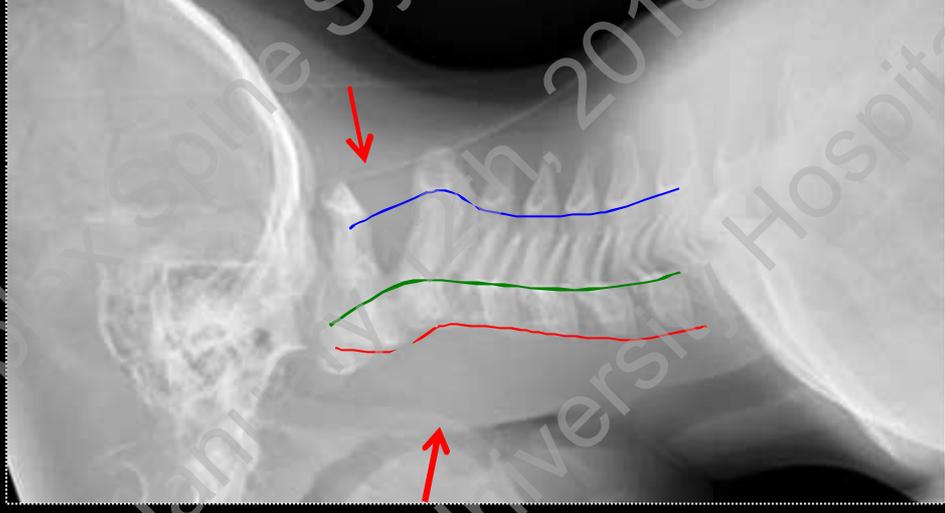
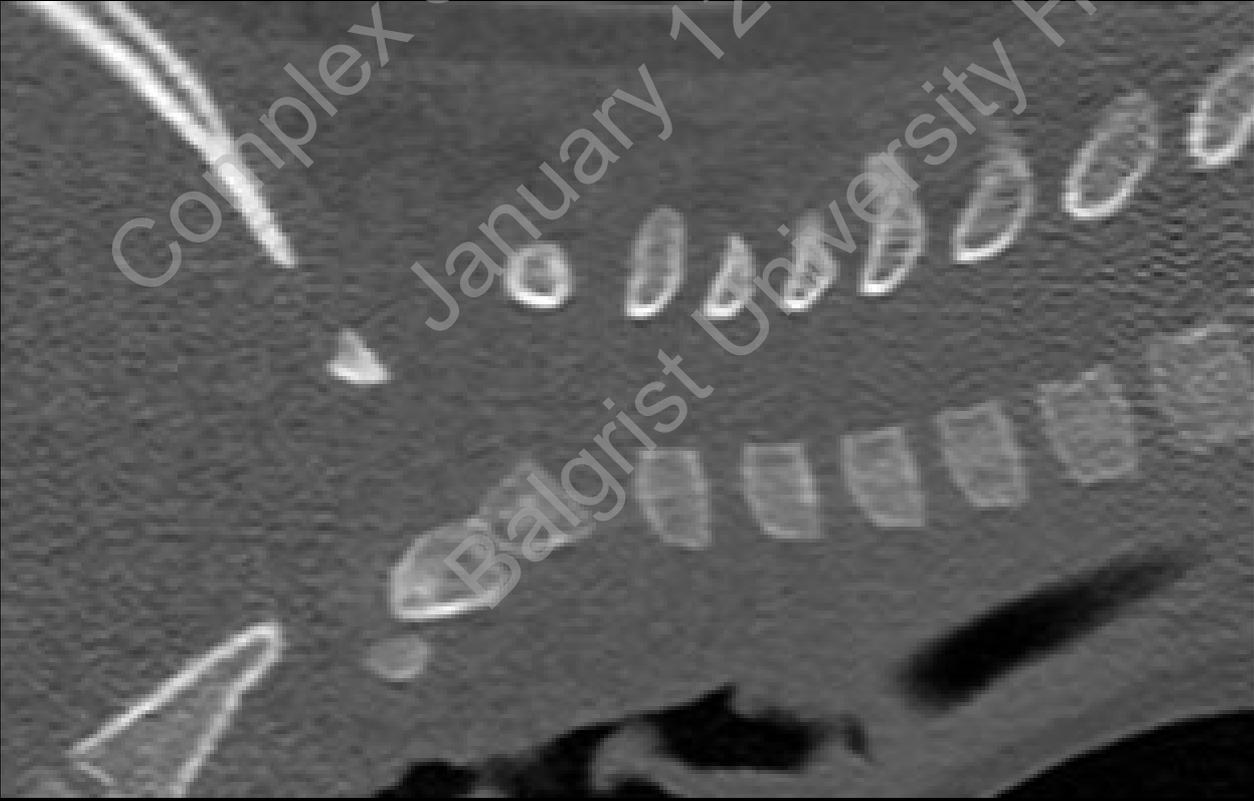
