



Australian
Orthopaedic
Association
National
Joint
Replacement
Registry

Automated Industry Report 824

Depuy Synthes Australia

Attune PS Total Knee

Report Generated: 9 January 2019

Data Period: 1 September 1999 - 8 January 2019

This report has been prepared by the Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR). The report provides information on the usage and outcomes of the Attune PS total knee femoral based on data collected by the AOANJRR.

This analysis compares Attune PS femoral components to all other total knee replacements.

Disclaimer

The AOANJRR has taken every care to ensure that the data supplied are accurate but does not warrant that the data are error free and does not accept any liability for errors or omissions in the data.

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Data Period: 1 September 1999 - 8 January 2019

Catalogue Numbers of Attune PS Femoral Components included in this analysis

Model	Catalogue Range	Range Description	No. of Primary Procedures
Attune PS	150410101 - 150410210	PS Femoral Component	4044
Attune PS	150410123 - 150410226	PS Narrow Femoral Component	1219

Table 1: Revision Rates of Attune PS Primary Total Knee Replacement by Femoral Catalogue Number Range (All Diagnoses)

Femoral Range	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
150410101 - 150410210	44	4044	8969	0.49 (0.36, 0.66)
150410123 - 150410226	18	1219	2697	0.67 (0.40, 1.05)
TOTAL	62	5263	11666	0.53 (0.41, 0.68)

Table 2: Implant Usage of Attune PS in Primary Total Knee Replacement (All Diagnoses)

	N
Implant Usage	
Date First Used	13 March 2013
Date Last Used	14 December 2018
N Procedures	5263
N Patients	4526
N Hospitals Implanting	96
N Surgeons Implanting*	136
Outcome	
N Revised	62
N Deceased**	99

*324 Attune PS procedures have unknown surgeon

**N Deceased' does not include patient deaths that occurred after the Attune PS implant was revised

Table 3: Follow Up Years of Attune PS Primary Total Knee Replacement (All Diagnoses)

Model	N	Minimum	Maximum	Median	Mean	Std Dev
Attune PS	5263	0.04	5.79	1.99	2.22	1.38
TOTAL	5263	0.04	5.79	1.99	2.22	1.38

Table 4: Age and Gender of Attune PS Primary Total Knee Replacement (All Diagnoses)

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	2223	42.2%	31	95	69	68.6	9.1
Female	3040	57.8%	33	97	69	68.8	9.4
TOTAL	5263	100.0%	31	97	69	68.7	9.3

Table 5: Primary Total Knee Replacement by Model and Age (All Diagnoses)

Age	Attune PS		Other Total Knee	
	N	Col%	N	Col%
<55	359	6.8	44015	6.8
55-64	1280	24.3	170781	26.4
65-74	2139	40.6	253983	39.2
≥75	1485	28.2	178842	27.6
TOTAL	5263	100.0	647621	100.0

Table 6: Primary Total Knee Replacement by Model and Gender (All Diagnoses)

Gender	Attune PS		Other Total Knee	
	N	Col%	N	Col%
Male	2223	42.2	281300	43.4
Female	3040	57.8	366321	56.6
TOTAL	5263	100.0	647621	100.0

Table 7: Primary Total Knee Replacement by Model and ASA Grade (All Diagnoses)

ASA Grade	Attune PS		Other Total Knee	
	N	Col%	N	Col%
1	257	5.0	16939	6.0
2	2872	55.3	155703	55.6
3	2003	38.6	104303	37.2
4	56	1.1	3080	1.1
5	1	0.0	15	0.0
TOTAL	5189	100.0	280040	100.0

Note: The AOANJRR commenced collection of ASA data in 2013. 74 Attune PS procedures with no ASA Grade recorded are excluded from this table

Table 8: Primary Total Knee Replacement by Model and BMI (All Diagnoses)

BMI	Attune PS		Other Total Knee	
	N	Col%	N	Col%
Underweight (<18.50)	8	0.2	385	0.2
Normal (18.50-24.99)	458	12.3	19630	10.4
Pre Obese (25.00-29.99)	1211	32.5	58650	31.1
Obese Class 1 (30.00-34.99)	1078	29.0	57780	30.6
Obese Class 2 (35.00-39.99)	578	15.5	32207	17.1
Obese Class 3 (≥40.00)	388	10.4	19974	10.6
TOTAL	3721	100.0	188626	100.0

