



Australian
Orthopaedic
Association
National
Joint
Replacement
Registry

Automated Industry Report 1268

Depuy Synthes Australia

Attune PS Total Knee

Report Generated: 10 May 2019

Data Period: 1 September 1999 - 9 May 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 femoral compared to all other total knee replacements, based on data collected by the AOANJRR.

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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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	4416
Attune PS	150410123 - 150410226	PS Narrow Femoral Component	1370

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	65	4416	10361	0.63 (0.48, 0.80)
150410123 - 150410226	20	1370	3126	0.64 (0.39, 0.99)
TOTAL	85	5786	13487	0.63 (0.50, 0.78)

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	24 April 2019
N Procedures	5786
N Patients	4960
N Hospitals Implanting	100
N Surgeons Implanting*	144
Outcome	
N Revised	85
N Deceased**	109

*330 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	5786	0.02	6.12	2.13	2.33	1.47
TOTAL	5786	0.02	6.12	2.13	2.33	1.47

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

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	2433	42.0%	31	95	69	68.5	9.1
Female	3353	58.0%	33	97	69	68.9	9.3
TOTAL	5786	100.0%	31	97	69	68.7	9.2

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

Age	Attune PS		Other Total Knee	
	N	Col%	N	Col%
<55	385	6.7	45240	6.8
55-64	1419	24.5	175791	26.4
65-74	2361	40.8	261760	39.3
≥75	1621	28.0	183420	27.5
TOTAL	5786	100.0	666211	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	2433	42.0	289694	43.5
Female	3353	58.0	376517	56.5
TOTAL	5786	100.0	666211	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	285	5.0	17958	6.0
2	3157	55.3	165466	55.4
3	2209	38.7	111856	37.5
4	60	1.1	3292	1.1
5	1	0.0	16	0.0
TOTAL	5712	100.0	298588	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)	10	0.2	423	0.2
Normal (18.50-24.99)	531	12.5	21527	10.4
Pre Obese (25.00-29.99)	1365	32.2	64244	31.0
Obese Class 1 (30.00-34.99)	1222	28.8	63485	30.7
Obese Class 2 (35.00-39.99)	667	15.7	35299	17.1
Obese Class 3 (\geq 40.00)	445	10.5	21935	10.6
TOTAL	4240	100.0	206913	100.0

Note: The AOANJRR commenced collection of BMI data in 2015. 1546 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	5688	98.3	650648	97.7
Rheumatoid Arthritis	59	1.0	8575	1.3
Other Inflammatory Arthritis	19	0.3	3377	0.5
Osteonecrosis	17	0.3	2104	0.3
Tumour	.	.	813	0.1
Fracture	2	0.0	482	0.1
Chondrocalcinosis	.	.	18	0.0
Osteochondritis Dissecans	.	.	2	0.0
Other	1	0.0	192	0.0
TOTAL	5786	100.0	666211	100.0

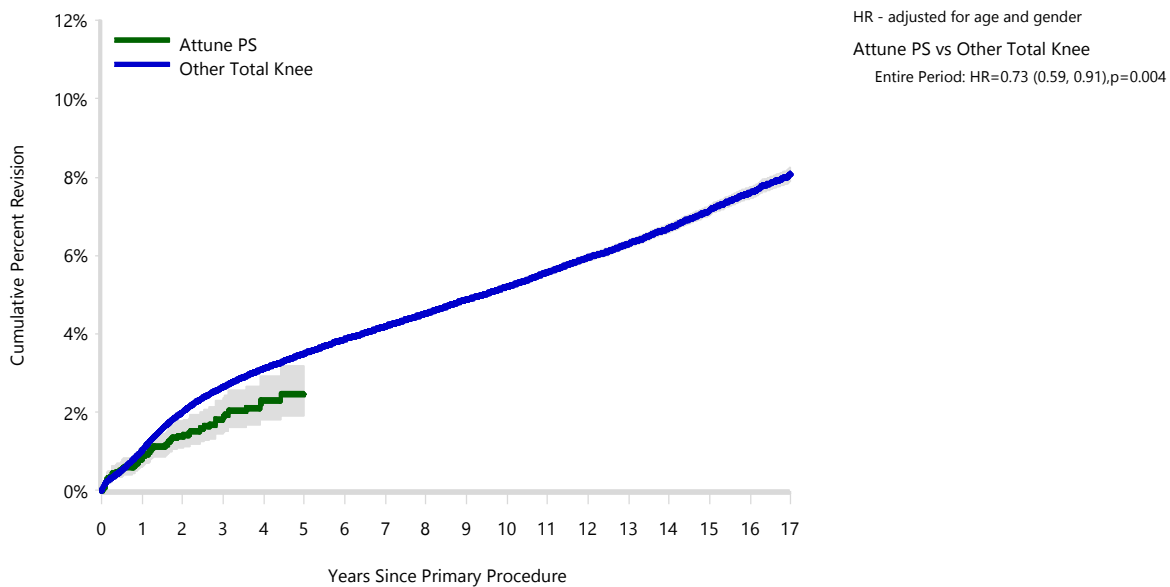
Table 10: Revision Rates of Primary Total Knee Replacement by Model (All Diagnoses)