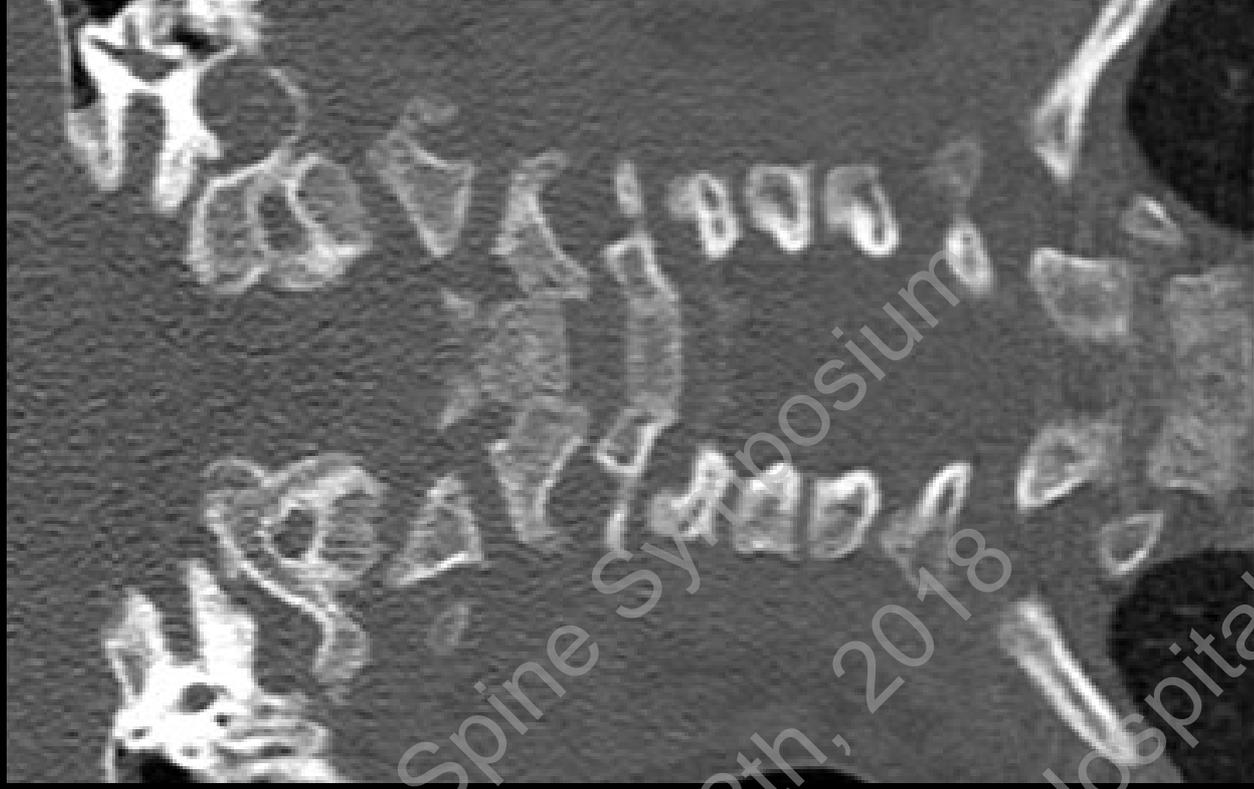


