Australian Orthopaedic Association National Joint Replacement Registry

2025 SUPPLEMENTARY REPORT

Demographics of Spinal Disc Arthroplasty

Australian Orthopaedic Association National Joint Replacement Registry

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Demographics of Spinal Disc Arthroplasty

2025 Supplementary Report

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Australian Orthopaedic Association
National Joint Replacement Registry

Demographics of Spinal Disc Arthroplasty

2025 Supplementary Report

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Introduction

The 2025 Demographics of Spinal Disc Arthroplasty Supplementary Report is based on the analysis of 13,620 spinal disc procedures recorded by the Registry with a procedure date up to and including 31 December 2024.

This supplementary report provides summary data and demographic information on spinal disc replacement surgery.

Data are broken down into the five classes of spinal disc replacement: spinal segment, spinal ball trough, insert and endplate, cervical intervertebral disc and lumbar intervertebral disc. Revision rates are not provided for spinal disc replacement.

The Spinal Disc Arthroplasty Report is one of 14 supplementary reports to complete the AOANJRR Annual Report for 2025.

Information on the background, purpose, aims, benefits and governance of the Registry can be found in the Introductory chapter of the 2025 Hip, Knee and Shoulder Arthroplasty Annual Report.

The Registry data quality processes, including data collection, validation and outcome assessment, are provided in detail in the Data Quality chapter of the 2025 Hip, Knee and Shoulder Arthroplasty Annual Report: https://aoanjrr.sahmri.com/annual-reports-2025

Spinal Disc Replacement

Demographics of Spinal Disc Replacement

Table SD1 Number of Primary Spinal Disc Replacements by Gender

Spinal Disc Replacement	Male		Female		TOTAL	
	N	Total%	N	Total%	N	Total%
Spinal Segment	197	1.4	162	1.2	359	2.6
Spinal Ball Trough	1729	12.7	1564	11.5	3293	24.2
Insert & Endplates	530	3.9	315	2.3	845	6.2
Intervertebral Disc (Cervical)	3026	22.2	2620	19.2	5646	41.5
Intervertebral Disc (Lumbar)	2143	15.7	1334	9.8	3477	25.5
TOTAL	7625	56.0	5995	44.0	13620	100.0

Table SD2 Number of Primary Spinal Disc Replacements by Age

Spinal Disc Replacement	<55		55-64		65-74		75-84		≥85		TOTAL	
	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%
Spinal Segment	317	2.3	26	0.2	15	0.1	1	0.0	.	.	359	2.6
Spinal Ball Trough	2651	19.5	469	3.4	150	1.1	21	0.2	2	0.0	3293	24.2
Insert & Endplates	686	5.0	110	0.8	42	0.3	7	0.1	.	.	845	6.2
Intervertebral Disc (Cervical)	4501	33.0	905	6.6	223	1.6	17	0.1	.	.	5646	41.5
Intervertebral Disc (Lumbar)	2735	20.1	497	3.6	206	1.5	38	0.3	1	0.0	3477	25.5
TOTAL	10890	80.0	2007	14.7	636	4.7	84	0.6	3	0.0	13620	100.0