Model	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Attune PS	85	5786	13487	0.63 (0.50, 0.78)
Other Total Knee	25900	666211	4300788	0.60 (0.59, 0.61)
TOTAL	25985	671997	4314275	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	0.8 (0.6, 1.1)	1.4 (1.1, 1.8)	1.8 (1.4, 2.3)	2.3 (1.8, 2.9)	2.5 (1.9, 3.2)	
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	11 Yrs
Attune PS						
Other Total Knee	3.9 (3.8, 3.9)	4.2 (4.1, 4.3)	4.5 (4.5, 4.6)	4.9 (4.8, 4.9)	5.2 (5.1, 5.3)	5.6 (5.5, 5.7)
CPR	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs
Attune PS						
Other Total Knee	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 (7.5, 7.7)	8.1 (7.9, 8.2)

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	8 Yrs
Attune PS	5786	4473	3078	1892	954	247	13	0	0
Other Total Knee	666211	607028	542096	480806	423349	369032	317952	270537	226200
Number at Risk	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs
Attune PS	0	0	0	0	0	0	0	0	0
Other Total Knee	185934	150376	119212	92065	68731	49126	32775	19875	9620

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 6.1 Years)

Revision Diagnosis	Number	Attune PS		Other Total Knee		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	39	0.7	45.9	5420	0.8	25.9
Loosening	16	0.3	18.8	4917	0.7	23.5
Patellofemoral Pain	2	0.0	2.4	2156	0.3	10.3
Pain	3	0.1	3.5	1802	0.3	8.6
Instability	11	0.2	12.9	1723	0.3	8.2
Patella Erosion				1044	0.2	5.0
Arthrofibrosis	5	0.1	5.9	854	0.1	4.1
Fracture	4	0.1	4.7	566	0.1	2.7
Malalignment	2	0.0	2.4	500	0.1	2.4
Metal Related Pathology				281	0.0	1.3
Incorrect Sizing				271	0.0	1.3
Lysis				210	0.0	1.0
Patella Maltracking				167	0.0	0.8
Wear Tibial Insert				158	0.0	0.8
Bearing Dislocation				157	0.0	0.8
Implant Breakage Patella				98	0.0	0.5
Implant Breakage Tibial Insert				72	0.0	0.3
Synovitis				67	0.0	0.3
Prosthesis Dislocation				61	0.0	0.3
Osteonecrosis	1	0.0	1.2	48	0.0	0.2
Implant Breakage Tibial				35	0.0	0.2
Implant Breakage Femoral				26	0.0	0.1
Tumour	1	0.0	1.2	18	0.0	0.1
Wear Patella				15	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	1.2	224	0.0	1.1
N Revision	85	1.5	100.0	20905	3.1	100.0
N Primary	5786			666211		

Note: This table is restricted to revisions within 6.1 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	39	0.4 (0.3, 0.6)	0.7 (0.5, 1.0)	0.8 (0.5, 1.1)	1.0 (0.7, 1.4)		
	Loosening	16	0.1 (0.0, 0.2)	0.2 (0.1, 0.4)	0.3 (0.2, 0.6)	0.6 (0.3, 1.1)		
	Instability	11	0.1 (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, 0.2)	0.1 (0.0, 0.2)	0.1 (0.0, 0.2)		
	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	10	0.1 (0.0, 0.2)	0.1 (0.0, 0.2)	0.3 (0.1, 0.6)	0.4 (0.2, 0.7)		
	Deceased	109	0.5 (0.3, 0.7)	1.6 (1.2, 2.0)	2.4 (2.0, 3.0)	4.9 (3.6, 6.4)		
	All Revision	85	0.8 (0.6, 1.1)	1.4 (1.1, 1.7)	1.8 (1.4, 2.3)	2.4 (1.9, 3.1)		
	Other Total Knee	Infection	6078	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 (1.1, 1.1)
Loosening		6470	0.2 (0.2, 0.2)	0.4 (0.4, 0.4)	0.6 (0.6, 0.6)	0.8 (0.8, 0.8)	1.2 (1.2, 1.3)	1.7 (1.7, 1.8)
Instability		2087	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 (0.5, 0.5)
Arthrofibrosis		904	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		803	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		9558	0.3 (0.3, 0.3)	0.7 (0.6, 0.7)	0.9 (0.9, 0.9)	1.2 (1.2, 1.3)	1.8 (1.8, 1.9)	2.4 (2.3, 2.5)
Deceased		10144 8	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)	39.0 (38.7, 39.2)
All Revision		25900	1.0 (1.0, 1.0)	2.0 (2.0, 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)

