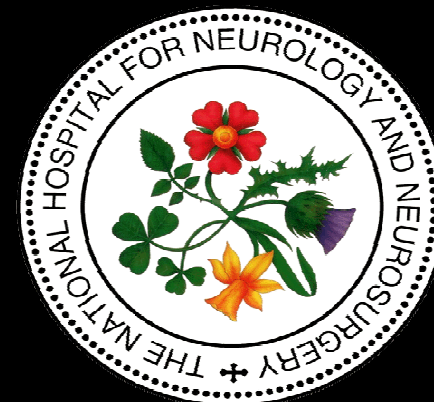


David Choi FRCS PhD

The National Hospital for Neurology and Neurosurgery, London UK

SPINAL METASTASES

CLASSIFICATION AND PROGNOSIS

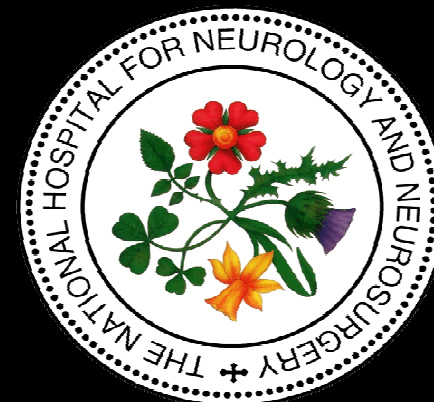


David Choi FRCS PhD

The National Hospital for Neurology and Neurosurgery, London UK

SPINAL METASTASES

CLASSIFICATION AND PROGNOSIS



Conflict of interest statement

David Choi, January 2011

The author has not received personal benefits from a commercial party in relation to this work.

Benefits have been received to a research charitable trust with which the author is associated



Global Spine Tumour Study Group

- UK
- Germany
- Netherlands
- France
- Spain
- Denmark
- Japan
- USA
- Canada



Spinal metastases 2001

The need for surgery.....

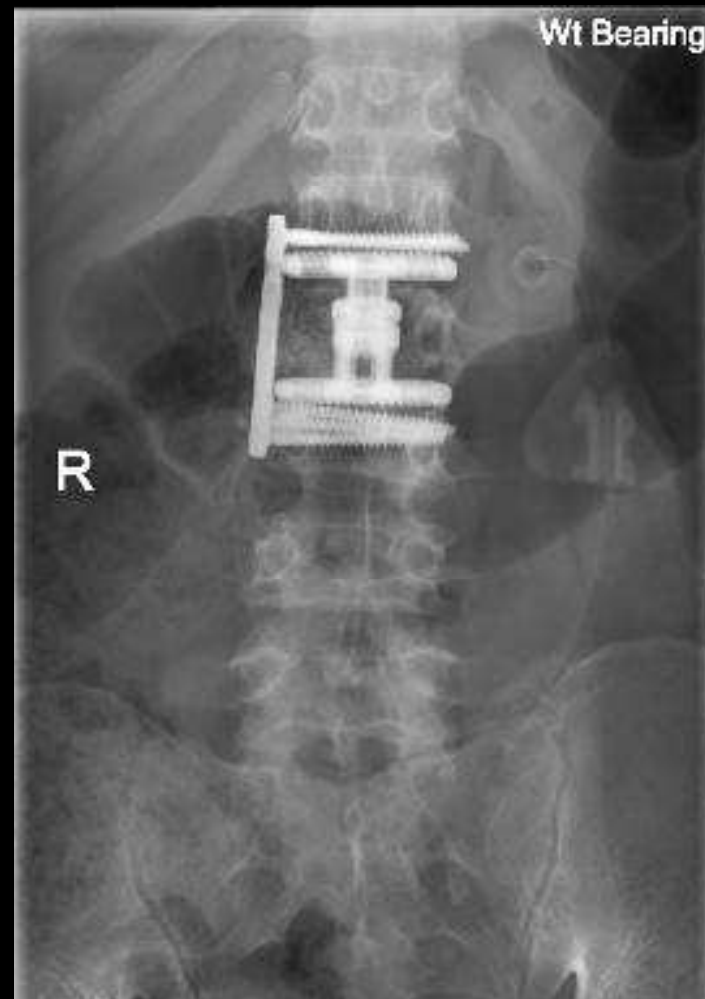
- Common problem
- Surgery or Radiotherapy?

