

TABLE E-1 Identification of the 168 Search Results

Search	Embase	PubMed	Cochrane Central Register of Controlled Trials
([prosthesis or prostheses or arthroplasty] OR [artificial {disc or disk}]) AND (cervical anterior [discectomy or diskectomy]) AND (randomized clinical trial)			
	56		
(prosthesis or prostheses or arthroplasty) AND (cervical anterior [discectomy or diskectomy]) AND (randomized clinical trial)			
		50	
Cochrane reviews			1
Clinical trials			31
Technology assessments			2
(artificial [disc or disk]) AND (cervical anterior [discectomy or diskectomy]) AND (randomized clinical trial)			
		12	
Cochrane reviews			2
Clinical trials			12
Technology assessments			2

TABLE E-2 Methodological Quality of the Included Studies

Study	Randomization	Allocation Concealment	Blinding	Loss to Follow-up	Level of Evidence
Anakwenze et al. ⁴⁵	Adequate	Comparable	Yes	Yes	I
Burkus et al. ²⁴	Adequate	Comparable	Yes	Yes	I
Cheng et al. ²⁵	Adequate	Unclear	Unclear	Yes	II
Coric et al. ²⁶	Adequate	Comparable	Yes	Yes	I
Coric et al. ²¹	Adequate	Comparable	Yes	Yes	I
Delamarter et al. ²⁷	Adequate	Unclear	Yes	Yes	II
Garrido et al. ²⁸	Adequate	Comparable	Yes	Yes	I
Grob et al. ²⁹	Adequate	Unclear	Yes	Yes	II
Heller et al. ¹⁴	Adequate	Unclear	Yes	Yes	II
Jawahar et al. ³⁰	Adequate	Comparable	Yes	Yes	I
Kelly et al. ³¹	Adequate	Comparable	Yes	Yes	I
McAfee et al. ³²	Adequate	Comparable	Yes	Yes	I
Mummaneni et al. ³³	Adequate	Comparable	Yes	Yes	I
Murrey et al. ¹⁸	Adequate	Comparable	Yes	Yes	I
Nabhan et al. ³⁴	Adequate	Unclear	Unclear	Yes	II
Nabhan et al. ²⁰	Adequate	Unclear	Unclear	Yes	II
Park et al. ³⁵	Adequate	Comparable	Yes	Yes	I
Porchet et al. ³⁶	Adequate	Unclear	Yes	Yes	II
Powell et al. ³⁷	Adequate	Comparable	Unclear	Not stated	II
Sasso et al. ³⁸	Adequate	Unclear	Yes	Yes	II
Sasso and Best ³⁹	Adequate	Unclear	Yes	Yes	II
Sasso et al. ⁴⁰	Adequate	Unclear	Yes	Yes	II
Sasso et al. ⁴¹	Adequate	Unclear	Yes	Yes	II
Sasso et al. ⁴²	Adequate	Unclear	Yes	Yes	II
Segebarth et al. ⁴³	Adequate	Unclear	Yes	Yes	II
Steinmetz et al. ¹⁶	Adequate	Comparable	Yes	Yes	I
Wang et al. ⁴⁴	Adequate	Unclear	Unclear	Yes	II

TABLE E-3 Summary of Study Characteristics*

Studies	Target Population	IDE	No. of Patients, Arthroplasty/ACDF	Duration of Follow-up (mo)	Prostheses	Male, Arthroplasty/ACDF (%)	Age, Arthroplasty/ACDF (yr)
Anakwenze et al. ⁴⁵	US	Y	89/91	24	ProDisc-C	46/53	42.2 ± 7.5/41.7 ± 7.9
Burkus et al. ²⁴	US	Y	276/265	60	Prestige	46.4/46.0	43.3 (25-72)/43.9 (22-73)
Cheng et al. ²⁵	US	N	31/34	24	Bryan	51.6/50.0	45/47
Coric et al. ²⁶	US	Y	17/16	12	Bryan	47/50	43/43
Coric et al. ²¹	US	Y	57/41	38 (24-67)	Bryan, Kineflex/C, and Discover	54.4/51.2	46.6/46.3
Delamarter et al. ²⁷	US	Y	103/106	48	ProDisc-C	55.3/53.8	42.1 ± 8.4/43.5 ± 7.2
Garrido et al. ²⁸	US	Y	21/26	48	Bryan	61.9/65.4	40.0/43.3
Grob et al. ²⁹	Europe	N	73/269	24	Prestige II, Discover, Bryan, and ProDisc-C	46.6/50.6	45.8 ± 7.9/56.1 ± 10.8
Heller et al. ¹⁴	US	Y	242/221	24	Bryan	45.5/51.1	44.4/44.7
Jawahar et al. ³⁰	US	Y	39/25	37 (24-49)	Kineflex-C, Mobi-C, and Advent	35.5/47.1	Not stated
Kelly et al. ³¹	US	Y	100/99	24	Not stated	44/46.5	42.1 ± 8.4/43.5 ± 7.1
McAfee et al. ³²	US	Y	151/100	24	PCM	50.3/47.0	45 ± 10/44 ± 8
Mummaneni et al. ³³	US	Y	276/265	24	Prestige ST	46.4/46.0	43.3 (25-72)/43.9 (22-73)
Murrey et al. ¹⁸	US	Y	103/106	24	ProDisc-C	44.7/46.2	42.1 ± 8.4/43.5 ± 7.1

