Supplementary Material (4). Included Studies' Characteristics

AUTHOR	YEAR	JOURNAL	COUNTRY	FUNDING	STUDY DESIGN	Number of Patients ACDF	Number of Patients HS	FOLLOW-UP DURATION MONTHS	Patient AGE ACDF	Patient AGE HS	Patient SEX ACDF (M/F)	Patient SEX HS (M/F)	Operated levels	Study arms
Tabanli et al	2024	Joint Diseases and Related Surgery	Turkey	Declared: The authors received NO financial support for the research	Retrospective study	40	40	ACDF: 27.5±6.1 HS: 21.1±5.0	55.6±7.9	46.5±9.1	26 /14	25 /15	2	3 (ACDF, HS, CDA)
Hung et al	2018	Clinical Neurology and Neurosurgery	China	Not reported	Retrospective	20	22	21–35	61.59±7.89	55.45±9.12	12/8	10/12	3	3(ACDF, HS, TDR)
Wang et al	2018	World Neurosurgery	China	National funding for nature, No. 61474107	Retrospective	33	30	ACDF: 83.7±17.0 HS: 84.4±16.8	59.9±5.4	58.4±6.5	16 / 17	14 / 16	2	3 (ACDF, HS, CADR)
Xiong et al	2018	SPINE	China	Declared: No funds were received in support of this work.	Retrospective	22	20	ACDF: 79.68±15.44 HS: 77.25±17.61	55.77±8.69	54.40±8.56	7/15	8 / 12	2	2 (ACDF, HS)
Jang et al	2017	The Journal of Korean Neurosurgical Society	Korea	Not reported	Retrospective	30	19	ACDF: 32.2 ± 13.1 HS: 30.5 ± 18.6	60.2±14.4	53.5±12.9	21 / 9	13/6	3	2 (ACDF, HS)
Ji et al	2017	Clinical spine surgery	South Korea	Not reported	Prospective	20	20	60	48.0 ± 9.9	45.7 ± 7.1	12/8	10/10	2	2 (ACDF, HS)
Grasso	2015	European spine journal	Italy	Not reported	Prospective	20	20	24-40	47.3	44.2	11/9	10/10	2	3 (ACDF, HS, CDA)
Hey et al	2013	European spine journal	Singapore	Not reported	Prospective pilot study with retrospective controls	7	7	24	(Median 48, SD 6.91)	(Median 51, SD 7.74)	4/ 3	3/ 4	2 LEVEL: 8 pts 3 LEVEL:6 pts	3(ACDF, ADR, HS)
Kang et al	2013	ORTHOPEDICS	China	Declared: No relevant financial relationships disclosed	Prospective	12	12	24-48	55.4 ± 6.7	53.7 ± 6.1	7/5	7/5	3	2 (ACDF, HS)

ACDF; anterior cervical discectomy and fusion, HS; hybrid surgery, CDA; cervical disc arthroplasty, TDR; total disc replacement, CADR; cervical artificial disc replacement , ADR; artificial disc replacement

Supplementary Material (4). Included Studies' Characteristics

Continued

AUTHOR	YEAR	Type of implant	Out Come Measures (Clinical)	Outcome Measures (Radiological)	Safety Outcome Measures (Complications)
Tabanli et al	2024	In the ACDF group, discectomy was followed by the placement of an intervertebral cage. In the CDA group, a cervical disc prosthesis was implanted following discectomy. In cases of HS, a combination of ACDF and CDA techniques was used to treat different levels, BUT STUDY DIDNT SPECIFY THE IMPLANT TYPE USED	1- Visual Analog Scale (VAS) for neck/arm 2-Neck Disability Index (NDI)	1- C2-C7 sagittal vertical axis (SVA) distance 2-Global cervical range of motion ROM 3-Cervical lordosis (CL) 4-T1 slope (T1S) 4-T1 slope (T1S)	1-complications; dysphagia, neurological, infections
Hung et al	2018	Prestige LP® Cervical Disc for arthroplasty for all cases except one (one level); for that one exception, used BRYAN®. For one case (one level), used PRODISC® C during HS	1-VAS (neck and arm) 2-JOA score 3-NDI	1-C2–7 sagittal vertical axis (SVA) 2-C2–7 lordosis, 3-focal lordosis, 4-C7 slope 5-C2-7 ROM	1-operative time 2- estimated blood loss 3-dysphagia 4-dural tear 5-revison surgery
Wang et al	2018	**HS group:** Combination of ProDisc-C (Depuy Synthes, Raynham, MA, USA) or Mobi-C (LDR Medical, Troyes, France)) with MC plus anterior cervical intervertebral fusion cages (LDR, France) **ACDF group:** MC plus anterior cervical fusion cages (LDR, France)	1-VAS (neck and arm) 2-JOA score 3-NDI 4-Odom criteria	1-C2–C7 ROM 2-superior adjacent segments ROM 3- Inferior adjacent segments ROM 4-cervical lordosis (CL)	1-operative time 2- estimated blood loss 3-Dysphagia and hoarseness 4-C5 palsy 5-Cerebral fluid leakage 6-Infection 7-Subsidence 8-adjacent segment degeneration (ASD) 9- heterotopic ossification (HO)
Xiong et al	2018	**HS group**: Combination of Bryan cervical disc prostheses (Medtronic, USA) and MC plus anterior cervical intervertebral fusion cages (a self-locking stand-alone PEEK cage system, LDR, France) **ACDF group**: MC plus anterior cervical intervertebral fusion cages only (LDR, France)	1-VAS (neck and arm) 2-JOA score 3-NDI	1-local cervical lordosis of treated levels 2-global ROM (C2–C7) 3-superior adjacent segments ROM 4- Inferior adjacent segments ROM	1-operative time 2- estimated blood loss 3-the superior or inferior vertebral sagittal wedge deformity (SWD) 4- heterotopic ossification (HO) 5-adjacent segment degeneration (ASD) 7-implant migration