Table SD3 Number of Primary Spinal Disc Replacements by Year of Implant

Year of Implant	Spinal Segment		Spinal Ball Trough		Insert & Endplates		Intervertebral Disc (Cervical)		Intervertebral Disc (Lumbar)		TOTAL	
	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%
2007	1	0.0	4	0.0	1	0.0	.	.	1	0.0	7	0.1
2008	39	0.3	40	0.3	23	0.2	2	0.0	11	0.1	115	0.8
2009	36	0.3	31	0.2	27	0.2	3	0.0	4	0.0	101	0.7
2010	57	0.4	15	0.1	32	0.2	23	0.2	14	0.1	141	1.0
2011	51	0.4	14	0.1	30	0.2	33	0.2	14	0.1	142	1.0
2012	26	0.2	7	0.1	22	0.2	64	0.5	36	0.3	155	1.1
2013	30	0.2	116	0.9	44	0.3	139	1.0	52	0.4	381	2.8
2014	30	0.2	192	1.4	33	0.2	301	2.2	89	0.7	645	4.7
2015	18	0.1	257	1.9	25	0.2	403	3.0	265	1.9	968	7.1
2016	24	0.2	264	1.9	24	0.2	313	2.3	316	2.3	941	6.9
2017	21	0.2	338	2.5	21	0.2	514	3.8	415	3.0	1309	9.6
2018	13	0.1	386	2.8	22	0.2	558	4.1	400	2.9	1379	10.1
2019	4	0.0	297	2.2	25	0.2	683	5.0	458	3.4	1467	10.8
2020	.	.	278	2.0	32	0.2	618	4.5	436	3.2	1364	10.0
2021	2	0.0	222	1.6	25	0.2	666	4.9	396	2.9	1311	9.6
2022	6	0.0	217	1.6	123	0.9	476	3.5	213	1.6	1035	7.6
2023	1	0.0	310	2.3	164	1.2	421	3.1	195	1.4	1091	8.0
2024	.	.	305	2.2	172	1.3	429	3.1	162	1.2	1068	7.8
TOTAL	359	2.6	3293	24.2	845	6.2	5646	41.5	3477	25.5	13620	100.0

Table SD4 Number of Primary Spinal Disc Replacements by Level

Spinal Disk Replacement	Spinal Segment		Spinal Ball Trough		Insert & Endplates		Intervertebral Disc (Cervical)		Intervertebral Disc (Lumbar)		TOTAL	
	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%
T12-L1	.	.	1	0.0	1	0.0	.	.	.	.	2	0.0
L1-L2	1	0.0	6	0.0	.	.	.	.	10	0.1	17	0.1
L2-L3	9	0.1	.	.	34	0.2	.	.	151	1.1	194	1.4
L3-L4	46	0.3	12	0.1	172	1.3	.	.	519	3.8	749	5.5
L4-L5	227	1.7	19	0.1	432	3.2	.	.	1876	13.8	2554	18.8
L5-S1	64	0.5	5	0.0	194	1.4	.	.	921	6.8	1184	8.7
C2-C3	.	.	7	0.1	.	.	5	0.0	.	.	12	0.1
C3-C4	1	0.0	181	1.3	2	0.0	161	1.2	.	.	345	2.5
C4-C5	1	0.0	583	4.3	4	0.0	717	5.3	.	.	1305	9.6
C5-C6	8	0.1	1494	11.0	3	0.0	2626	19.3	.	.	4131	30.3
C6-C7	2	0.0	965	7.1	3	0.0	2076	15.2	.	.	3046	22.4
C7-T1	.	.	20	0.1	.	.	61	0.4	.	.	81	0.6
TOTAL	**359**	**2.6**	**3293**	**24.2**	**845**	**6.2**	**5646**	**41.5**	**3477**	**25.5**	**13620**	**100.0**

Primary Spinal Disc Replacement

Table SD5 Age and Gender of Primary Spinal Disc Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	5995	44.0%	15	87	45	45.7	10.6
Male	7625	56.0%	17	99	45	45.8	10.9
TOTAL	**13620**	**100.0%**	**15**	**99**	**45**	**45.8**	**10.8**

Figure SD1 Primary Spinal Disc Replacement by Age and Gender

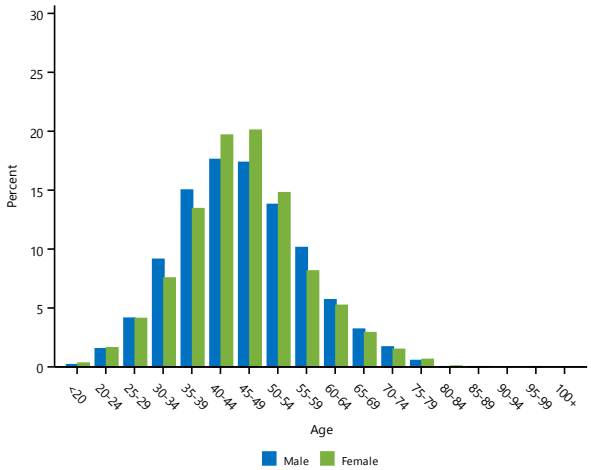

Table SD6 Primary Spinal Disc Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	12139	89.1
Disc Disease Without Radiculopathy	1036	7.6
Pain Of Unknown Cause	135	1.0
Spondylolisthesis	104	0.8
Adjacent To Concurrent Fusion	85	0.6
Adjacent Segment Syndrome	42	0.3
Post Laminectomy Or Discectomy	38	0.3
Other	41	0.3
TOTAL	**13620**	**100.0**

