0
Posterior involvement	
Bilateral	3
Unilateral	1
None of the above	0

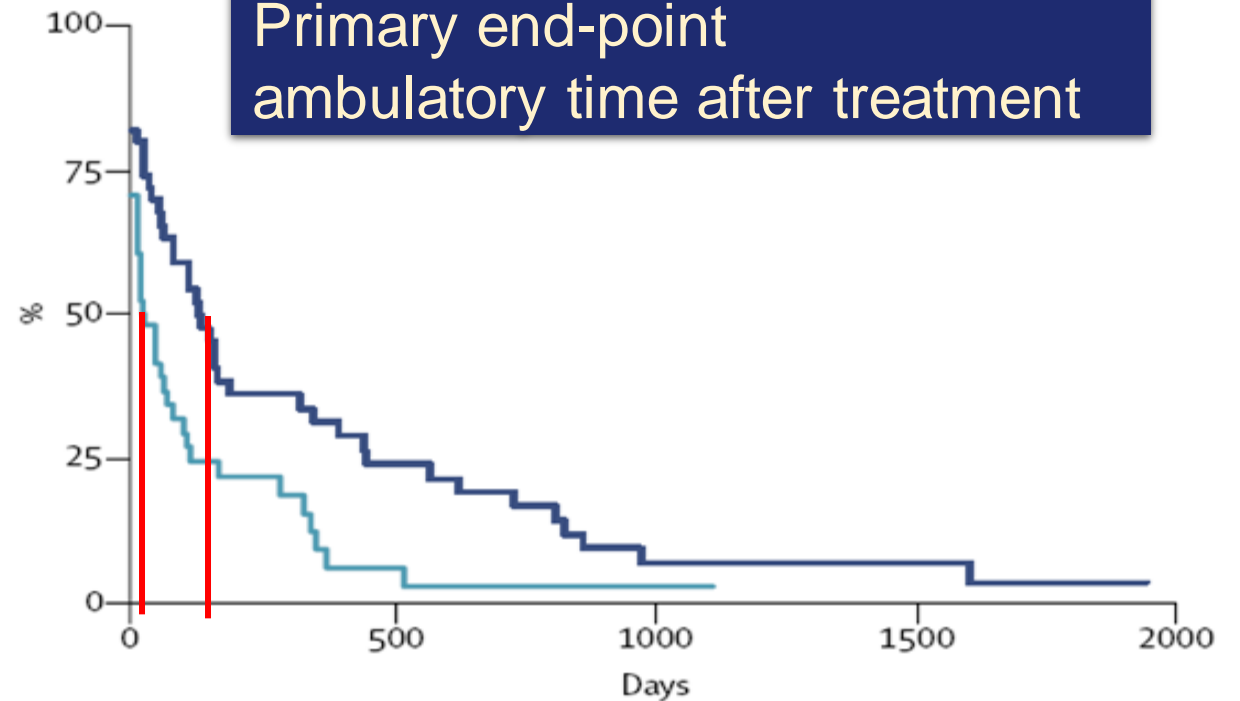
SINS

*Spine
Instability
Neoplasia
Score*

Surgery over radiation

Patchell et al. Lancet 2005; 366:643-48

Difference



Number at risk

Surgery	50	16	10	7	3	3	2	1	1
Radiation	51	7	2	1	1	0	0	0	0

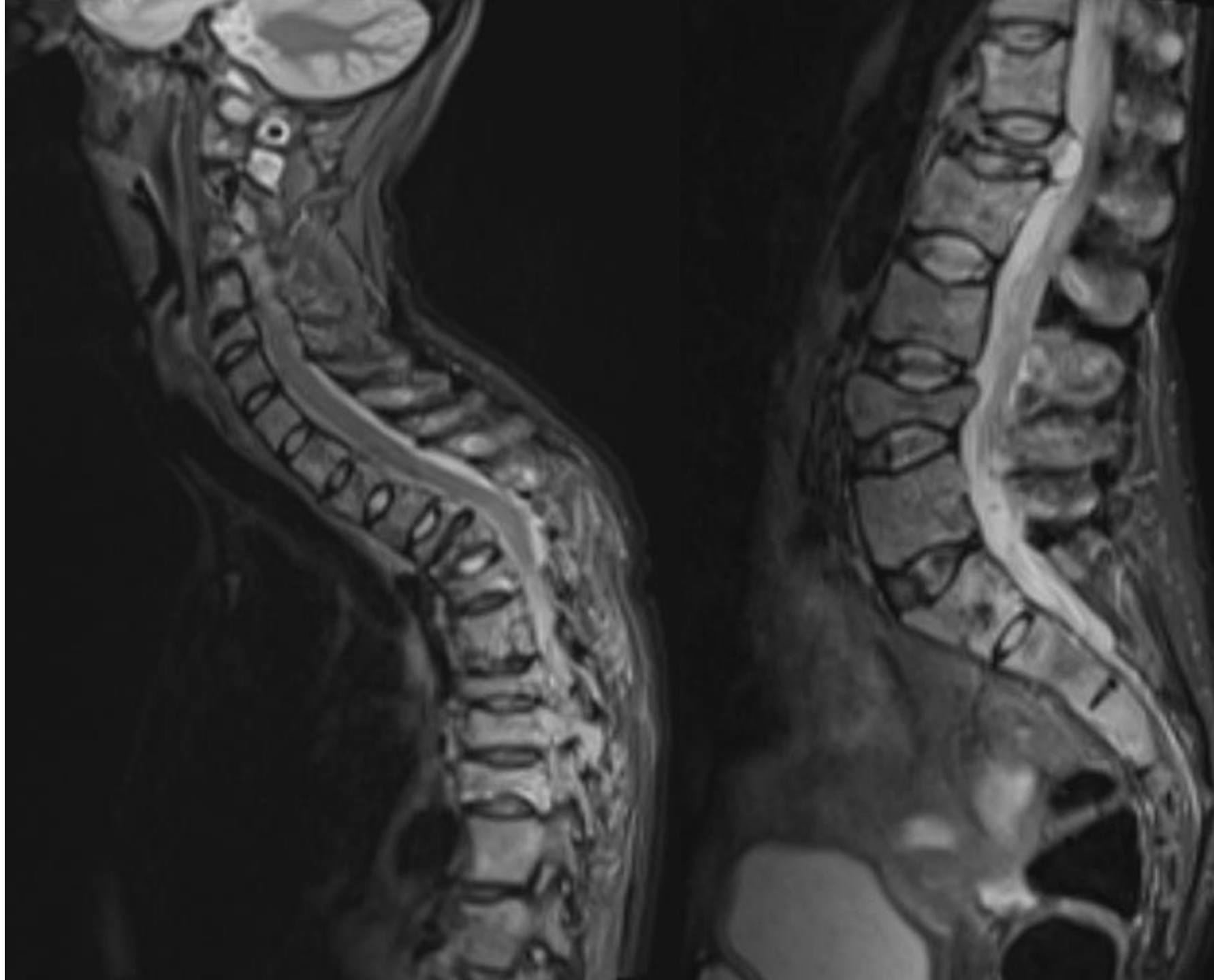
S+RT median post treatment ambulation = 122 days

RT median post treatment ambulation = 13 days



Simple Case - One Level

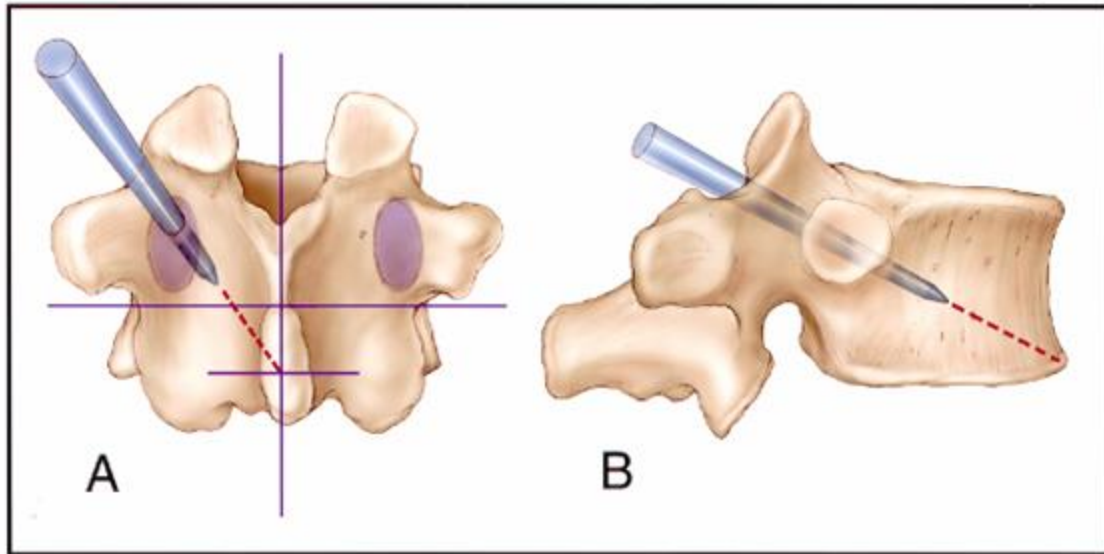
Complex Case Multi-Level



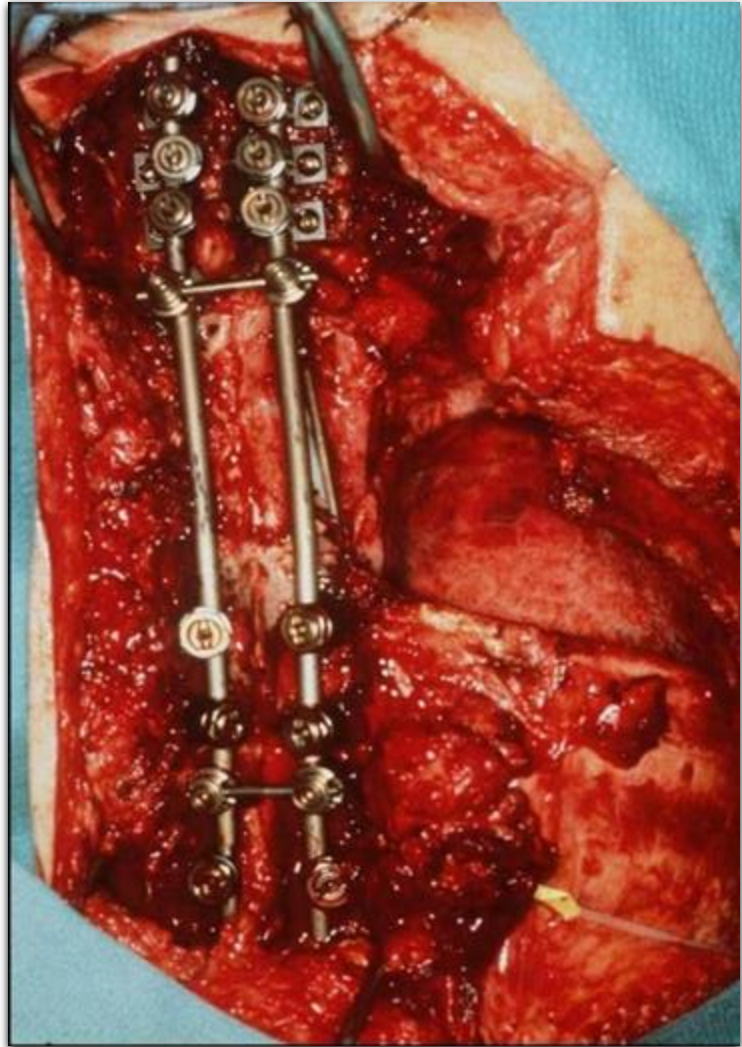
Percutaneous vertebroplasty and kyphoplasty for painful vertebral body fractures in cancer patients

DARYL R. FOURNEY, M.D., F.R.C.S.(C), DONALD F. SCHOMER, M.D., REMI NADER, M.D., JENNIFER CHLAN-FOURNEY, PH.D., DIMA SUKI, PH.D., KAMRAN AHRAR, M.D., LAURENCE D. RHINES, M.D., AND ZIYA L. GOKASLAN, M.D.