CASE: 4yo, MVH ACCIDENT



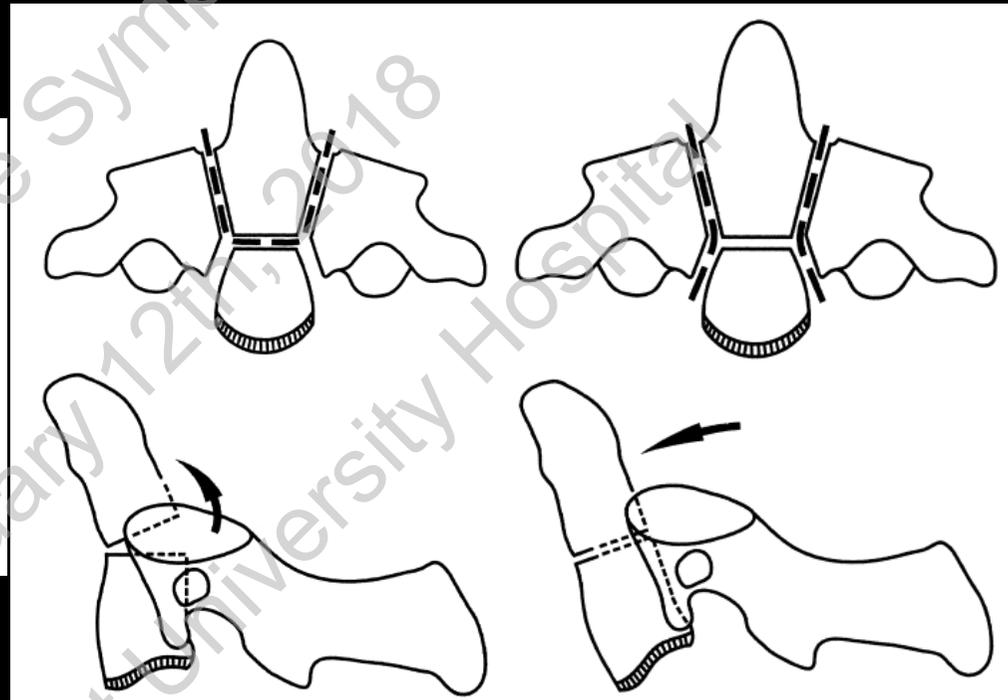
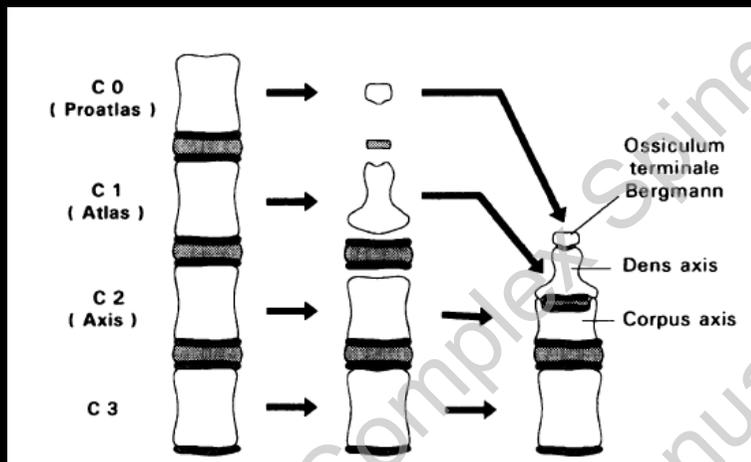


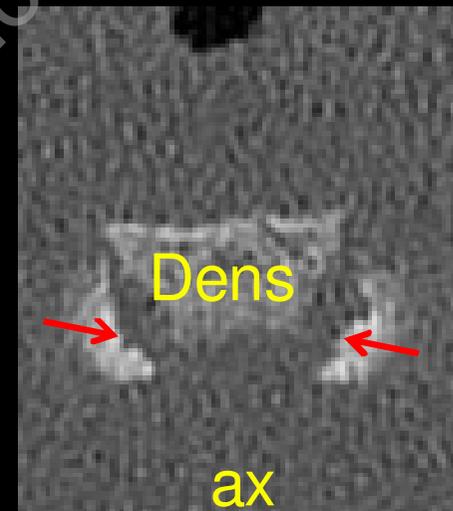
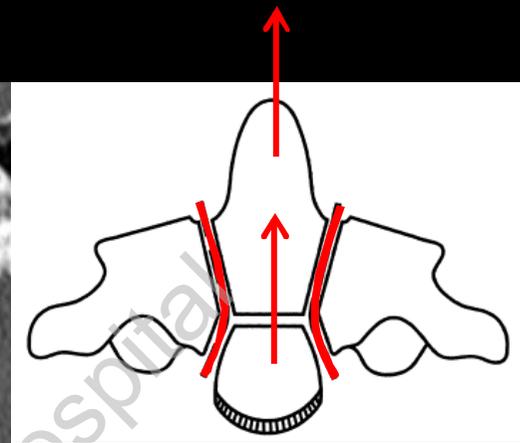