Treatment uncertainties

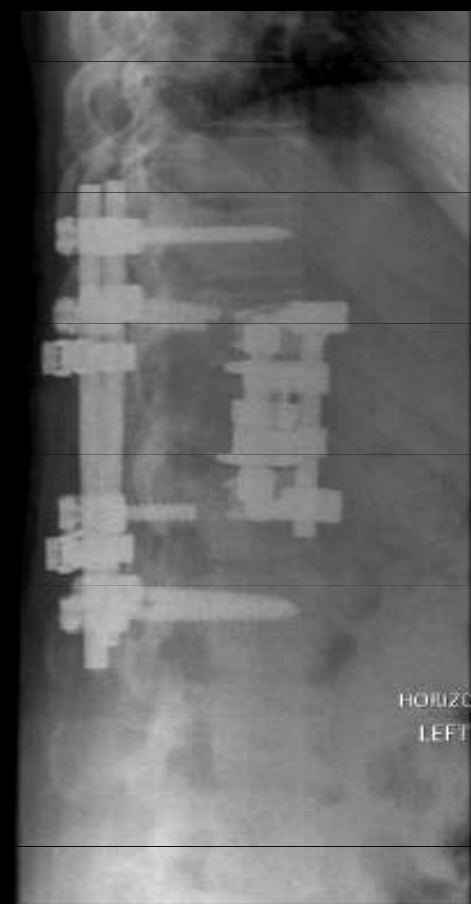
- Which operation to choose for which patient
- Benefit of more extensive (and risky) operations