Note: The AOANJRR commenced collection of BMI data in 2015. 1542 Attune PS procedures with no BMI recorded are excluded from this table

Table 9: Primary Total Knee Replacement by Model and Primary Diagnosis

Primary Diagnosis	Attune PS		Other Total Knee	
	N	Col%	N	Col%
Osteoarthritis	5174	98.3	632435	97.7
Rheumatoid Arthritis	53	1.0	8413	1.3
Other Inflammatory Arthritis	19	0.4	3259	0.5
Osteonecrosis	15	0.3	2053	0.3
Tumour	.	.	799	0.1
Fracture	1	0.0	457	0.1
Chondrocalcinosis	.	.	18	0.0
Osteochondritis Dissecans	.	.	2	0.0
Other	1	0.0	185	0.0
TOTAL	5263	100.0	647621	100.0

Table 10: Revision Rates of Primary Total Knee Replacement by Model (All Diagnoses)

Model	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Attune PS	62	5263	11666	0.53 (0.41, 0.68)
Other Total Knee	24888	647621	4124690	0.60 (0.60, 0.61)
TOTAL	24950	652884	4136356	0.60 (0.60, 0.61)

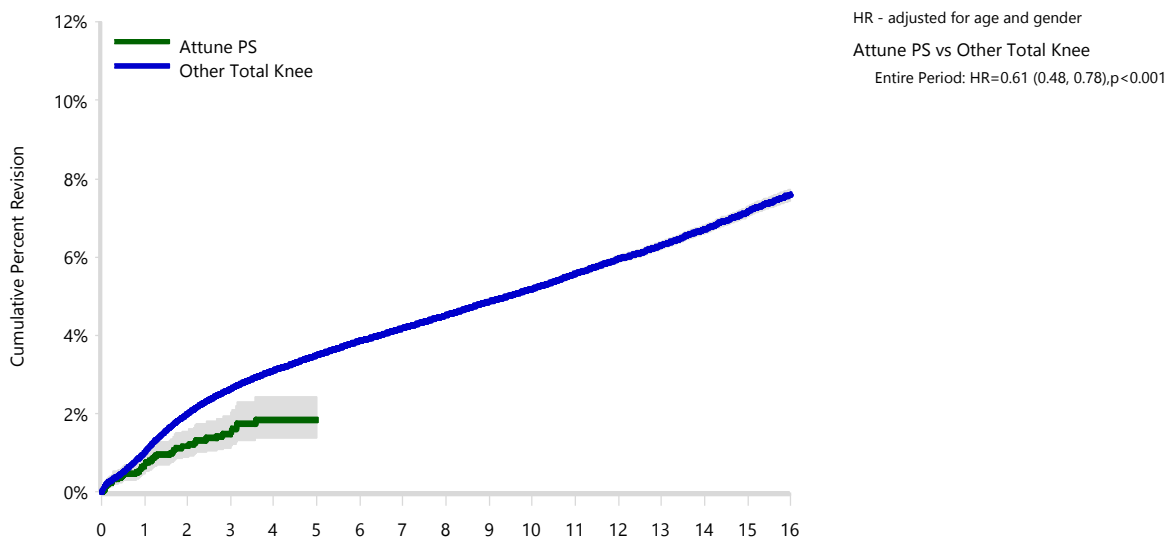


Table 11: Yearly Cumulative Percent Revision of Primary Total Knee Replacement by Model (All Diagnoses)

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	
Attune PS	0.7 (0.5, 0.9)	1.2 (0.9, 1.6)	1.5 (1.1, 1.9)	1.8 (1.4, 2.4)	1.8 (1.4, 2.4)	
Other Total Knee	1.0 (1.0, 1.0)	2.0 (2.0, 2.0)	2.6 (2.6, 2.7)	3.1 (3.1, 3.2)	3.5 (3.4, 3.5)	
CPR	6 Yrs	7 Yrs	8 Yrs	9 Yrs	10 Yrs	
Attune PS						
Other Total Knee	3.9 (3.8, 3.9)	4.2 (4.1, 4.2)	4.5 (4.5, 4.6)	4.9 (4.8, 4.9)	5.2 (5.1, 5.3)	
CPR	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs
Attune PS						
Other Total Knee	5.6 (5.5, 5.7)	6.0 (5.9, 6.0)	6.3 (6.2, 6.4)	6.7 (6.6, 6.8)	7.2 (7.0, 7.3)	7.6 (7.4, 7.7)