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- 1 Huber, H, et al. J Pediatr Orthop. 2010. 30(2):115-118.
- 2 Mousny, M, et al. J Pediatr Orthop. 2001. 21(5): 590-593
- 3 Connolly, B, et al. Pediatr Radiol. 1995. 25: S129-S1



Fig. 8-B



Fig. 8-A

Figs. 8-A and 8-B Radiographs in flexion (Fig. 8-A) and extension (Fig. 8-B) at 3 months after reduction confirmed sufficient stability of C1-C2.

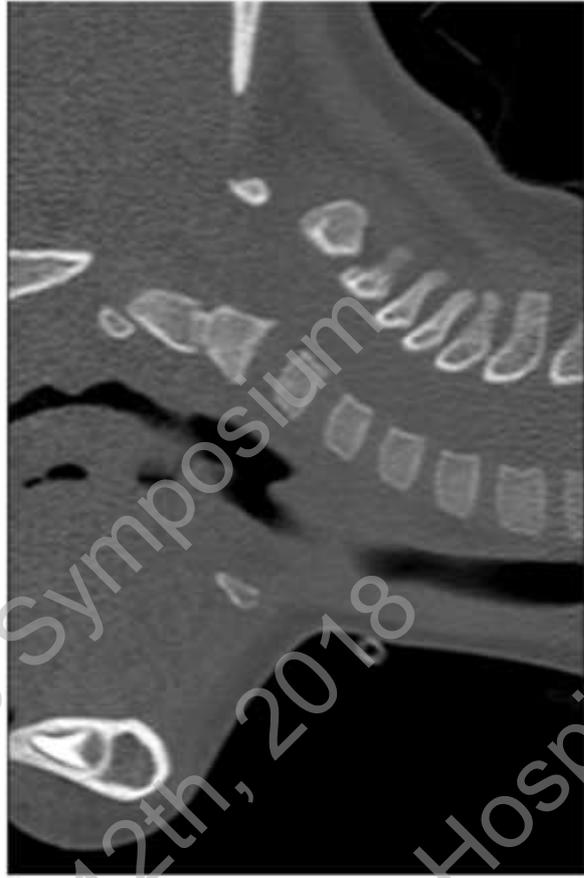
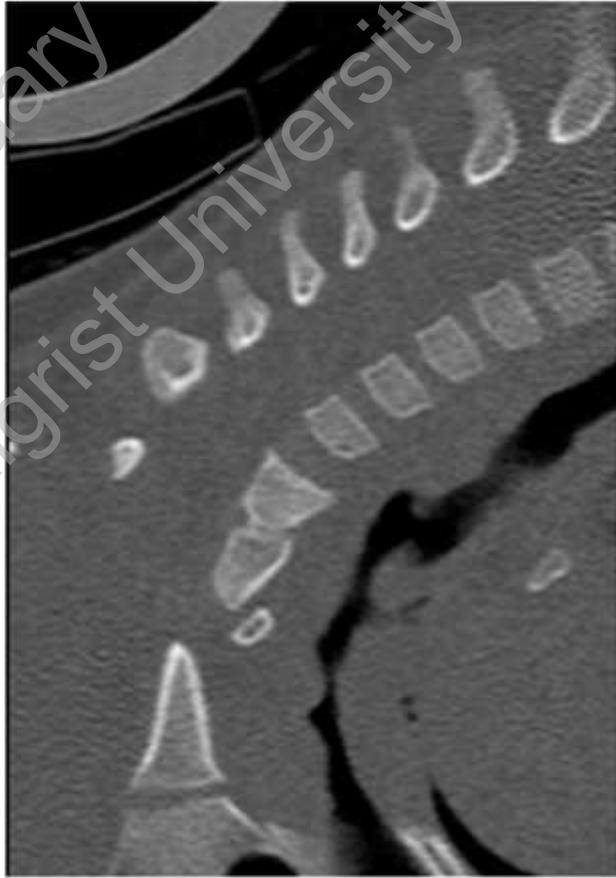
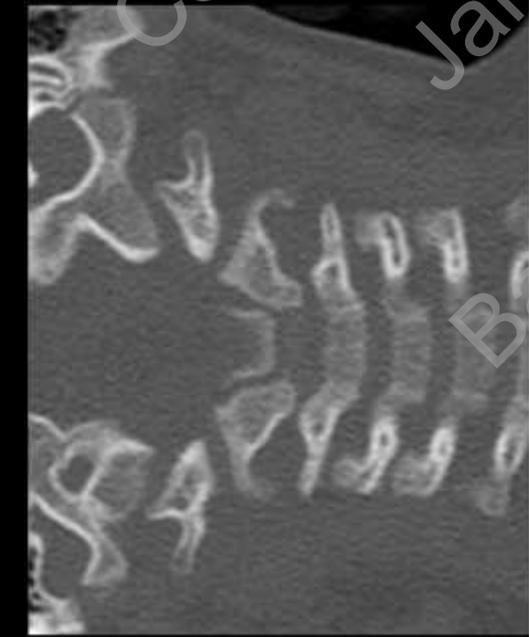
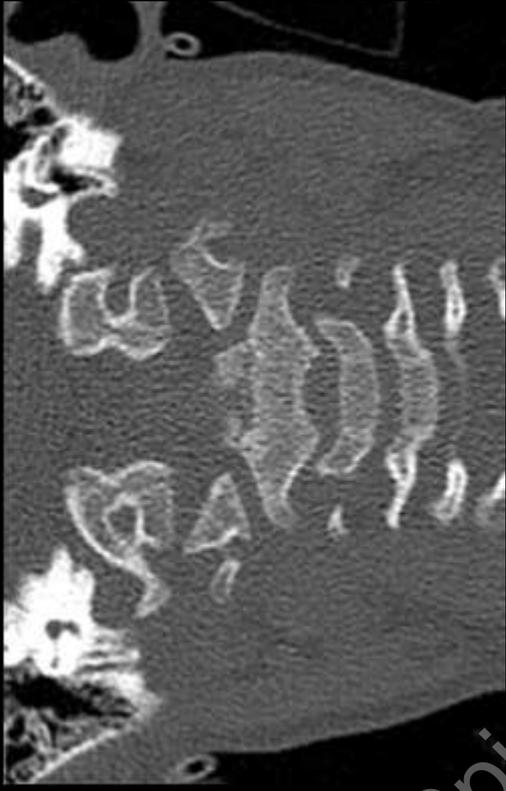