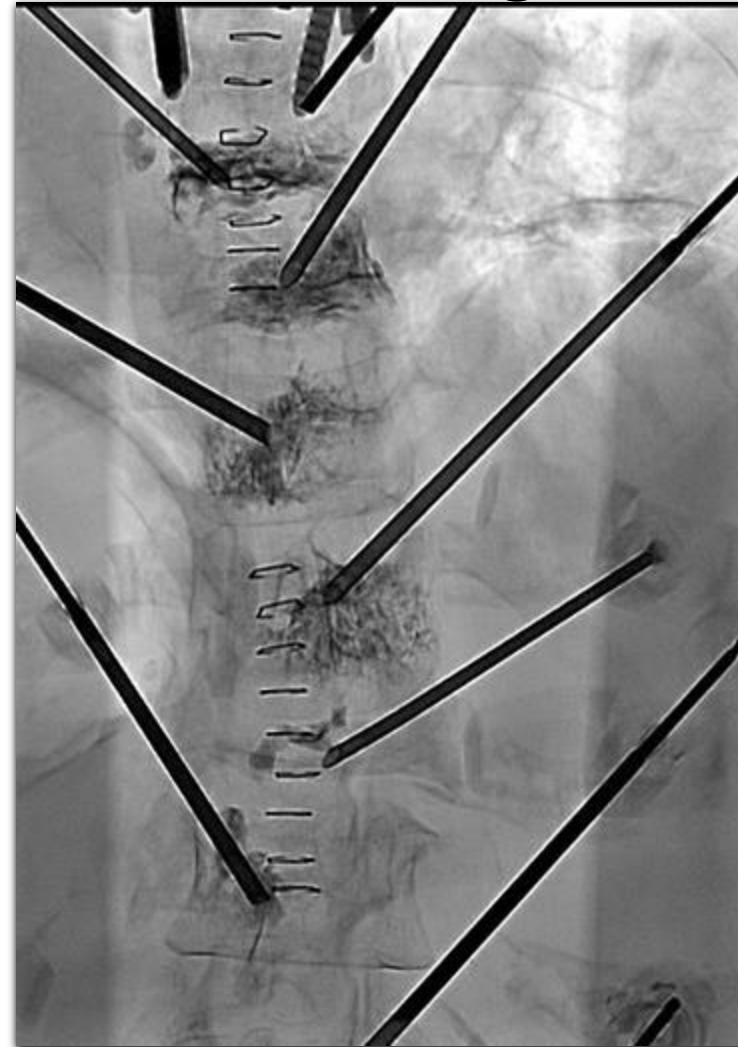
Departments of Neurosurgery and Radiology, The University of Texas M. D. Anderson Cancer Center, Houston, Texas; and Department of Neurosurgery, Johns Hopkins University, Baltimore, Maryland



Surgery



Vertebral Augmentation



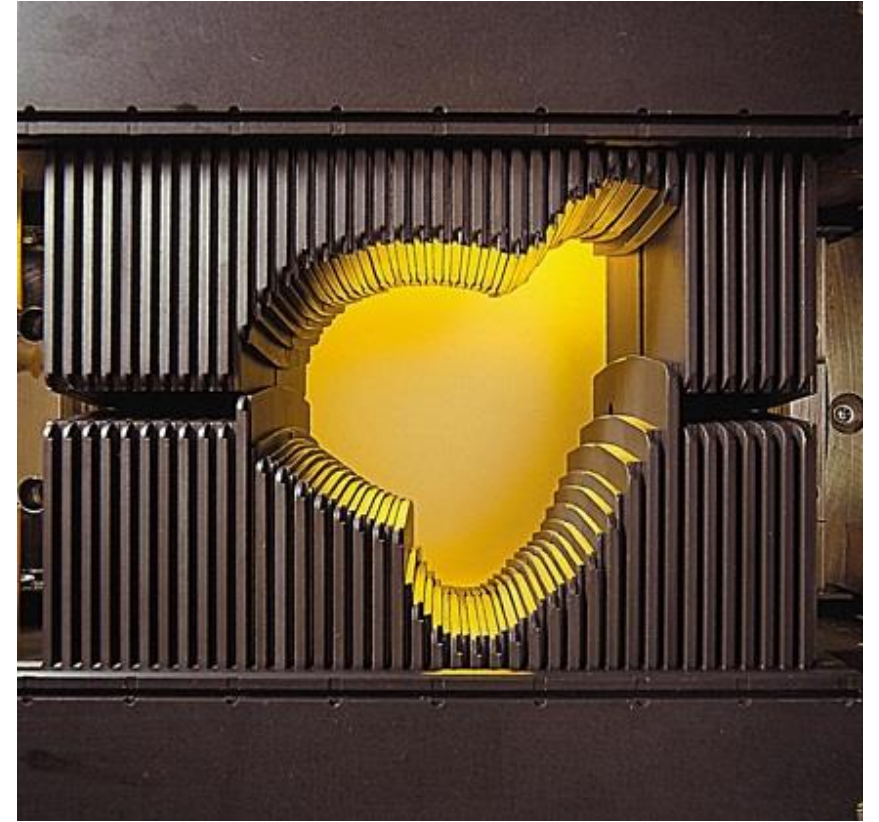
Radiotherapy



Immobilization

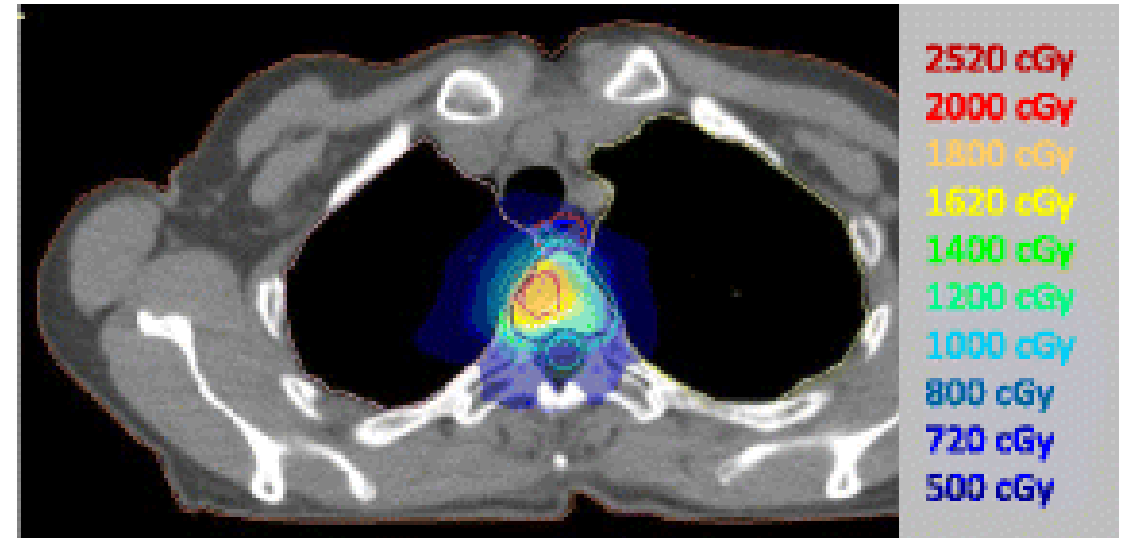
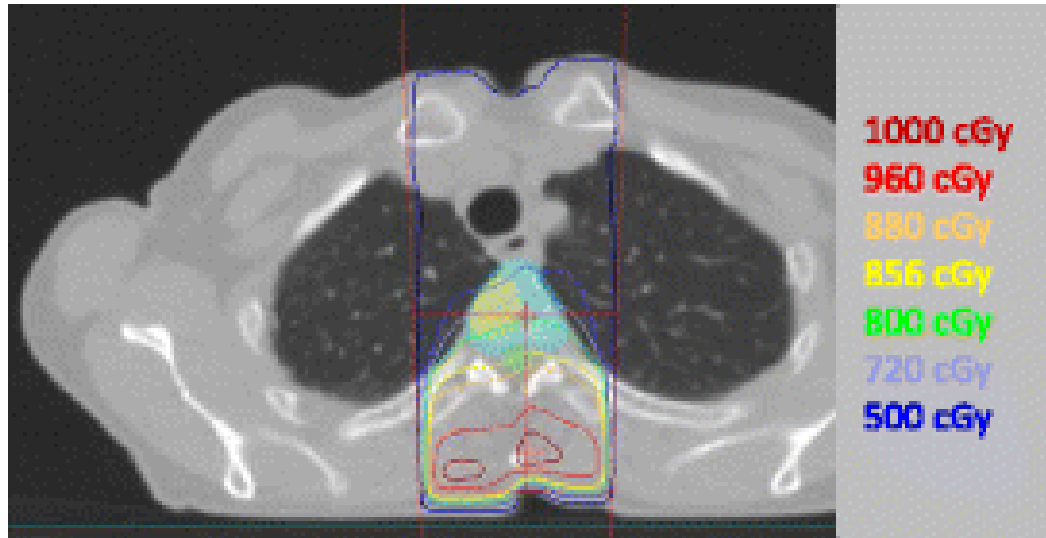


Radiation Technology



Conventional RT

SBRT



SBRT vs. conventional RT

Stereotactic body radiotherapy versus conventional external beam radiotherapy in patients with painful spinal metastases: an open-label, multicentre, randomised, controlled, phase 2/3 trial

Arjun Sahgal, Sten D Myrehaug, Shankar Siva, Giuseppina L Masucci, Pejman J Maralani, Michael Brundage, James Butler, Edward Chow, Michael G Fehlings, Mathew Foote, Zsolt Gabos, Jeffrey Greenspoon, Marc Kerba, Young Lee, Mitchell Liu, Stanley K Liu, Isabelle Thibault, Rebecca K Wong, Maaiké Hum, Keyue Ding, Wendy R Parulekar, on behalf of the trial investigators*

	Conventional external beam radiotherapy group (n=115)	Stereotactic body radiotherapy group (n=114)	p value
1-month assessment			
Complete response	20 (17%)	30 (26%)	0.10*
Partial response	33 (29%)	34 (30%)	..
Stable pain	38 (33%)	26 (23%)	..
Progressive pain	14 (12%)	9 (8%)	..
Indeterminant	10 (9%)	15 (13%)	..
Mean daily OME consumption, mg	44 (122)	27 (95)	0.26
3-month assessment			
Complete response	16 (14%)	40 (35%)	0.0002*
Partial response	29 (25%)	20 (18%)	..
Stable pain	34 (30%)	27 (24%)	..
Progressive pain	14 (12%)	7 (6%)	..
Indeterminant	22 (19%)	20 (18%)	..
Mean daily OME consumption, mg	43 (106)	37 (97)	0.70
Mean change in SINS from baseline	-0.49 (1.61)	-0.94 (1.69)	0.034
6-month assessment			
Complete response	18 (16%)	37 (32%)	0.0036*
Partial response	18 (16%)	10 (9%)	..
Stable pain	32 (28%)	26 (23%)	..
Progressive pain	8 (7%)	5 (4%)	..
Indeterminant	39 (34%)	36 (32%)	..
Mean daily OME consumption, mg	36 (126)	36 (84)	1.00
Mean change in SINS from baseline	-0.74 (1.99)	-0.73 (1.86)	0.88

Data are n (%) or mean (SD). Pain responses at 1, 3, and 6 months after treatment relative to baseline assessments were based on International Consensus on Palliative Radiotherapy Endpoints. OME=oral morphine equivalent. SINS=Spinal Instability in Neoplasia Score. *Adjusted for stratification factors of histology (radioresistant vs radiosensitive), and the the presence or absence of mass-type tumour (extraosseous or epidural disease extension, or both) on imaging.