Figure 1: Cumulative Percent Revision of Primary Total Knee Replacement by Model (All Diagnoses)



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs	
Attune PS	5263	4003	2627	1588	690	143	0	0	
Other Total Knee	647621	588189	524211	464592	407455	354447	304806	258400	
Number at Risk	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs
Attune PS	0	0	0	0	0	0	0	0	0
Other Total Knee	215396	176192	141949	111473	85564	63322	44295	28922	16523

TABLE 12

Reasons for Revision

This is reported in two ways: a percentage of primary procedures revised and as a percentage of all revision procedures.

% Primaries Revised: This shows the proportional contribution of each revision diagnosis as a percentage of the total number of primary procedures. This percentage can be used to approximate the risk of being revised for that diagnosis. Differing percentages between groups, with the same distribution of follow up time, may identify problems of concern.

% Revisions: The number of revisions for each diagnosis is expressed as a percentage of the total number of revisions. This shows the distribution of reasons for revision within a group but cannot be used as a comparison between groups.

Table 12: Revision Diagnosis of Primary Total Knee Replacement by Model (All Diagnoses) (Follow-up Limited to 5.8 Years)

Revision Diagnosis	Number	Attune PS		Other Total Knee		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	25	0.5	40.3	5125	0.8	25.8
Loosening	12	0.2	19.4	4682	0.7	23.6
Patellofemoral Pain	2	0.0	3.2	2092	0.3	10.5
Pain	2	0.0	3.2	1711	0.3	8.6
Instability	9	0.2	14.5	1624	0.3	8.2
Patella Erosion				977	0.2	4.9
Arthrofibrosis	5	0.1	8.1	805	0.1	4.1
Fracture	4	0.1	6.5	540	0.1	2.7
Malalignment	1	0.0	1.6	471	0.1	2.4
Metal Related Pathology				270	0.0	1.4
Incorrect Sizing				263	0.0	1.3
Lysis				195	0.0	1.0
Patella Maltracking				163	0.0	0.8
Bearing Dislocation				154	0.0	0.8
Wear Tibial Insert				151	0.0	0.8
Implant Breakage Patella				92	0.0	0.5
Implant Breakage Tibial Insert				69	0.0	0.3
Synovitis				65	0.0	0.3
Prosthesis Dislocation				58	0.0	0.3
Osteonecrosis	1	0.0	1.6	46	0.0	0.2
Implant Breakage Tibial				35	0.0	0.2
Implant Breakage Femoral				25	0.0	0.1
Tumour				18	0.0	0.1
Wear Patella				14	0.0	0.1
Heterotopic Bone				5	0.0	0.0
Wear Tibial				5	0.0	0.0
Incorrect Side				2	0.0	0.0
Wear Femoral				2	0.0	0.0
Patella Dislocation				1	0.0	0.0
Other	1	0.0	1.6	205	0.0	1.0
N Revision	62	1.2	100.0	19865	3.1	100.0
N Primary	5263			647621		

Note: This table is restricted to revisions within 5.8 years for all groups to allow a time-matched comparison of revisions.

Table 13: Yearly Cumulative Incidence Revision Diagnosis of Primary Total Knee Replacement by Model (All Diagnoses)