Antero-lateral only



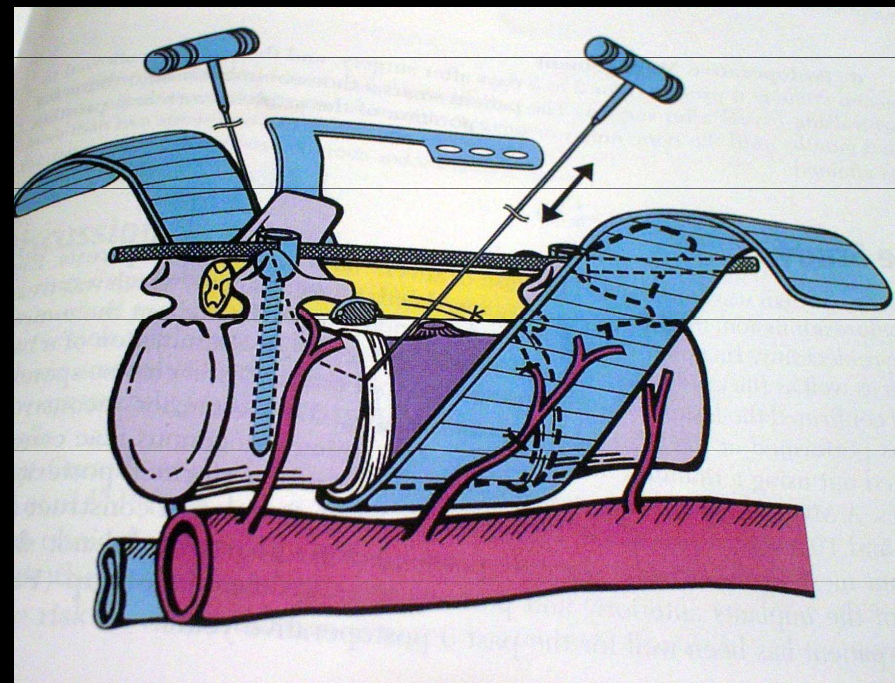
Combined anterior and posterior



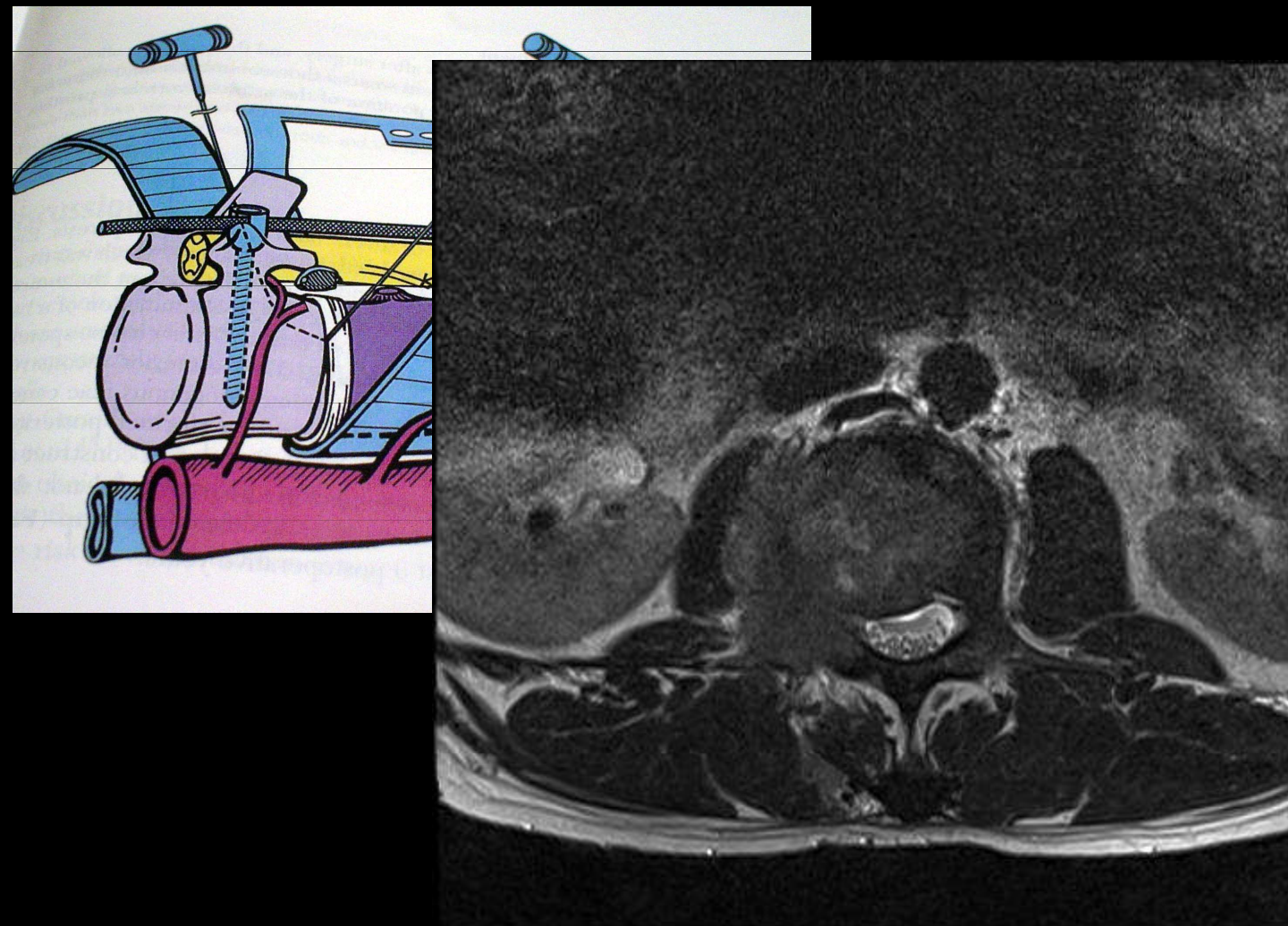
Posterior only



Total En bloc Spondylectomy



