

Supplementary article data

Periprosthetic bone mineral density and fixation of the uncemented CLS stem related to different weight bearing regimes

A randomized study using DXA and RSA in 38 patients followed for 5 years

Olof Wolf, Per Mattsson, Jan Milbrink, Sune Larsson, and Hans Mallmin

Table 3. Bone mineral density (BMD) and percentage change in BMD in the 7 different Gruen zones around the CLS femoral stem up to 5 years after surgery. Immediate postoperative weight bearing versus partial weight bearing

Gruen zone	Exam.	IWB	n	%Δpo	PWB	n	%Δpo	p
1	po	1.02 (0.2)	18		1.01 (0.2)	20		0.9
	3m	0.97 (0.2)	17	-5.7	0.88 (0.2)	20	-13.4	0.2
	1y	1.02 (0.2)	18	0.3	0.96 (0.2)	19	-5.8	0.3
	2y	1.00 (0.2)	15	-0.9	0.98 (0.2)	19	-2.7	0.8
	5y	1.02 (0.2)	14	0.2	0.97 (0.3)	18	-5.5	0.6
2	po	1.96 (0.2)	18		1.98 (0.2)	20		0.7
	3m	1.78 (0.2)	17	-10.2	1.80 (0.2)	20	-9.5	0.8
	1y	1.83 (0.2)	18	-6.6	1.90 (0.2)	19	-4.0	0.3
	2y	1.84 (0.2)	15	-6.2	1.89 (0.2)	19	-3.9	0.4
	5y	1.87 (0.3)	14	-5.7	1.92 (0.3)	18	-2.5	0.6
3	po	2.14 (0.2)	18		2.15 (0.2)	20		0.8
	3m	1.94 (0.2)	17	-9.7	1.93 (0.2)	20	-10.6	0.9
	1y	2.03 (0.2)	18	-4.9	2.06 (0.2)	19	-4.0	0.7
	2y	2.08 (0.2)	15	-3.0	2.07 (0.2)	19	-3.9	0.9
	5y	2.01 (0.4)	14	-6.2	2.07 (0.2)	18	-3.7	0.6
4	po	1.96 (0.2)	18		1.99 (0.2)	20		0.7
	3m	1.80 (0.2)	17	-8.2	1.82 (0.2)	20	-8.3	0.7
	1y	1.93 (0.2)	18	-1.2	1.92 (0.3)	19	-3.8	0.8
	2y	1.96 (0.1)	15	0	1.92 (0.3)	19	-2.8	0.6
	5y	1.96 (0.2)	14	-0.6	1.94 (0.3)	18	-2.2	0.8
5	po	2.16 (0.2)	18		2.17 (0.2)	20		0.9
	3m	1.93 (0.2)	17	-10.5	1.98 (0.2)	20	-8.8	0.5
	1y	2.05 (0.2)	18	-5.3	2.11 (0.2)	19	-2.2	0.3
	2y	2.10 (0.2)	15	-2.3	2.13 (0.2)	19	-1.4	0.6
	5y	2.13 (0.2)	14	-1.3	2.14 (0.2)	18	-1.0	0.9
6	po	1.81 (0.3)	18		1.82 (0.2)	20		0.9
	3m	1.62 (0.3)	17	-10.5	1.60 (0.2)	20	-11.5	0.9
	1y	1.67 (0.3)	18	-7.1	1.69 (0.2)	19	-7.3	0.9
	2y	1.64 (0.3)	15	-6.2	1.71 (0.2)	19	-5.3	0.5
	5y	1.71 (0.3)	14	-5.2	1.71 (0.3)	18	-5.3	1.0
7	po	1.26 (0.2)	18		1.26 (0.2)	20		1.0
	3m	1.07 (0.2)	17	-14.8	1.07 (0.2)	20	-15.0	1.0
	1y	1.05 (0.2)	18	-17.0	1.05 (0.2)	19	-17.5	1.0
	2y	0.98 (0.2)	15	-20.8	1.08 (0.2)	19	-14.6	0.2
	5y	1.00 (0.2)	14	-19.5	0.97 (0.2)	18	-23.7	0.7

Examination po = postoperative within 7 days; 3 months; 1, 2, and 5 years after surgery.
 IWB = immediate weight bearing.
 PWB = partial weight bearing.
 n = number of patients.
 %Δpo = percentage change from first postoperative examination.
 p = p value, t-test.

