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Supplementary Information.

Experimental arthritis and *Porphyromonas gingivalis* administration synergistically decrease bone regeneration in femoral cortical defects

Go Okumura[1], Naoki Kondo[1], Keisuke Sato[2,3], Kazuhisa Yamazaki[3], Hayato Ohshima[4], Hiroyuki Kawashima[1], Akira Ogose[1], Naoto Endo[1]

[1]Division of Orthopedic Surgery, Department of Regenerative and Transplant Medicine, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan

[2]Division of Periodontology, Department of Oral Science, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan

[3]Research Unit for Oral-Systemic Connection, Division of Oral Science for Health Promotion, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan

[4]Division of Anatomy and Cell Biology of the Hard Tissue, Department of Tissue Regeneration and Reconstruction, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan

Correspondence to:

Go Okumura, MD, E-mail: goingok@hotmail.com

Supplementary Table. Detailed results (F value) of two-way analysis of variance BVd / TVd of bone regenerated area.

parameter	CIA factor	P.g factor	CIA×P.g interaction
PO 2w	$F_{(1,26)}=59.9$, $P<0.001$	$F_{(1,26)}=60.2$, $P<0.001$	$F_{(1,26)}=41.6$, $P<0.001$
PO 3w	$F_{(1,23)}=69.6$, $P<0.001$	$F_{(1,23)}=2.60$, $P=0.12$	$F_{(1,23)}=1.38$, $P=0.25$.
PO 4w	$F_{(1,25)}=125.60$, $P<0.001$	$F_{(1,25)}=3.96$, $P=0.06$	$F_{(1,25)}=21.48$, $P<0.001$

BVd/TVd; bone volume in cortical defect lesion / tissue volume in cortical defect lesion, CIA; collagen-induced arthritis, P.g; *Porphyromonas gingivalis* administration, PO; postoperative, P value with underline represents a significant difference.

Osteoclast number / decalcified bone regenerated area.

parameter	CIA factor	P.g factor	CIA×P.g interaction
PO 2w	$F_{(1,25)}=1.85$, $P=0.19$	$F_{(1,25)}=1.19$, $P=0.29$	$F_{(1,25)}=0.13$, $P=0.72$
PO 3w	$F_{(1,18)}=51.2$, $P<0.001$	$F_{(1,18)}=0.99$, $P=0.33$	$F_{(1,18)}=0.99$, $P=0.33$
PO 4w	$F_{(1,21)}=6.46$, $P=0.02$	$F_{(1,21)}=2.78$, $P=0.11$	$F_{(1,21)}=0.06$, $P=0.81$

CIA; collagen-induced arthritis, P.g; *Porphyromonas gingivalis* administration, PO; postoperative, P value with underline represents a significant difference.

Osteoblast surface / decalcified bone surface.

parameter	CIA factor	P.g factor	CIA×P.g interaction
PO 2w	$F_{(1,20)}=10.7$, $P=0.004$	$F_{(1,20)}=7.59$, $P=0.01$	$F_{(1,20)}=0.34$, $P=0.54$
PO 3w	$F_{(1,20)}=6.48$, $P=0.02$	$F_{(1,20)}=0.34$, $P=0.57$	$F_{(1,20)}=0.35$, $P=0.56$

CIA; collagen-induced arthritis, P.g; *Porphyromonas gingivalis* administration, PO; postoperative, P value with underline represents a significant difference.

Bone mineral density in proximal tibia at postoperative 2 weeks.

parameter	CIA factor F value(1,25), P value	P.g factor F value(1,25), P value	CIA×P.g interaction F value(1,25), P value
TV	F=3.61, P=0.07	F=0.008, P=0.93	F=0.55, P=0.47
BV	F=3.19, P=0.09	F=0.39, P=0.54	F=1.12, P=0.30
BV/TV	F=11.4, P=0.002	F=0.50, P=0.49	F=0.01, P=0.94
Tb. Th	F=2.23, P=0.15	F=0.23, P=0.14	F=0.21, P=0.65
Tb. N	F=4.04, P=0.06	F=0.62, P=0.44	F=0.001, P=0.97
Tb. Sp	F=7.39, P=0.01	F=0.001, P=0.98	F=0.02, P=0.88
Tb. Spac	F=4.59, P=0.04	F=0.61, P=0.44	F=0.15, P=0.70
TMD	F=8.08, P=0.009	F=3.98, P=0.06	F=4.90, P=0.04
vBMD	F=22.6, P<0.001	F=3.58, P=0.07	F=5.35, P=0.03

CIA; collagen-induced arthritis, P.g; *Porphyromonas gingivalis* administration, TV; tissue volume, BV; bone volume, Tb. Th; trabecular thickness, Tb.N; trabecular number, Tb.Sp; trabecular separation, Tb.Spac; trabecular spacing, TMD; tissue mineral density, vBMD; volumetric bone mineral density, P value with underline represents a significant difference.

Bone mineral density at postoperative 4 weeks.

parameter	CIA factor F value(1,25), P value	P.g factor F value(1,25), P value	CIA×P.g interaction F value(1,25), P value
TV	F=0.19, P=0.67	F=1.41, P=0.25	F=0.17, P=0.68
BV	F=22.7, P<0.001	F=10.6, P=0.003	F=1.41, P=0.25
BV/TV	F=43.9, P<0.001	F=11.2, P=0.003	F=1.38, P=0.25
Tb. Th	F=7.03, P=0.01	F=0.17, P=0.69	F=0.41, P=0.53
Tb. N	F=17.4, P<0.001	F=23.2, P<0.001	F=0.52, P=0.48
Tb. Sp	F=5.15, P=0.03	F=3.28, P=0.08	F=0.29, P=0.61
Tb. Spac	F=1.87, P=0.18	F=3.44, P=0.08	F=0.09, P=0.77
TMD	F=25.4, P<0.001	F=6.24, P=0.02	F=3.49, P=0.07
vBMD	F=66.3, P<0.001	F=17.6 P<0.001	F=6.72, P=0.02

CIA; collagen-induced arthritis, P.g; *Porphyromonas gingivalis* administration, TV; tissue volume, BV; bone volume, Tb. Th; trabecular thickness, Tb.N; trabecular number, Tb.Sp; trabecular separation, Tb.Spac; trabecular spacing, TMD; tissue mineral density, vBMD; volumetric bone mineral density, P value with underline represents a significant difference.

Serum levels of TNF-α.

parameter	CIA factor	P.g factor	CIA×P.g interaction
PO2w	$F_{(1,19)}=8.18$, <u>P=0.010</u>	$F_{(1,19)}=1.26$, P=0.28	$F_{(1,19)}=7.65$, <u>P=0.012</u>
PO3w	$F_{(1,18)}=2.33$, P=0.14	$F_{(1,18)}=0.51$, P=0.82	$F_{(1,18)}=0.00$, P=0.97
PO4w	$F_{(1,20)}=25.7$, <u>P<0.001</u>	$F_{(1,20)}=7.93$, <u>P=0.01</u>	$F_{(1,20)}=10.0$, <u>P=0.005</u>

TNF; tumor necrosis factor, CIA; collagen-induced arthritis, P.g; *Porphyromonas gingivalis* administration, PO; postoperative, P value with underline represents a significant difference.