Primary Spinal Segment Replacement

Table SD7 Age and Gender of Primary Spinal Segment Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	162	45.1%	19	73	40	40.4	10.8
Male	197	54.9%	19	75	40	41.9	11.4
TOTAL	**359**	**100.0%**	**19**	**75**	**40**	**41.2**	**11.1**

Figure SD2 Primary Spinal Segment Replacement by Age and Gender

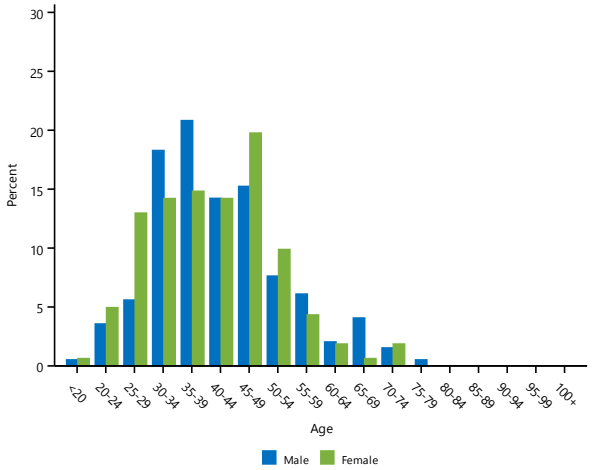

Table SD8 Primary Spinal Segment Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease Without Radiculopathy	183	51.0
Disc Disease With Radiculopathy	151	42.1
Adjacent To Concurrent Fusion	8	2.2
Pain Of Unknown Cause	7	1.9
Spondylolisthesis	5	1.4
Post Laminectomy Or Discectomy	1	0.3
Adjacent Segment Syndrome	1	0.3
Other	3	0.8
TOTAL	**359**	**100.0**

Table SD9 Most Used Segment Prostheses in Primary Spinal Segment Replacement

2008		2021		2022		2023	
N	Model	N	Model	N	Model	N	Model
39	Maverick	2	Verte-Stack	6	Verte-Stack	1	Verte-Stack
Most Used							
39	(1) 100.0	2	(1) 100.0	6	(1) 100.0	1	(1) 100.0

Note: There were no procedures recorded in 2024

Primary Spinal Ball Trough Replacement

Table SD10 Age and Gender of Primary Spinal Ball Trough Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	1564	47.5%	22	81	46	46.3	9.7
Male	1729	52.5%	21	99	46	46.6	10.4
TOTAL	3293	100.0%	21	99	46	46.5	10.1

Figure SD3 Primary Spinal Ball Trough Replacement by Age and Gender

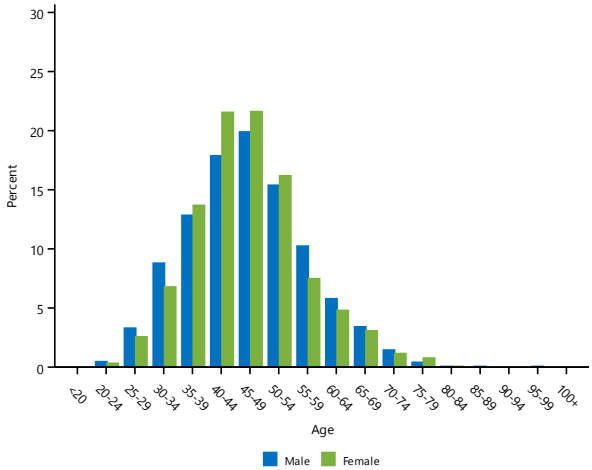

Table SD11 Primary Spinal Ball Trough Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	3042	92.4
Disc Disease Without Radiculopathy	149	4.5
Spondylolisthesis	25	0.8
Pain Of Unknown Cause	20	0.6
Adjacent Segment Syndrome	17	0.5
Adjacent To Concurrent Fusion	14	0.4
Post Laminectomy Or Discectomy	12	0.4
Other	14	0.4
TOTAL	3293	100.0