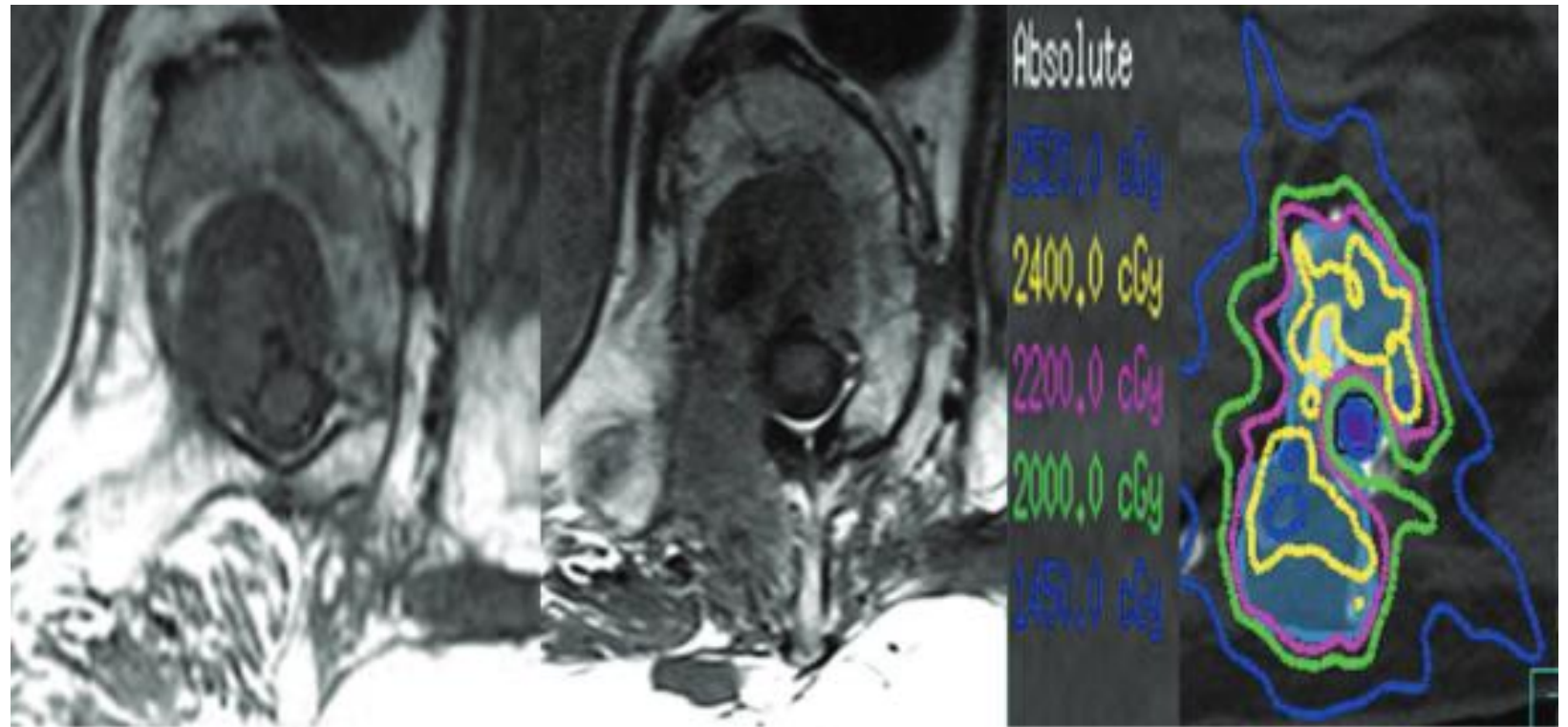
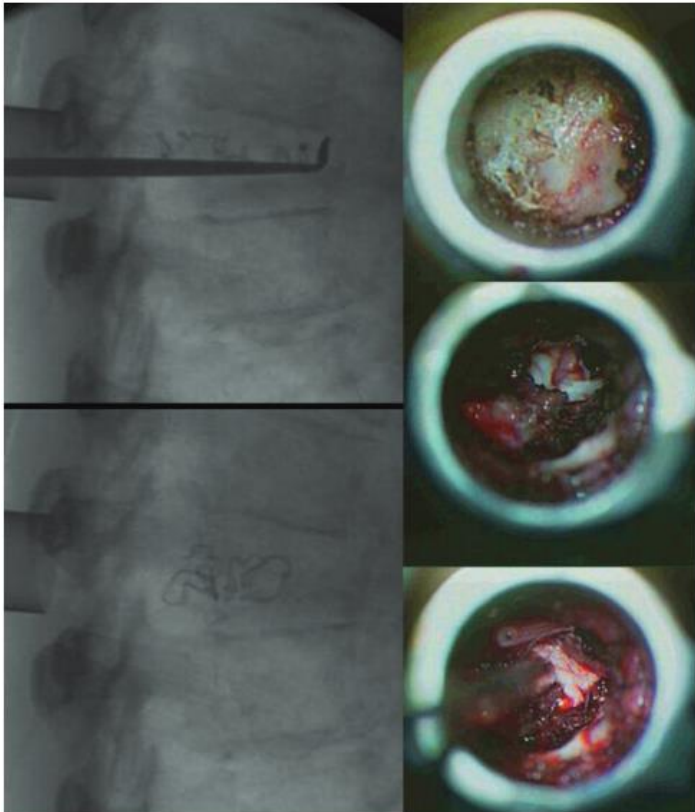
Table 3: Pain responses, mean daily OME consumption, and change in SINS score from baseline to 1, 3, and 6 months after treatment

Separation Surgery and SBRT

Minimal Access Spine Surgery (MASS) for Decompression and Stabilization Performed as an Out-Patient Procedure for Metastatic Spinal Tumours Followed by Spine Stereotactic Body Radiotherapy (SBRT): First Report of Technique and Preliminary Outcomes

Eric Massicotte, M.D.,
F.R.C.S.C.^{1*}
Matthew Foote, M.D.,
F.R.A.N.Z.C.R.²
Rajesh Reddy, M.B.B.S.,
F.R.A.C.S.¹
Arjun Sahgal, M.D.,
F.R.C.P.C.^{2,3}

www.tcr.org



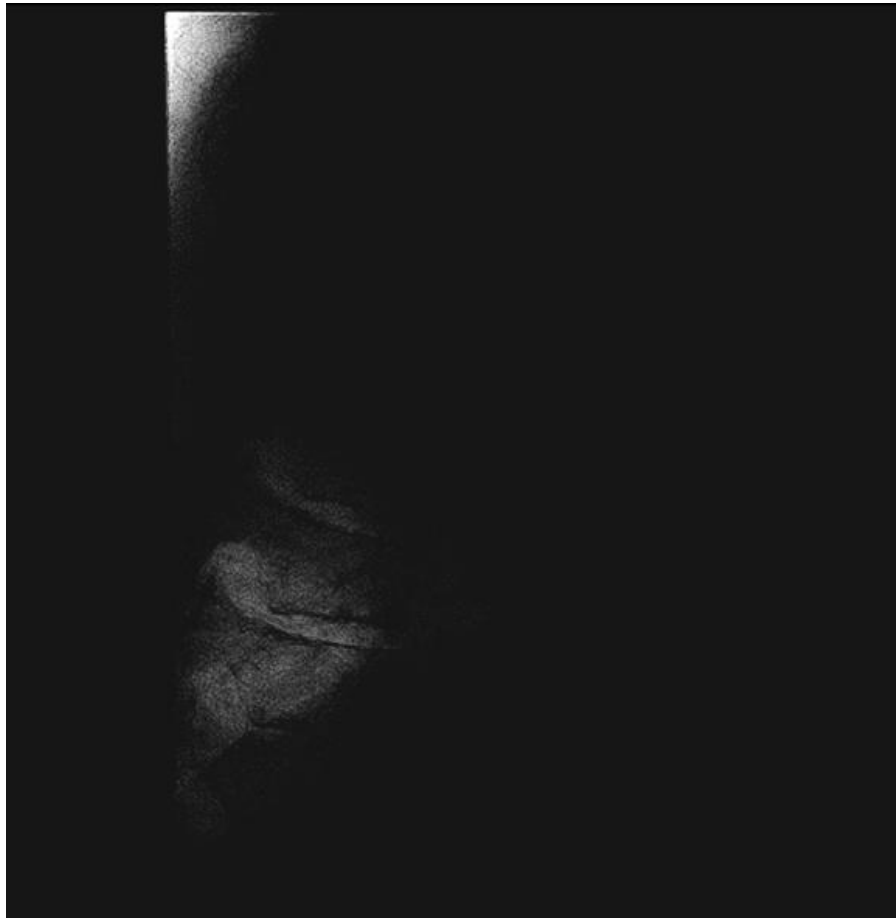
In a world of pain and pain management where does vertebral augmentation fit in?

- Multiple factors contributing to pain generation
- Radiation and chemotherapy treat tumour and cancer
- Neither of them address the mechanical pain generated by the fracture
- These fractures may be macro or microscopic (internal)
- Steroids (dexamethasone, prednisone) reduce edema – ‘apparent’ pain relief
 - consequences: osteoporosis, systemic, only effective when on them

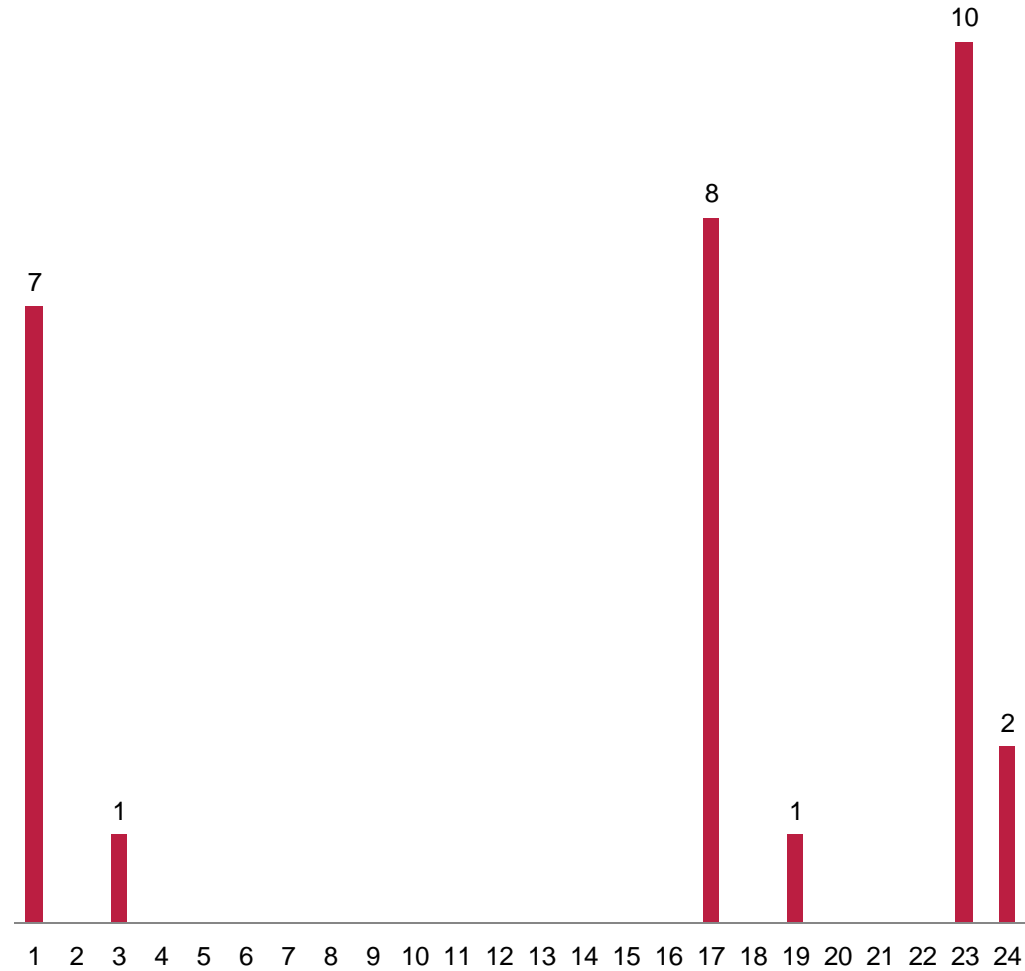
Case #1

Primary amyloid

Severe pain greater than 7/10



Pain over time (months)