Fig. 9-A

Fig. 9-B

Figs. 9-A and 9-B Dynamic CT in flexion (**Fig. 9-A**) and extension (**Fig. 9-B**) at 3 months after reduction confirmed sufficient stability at C1-C2, acceptable alignment, and no subluxation.

2 years post trauma



2015



2016



Fractures of the Bilateral C2 Neurocentral and Lateral Dental Synchondroses with Kyphotic C1-C2 Subluxation in a 3-Year-Old Girl: A Description of a Rare Fracture Pattern and Its Treatment

A Case Report

Lucienne Gautier, MD, Christoph Aufdenblatten, MD, Stefan Dierauer, MD, Leonhard Ramseier, MD, Luca Mazzone, MD, Hanspeter Huber, MD, and Mazda Farshad, MD, MPH

Investigation performed at the Department of Orthopaedics, University Hospital Balgrist, University of Zürich, Zürich, Switzerland

Abstract

Case: Spinal fractures are rare in young children. Because spinal anatomy and biomechanics differ in children and adults, knowledge of the deviations of the juvenile spine is necessary for adequate treatment. We present the case of a young girl with an unusual C2 fracture that included rupture of both of the neurocentral and lateral dental synchondroses, with an opening of the synchondroses and a caudal dislocation of both vertebral arches following a head-on motor vehicle collision. The whole body and apex of the dens was displaced anteriorly and cranially with a kyphotic angulation of 34°. We describe the treatment and clinical and radiographic outcome after 1 year.

Conclusion: Using passive hyperextension and distraction of the head, a closed open-mouth digital reduction was performed under continuous fluoroscopy. At the 1-year follow-up, the patient had full range of motion of the head without pain or neurologic dysfunction.



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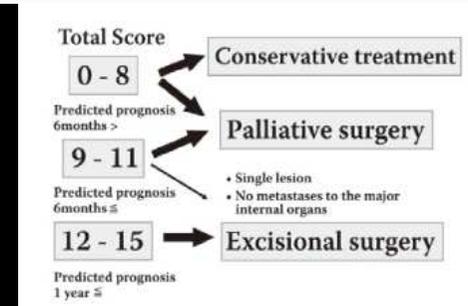
SURVIVAL?