Model	Event	N Events	1 Yr	2 Yrs	3 Yrs	5 Yrs	10 Yrs	15 Yrs
Attune PS	Infection	25	0.3 (0.1, 0.4)	0.5 (0.3, 0.8)	0.6 (0.4, 0.9)	0.6 (0.4, 1.0)		
	Loosening	12	0.1 (0.0, 0.2)	0.2 (0.1, 0.4)	0.3 (0.1, 0.5)	0.5 (0.2, 0.9)		
	Instability	9	0.2 (0.1, 0.3)	0.2 (0.1, 0.4)	0.2 (0.1, 0.4)	0.2 (0.1, 0.4)		
	Arthrofibrosis	5	0.1 (0.0, 0.2)	0.1 (0.0, 0.3)	0.1 (0.0, 0.3)	0.1 (0.0, 0.3)		
	Fracture	4	0.1 (0.0, 0.2)	0.1 (0.0, 0.2)	0.1 (0.0, 0.2)	0.1 (0.0, 0.2)		
	Other	7	0.0 (0.0, 0.2)	0.0 (0.0, 0.2)	0.2 (0.1, 0.5)	0.3 (0.1, 0.6)		
	Deceased	99	0.5 (0.3, 0.7)	1.6 (1.2, 2.1)	2.5 (1.9, 3.1)	6.0 (4.0, 8.5)		
	All Revision	62	0.7 (0.5, 0.9)	1.2 (0.9, 1.5)	1.5 (1.1, 1.9)	1.8 (1.4, 2.4)		
	Other Total Knee	Infection	5801	0.4 (0.4, 0.4)	0.6 (0.6, 0.6)	0.7 (0.7, 0.7)	0.9 (0.8, 0.9)	1.1 (1.0, 1.1)
Loosening		6257	0.2 (0.2, 0.2)	0.4 (0.4, 0.4)	0.6 (0.6, 0.6)	0.8 (0.8, 0.8)	1.3 (1.2, 1.3)	1.7 (1.7, 1.8)
Instability		1978	0.1 (0.1, 0.1)	0.2 (0.2, 0.2)	0.2 (0.2, 0.2)	0.3 (0.3, 0.3)	0.4 (0.4, 0.4)	0.5 (0.4, 0.5)
Arthrofibrosis		863	0.0 (0.0, 0.0)	0.1 (0.1, 0.1)	0.1 (0.1, 0.1)	0.1 (0.1, 0.2)	0.2 (0.2, 0.2)	0.2 (0.2, 0.2)
Fracture		765	0.0 (0.0, 0.0)	0.1 (0.1, 0.1)	0.1 (0.1, 0.1)	0.1 (0.1, 0.1)	0.1 (0.1, 0.2)	0.2 (0.2, 0.2)
Other		9224	0.3 (0.3, 0.3)	0.7 (0.6, 0.7)	0.9 (0.9, 0.9)	1.2 (1.2, 1.3)	1.9 (1.8, 1.9)	2.4 (2.4, 2.5)
Deceased		95893	0.8 (0.7, 0.8)	1.8 (1.7, 1.8)	3.1 (3.1, 3.2)	6.7 (6.6, 6.7)	20.7 (20.5, 20.8)	38.8 (38.5, 39.0)
All Revision		24888	1.0 (1.0, 1.0)	2.0 (1.9, 2.0)	2.6 (2.6, 2.6)	3.4 (3.4, 3.5)	4.9 (4.8, 5.0)	6.2 (6.1, 6.3)

Figure 2: Cumulative Incidence Revision Diagnosis of Primary Total Knee Replacement by Model (All Diagnoses)