Table SD12 Most Used Ball Trough Prostheses in Primary Spinal Ball Trough Replacement

2008		2021		2022		2023		2024	
N	Model	N	Model	N	Model	N	Model	N	Model
30	Prestige	118	Prodisc-C	108	Prodisc-C	159	Prodisc-C	176	Prodisc-C
4	Wallis	73	Mobi-C	41	Mobi-C	118	Simplify Disc	102	Simplify Disc
3	Prodisc-C	31	Prestige	32	Prestige	25	Prestige	27	Prestige
3	X-Stop			29	Simplify Disc	8	Secure-C		
				7	Secure-C				
Most Used									
40	(4) 100.0%	222	(3) 100.0%	217	(5) 100.0%	310	(4) 100.0%	305	(3) 100.0%

Primary Spinal Insert/Endplate Replacement

Table SD13 Age and Gender of Primary Spinal Insert/Endplate Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	315	37.3%	18	78	44	44.4	12.1
Male	530	62.7%	19	78	43	44.1	11.7
TOTAL	**845**	**100.0%**	**18**	**78**	**43**	**44.2**	**11.8**

Figure SD4 Primary Spinal Insert/Endplate Replacement by Age and Gender

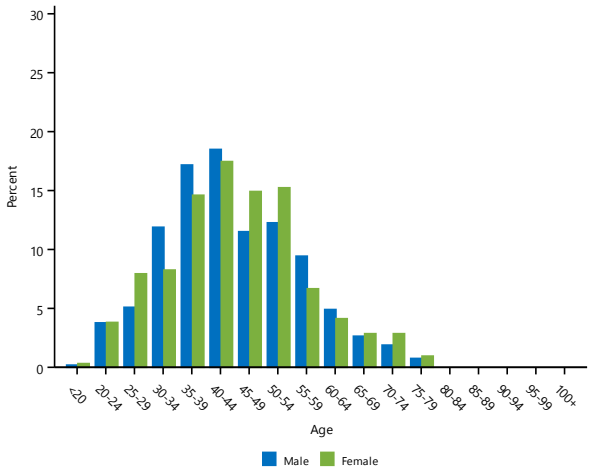

Table SD14 Primary Spinal Insert/Endplate Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	683	80.8
Disc Disease Without Radiculopathy	97	11.5
Pain Of Unknown Cause	39	4.6
Spondylolisthesis	12	1.4
Adjacent To Concurrent Fusion	6	0.7
Adjacent Segment Syndrome	3	0.4
Post Laminectomy Or Discectomy	2	0.2
Other	3	0.4
TOTAL	**845**	**100.0**

Table SD15 Most Used Insert Prostheses in Primary Spinal Insert/Endplate Replacement

2008		2021		2022		2023		2024	
N	Model	N	Model	N	Model	N	Model	N	Model
16	Prodisc-L	21	Activ L	105	Activ L	105	Prodisc-L	159	Prodisc-L
7	In Motion	4	Prodisc-L	18	Prodisc-L	59	Activ L	13	Activ L
Most Used									
23	(2) 100	25	(2) 100	123	(2) 100	164	(2) 100	172	(2) 100

Primary Cervical Intervertebral Disc Replacement

Table SD16 Age and Gender of Primary Cervical Intervertebral Disc Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	2620	46.4%	15	78	46	46.6	9.6
Male	3026	53.6%	19	78	46	46.6	10.0
TOTAL	**5646**	**100.0%**	**15**	**78**	**46**	**46.6**	**9.8**