Mechanical pain (Outcome)

Case #1

(T6 #)

Performed a balloon kyphoplasty

VAS Pain relief from 10/10 – 2/10

Able to drive home after BKP

Able to resume activities of daily living within 1 week

Stopped opiates within 1 week

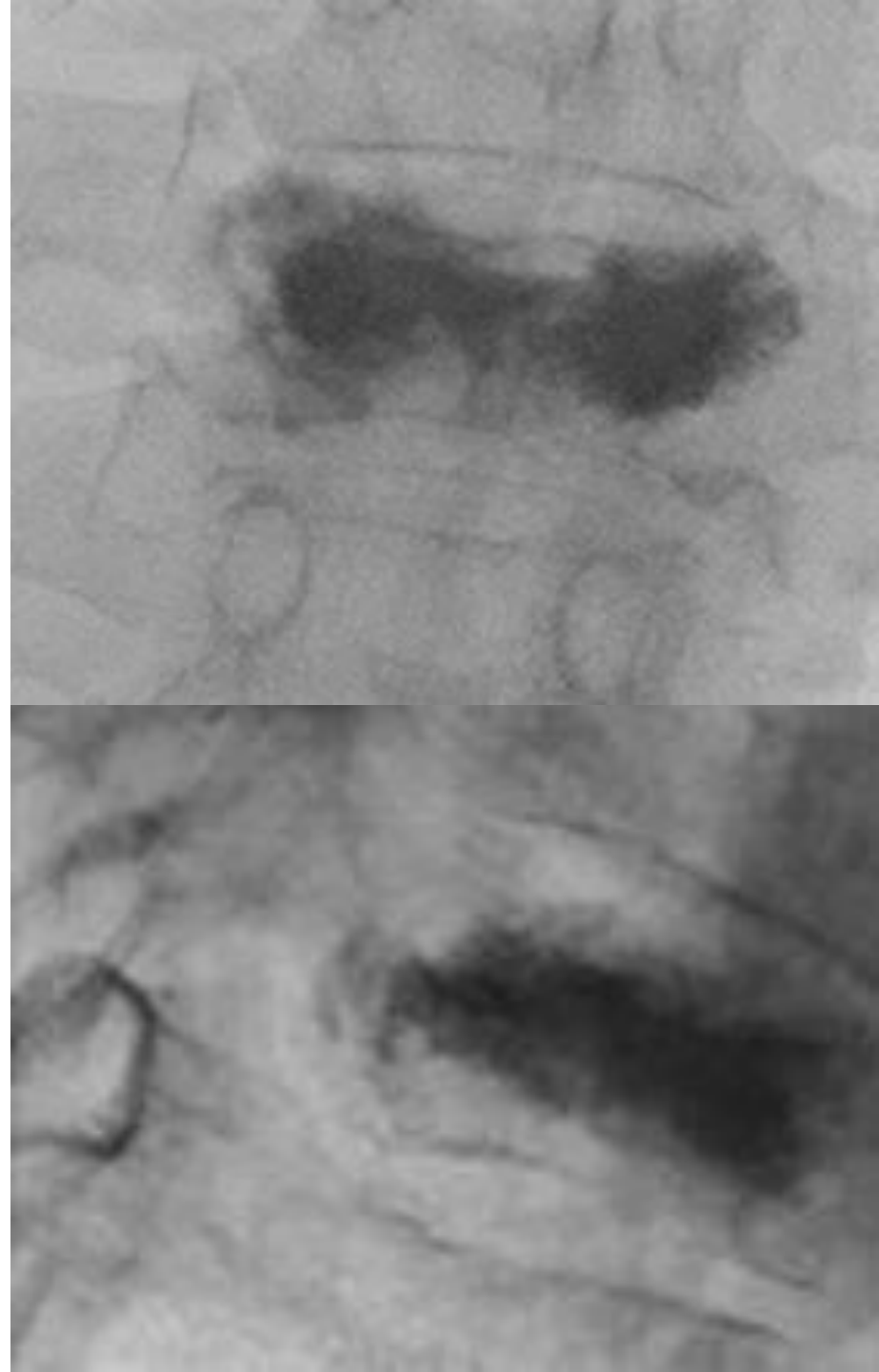


Immediate benefit/results

- Refer to Case #1
- Pain at rest with respiration prior immediately relieved by stabilization
- Procedure took <1 hour
- Can be repeated
- Low risk
- Can be performed without interrupting radiation, chemotherapy plans
- Can be performed immediately after radiation

Balloon Kyphoplasty

- Fracture reduction
- Height restoration
- Immobilization
- Pain relief +++



Health Quality Ontario

The provincial advisor on the quality of health care in Ontario

Vertebral Augmentation Involving Vertebroplasty or Kyphoplasty for Cancer-Related Vertebral Compression Fractures: OHTAC Recommendation

ONTARIO HEALTH TECHNOLOGY ADVISORY COMMITTEE RECOMMENDATIONS

- The Ontario Health Technology Advisory Committee recommends that vertebral augmentation (either vertebroplasty or kyphoplasty) be publicly funded and made accessible for appropriately selected cancer patients with vertebral compression fractures
- The Ontario Health Technology Advisory Committee recommends that Cancer Care Ontario provide the provincial oversight for vertebral augmentation services for cancer patients and work with clinical experts to determine the criteria needed for patient selection for kyphoplasty and vertebroplasty

BACKGROUND

With increasing survival among cancer patients, spinal lesions occur more frequently during disease progression. Cancers that metastasize to the spine, as well as other cancers such as multiple myeloma, can cause vertebral compression fractures or instability.

Conservative strategies including bed rest, bracing, and analgesics can be ineffective, leading to continued pain and progressive functional disability, limiting mobility and self-care. Surgery is usually not an option for cancer patients in advanced disease states owing to their poor medical or functional status and limited life expectancy. Vertebral augmentation—vertebroplasty and kyphoplasty—are minimally invasive treatment options for these cancer patients.

Health Quality Ontario conducted a health technology assessment to assess the safety and effectiveness of vertebroplasty or kyphoplasty as a treatment option for cancer patients with vertebral fractures. In addition, it commissioned the Ottawa Hospital Research Institute to evaluate the cost-effectiveness of vertebroplasty or kyphoplasty compared with the non-surgical management of cancer-related vertebral compression fractures and to conduct a budget impact analysis.

