

Repair of bone defects with prefabricated vascularized bone grafts and double-labeled bone marrow-derived mesenchymal stem cells in a rat model

Running title: Prefabricated vascularized grafts in bone repair

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Figure 1 Positive cell number of BMSCs after induction

VEGFR-2	CD133
45.6	38.7
57.7	36.2
53.9	27.4

Figure 5 Attached EPCs on DBM grafts

3d	7d	10d	14d
13.52	27.14	37.93	32.49
11.15	22.28	40.81	37.64
5.96	18.26	32.39	40.99

Table 2

	MVD			
	a	b	c	d
3 days	1.8	1.79	0.98	0.8
	3.22	0.72	1.76	0.71
	2.72	1.42	2.18	0.56
7 days	5.57	5.18	3.26	2.22

	7.86	3.17	4.81	1.86
	7.06	4.48	5.64	1.2
14 days	7.64	7.3	4.55	3.05
	10.75	4.66	6.54	2.48
	9.66	6.37	7.6	1.4
21 days	7.75	8.53	6.08	3.7
	10.75	5.66	7.84	3.03
	9.7	7.53	8.78	1.79

		X ray score					Rat:	
Table 3		A	B	C	D	E	4w	A
4w		4.07	4.12	2.31	4.44	1.83	4w	6.12
		5.07	2.43	3.42	3.78	2.23		6.59
		4.72	3.53	4.02	2.55	1.1		6.43
8w		6.29	6.19	5.35	7.02	2.56	8w	8.31
		7.73	5.3	5.9	6.64	2.87		8.73
		7.22	5.88	6.2	5.93	1.98		8.58
12w		9.22	8.53	7.07	9.68	4.01	12w	11.94
		10.33	7.04	7.92	9.14	4.45		12.25
		9.94	8.01	8.38	8.12	3.21		12.14

Table 4		Mean MVDs at different time points				
		A	B	C	D	E
4w		11.87	3.85	3.89	10.82	1.8
		13.23	5.98	6.06	13.54	3.83
		12.76	5.23	5.3	12.59	3.12
8w		13.26	10.86	10.84	13.16	6.89
		15.64	13.11	13.19	15.62	9.14
		14.81	12.32	12.36	14.76	8.35
12w		15.24	15.03	15.13	15.18	7.28
		17.73	17.57	17.75	17.82	9.1
		16.86	16.68	16.83	16.89	8.46

Table 5		<i>OCN</i> mRNA						
		A	B	C	D	E	4w	A
4w		0.73	0.55	0.57	0.5	0.34	4w	0.67
		0.95	0.69	0.69	0.74	0.46		0.89
		0.87	0.64	0.65	0.65	0.42		0.81
8w		0.88	0.76	0.77	0.79	0.43	8w	0.96
		1.14	1	1.01	1.08	0.61		1.05
		1.05	0.91	0.92	0.98	0.55		1.02
12w		1.21	1.01	1.04	1.18	0.47	12w	1.24
		1.43	1.21	1.22	1.44	0.67		1.46
3		1.35	1.14	1.16	1.35	0.6		1.38

Table 6		Maximum load (N)					Tc	
A	B	C	D	E	Normal	A	B	
165.64	146.46	145.41	164.25	101.64	175.53	4.52	4.08	

185.03	154.02	153.79	183.54	108.77	180.2	4.76	4.35
178.25	147.88	147.36	176.79	106.27	178.57	4.67	4.26



Ratio of vascular area ratio

B	C	D	E
3.11	3.17	6	0.23
3.35	3.44	6.44	0.27
3.26	3.35	6.28	0.25
5.72	5.71	8.26	0.68
5.99	6.02	8.55	0.92
5.9	5.91	8.45	0.83
7.81	7.77	11.6	2
8.44	8.38	12.62	2.08
8.22	8.17	12.26	2.05

Ratio of new bone formation

	A	B	C	D	E
4w	5	1.35	1.36	1.5	0.11
	5.27	1.66	1.62	2.01	0.13
	5.18	1.55	1.53	1.83	0.12
8w	12.5	3.94	3.84	6.58	0.43
	12.76	4.55	4.47	7.38	0.51
	12.67	4.34	4.25	7.1	0.48
12w	17.62	6.11	6.13	12.27	0.71
	18.62	7.53	7.47	13.87	0.85
	18.27	7.03	7	13.31	0.8

VEGF mRNA

B	C	D	E
0.54	0.57	0.72	0.44
0.66	0.66	0.88	0.52
0.62	0.63	0.83	0.49
0.84	0.83	0.88	0.51
1.02	1.05	1.06	0.6
0.96	0.97	1	0.57
1.21	1.25	1.2	0.52
1.45	1.43	1.47	0.61
1.36	1.37	1.38	0.58

Compressive strength (Mpa)

C	D	E	Normal
4.15	4.54	1.23	4.57

4.41	4.8	1.29	4.84
4.32	4.71	1.27	4.75