Figure SD5 Primary Cervical Intervertebral Disc Replacement by Age and Gender

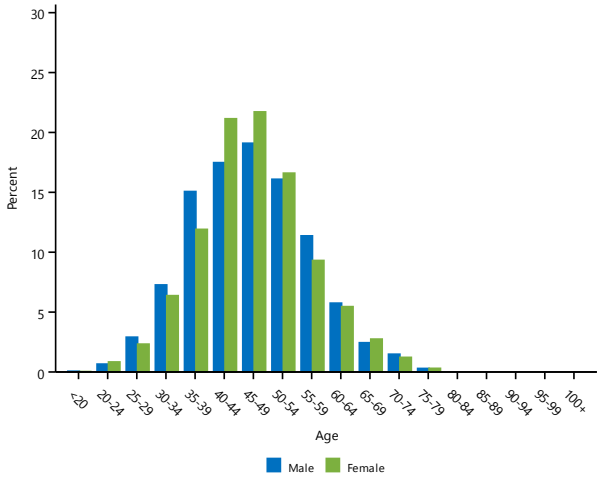

Table SD17 Primary Cervical Intervertebral Disc Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	5254	93.1
Disc Disease Without Radiculopathy	237	4.2
Spondylolisthesis	43	0.8
Pain Of Unknown Cause	36	0.6
Adjacent To Concurrent Fusion	29	0.5
Post Laminectomy Or Discectomy	19	0.3
Adjacent Segment Syndrome	14	0.2
Other	14	0.2
TOTAL	**5646**	**100.0**

Table SD18 Most Used Disc Prostheses in Primary Cervical Intervertebral Disc Replacement

2008		2021		2022		2023		2024	
N	Model	N	Model	N	Model	N	Model	N	Model
2	Spinal Disc (DePuy)	382	M6	225	M6	122	Baguera	167	Baguera
		142	CP-ESP	132	CP-ESP	112	CP-ESP	135	Synergy Disc
		128	Synergy Disc	96	Synergy Disc	105	Synergy Disc	98	CP-ESP
		14	Baguera	22	Baguera	78	M6	29	M6
				1	Generic All in One Spinal Disc	2	Generic All in One Spinal Disc		
						2	Rotaio		
Most Used									
2	(1) 100.0%	666	(4) 100.0%	476	(5) 100.0%	421	(6) 100.0%	429	(4) 100.0%

Primary Lumbar Intervertebral Disc Replacement

Table SD19 Primary Lumbar Intervertebral Disc Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	1334	38.4%	16	87	43	44.2	12.6
Male	2143	61.6%	17	79	44	44.9	12.1
TOTAL	**3477**	**100.0%**	**16**	**87**	**43**	**44.6**	**12.3**

Figure SD6 Primary Lumbar Intervertebral Disc Replacement by Age and Gender

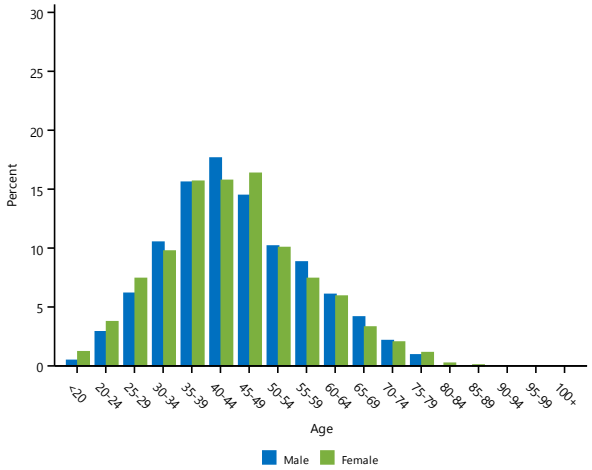

Table SD20 Primary Lumbar Intervertebral Disc Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	3009	86.5
Disc Disease Without Radiculopathy	370	10.6
Pain Of Unknown Cause	33	0.9
Adjacent To Concurrent Fusion	28	0.8
Spondylolisthesis	19	0.5
Adjacent Segment Syndrome	7	0.2
Post Laminectomy Or Discectomy	4	0.1
Other	7	0.2
TOTAL	**3477**	**100.0**

Table SD21 Most Used Disc Prostheses in Primary Lumbar Intervertebral Disc Replacement

2008		2021		2022		2023		2024	
N	Model	N	Model	N	Model	N	Model	N	Model
11	Flexicore	310	LP-ESP	169	LP-ESP	133	LP-ESP	93	LP-ESP
		85	M6	40	M6	37	Baguera	50	Baguera
		1	Baguera	3	Baguera	25	M6	19	M6
				1	Generic All In One Spinal Disc				
Most Used									
11	(1) 100.0%	396	(3) 100.0%	213	(4) 100.0%	195	(3) 100.0%	162	(3) 100.0%

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