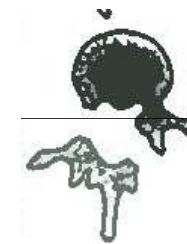
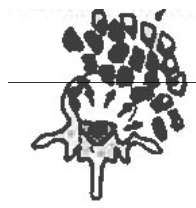
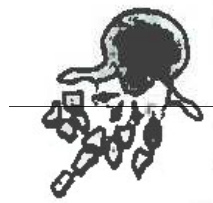
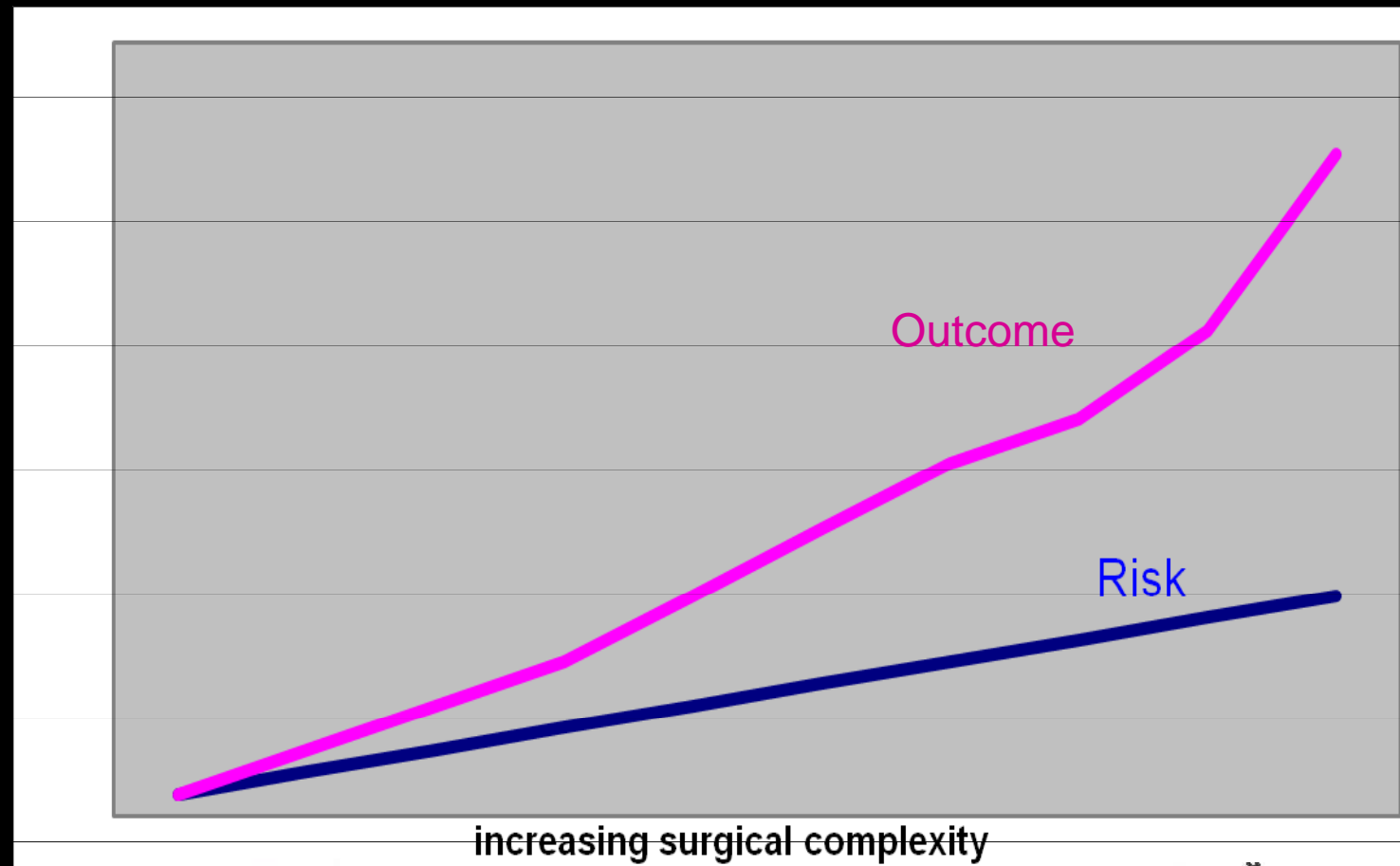
Total En bloc Spondylectomy



