

Supplemental Table 2. Demographics, preoperative and operative characteristics of individual patients exhibiting symptomatic implant failure

No.	Age (yr)	Sex	Primary tumor	SINS	ECOG preoperative	Metastasis site	Type of lesion	Levels of instrumentation	Approach (posterior, anterior, combined)	Type of surgery (posterior, anterior, combined)	Type of failure/description	Onset and presentation of failure	Revision after index surgery	Survival after surgery (mo)
Implant failure/construct failure with revision surgery														
1	49	F	Breast	8	2	C5–C6, T1, T2	Lytic	C3–T4	Open	Posterior stabilization C3–T4; posterior decompression of T2; anterior cervical corpectomy of C5–C7	T4 cord compression secondary to screw cut-out; translation and subsidence of cage; anterior plate disassembly	4 months; neurological deficit; intractable pain	Repositioning of T4 screws; extension of instrumentation to T6	41
2	62	M	Lung	9	1	T11	Mixed	T9–L3	MIS	Posterior stabilization T9–L3; laminectomy and decompression at T11	Screw pull-out	1 month; implant prominence; wound dehiscence	Removal of both L3 and single L2 screws; shortening of instrumentation to L2	65
3	56	M	Lung	13	2	T12	Lytic	T11–L1	MIS	Posterior stabilization T11–L1	Increase in kyphosis by 20°; secondary to collapse of T12; screw ploughing	1 month; neurological deficit and back pain	Anterior instrumentation T11–L1; anterior corpectomy of T12; reconstruction with cage	28
4	54	F	Nasopharynx	10	3	T11–T12	Lytic	T10–L3	Open	Posterior stabilization T10–L3; decompression T11–T12	Fracture of T9 and T10 due to local disease progression; screw cut-out and pull-out in upper vertebra	6 months; neurological deficit; severe back pain	Extension of posterior instrumentation to T6–T8; decompression of T9 and T11	8.5
5	56	M	Kidney	9	2	L2	Lytic	T12–L4	Open	Posterior stabilization T12–L4	Reduced anterior column height; reduced lordosis	10 months; neurological deficit	Anterior corpectomy and cage placement of L2	18
Symptomatic failures that cannot be managed with surgery														
6	67	M	Prostate	12	1	T3, T6–7, T12–L1	Sclerotic	C7–T9	Open	Posterior stabilization C7–T9; decompression T3–T6	Screw pull-out; increase kyphosis 14° with implant prominence at T9	36 months; intractable pain	Patient declined surgery	65
7	64	M	Kidney	12	1	T6	Lytic	T4–T8	Open	Posterior stabilization T4–T8; near total corpectomy with anterior reconstruction with cage	Increase in kyphosis 10°; anterior height loss 5 mm; cage subsidence; screw ploughing	3 months; intractable; back pain	Not revised as patient terminally ill and not fit for surgery	4
8	46	M	Lung	7	2	T12, L2	Mixed	T12–L3	Open	Posterior stabilization T12–L3; L2 anterior decompression and reconstruction with cage	Reduce anterior column height; cage subsidence; reduced lordosis; screw cut-out	3 months; intractable pain	Not revised as tumor mass was inoperable	13

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Supplemental Table 2. Continued

No.	Age (yr)	Sex	Primary tumor	SINS	ECOG preoperative	Metastasis site	Type of lesion	Levels of instrumentation	Approach	Type of surgery (posterior, anterior, combined)	Type of failure/description	Onset and presentation of failure	Revision after index surgery	Survival after surgery (mo)
9	71	M	Thyroid	10	2	L4	Lytic	L1-S1	Open	Posterior stabilization L1-S1	Disease progression in L3 and L4 leading to proximal screw pull-out	3.5 months; intractable pain	Not revised as patient terminally ill	4.5
Peri-construct disease progression														
10	59	F	Breast	14	0	C5-C7	Mixed	C3-T2	Open	Anterior corpectomy C5-C7; anterior cervical plating C4-C7; posterior stabilization from C3-T2	Peri-construct disease in T3-T4	16 months; neurological deficit; intractable pain	Extension of instrumentation in T3-T6; decompression of T3 with cementing of vertebral body	40
11	51	M	Lung	11	3	T7, T10, L1	Lytic	T6-L2	MIS	Posterior stabilization T6-L2	Peri-construct disease progression in T4 requiring extension to T1	20 months; intractable pain	Extension of posterior instrumentation up to T1; decompression laminectomy T4 with partial corpectomy	24
12	59	F	Kidney	13	0	T9-T11, L1-L3	Lytic	T9-L3	Open	Posterior stabilization T9-L3; anterior decompression and reconstruction of T12	Peri-construct disease progression in T5-T9	4 months; intractable pain	Extension of instrumentation till T2; decompression of T5 to T7	6
13	51	F	Lungs	13	2	T11	Lytic	T9-L1	Open	Posterior stabilization T9-L1; decompression of T11 & cage insertion	Peri-construct disease progression in L3	60 months; neurological deficit; instability pain	Extension of posterior instrumentation from T9-L5; corpectomy L3 with Harri's cage & cement	69
14	57	F	Cervix	7	3	L4-L5	Lytic	L2-iliac	MIS	Posterior stabilization L2-iliac; decompression of L4-S1	Screw pull-out at the lower end of the construct due to tumor progression in S1	12 months; neurological deficit	Revision of instrumentation and decompression of L3-S1	15

SINS, Spinal Instability Neoplastic Score; ECOG, Eastern Cooperation Oncology Group; F, female; M, male; MIS, minimally invasive surgery.