Nabhan et al. ³⁴	Germany	N	25/24	12	ProDisc-C	23 total	44
Nabhan et al. ²⁰	Germany	N	16/17	24 weeks	ProDisc-C	19 total	44 ± 11
Park et al. ³⁵	US	Y	272/182	12	PCM	Similar	45.0 ± 9.1/44.0 ± 8.5
Porchet et al. ³⁶	UK, Belgium, Australia, Switzerland	N	27/28	12	Prestige II	63.0/42.9	44 ± 8.9/43 ± 6.9 (32-64/28-58)
Powell et al. ³⁷	US	N	22/26	24	Bryan	61.9/65.4	40.0/43.3
Sasso et al. ³⁸	US	Y	56/59	24	Bryan	53.6/54.2	42.5 ± 7.8/46.1 ± 7.8
Sasso and Best ³⁹	US	Y	9/13	24	Bryan	Not stated	42.4 ± 5.4 (32-53)
Sasso et al. ⁴⁰	US	Y	56/59	24	Bryan	53.6/54.2	42.5 ± 7.8/46.1 ± 7.8
Sasso et al. ⁴¹	US	Y	242/221	24	Bryan	45.5 /51.1	44.4 /44.7
Sasso et al. ⁴²	US	Y	22/26	24	Bryan	Not stated	Not stated
Segebarth et al. ⁴³	US	Y	45/42	18.2	ProDisc-C	64.4/45.2	43/44.6
Steinmetz et al. ¹⁶	US	Y	47/46	24	Bryan and Prestige ST	48.9/69.6	44.3 ± 6.5/43.9 ± 8.3
Wang et al. ⁴⁴	China	N	28/31	24	Bryan	53.6/54.8	42/41

*IDE is a prospective, randomized, multicenter Investigational Device Exemption trial allowed by the Food and Drug Administration, and ACDF = anterior cervical discectomy and fusion.

TABLE E-4 Study Funding

Study	Funding
Anakwenze et al. ⁴⁵	Corporate/industry funds were received in support of this work
Burkus et al. ²⁴	Not described
Cheng et al. ²⁵	Not described
Coric et al. ²⁶	Not described
Coric et al. ²¹	Not described
Delamarter et al. ²⁷	Not described
Garrido et al. ²⁸	Not described
Grob et al. ²⁹	This study was supported by the Schulthess Klinik Research Fund
Heller et al. ¹⁴	Not described
Jawahar et al. ³⁰	Not described
Kelly et al. ³¹	Synthes USA Products, LLC, West Chester, PA provided direct research support
McAfee et al. ³²	Not described
Mummaneni et al. ³³	Not described
Murrey et al. ¹⁸	Not described
Nabhan et al. ³⁴	No funds were received in support of this work
Nabhan et al. ²⁰	Not described
Park et al. ³⁵	No funds were received in support of this work
Porchet et al. ³⁶	Not described
Powell et al. ³⁷	Not described
Sasso et al. ³⁸	Corporate/industry funds were received in support of this work
Sasso and Best ³⁹	Not described
Sasso et al. ⁴⁰	Not described
Sasso et al. ⁴¹	Not described
Sasso et al. ⁴²	Not described
Segebarth et al. ⁴³	Not described
Steinmetz et al. ¹⁶	Not described
Wang et al. ⁴⁴	Not described