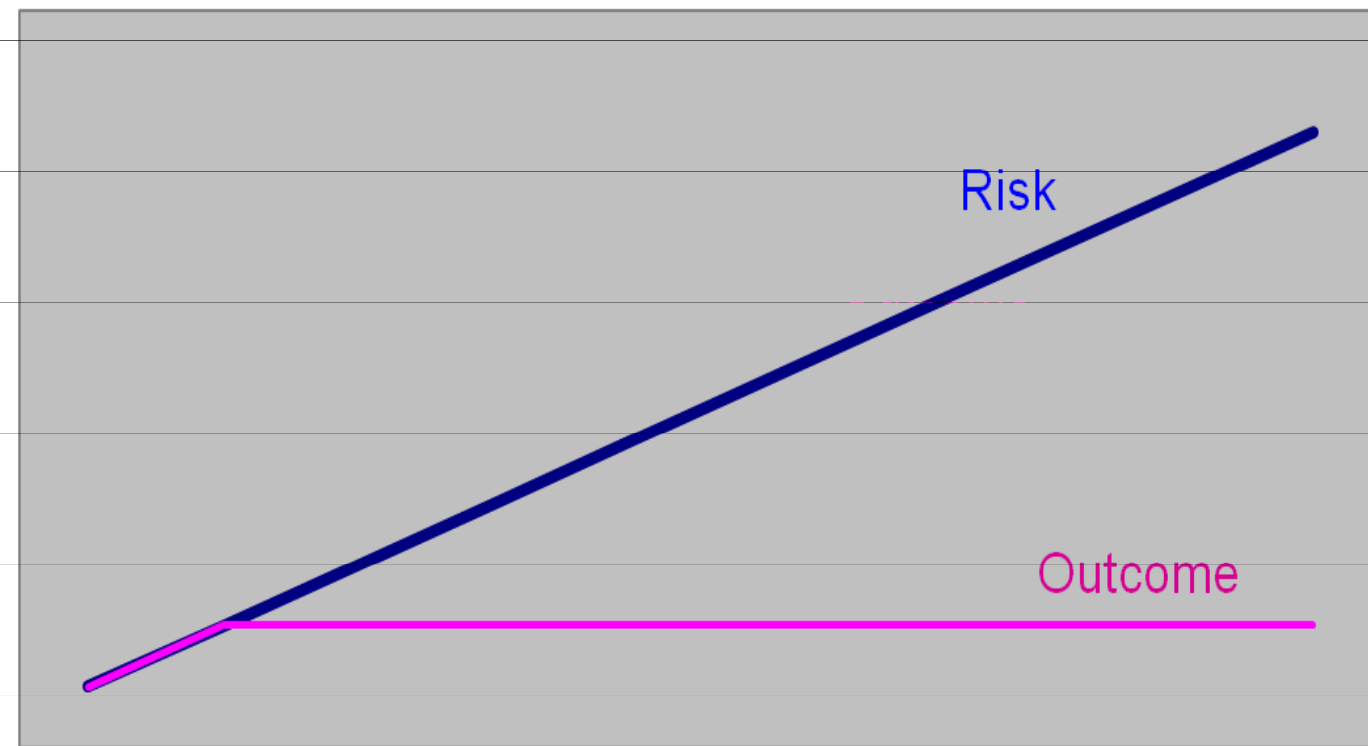
Complications?



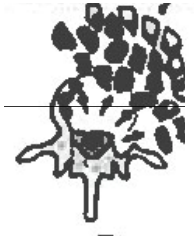
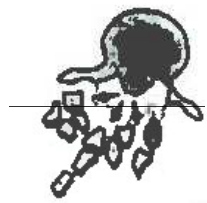
Outcome vs Risk



But.....?



increasing surgical complexity



- Randomised trial?
- Large prospective database

BMJ 2003



Parachutes reduce the risk of injury after gravitational challenge, but their effectiveness has not been proved with randomised controlled trials

