

APPENDIX

Analysis of sources included in the systematic review

Source	Country	Number of patients	Age of patients, years	Pathology	Localization	Material of implants	Addressed task	Technical solution
Amelot et al. [6]	France, United States of America	6	54–80	Cervical discogenic myelopathy	Subaxial cervical spine	PEEK	Anterior reconstruction	Congruent body-replacing implant
Amin et al. [41]	Australia	1	68	Complication (esophageal fistula)	Subaxial cervical spine	TiAl	"Zero" profile	Congruent body-replacing implant
Amin et al. [37]	Australia	1	53	Hemivertebra L4	Lumbar spine	TiAl	Indirect foraminal decompression	Congruent interbody implants
Ashgar et al. [11]	United States of America	135	Older than 18	Degenerative diseases	Lumbar spine	TiAl	Correction of sagittal balance	Congruent interbody implants
Baldassarre et al. [18]	Italy	1	45	Chordoma C1–C2	C1–C2	TiAl	Reconstruction C2	Body-replacing implant with a seating surface for C1
Choy et al. [19]	Australia, United States of America	1	14	Hemangioendothelioma T9	Thoracic spine	TiAl	Anterior reconstruction	Congruent body-replacing implant, coupled with a posterior construct
Chung et al. [7]	South Korea	1	55	Complication (infectious spondylitis)	Lumbar spine	TiAl	Anterior reconstruction	Congruent body-replacing implant, coupled with a posterior construct
Girolami et al. [20]	Italy	13	18–72	Tumors	Thoracic and lumbar spines	TiAl	Anterior reconstruction	Congruent body-replacing implant, coupled with a posterior construct
Girolami et al. [21]	Italy, Spain	2	65–75	Chordoma C2	Second Cervical vertebra	TiAl	Reconstruction C ₂	Body-replacing implant with a seating surface for C1
He et al. [22]	China	1	27	Chondrosarcoma C2–C7	C2, subaxial cervical spine	TiAl	Reconstruction C ₂ –C ₇	Body-replacing implant with a seating surface for C1

He et al. [23]	China	6	41–72	Tumors C1–C2, C1–C3	C1–C3	TiAl	Reconstruction C1–C2– C3	Body-replacing implant with a seating surface for C0
		1	12					
Hu et al. [10]	China	16	18–62	Tumors C2	C2	TiAl	Reconstruction C2	Body-replacing implant with a seating surface for C1
		2	12–16					
Hu et al. [24]	China, United States of America	1	51	Osteosarcoma of First Cervical to Second Cervical vertebrae	C1–C2	TiAl	Reconstruction C1–C2	Body-replacing implant with a seating surface for C1 (unsuccessfully)
		1	31	Epithelioid hemangioendothelioma of C5–T1	Subaxial cervical spine		Anterior reconstruction	Congruent body- replacing implant, coupled with a posterior construct
		5	22–53	Tumors of the thoracic spine	Thoracic spine		Anterior reconstruction	Congruent body- replacing implant (unsuccessfully)
		1	42	Complication (instability of construct)	Thoracolumbar junction			
Hunn et al. [25]	Australia	2	56–63	Tumors C2	C2	TiAl	Reconstruction C2	Body-replacing implant with a seating surface for C1
		1	72	Rheumatoid arthritis				
Jackson et al. [38]	United States of America	1	48	Klippel-Feil syndrome	Subaxial cervical spine	TiAl	Anterior fixation <i>in situ</i>	Custom anterior plate
Lador et al. [26]	Israel, United States of America	1	18	Giant-cell tumor L5	Lumbar spine	TiAl	Anterior reconstruction	Congruent body- replacing implant
		1	13	Ewing's sarcoma C3	Subaxial cervical spine			
		1	17	Aggressive hemangioma T3	Thoracic spine			