TABLE E-5 Excluded Papers

Year	1st Author	Journal	Exclusion Reason*
2000	Hacker RJ	Spine (Phila Pa 1976)	No cervical disc arthroplasty
2001	Wigfield CC	Spine	Review
2002	Bärlocher CB	Neurosurg Focus	No cervical disc arthroplasty
2002	Gibson S	Spine (Phila Pa 1976)	Focus on lumbar disc
2003	Baskin DS	Spine	No cervical disc arthroplasty
2003	Meier U	Neurosurgery Quarterly	No cervical disc arthroplasty
2004	Cho DY	Surg Neurol	No cervical disc arthroplasty
2004	Gibson S	Neurosurg Focus	Trial design
2004	Johnson JP	Neurosurg Focus	Not randomized
2004	Porras-Estrada LF	Neurocirugia (Astur)	No cervical disc arthroplasty
2005	Acosta FL Jr	Neurosurg Clin N Am	Review
2005	Cho DY	Surg Neurol	No cervical disc arthroplasty
2005	Hacker RJ	J Neurosurg Spine	No full text found
2006	Bartels RH	BMC Musculoskelet Disord	Study design
2006	Brodke DS	J Bone Joint Surg Am	No cervical disc arthroplasty
2006	McAfee PC	Current Opinion in Orthopaedics	Review
2006	Nabhan A	Eur Spine J	No full text found
2006	Ryu SI	Eur Spine J	No cervical disc arthroplasty
2006	Thomé C	J Neurosurg Spine	No cervical disc arthroplasty
2007	Aryan HE	Spine	No cervical disc arthroplasty
2007	Benzel EC	J Neurosurg Spine	Discussion
2007	Blue Cross Blue Shield Association	Chicago IL: Blue Cross Blue Shield Association (BCBS)	Technology assessments
2007	Celik SE	J Neurosurg Spine	No cervical disc arthroplasty
2007	Lind BI	Eur Spine J	No cervical disc arthroplasty
2007	Nabhan A	J Long Term Eff Med Implants	No full text found
2007	Nabhan A	Zentralbl Neurochir	No cervical disc arthroplasty
2007	Oktenoglu T	J Spinal Disord Tech	No cervical disc arthroplasty
2007	Resnick DK	Neurosurgery	Review
2007	Schröder J	Zentralbl Neurochir	No cervical disc arthroplasty

2007	Stulik J	Eur Spine J	No cervical disc arthroplasty
2008	No authors listed	Technol Eval Cent Asses Program Exec Summ	Technology assessments
2008	Anderson PA	Spine (Phila Pa 1976)	A part of IDE, focus on adverse events and repeated in other IDE studies
2008	Blue Cross Blue Shield Association	Chicago, IL: Blue Cross Blue Shield Association (BCBS)	Technology assessments
2008	Botelho RV	Spine (Phila Pa 1976)	Discussion
2008	Dai LY	Eur Spine J	No cervical disc arthroplasty
2008	Fernández-Fairen M	Spine (Phila Pa 1976)	No cervical disc arthroplasty
2008	He D	Journal of Clinical Rehabilitative Tissue Engineering Research	Biomechanical test
2008	Riina J	Am J Orthop (Belle Mead NJ)	No full text found
2008	Seo M	British Journal of Neurosurgery	Review
2009	No authors listed	Spine	No full text found
2009	Anderson PA	Spine (Phila Pa 1976)	A part of IDE and focus on logistic analysis
2009	Bartels RH	Spine (Phila Pa 1976)	Discussion
2009	Blue Cross Blue Shield Association	Chicago, IL: Blue Cross Blue Shield Association (BCBS)	Technology assessments
2009	Buchowski JM	J Bone Joint Surg Am	No full text found
2009	Duggal N	Current Orthopaedic Practice	Review
2009	Fekete TF	Acta Neurochir (Wien)	Review
2009	Haid RW	Spine	No full text found
2009	Kast E	Neurosurg Rev	No cervical disc arthroplasty
2009	Kelly MP	Spine	No full text found
2009	Nabhan A	J Spinal Disord Tech	No cervical disc arthroplasty
2009	Nunley PD	Spine J	No cervical disc arthroplasty
2009	Phillips FM	Spine (Phila Pa 1976)	Only arthroplasty
2009	Pitzen TR	Spine (Phila Pa 1976)	No cervical disc arthroplasty
2009	Teng WR	Zhongguo Gu Shang	Drug treatment
2009	Xu JX	Spine (Phila Pa 1976)	Investigate the modified techniques of cervical arthroplasty with Bryan disc
2010	Arts MP	BMC Musculoskelet Disord	Study design

2010	Bartels RH	Neurosurgery	Review
2010	Bae HW	Spine Journal	No full text found
2010	Botelho RV	Neurosurg Focus	Review
2010	Hsu WK	Techniques in Orthopaedics	Review
2010	Jiang H	Neurosurgery	Review
2010	Koh EY	Techniques in Orthopaedics	Review
2010	Lied B	BMC Surg	No cervical disc arthroplasty
2010	Lofgren H	European Spine Journal	No cervical disc arthroplasty
2010	Marzluff J	Spine Journal	No full text found
2010	Menzin J	Techniques in Orthopaedics	Review
2010	Nikolaidis I	Cochrane Database Syst Rev	Review
2010	O'Leary PT	Spine Journal	Only arthroplasty included
2010	Oliveira L	Spine Journal	No full text found
2010	Pitzen T	Spine Journal	No cervical disc arthroplasty
2010	Tang W	Journal of Clinical Rehabilitative Tissue Engineering Research	Review
2010	Tumialán LM	Neurosurg Focus	Review
2011	Jacobs W	Cochrane Database Syst Rev	Review

*IDE = Investigational Device Exemption trial.