JOA; Japanese Orthopedic Association, ROM; range of motion.

Continued

Supplementary Material (4). Included Studies' Characteristics

AUTHOR	YEAR	Type of implant	Out Come Measures (Clinical)	Outcome Measures (Radiological)	Safety Outcome Measures (Complications)
Jang et al	2017	ACDF group: fusion with a cervical plate system (Zephir plate; Medtronic, Memphis, TN, USA); HS group: hybrid surgery combining ACDF with cervical disc replacement using Active-C disc® (B. Braun, Sheffield, UK) and Baguera C® (Spineart, Paris, France)	1-VAS (arm) 2-NDI 3-Odom criteria	1-ROM for C2–C7 2-fusion rate	1-surgery related complications (soft tissue swelling, infections, hematoma, dysphagia and hoarse-ness) 2-adjacent segment degeneration 3-implant related complications
Ji et al	2017	HS group: artificial disk(Mobi-C disc; LDR Medical, Troyes, France) combined with fusion with a cage (Fidji cage; Spine Next, Bordeaux, France) filled with bovine bone (Lubboc; Transphyto S.A., Clermont- Ferrand, France) ACDF group: 2-level anterior cervical discectomy and fusion using an autogenous iliac-crest graft and a cervical plate system (Zephir plate; Medtronic, Memphis, TN	1-VAS (neck and arm) 2-NDI	1-C2–C7 ROM 2-superior adjacent segments ROM 4- Inferior adjacent segments ROM	1- heterotopic ossification (HO) 2-operative time 3-implant related complications 4-surgery related complications (infections, neurological compromise) 5-Blood loss
Grasso	2015	For ACDF: ROI-C cages (LDR Medical, France) packed with demineralized bone matrix and fixed with a dedicated double anchoring system; for hybrid surgery (HS): a combination of ACDF (using ROI-C cage) and CDA (using ProDisc-C or Mobi-C) was applied.	1-VAS neck and arm 2-JOA 3-NDI 4-Return-to-work time 5-hospital stay	1-overall cervical ROM, 2-disc height restoration, 3-adjacent disc space changes	1- heterotopic ossification (HO) 2-operative time 3-implant related complications 4-dysphagia
Hey et al	2013	Disc arthroplasty implants used in the study were Prodisc-C (Synthes Spine, Paoli, PA, USA). Fusion constructs were performed using Cervical cages (Synthes spine, West Chester, PA). Iliac crest autograft was used for fusion	1-EQ-5D Health score 2-hospital stay 3-return-to-work time 4-VAS 5-NDI 6-EQ-5D index	1- Global ROM	1-operative time 2-blood loss 3-Post-op drop in Hemoglobin 4-surgery related complications 5-implant related complications 6- heterotopic ossification (HO)
Kang et al	2013	arthrodesis with an autogenous iliac-crest graft and a cervical plate system (Synthes Spine, West Chester, Pennsylvania). The hybrid constructs using ProDisc-C (Synthes Spine) combined with midlevel fusion with cervical interbody fusion cage or ZERO-P (Synthes Spine) filled with iliac bone.	1- VAS neck/arm scores; 2-Neck Disability Index (NDI) 3-return-to-work time	1-C2–C7 ROM 2-adjacent segment ROM	1-heterotopic ossification 2-ASD 3-implant subsidence 4-operative time 5-blood loss

EQ-5D; standardised measure of health-related quality of life developed by the EuroQol Group, ASD; adjacent segment degeneration.