GSTSG

- Randomised trial?
- Large prospective database

Classification of spine metastases

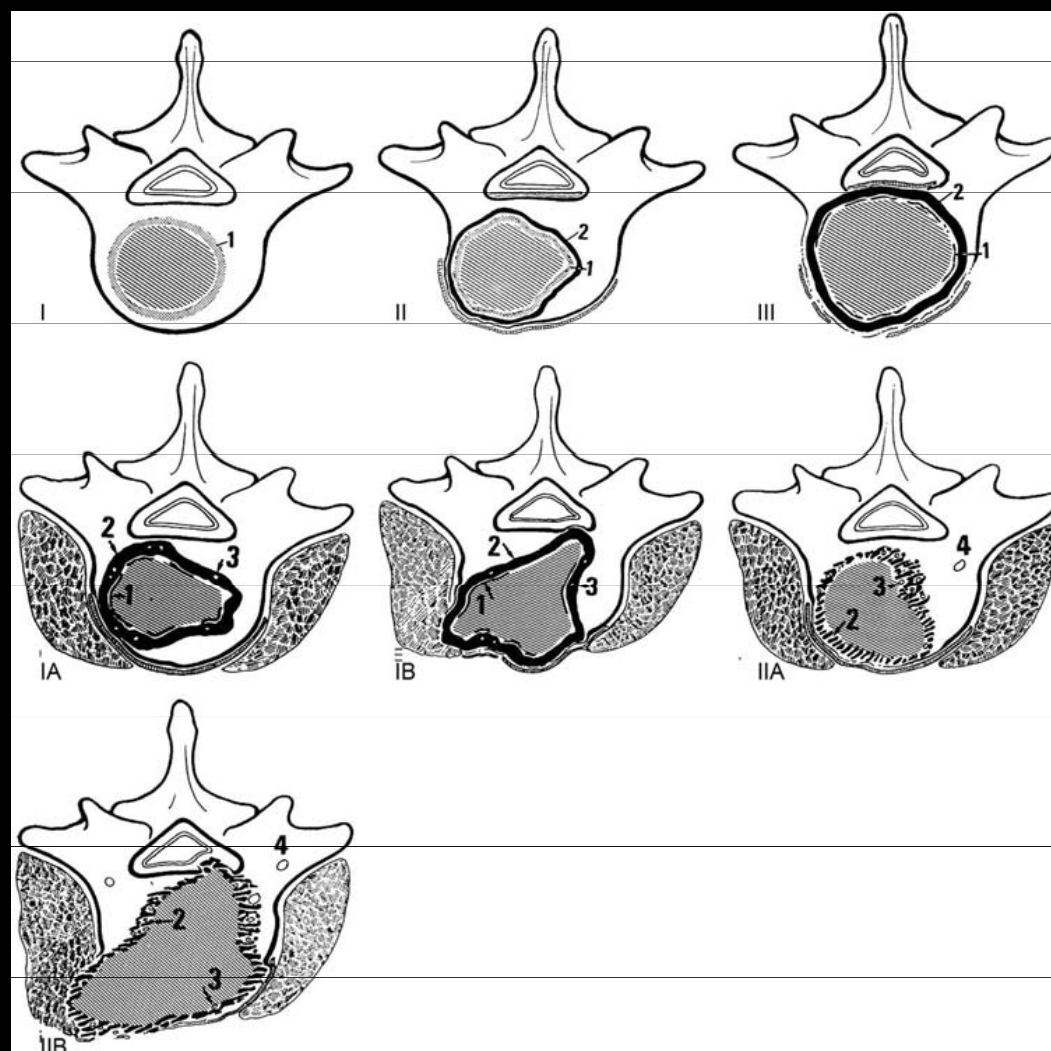
Eur Spine J (2010) 19:215–222
DOI 10.1007/s00586-009-1252-x