Li et al. [27]	China	1	53	Metastatic tumor C2–C4	C2, subaxial cervical spine	TiAl	Reconstruction C2–C4	Body-replacing implant with a seating surface for C1
Li et al. [8]	China	1	57	Solitary plasmacytoma C1	C1	TiAl	Partial reconstruction C1	Implant replacing the lateral mass of C1
Li et al. [39]	China	22	6–14	Cervical hemivertebrae	Subaxial cervical spine	TiAl	Distraction on the concave side	Congruent interbody implant
Li et al. [42]	United Kingdom	1	2	Complication (failure of integuments)	Lumbar spine	TiAl	Low-profile implant	Monolithic component of the construct without a connecting node
Mobbs et al. [28]	Australia	1	63	Chordoma C1–C2	C1–C2	TiAl	Reconstruction C1–C2	Body-replacing implant with a seating surface for C0
		1	52	Hemivertebra L5	Lumbar spine	TiAl	Correction of sagittal balance	Congruent interbody implant
Mobbs et al. [13]	Australia	1	34	Spondylolysis L5, foraminal stenosis	Lumbar spine	TiAl	Correction of sagittal balance	Congruent interbody implant
Mobbs et al. [45]	Australia	1	31	Fracture C7	Subaxial cervical spine	TiAl	Anterior reconstruction	Congruent body-replacing implant
Parr et al. [29]	Australia	1	45	Chordoma C3–C5	Subaxial cervical spine	TiAl	Anterior reconstruction	Congruent body-replacing implant
Pesante et al. [40]	United States of America	1	50	Hemivertebra L5	Lumbar spine	TiAl	Anterior correction	Multiple congruent interbody implants
Phan et al. [14]	Australia	1	65	Osteoarthritis C1–C2	First Cervical to Second Cervical vertebrae	TiAl	Transarticular arthrodesis	Implant-template
Shkarubo et al. [30]	Russia, Cyprus	1	53	Fracture dislocation C2	First Cervical to Second Cervical vertebrae	TiAl	Anterior stabilization	Custom low-profile plate
		1	14	Basilar impression				
		1	38					
		1	55	Meningioma of Craniovertebral junction				
		1	31	Aggressive aneurysmal bone cyst C2	First Cervical to Third Cervical vertebrae			
Siu et al. [15]	Australia	1	74	Degenerative scoliosis	Lumbar spine	TiAl	Anterior correction	Multiple congruent interbody implants
Smith et al. [12]	United States of	65	70 (average)	Deformities	Thoracic and lumbar	TiAl	Correction of sagittal	Congruent interbody

	America				spines		balance	implant
Spetzger et al. [16]	Germany	1	Not specified	Cervical discogenic myelopathy	Subaxial cervical spine	TiAl	Anterior stabilization	Congruent interbody implant
Sun et al. [31]	China	2	31–51	Tumors	Subaxial cervical and thoracic spines	TiAl	Anterior reconstruction	Congruent body-replacing implant, coupled with a posterior construct
		6	22–53		Thoracic spine			

Thayaparan et al. [43]	Australia	1	72	Revision (instability of construct)	Lumbosacral spine	TiAl	Lumbosacral stabilization without S1 fixation	Rod with several "branches" for sacropelvic fixation
Thayaparan et al. [17]	Australia	2	69–76	Osteoarthritis C1–C2	C1–C2	TiAl	Transarticular arthrodesis	Implant-temple
Tredan et al. [44]	Australia	1	39	Revision (instability of construct)	Subaxial cervical spine	TiAl	Anterior reconstruction	Congruent body-replacing implant
Wei et al. [32]	China	6	18–59	Tumors C2	C2	TiAl	Reconstruction C2	Body-replacing implant with a seating surface for C1
		2	16–17					
Willemsen et al. [9]	Netherlands	1	16	Neurofibromatosis	Thoracic spine	TiAl	Anterior stabilization	Anterior "bridge-like" implant
		1	68	Gorham's disease				
Willemsen et al. [46]	Netherlands	1	20	Neurofibromatosis	Thoracic spine	TiAl	Anterior stabilization	Anterior "bridge-like" implant
Xu et al. [33]	China	1	12	Ewing's sarcoma C2	C2	TiAl	Reconstruction C2	Body-replacing implant with a seating surface for C1
Yang et al. [34]	China	1	40	Chordoma C3–T1	Subaxial cervical and thoracic spines	TiAl	Anterior reconstruction	Low-profile body-replacing implant
Zaborovskii et al. [35]	Russia	5	44–58	Tumors	Thoracic and lumbar spines	PEEK	Anterior reconstruction	Congruent body-replacing implant, coupled with a posterior construct
Kerimbaev et al., [36]	Kazakhstan	4	37–64	Tumors	Thoracic spine	TiAl	Anterior reconstruction	Congruent body-replacing implant

TiAl – products made of TiAl; PEEK – products made of polyetheretherketone.