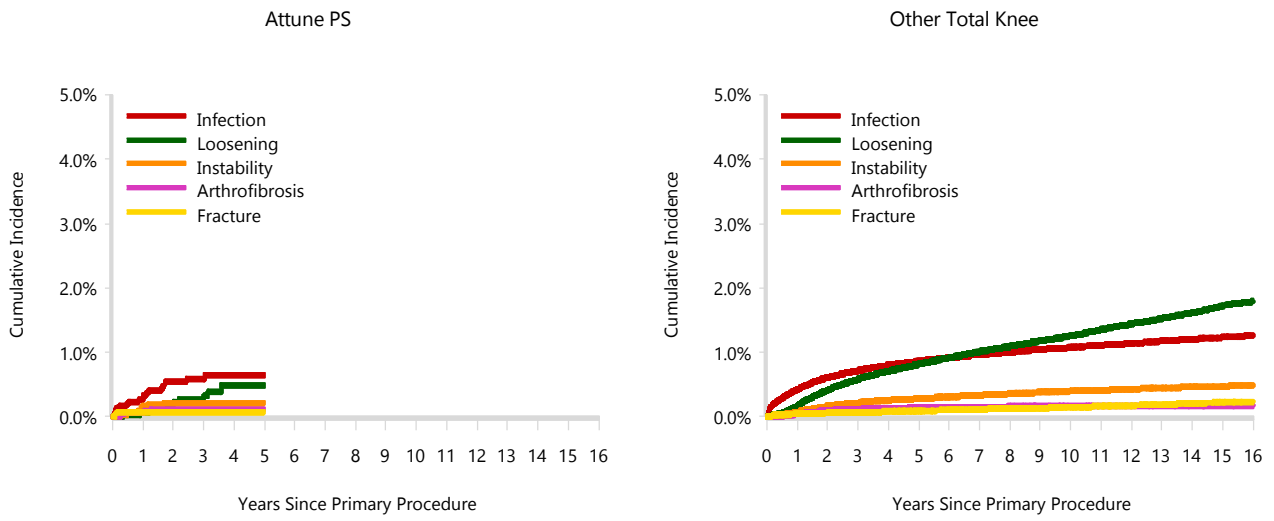


TABLE 14

Type of Revision

This is reported in two ways: a percentage of primary procedures revised and as a percentage of all revision procedures.

% Primaries Revised: This shows the proportional contribution of each type of revision as a percentage of the total number of primary procedures. This percentage can be used to approximate the risk of having that type of revision. Differing percentages between groups, with the same distribution of follow up time, may identify problems of concern.

% Revisions: The number of revisions for each type of revision is expressed as a percentage of the total number of revisions. This shows the distribution of types of revision within a group but cannot be used as a comparison between groups.

Table 14: Type of Revision of Primary Total Knee Replacement by Model (All Diagnoses) (Follow-up Limited to 5.8 Years)

Type of Revision	Number	Attune PS		Other Total Knee		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Insert Only	27	0.5	43.5	4897	0.8	24.7
TKR (Tibial/Femoral)	18	0.3	29.0	4517	0.7	22.7
Patella Only	2	0.0	3.2	4185	0.6	21.1
Tibial Component	5	0.1	8.1	1924	0.3	9.7
Insert/Patella	1	0.0	1.6	1679	0.3	8.5
Femoral Component	5	0.1	8.1	1287	0.2	6.5
Cement Spacer	3	0.1	4.8	1167	0.2	5.9
Removal of Prostheses				126	0.0	0.6
Minor Components	1	0.0	1.6	50	0.0	0.3
Cement Only				12	0.0	0.1
Total Femoral				12	0.0	0.1
Reinsertion of Components				9	0.0	0.0
N Revision	62	1.2	100.0	19865	3.1	100.0
N Primary	5263			647621		

Note: This table is restricted to revisions within 5.8 years for all groups to allow a time-matched comparison of revisions.

Table 15: Revision Rates of Attune PS Primary Total Knee Replacement by Fixation (All Diagnoses)

Fixation	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Cemented	62	5263	11666	0.53 (0.41, 0.68)
TOTAL	62	5263	11666	0.53 (0.41, 0.68)

Table 16: Revision Rates of Attune PS Primary Total Knee Replacement by Polyethylene Type (All Diagnoses)

Polyethylene Type	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
XLPE + Antioxidant	62	5263	11666	0.53 (0.41, 0.68)
TOTAL	62	5263	11666	0.53 (0.41, 0.68)

Table 17: Revision Rates of Attune PS Primary Total Knee Replacement by Bearing Mobility (All Diagnoses)

Bearing Mobility	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Fixed	40	3169	7639	0.52 (0.37, 0.71)
Rotating	22	2094	4027	0.55 (0.34, 0.83)
TOTAL	62	5263	11666	0.53 (0.41, 0.68)

Table 18: Revision Rates of Attune PS Primary Total Knee Replacement by Patella Usage (All Diagnoses)

Patella Usage	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Patella Used	54	4932	10790	0.50 (0.38, 0.65)
No Patella	8	331	876	0.91 (0.39, 1.80)
TOTAL	62	5263	11666	0.53 (0.41, 0.68)

Table 19: Number of Revisions of Attune PS Primary Total Knee Replacement by Year of Implant (All Diagnoses)

Year of Implant	Number Revised	Total Number
2013	1	154
2014	7	564
2015	20	931
2016	12	1047
2017	18	1350
2018	4	1217
TOTAL	62	5263

Table 20: Revision Rates of Attune PS Primary Total Knee Replacement by Tibial Component (All Diagnoses)

Tibial	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Attune	62	5263	11666	0.53 (0.41, 0.68)
TOTAL	62	5263	11666	0.53 (0.41, 0.68)

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