Let's make our health system healthier



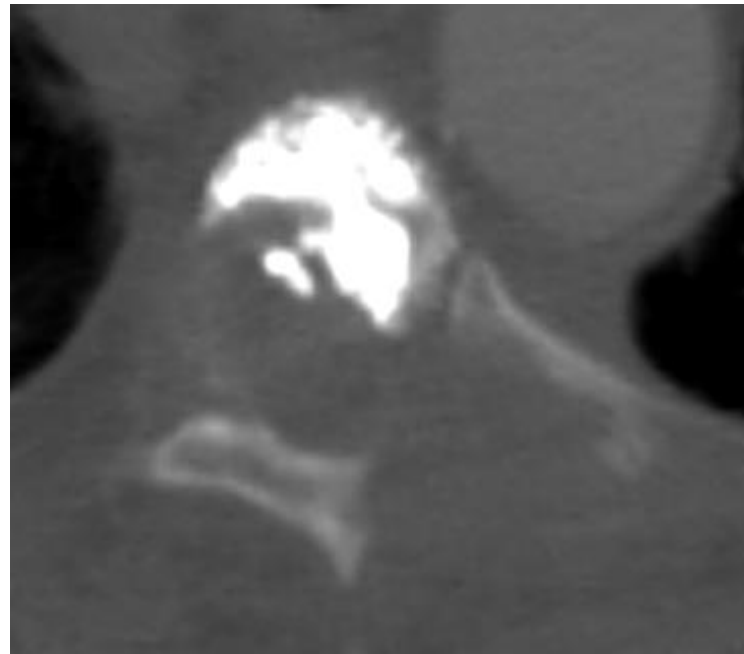
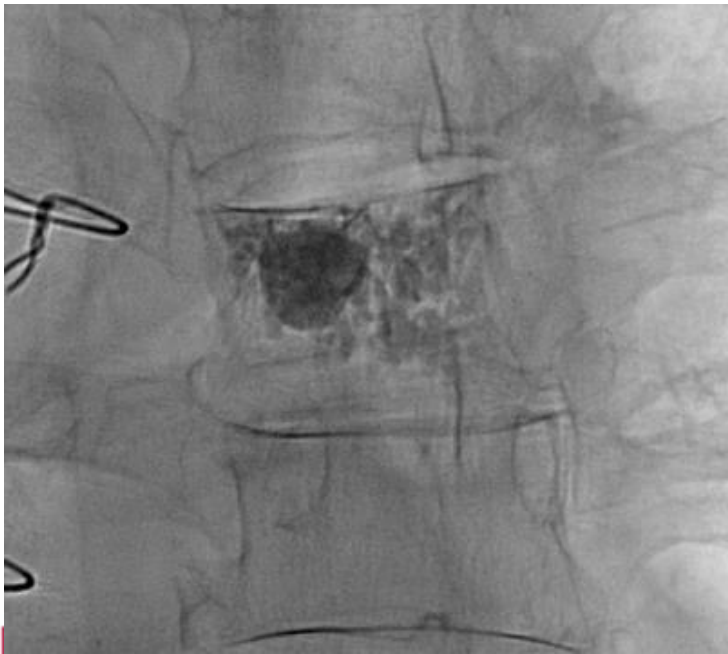
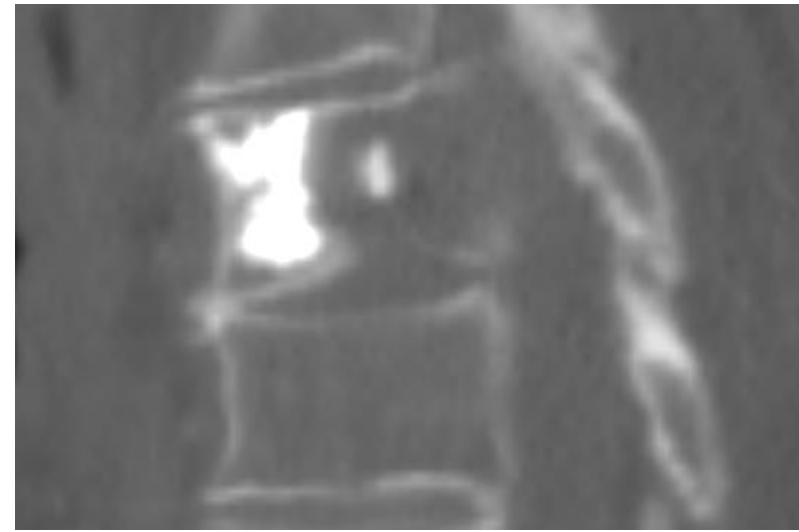
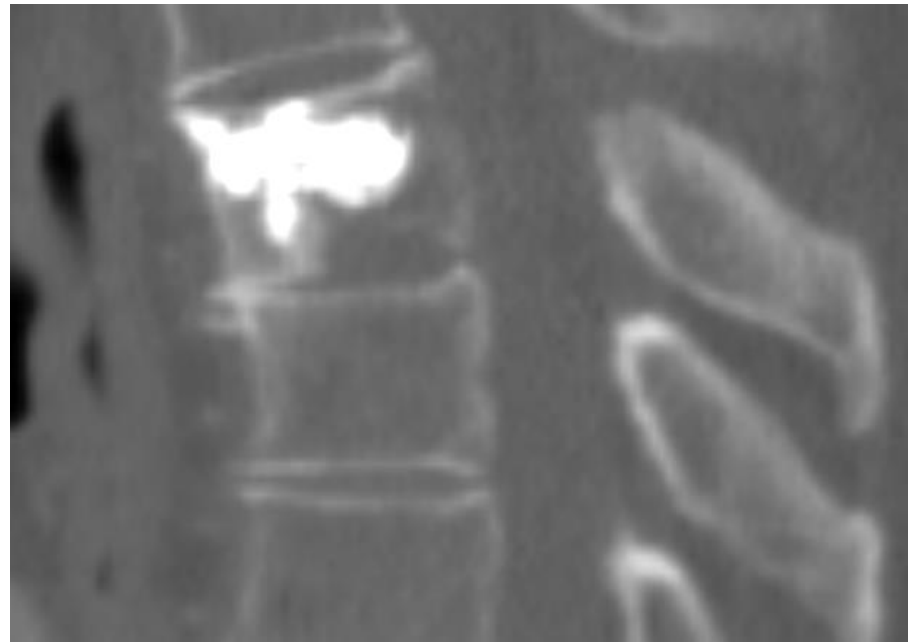
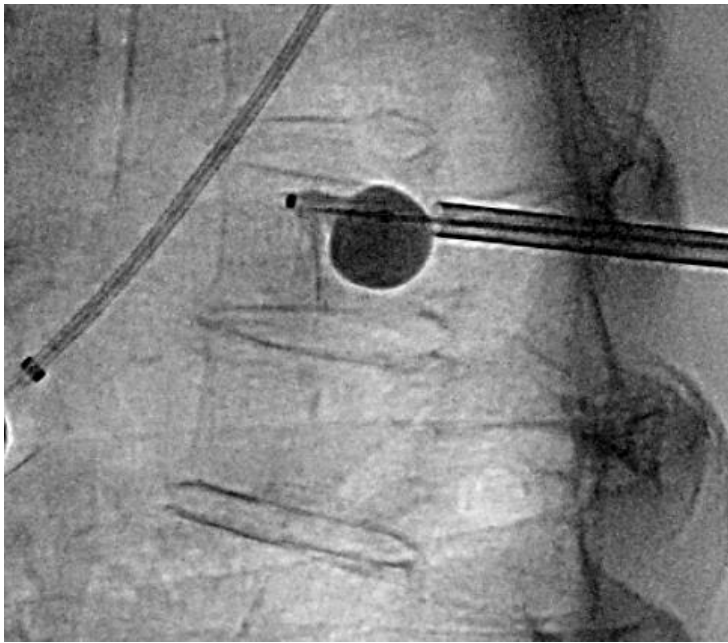
GUIDANCE FOR KYPHOPLASTY AND VERTEBROPLASTY FOR CANCER PATIENTS IN ONTARIO:

Recommendations Report 2017

Kyphoplasty and Vertebroplasty Working Group

Interventional Oncology Steering Committee





Case #2

M 81, Lung Ca on chemo post radiation therapy. Lytic metastasis with absent cortex and endplate fracture. NO pain immediately post kyphoplasty in day surgery

GUIDANCE FOR KYPHOPLASTY AND VERTEBROPLASTY FOR CANCER PATIENTS IN ONTARIO:
Recommendations Report 2017

Kyphoplasty and Vertebroplasty Working Group
Interventional Oncology Steering Committee



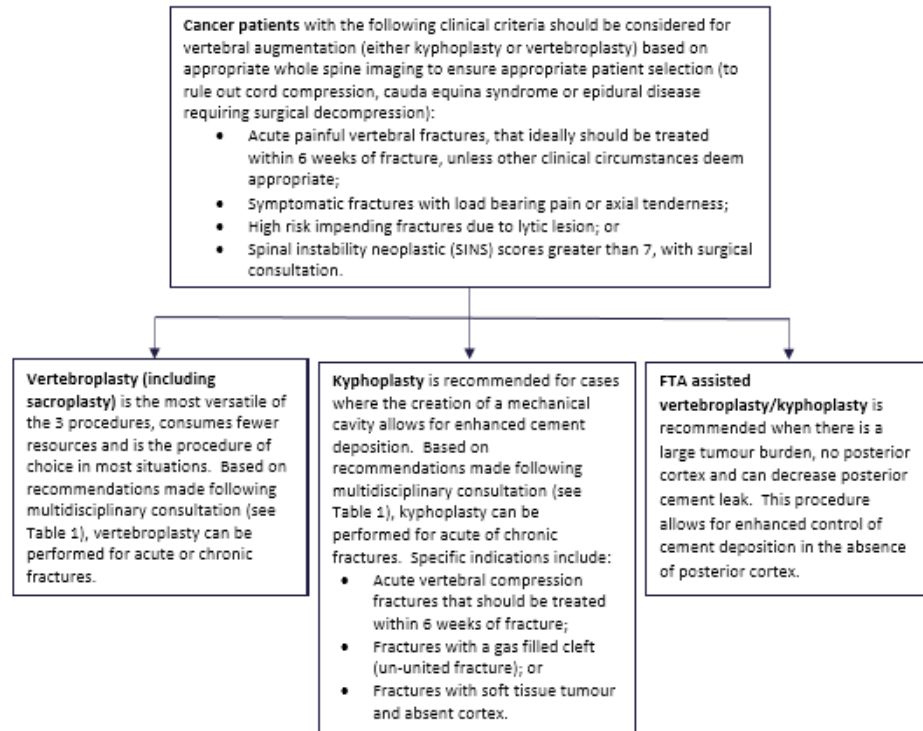
Recommendations for Vertebral Augmentation involving Kyphoplasty or Vertebroplasty for Cancer-Related Vertebral Compression Fractures

The following recommendations leverage a systematic review (3) conducted by HQO in May 2016 and are derived from a limited evidentiary base comparing kyphoplasty and vertebroplasty (4, 5). These recommendations are also informed by consensus expert opinion of the Kyphoplasty and Vertebroplasty Working Group (membership included in Appendix A) and the Interventional Oncology Steering Committee at Cancer Care Ontario.

Clinical Criteria

The following figure describes the clinical criteria for when vertebroplasty, focal tumour ablation (FTA) assisted vertebroplasty/kyphoplasty and kyphoplasty should be performed for cancer patients.

FIGURE 1: CLINICAL CRITERIA FOR WHEN VERTEBROPLASTY, KYPHOPLASTY OR FOCAL TUMOUR ABLATION (FTA) ASSISTED VERTEBROPLASTY/KYPHOPLASTY SHOULD BE PERFORMED FOR CANCER-RELATED VERTEBRAL COMPRESSION FRACTURES.



1. Acute painful vertebral fractures, that ideally should be treated within 6 weeks of fracture, unless other clinical circumstances deem appropriate;
2. Symptomatic fractures with load bearing pain or axial tenderness;
3. High risk impending fractures due to lytic lesion; or
4. Spinal instability neoplastic (SINS) scores greater than 7, with surgical consultation.

Requirements for Cco engagement

- Tumour Board recommendations (Multidisciplinary Cancer Conference)
- Time guidelines – 2 weeks referral to consultation, 2 weeks from consult to augmentation treatment
- Best achieved by bringing the specialist players together in a Multidisciplinary Clinic to create the treatment pathway
- MMSC went live January 2023

Communication Tools (SINS, ESCC, NOMS)

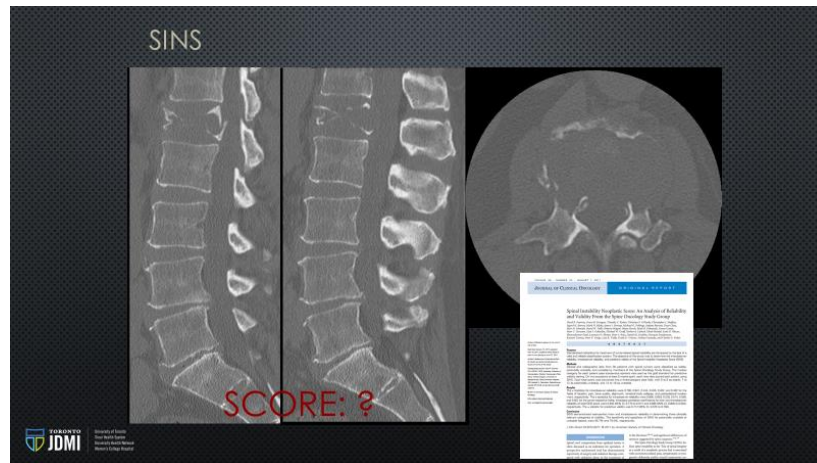
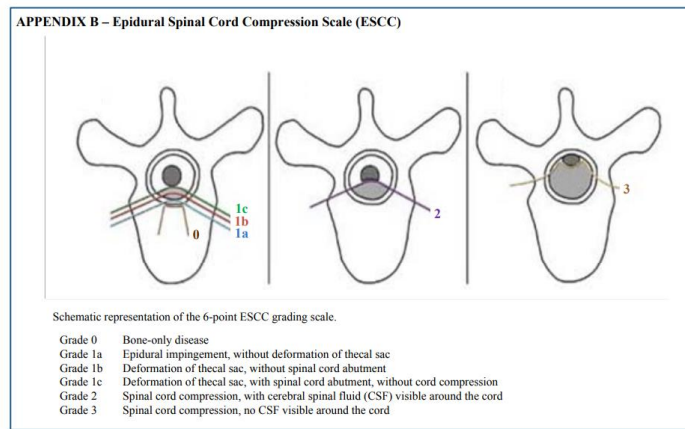


Table 1: The Spinal Instability Neoplastic Score (SINS)