❖ Revised Tokuhashi Scoring System

- Median survival with metastasis of breast- CA

- If only osseous: 3 y
- If soft tissue and osseous: 2 y

Characteristic	Score
General condition (performance status)	
Poor (PS 10 ~ 40%)	0
Moderate (PS 50 ~ 70%)	1
Good (PS 80 ~ 100%)	2
No. of extraspinal bone metastases foci	
≥3	0
1 ~ 2	1
0	2
No. of metastases in the vertebral body	
≥3	0
2	1
1	2
Metastases to the major internal organs	
Unremovable	0
Removable	1
No metastases	2
Primary site of the cancer	
Lung, osteosarcoma, stomach, bladder, esophagus, pancreas	0
Liver, gallbladder, unidentified	1
Others	2
Kidney, uterus	3
Rectum	4
Thyroid, breast, prostate, carcinoid tumor	5
Palsy	
Complete (Frankel A, B)	0
Incomplete (Frankel C, D)	1
None (Frankel E)	2
Criteria of predicted prognosis: Total Score (TS) 0 ~ 8 => >6 mo; TS 9 ~ 11 =< 6 mo; TS 12 ~ 15 =< 1 yr	



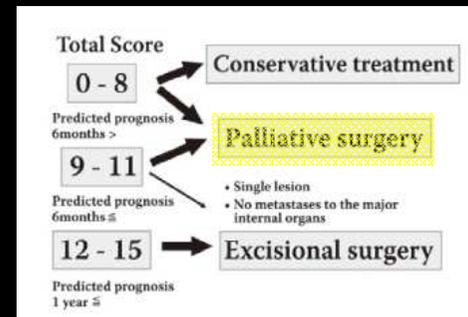
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19





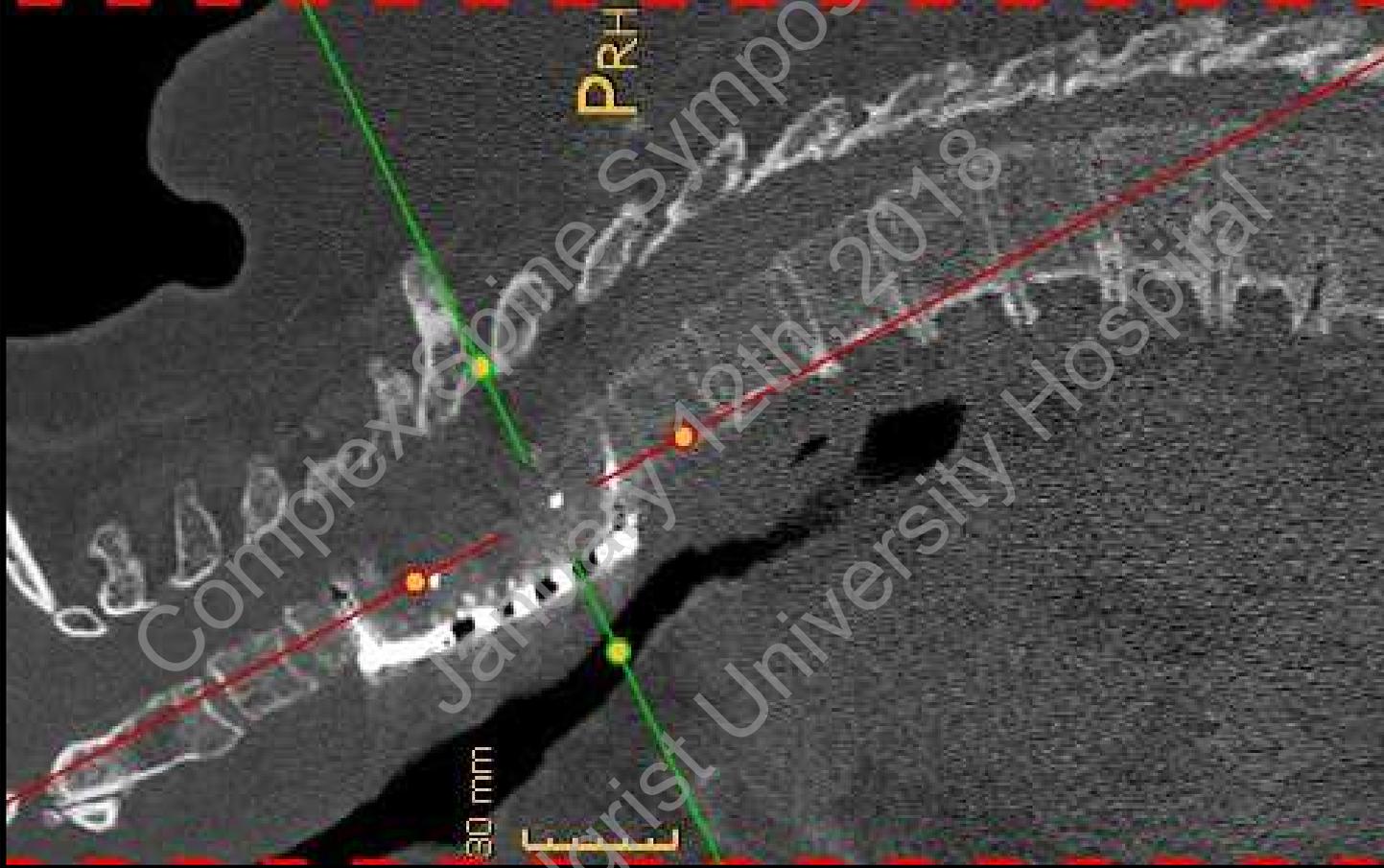
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SINS Component	Description	Score
Location	Junctional (Occ-C2, C7-T2, T11-L1, L5-S)	3
	Mobile (C3-6, L2-4)	2
	Semirigid (T3-10)	1
	Rigid (S2-5)	0
Pain	Yes*	3
	Occasional non-mechanical pain	1
	No	0
Bone Lesion	Lytic	2
	Mixed	1
	Blastic	0
Alignment	Subluxation / translation	4
	De novo deformity	2
	Normal	0
Vertebral Body	>50% collapse	3
	<50% collapse	2
	No collapse with >50% VB involved	1
	None of above	0
Posterolateral Involvement	Bilateral	3
	Unilateral	1
	None	0