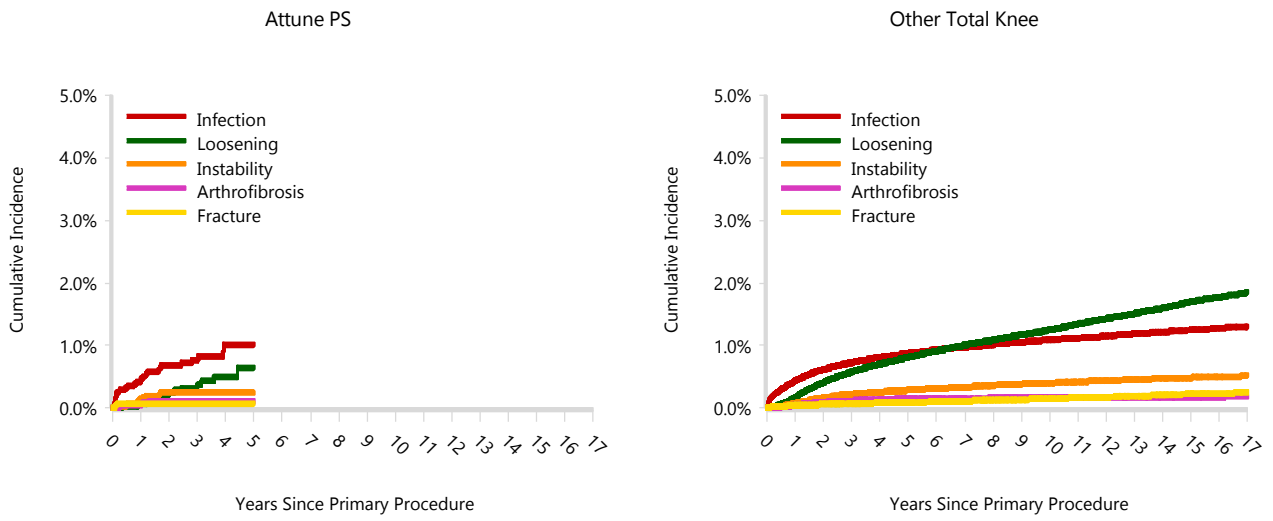


TABLE 14

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 6.1 Years)

Type of Revision	Number	Attune PS		Other Total Knee		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Insert Only	41	0.7	48.2	5204	0.8	24.9
TKR (Tibial/Femoral)	23	0.4	27.1	4802	0.7	23.0
Patella Only	3	0.1	3.5	4353	0.7	20.8
Tibial Component	7	0.1	8.2	1990	0.3	9.5
Insert/Patella	1	0.0	1.2	1780	0.3	8.5
Femoral Component	5	0.1	5.9	1322	0.2	6.3
Cement Spacer	4	0.1	4.7	1229	0.2	5.9
Removal of Prostheses				139	0.0	0.7
Minor Components	1	0.0	1.2	53	0.0	0.3
Cement Only				13	0.0	0.1
Total Femoral				11	0.0	0.1
Reinsertion of Components				9	0.0	0.0
N Revision	85	1.5	100.0	20905	3.1	100.0
N Primary	5786			666211		

Note: This table is restricted to revisions within 6.1 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	85	5786	13487	0.63 (0.50, 0.78)
TOTAL	85	5786	13487	0.63 (0.50, 0.78)

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	85	5786	13487	0.63 (0.50, 0.78)
TOTAL	85	5786	13487	0.63 (0.50, 0.78)

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	50	3398	8714	0.57 (0.43, 0.76)
Rotating	35	2388	4773	0.73 (0.51, 1.02)
TOTAL	85	5786	13487	0.63 (0.50, 0.78)

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	75	5450	12505	0.60 (0.47, 0.75)
No Patella	10	336	982	1.02 (0.49, 1.87)
TOTAL	85	5786	13487	0.63 (0.50, 0.78)

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	8	564
2015	22	931
2016	16	1048
2017	23	1350
2018	11	1341
2019	4	398
TOTAL	85	5786

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	85	5786	13487	0.63 (0.50, 0.78)
TOTAL	85	5786	13487	0.63 (0.50, 0.78)

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