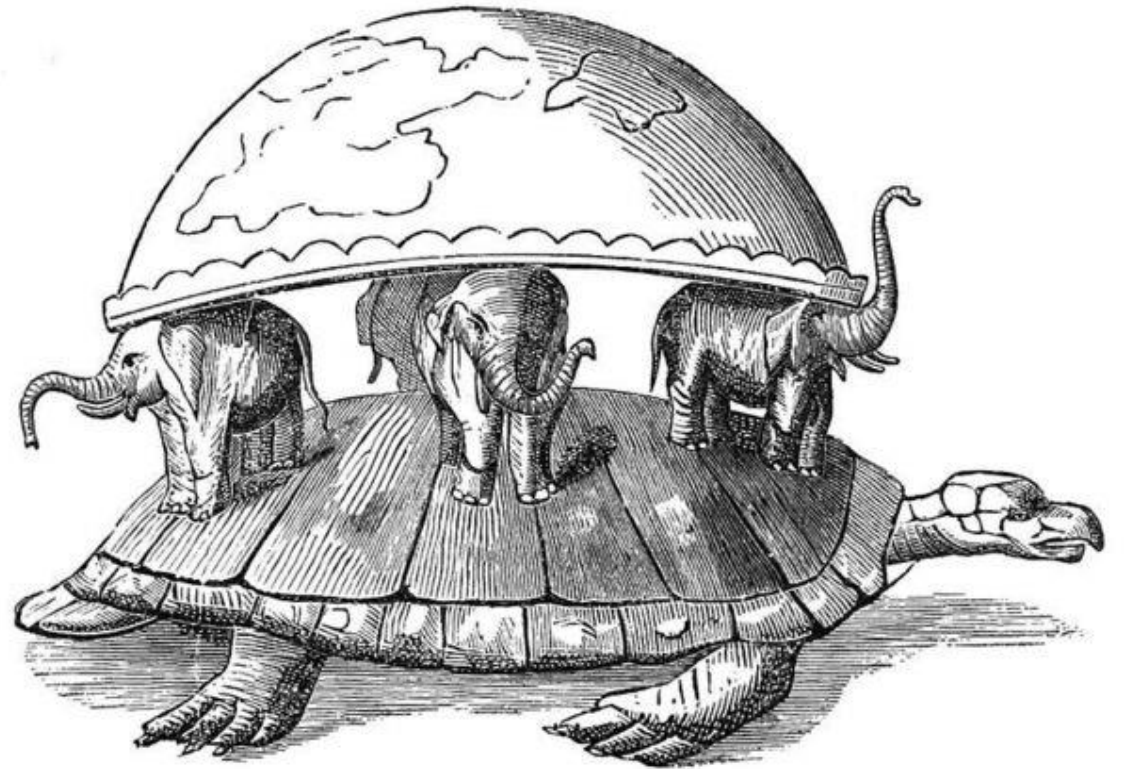
SINS Component	Description	Score
Location	Junctional (occiput-C2, C7-T2, T11-L1, L5-S1)	3
	Multifocal (C3-C6, L2-L4)	2
	Semi-focal (T3-T10)	1
	Rigid (C5)	0
Pain*	Yes	3
	Casey's but not mechanical	1
	Painless	0
Bone lesion	Lytic	2
	Mixed (lytic/plastic)	1
	Blastic	0
Radiographic spinal alignment	Flexion/extension present	4
	De novo (kyphosis/scoliosis)	2
Vertebral body collapse	Normal alignment	0
	>50% collapse	3
	<50% collapse	2
	No collapse with >50% body involved	1
Posterolateral involvement of spinal elements**	None of the above	0
	Bilateral	3
	Unilateral	1
	None of the above	0



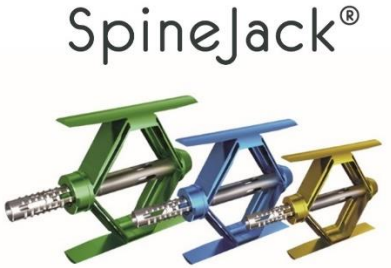
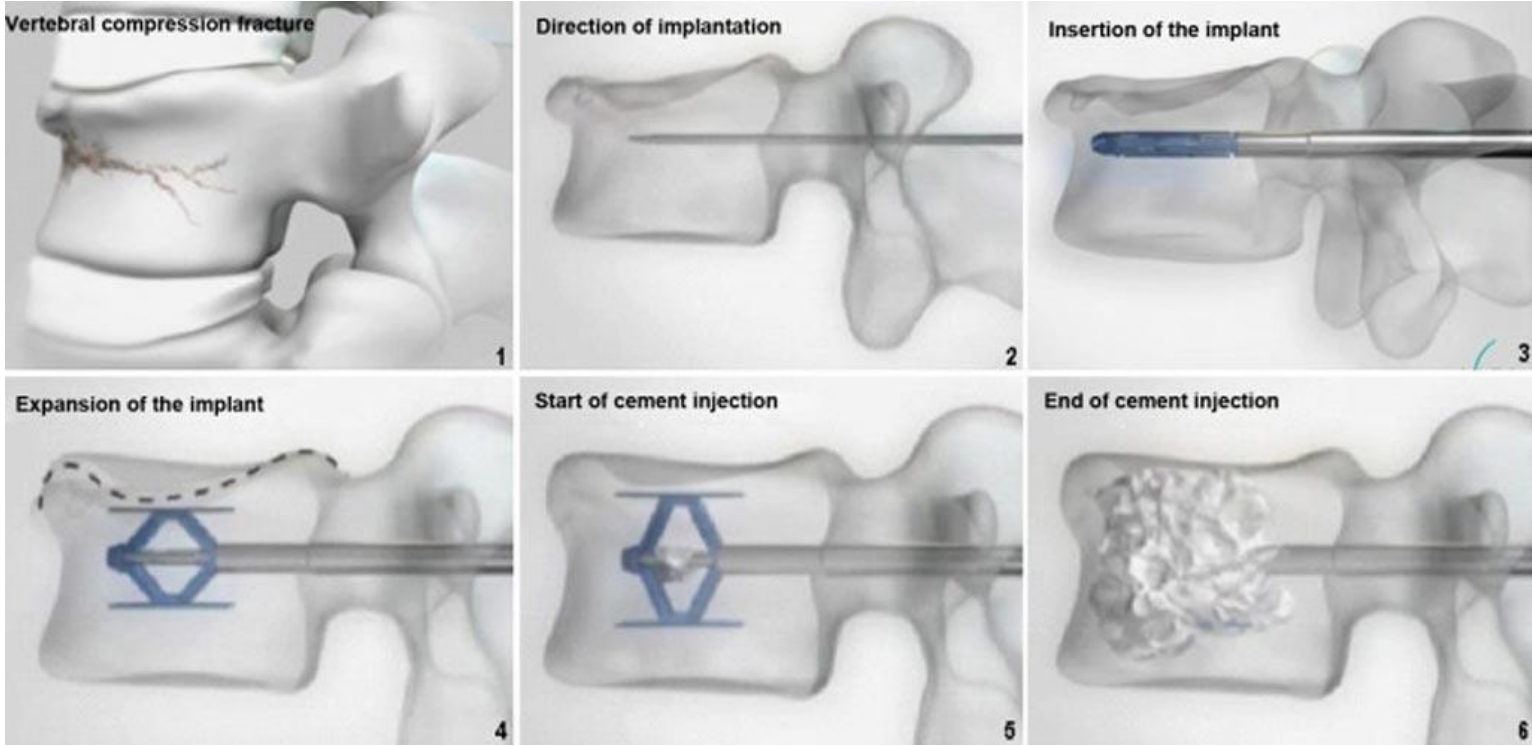
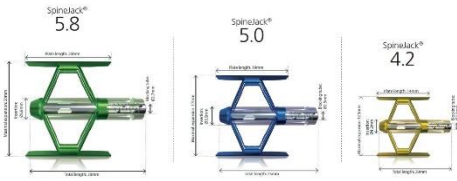
Reproduced with permission from Bilsky et al, 2010, J Neurosurg: Spine 13(3), 324-328

What's next

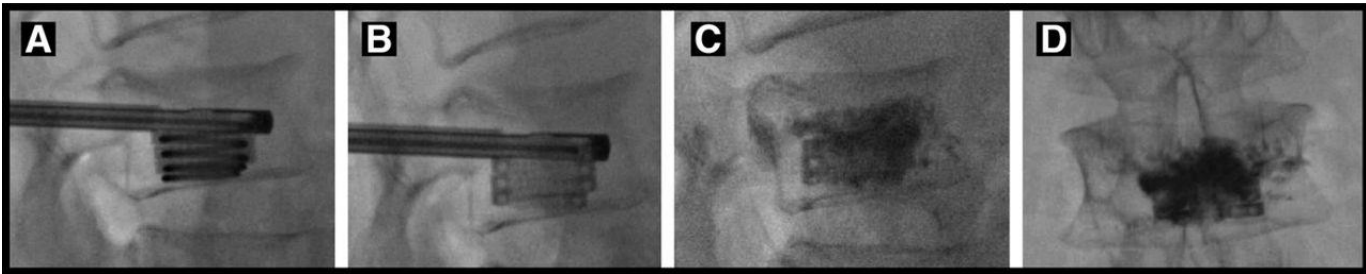
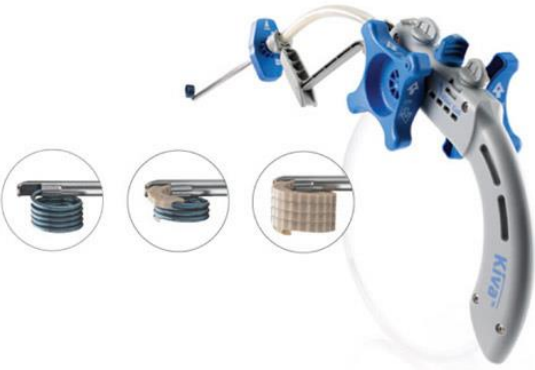
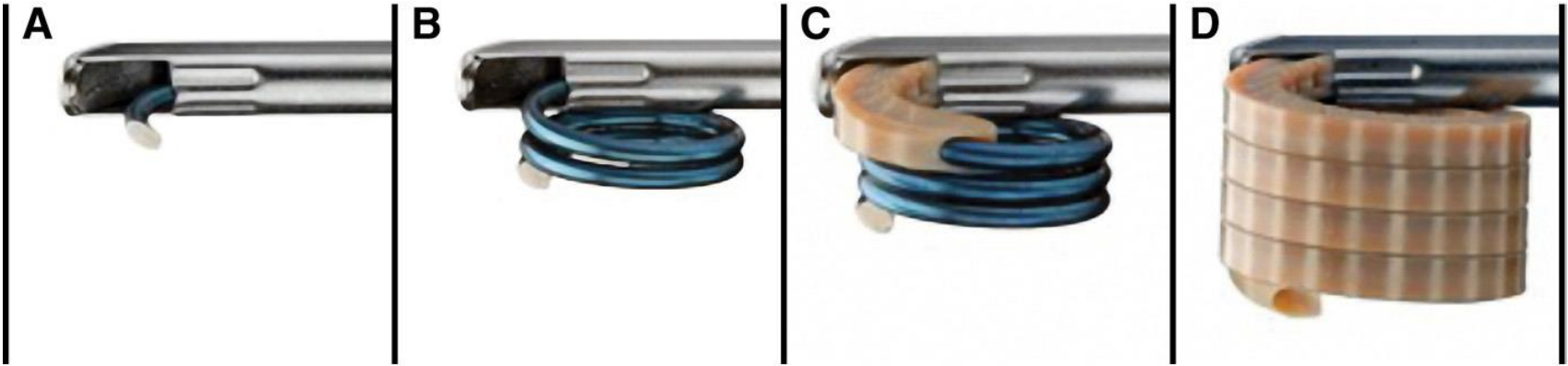
- Other devices
- Product development – Industry involvement
- Integrated Management programs - MMSC
- Increase public awareness
- Prophylaxis – prevents kyphosis