SINS 13

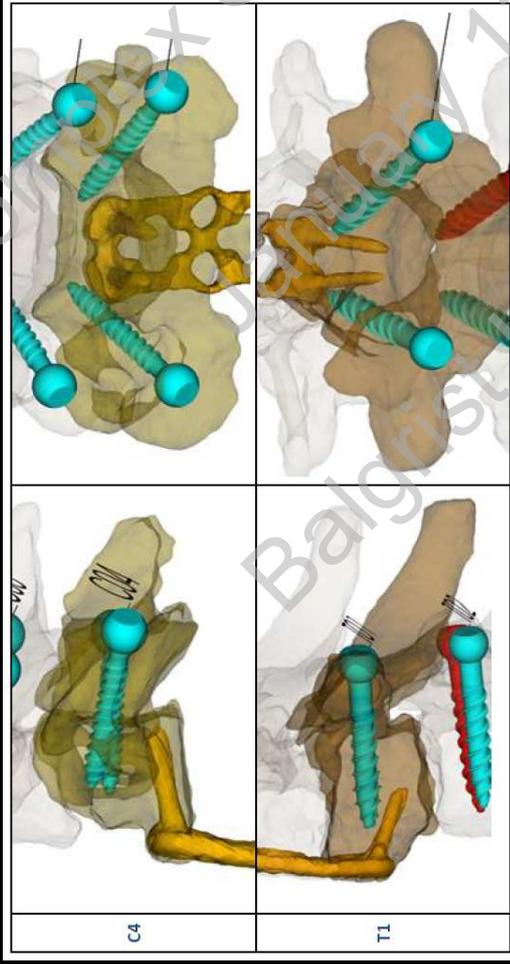
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	<50% collapse	2
	No collapse with >50% VB involved	1
	None of above	0
Posterolateral Involvement	Bilateral	3
	Unilateral	1
	None	0