REVIEW ARTICLE

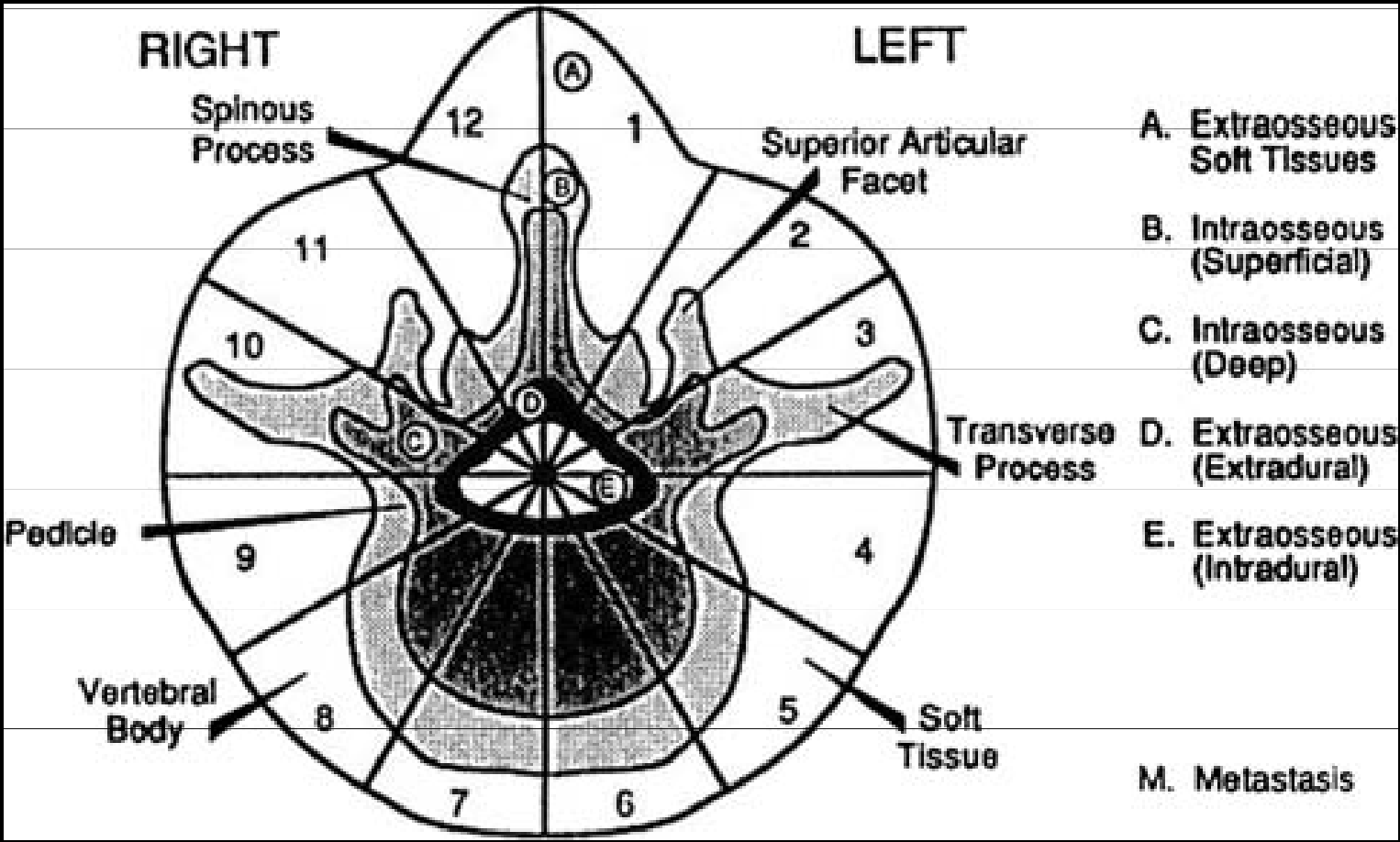
Review of metastatic spine tumour classification and indications for surgery: the consensus statement of the Global Spine Tumour Study Group

David Choi · A. Crockard · C. Bungler · J. Harms ·
N. Kawahara · C. Mazel · R. Melcher · K. Tomita

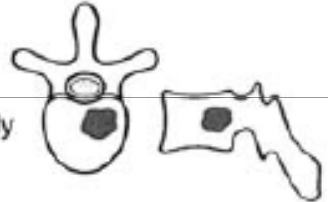
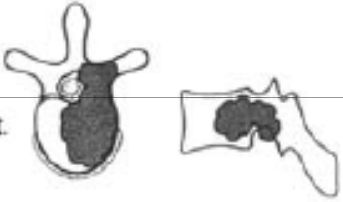
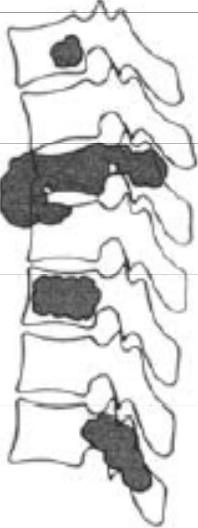
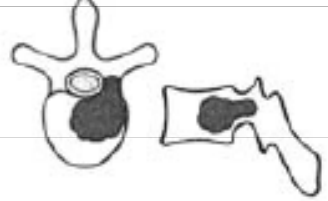
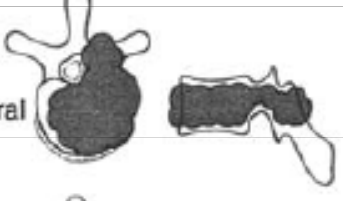
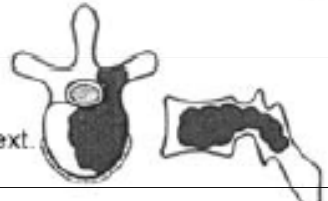