Stryker Spine Jack System



KiVA VCF R_x System – IZI Medical Products



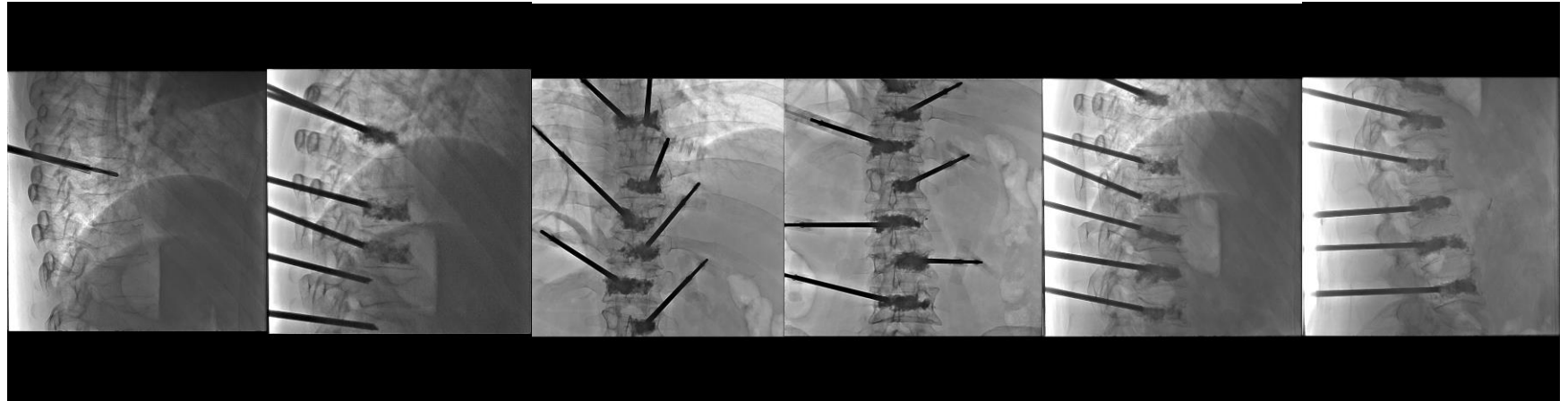
Vertebral body stenting / Stentoplasty



Cryoablation +/- augmentation



Case Study #3 - MM



39 yo father of 2 year old, marine mechanic, self employed, in remission post ASCT, ongoing severe back pain severely limiting activity, walking and working. Unable to manage his 2 year old at times. VAS 0-5/10, manages pain with rest, intolerant of opiates.

Post procedure immediate decrease in pain, felt as if he had a dose of flu, weak, febrile, myalgia, for 1-2 days.

Within 2 weeks had minimal pain discomfort and AOLs were returning to 'normal'.

Kyphoplasty T7, T9, T10, T11, T12, L1, L2, L3, L4

Challenge

- To deliver timely intervention tailored to a patient's specific needs
- Day surgery to minimize costs and maximize access
- Personalized care at a single venue
- Use data to improve and develop the patient experience

Thank you



Session Learning Objectives

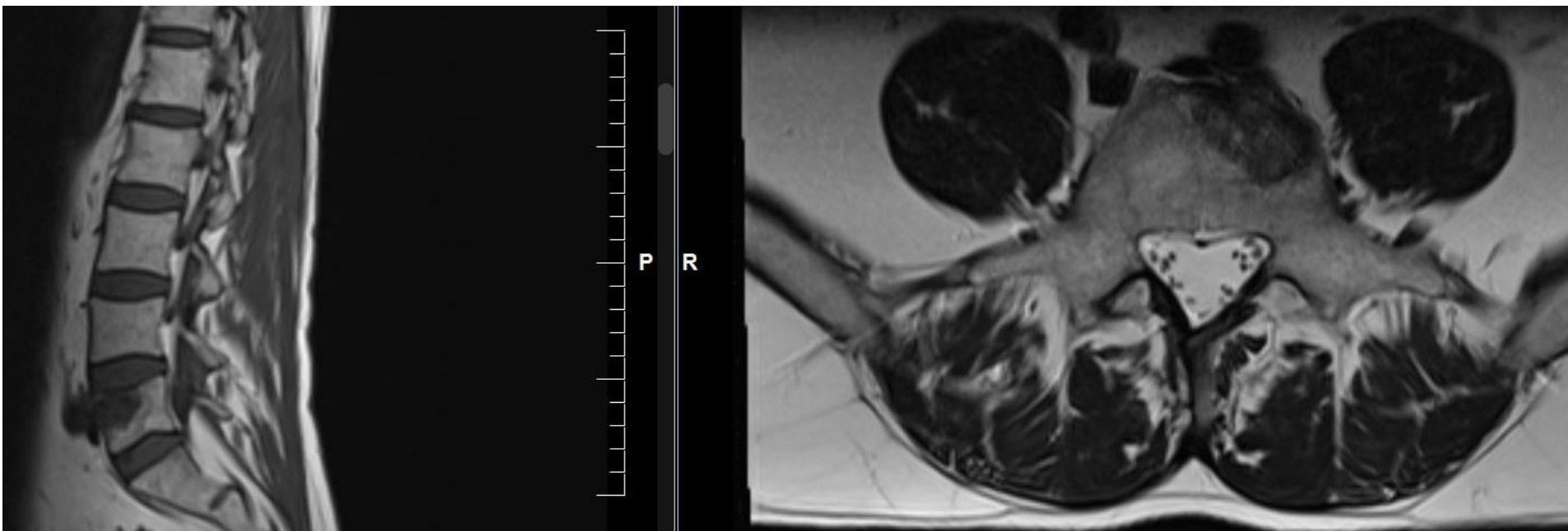
Upon completing the session, participants will be able to:

- Have awareness of multimodal interventional procedures used to treat pain
- Understand a multidisciplinary approach to management of pain

One More Case Based Discussion

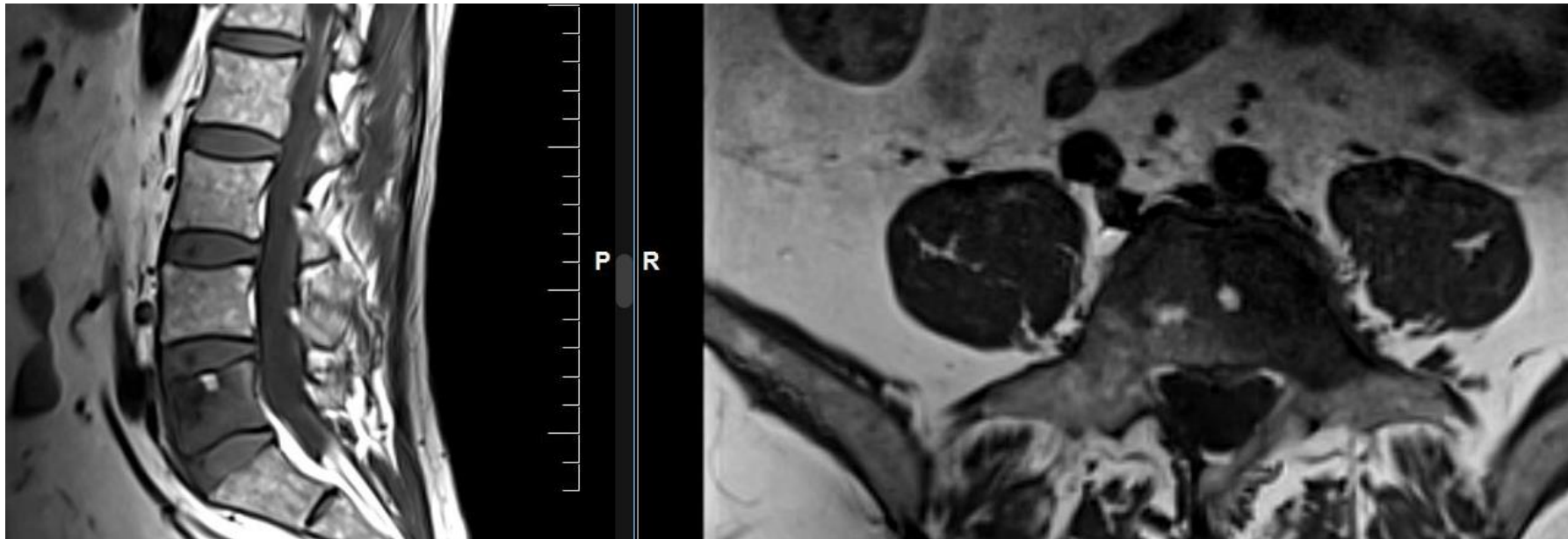
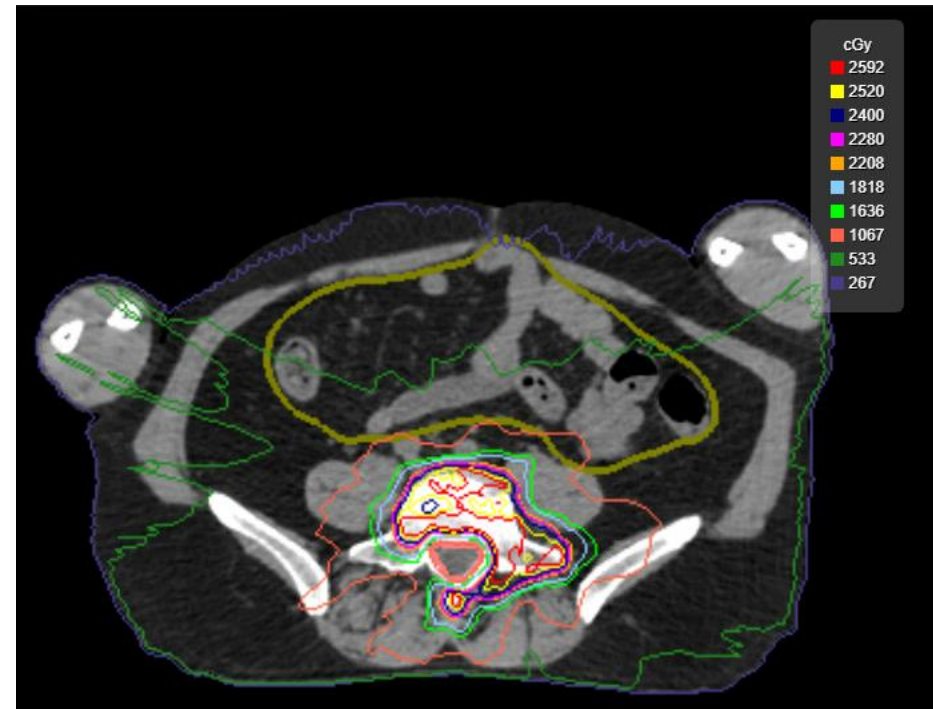
Patient JA

- 50yo M with metastatic cholangiocarcinoma
- Metastasis to lymph nodes, lung, and spine (including L5)
- Start on systemic therapy since no symptoms