Stable	Potentially Unstable	Unstable
0-6	7-12	13-18

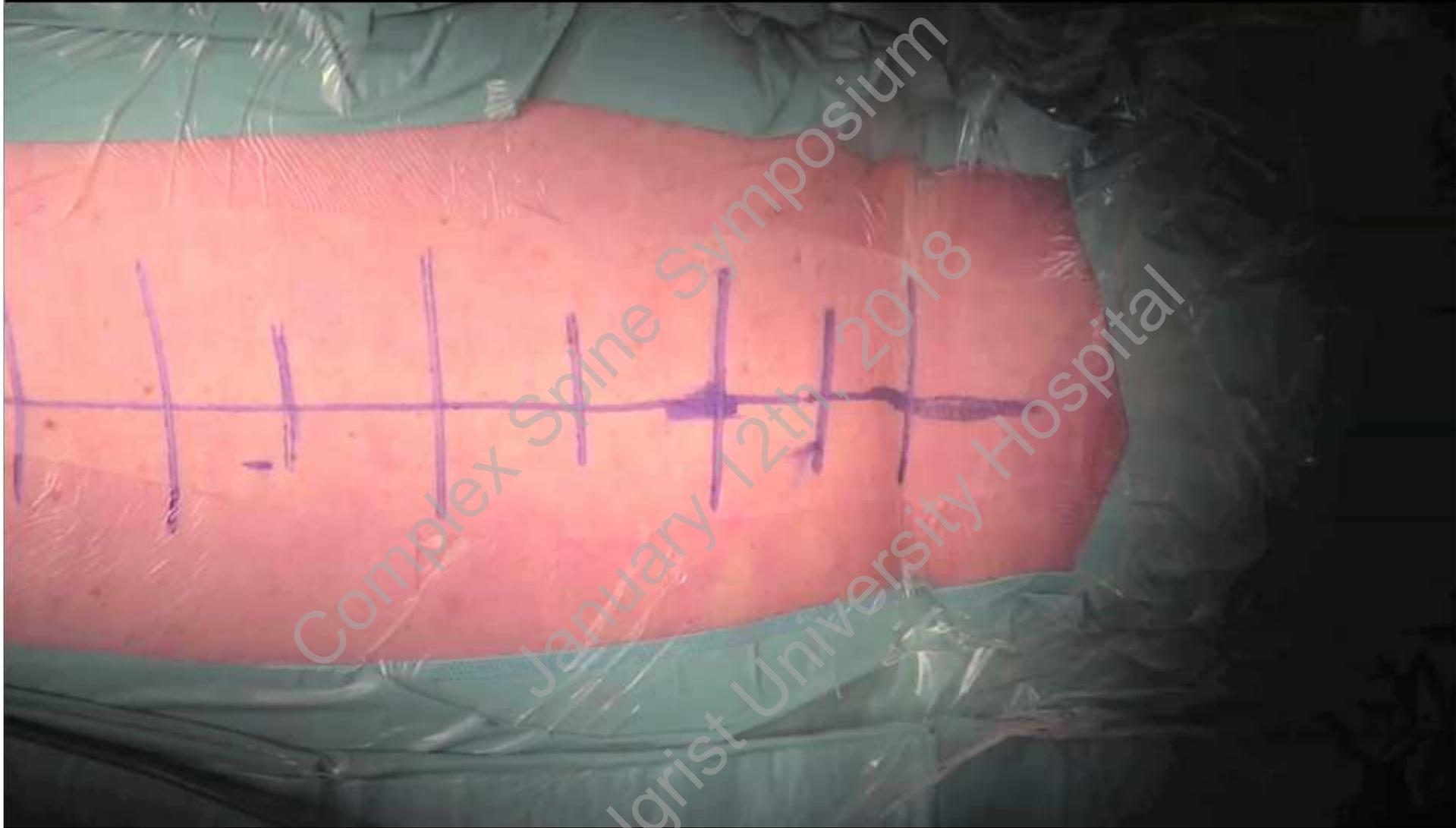




53
12 0 1
00 L 50
7-12-12
12:35



Level: C03					
SAGITTAL PLANE		TRANSVERSAL PLANE		CORONAL PLANE	
R	L	R	L	R	L
SAR: 23 deg SAR: 19 deg		TAL: 35 deg TAR: 33 deg		HDL: 20.2 mm VDL: -4.1 mm HDR: 19.6 mm VDR: -4.0 mm	
SCREW LENGTH (cross-section in the screw plane)		3D VIEW		SCREW DIAMETER (min cross-section of the pedicle)	
L	R			L	R
Length: 24 mm Cortical gap: 5 mm	Length: 22 mm Cortical gap: 6 mm			Diameter: 3.5 mm	Diameter: 3.5 mm



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C3



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C4