Table 4. Micromotion of the CLS femoral stem along and around the three axes measured with RSA up to 5 years after surgery. Immediate versus partial weight bearing group

	IWB Mean (SD)	PWB Mean (SD)	p
1 month (n=18/20)			
X _{trans} , medial+/lateral-	-0.01 (0.1)	0.02 (0.1)	0.6
Y _{trans} , proximal+/distal-	-0.38 (1.0)	-0.42 (0.9)	0.3
Z _{trans} , anterior+/posterior-	0.02 (0.1)	-0.09 (0.2)	0.06
X _{rot} , anterior+/posterior- tilt	-0.14 (0.3)	-0.12 (0.2)	0.8
Y _{rot} , retroversion+/anteversion-	0.55 (0.8)	0.69 (1.4)	0.5
Z _{rot} , valgus+/varus- tilt	-0.04 (0.1)	-0.05 (0.2)	0.7
3 months (n=18/19)			
X _{trans} , medial+/lateral-	-0.04 (0.2)	0.04 (0.2)	0.2
Y _{trans} , proximal+/distal-	-1.00 (1.7)	-1.01 (1.7)	0.6
Z _{trans} , anterior+/posterior-	0.15 (0.2)	-0.09 (0.2)	0.002
X _{rot} , anterior+/posterior- tilt	-0.15 (0.3)	-0.10 (0.3)	0.4
Y _{rot} , retroversion+/anteversion-	0.64 (1.0)	0.92 (1.6)	0.9
Z _{rot} , valgus+/varus- tilt	0.00 (0.2)	-0.08 (0.2)	0.2
1 year (n=17/19)			
X _{trans} , medial+/lateral-	0.03 (0.3)	0.00 (0.2)	0.6
Y _{trans} , proximal+/distal-	-1.42 (2.1)	-1.03 (1.8)	0.09
Z _{trans} , anterior+/posterior-	-0.01 (0.3)	-0.06 (0.3)	0.7
X _{rot} , anterior+/posterior- tilt	-0.02 (0.7)	0.00 (0.3)	0.4
Y _{rot} , retroversion+/anteversion-	1.83 (3.0)	1.04 (1.6)	0.2
Z _{rot} , valgus+/varus- tilt	-0.15 (0.6)	-0.14 (0.2)	0.9
2 years (n=17/19)			
X _{trans} , medial+/lateral-	0.05 (0.3)	0.01 (0.2)	0.6
Y _{trans} , proximal+/distal-	-1.42 (2.1)	1.25 (1.9)	0.3
Z _{trans} , anterior+/posterior-	-0.10 (0.7)	-0.12 (0.3)	0.2
X _{rot} , anterior+/posterior- tilt	-0.19 (0.7)	0.04 (0.4)	0.4
Y _{rot} , retroversion+/anteversion-	2.39 (3.7)	1.02 (1.6)	0.2
Z _{rot} , valgus+/varus- tilt	-0.16 (0.6)	-0.07 (0.3)	0.5
5 years (n=16/17)			
X _{trans} , medial+/lateral-	-0.11 (0.5)	0.07 (0.3)	0.4
Y _{trans} , proximal+/distal-	-2.13 (3.2)	1.33 (2.1)	0.1
Z _{trans} , anterior+/posterior-	-0.36 (1.3)	-0.13 (0.3)	0.5
X _{rot} , anterior+/posterior- tilt	0.36 (1.4)	0.23 (0.8)	1.0
Y _{rot} , retroversion+/anteversion-	4.90 (11.6)	1.26 (1.8)	0.1
Z _{rot} , valgus+/varus- tilt	-0.62 (1.5)	-0.16 (0.3)	0.3

IWB = Immediate weight bearing group. PWB = partial weight bearing group.
 p = p value, Mann-Whitney U test.
 trans = translation (mm)
 rot = rotation (°)