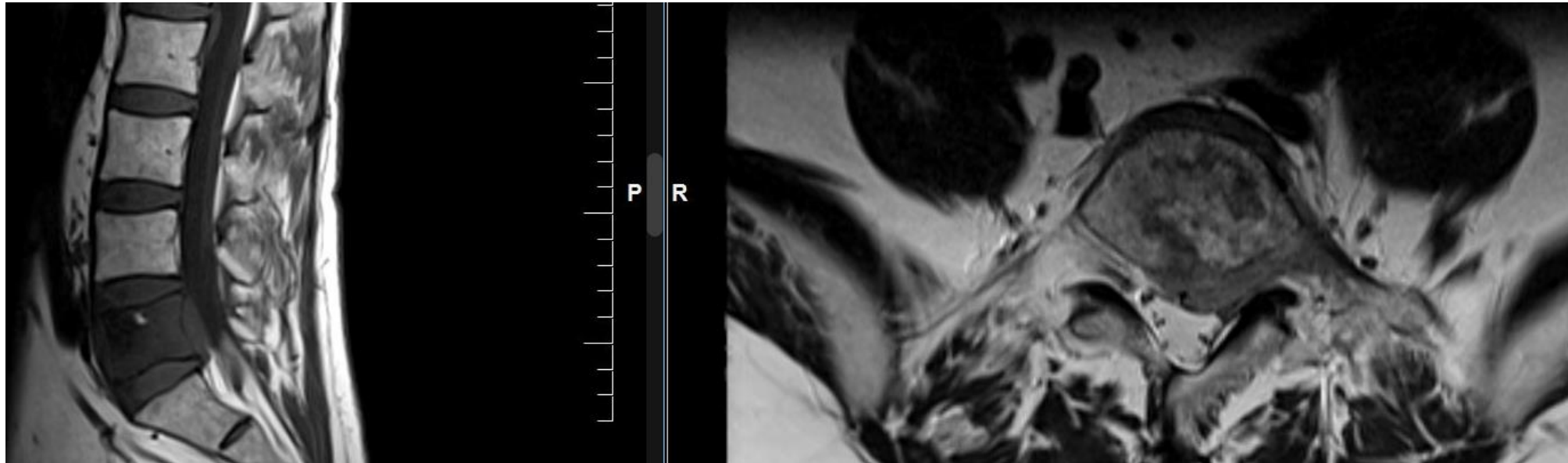
10 months later

- Worsening of L5
- Painful
- SBRT (24Gy/2) by colleague



4 months later...

- Unfortunately, worsening pain
- MR shows epidural disease worsening
- Too soon to safely consider repeat RT
- Suggest radioresistance



Radiofrequency ablation combined with cement augmentation



DISCOVER HOW OSTEOCOOL WORKS

Coaxial, bipolar technology delivers RF energy to the site, and automatically moderates power to keep RF heating within the desired treatment range. This reduces risk of potential thermal damage to adjacent tissue.⁵

The active tip of the ablation probe is internally cooled with circulating water. RF energy heats the tissue while circulating water moderates the temperature close to the active tip. This combination:

- Creates large volume lesions without excessive heating at the active tip
- Minimizes potential for char

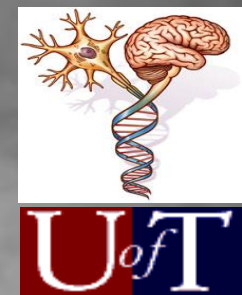
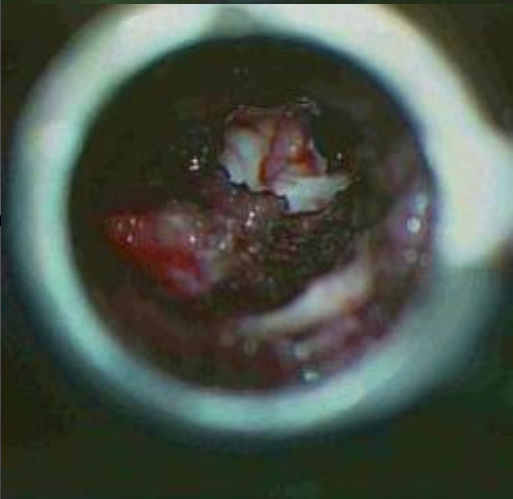
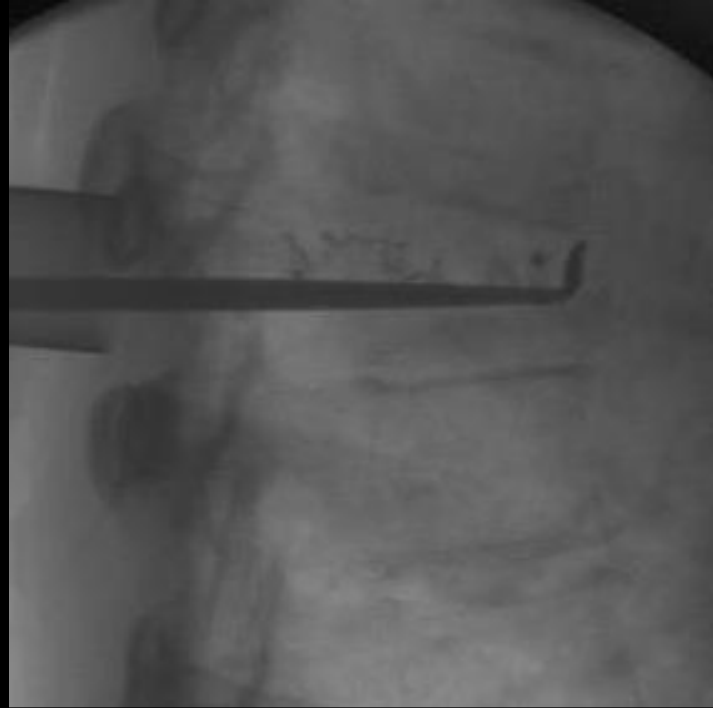
The OsteoCool RF ablation probes are sterile and intended for single use.



Case Presentation

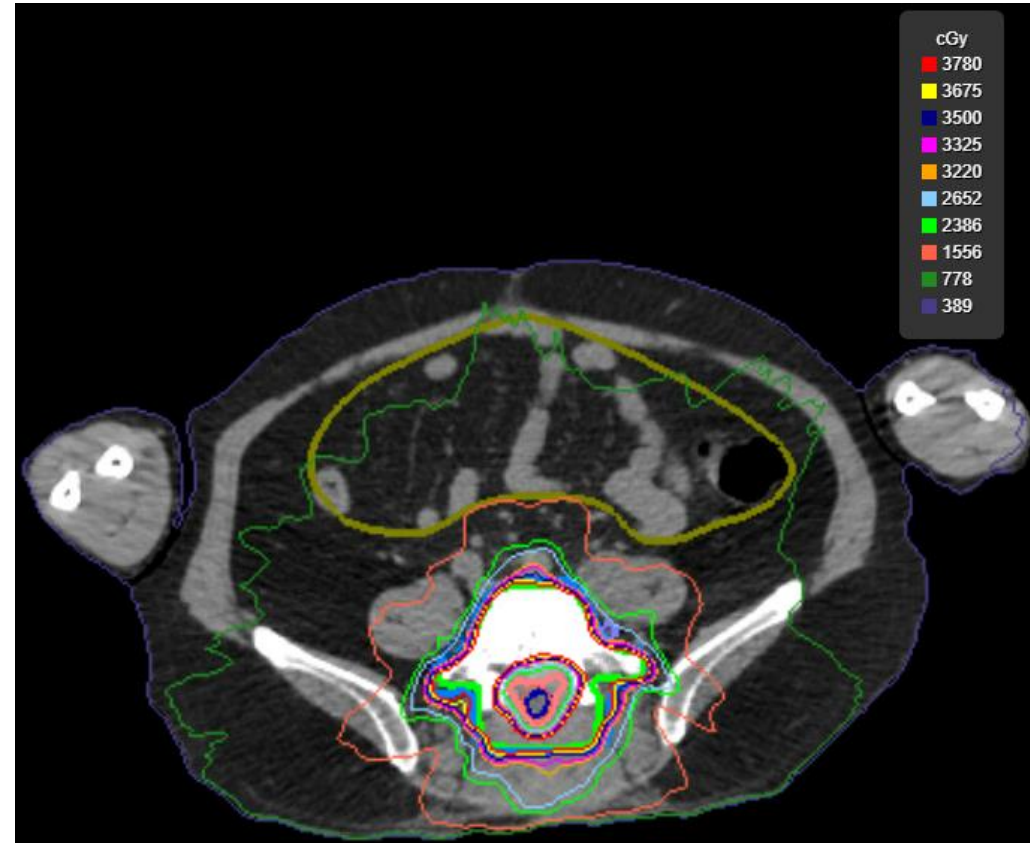
- 71 year-old man
- High level of function ECOG 1
- Normal Neurological Exam





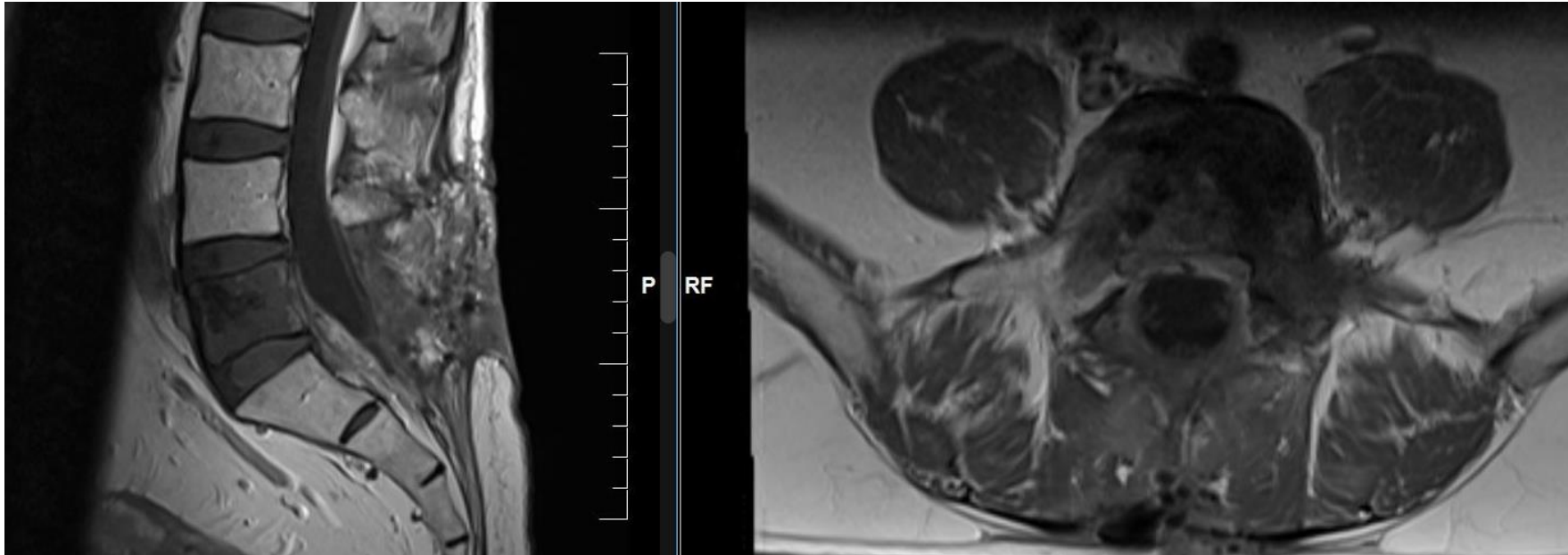
Repeat SBRT ~ 1 year from first course

- Surveillance MR shows ongoing residual tumor
- Slight progression
- Neurologically no significant change



4 months later – present

- Controlled disease
- Pain under control, occasional parasthesiaes
- Requires some neuropathic pain agents
 - Scarring from treatments
- ECOG 1



Session Wrap Up

- Please fill out our feedback survey, a link has been added into the chat.
- A recording of this session will be emailed to registrants within the next week.
- We hope to see you again at our next session taking place **March 27th, 2024 from 12:30-1:30pm ET** on the topic of **Terminal Delirium and Palliative Sedation.**
- Thank you for your participation!

Thank You



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