Enneking 1980



Weinstein Boriani Biagini 1997



Tomita 2001

Intra-Compartmental	Extra-Compartmental	Multiple
<p>Type 1</p>  <p>vertebral body</p>	<p>Type 4</p>  <p>epidural ext.</p>	<p>Type 7</p> 
<p>Type 2</p>  <p>pedicle extension</p>	<p>Type 5</p>  <p>paravertebral ext.</p>	
<p>Type 3</p>  <p>body-lamina ext.</p>	<p>Type 6</p>  <p>2-3 vertebrae</p>	

Prognosis and systemic disease

- **Tokuhashi** et al “Scoring system for the pre-operative evaluation of metastatic spine tumour prognosis” Spine 1990
 - 64 patients, retrospective analysis
- **Tomita** et al “Surgical strategy for spinal mets” Spine 2001
 - 67 patients, retrospective
 - 62 patients, prospective

Tokuhashi 1990

• Primary tumour	Survival (mth)
– Lung, Gastric	2.4 +/- 1.4 mths
– Renal, Uterus, Liver	4.9 +/- 3.4
– Breast, Thyroid, Prostate	13.7 +/- 13.6

Tokuhashi 1990

- **Karnofsky** **Survival (months)**
 - Low (10-40) 4.2 +/- 3
 - Medium (50-70) 3.1 +/- 2.5
 - High (80-100) 11.9 +/- 11.8

Tokuhashi 1990

- **Paralysis** **Survival (months)**
 - Yes 3.7 +/- 3.9
 - No 10.4 +/- 13.6

Tokuhashi 1990

• Other spinal mets	Survival (months)
– 1	13.3 +/- 13.1
– 2	5.2 +/- 5.3
– 3 or more	4.3 +/- 4

Tokuhashi 1990

• Extraspinal bone mets	Survival
– 0	12.0 +/- 12.4
– 1-2	6.3 +/- 6.8
– 3 or more	4.4 +/- 4.1

Tokuhashi 1990

• Visceral mets	Survival
– No	12.0 +/- 11.9
– Yes	3.4 +/- 2.3

Tokuhashi 1990

- Tokuhashi score 1 3.0 +/- 4
- Tokuhashi score 12 38.5 +/- 3
- Prognosis vs Score, $r=0.65$, $p<0.01$

Tokuhashi 2005

- Increased weighting to primary tumours
- Total maximum score 15

Tomita 2001

Tomita 2001

- **Primary tumour**

	Survival	
Breast, thyroid, prostate	40.8m	score 1
Renal, uterus	24.2m	score 2
Lung, GI, liver, unknown	10m	score 4

Tomita 2001

• Visceral mets	Survival	
– None	36.8m	score 0
– Treatable	16.5m	score 2
– Untreatable	8.7m	score 4

Tomita 2001

- **Bone mets** **Survival**
 - Solitary 34.8m score1
 - Multiple 17.9m score2

Tomita 2001

- Correlation of combined score was better than individual factors

Tomita 2001

- Retrospective survival times
 - Score 2-3 49.9m
 - 4-5 23.5m
 - 6-7 15m
 - 8-10 5.9m

Tomita 2001

- Score 2-3 Wide marginal excision
- 4-5 Intralesional excision
- 6-7 Palliative surgery
- 8-10 No surgery

Tomita 2001

- Prospective survival
 - Score 2-3 38.2m
 - 4-5 21.5m
 - 6-7 10.1m
 - 8-10 5.3m

Tomita 2001

- Conclusion

“A clear consensus does not yet exist for deciding which patients should undergo surgical treatment for spinal metastasis”

GSTSG 2010

Tactics	Palliative decompression	Tumour curettage (debulking)	Total vertebrectomy	
Method	piecemeal		piecemeal	en bloc
Oncological margin	intralesional		intralesional	wide

Conclusion

- We need to understand and use reliable and simple classification systems to learn from our experience
- Prognostic scores need development and validation
- Only then can we decide which operations to perform for which patient

Acknowledgements

- **Funding**, DePuy Spine, UCLH London
- **IT support**, Monza digital
- **GSTSG trustees** (A Crockard, D Choi, C Mazel)
- **GSTSG members** (T Albert, C Bungler, M Fehlings, J Harms, J Harrop, N Kawahara, A Martin, E Massicote, FC Oner, G Perrin, W Peul, K Tomita, M Wang)

