

Bone dimensions of oligodontia patients: a case-control study

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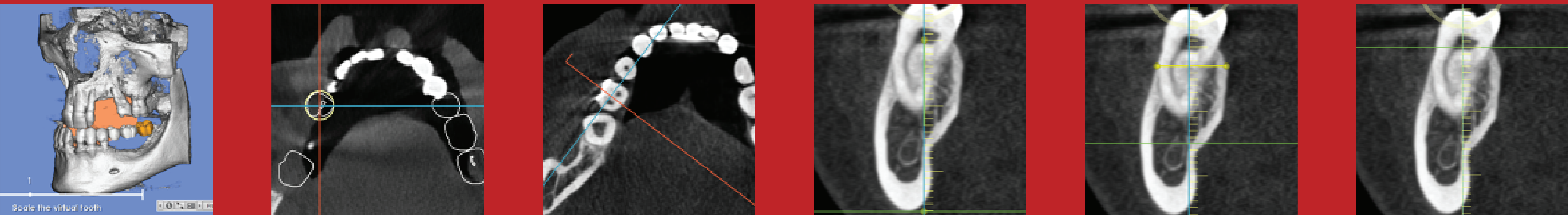


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Oligodontia (OD) is a rare developmental disease characterized by agenesis of at least six permanent teeth. Once diagnosed, patients require complex oral rehabilitation. Difficulties in dental implants treatment have been reported. We aim to determine whether the bone volume of the maxilla and mandible are altered in OD patients compared to non-OD patients, in a retrospective case control study.

MATERIAL AND METHOD

CBCTs of 53 adult OD patients (40 maxillary, 32 mandibular) were analyzed and compared with those of 82 (51 maxillary, 31 mandibular) age- and sex-matched controls. Alveolar bone dimensions were evaluated at every tooth position site.



RESULTS

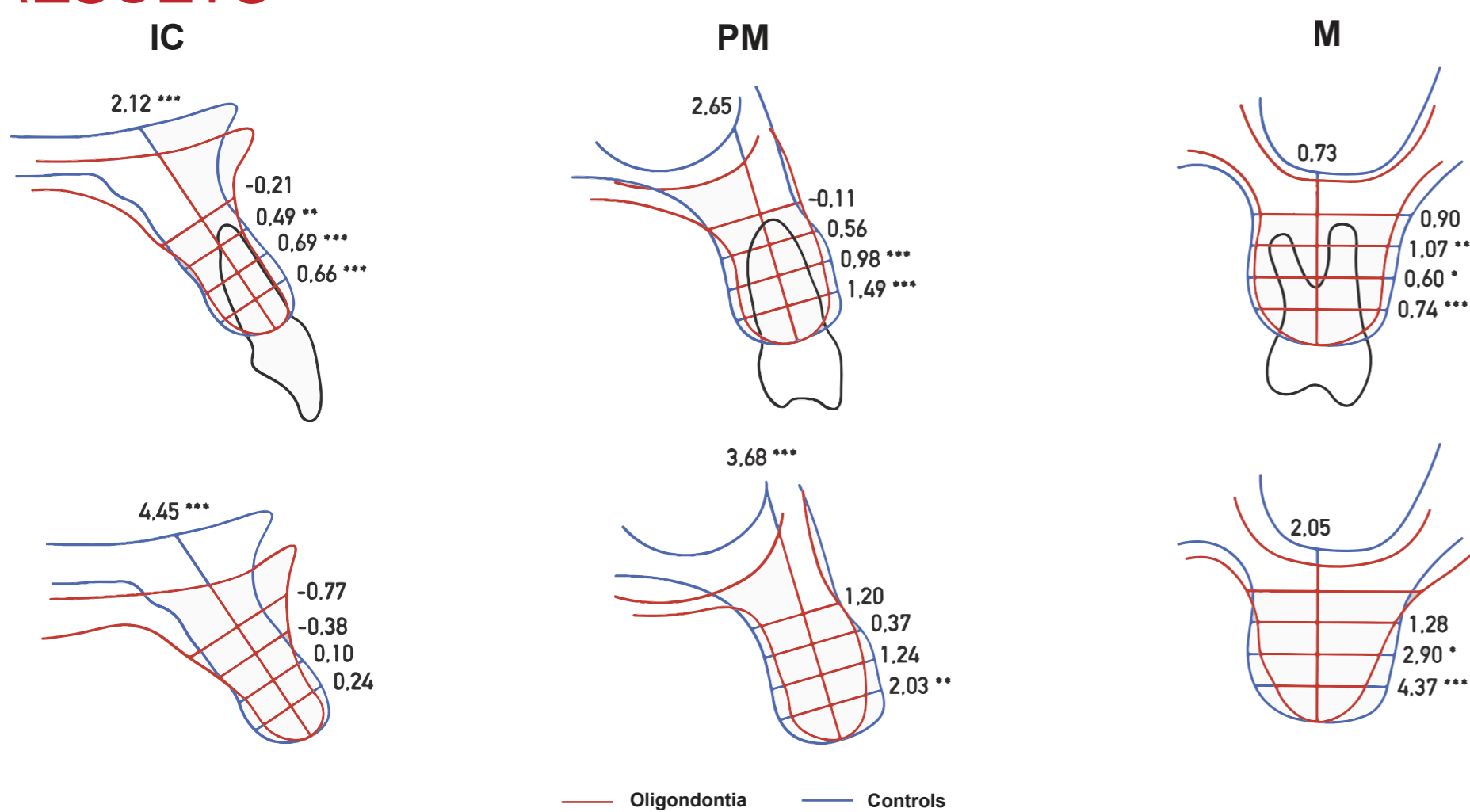


Figure 1: Maxillary: Difference of means between oligodontia permanent sites and control permanent sites (up) and between oligodontia absent sites and control absent sites (down) (*: p<0.001; **: p<0.01; ***: p<0.05)

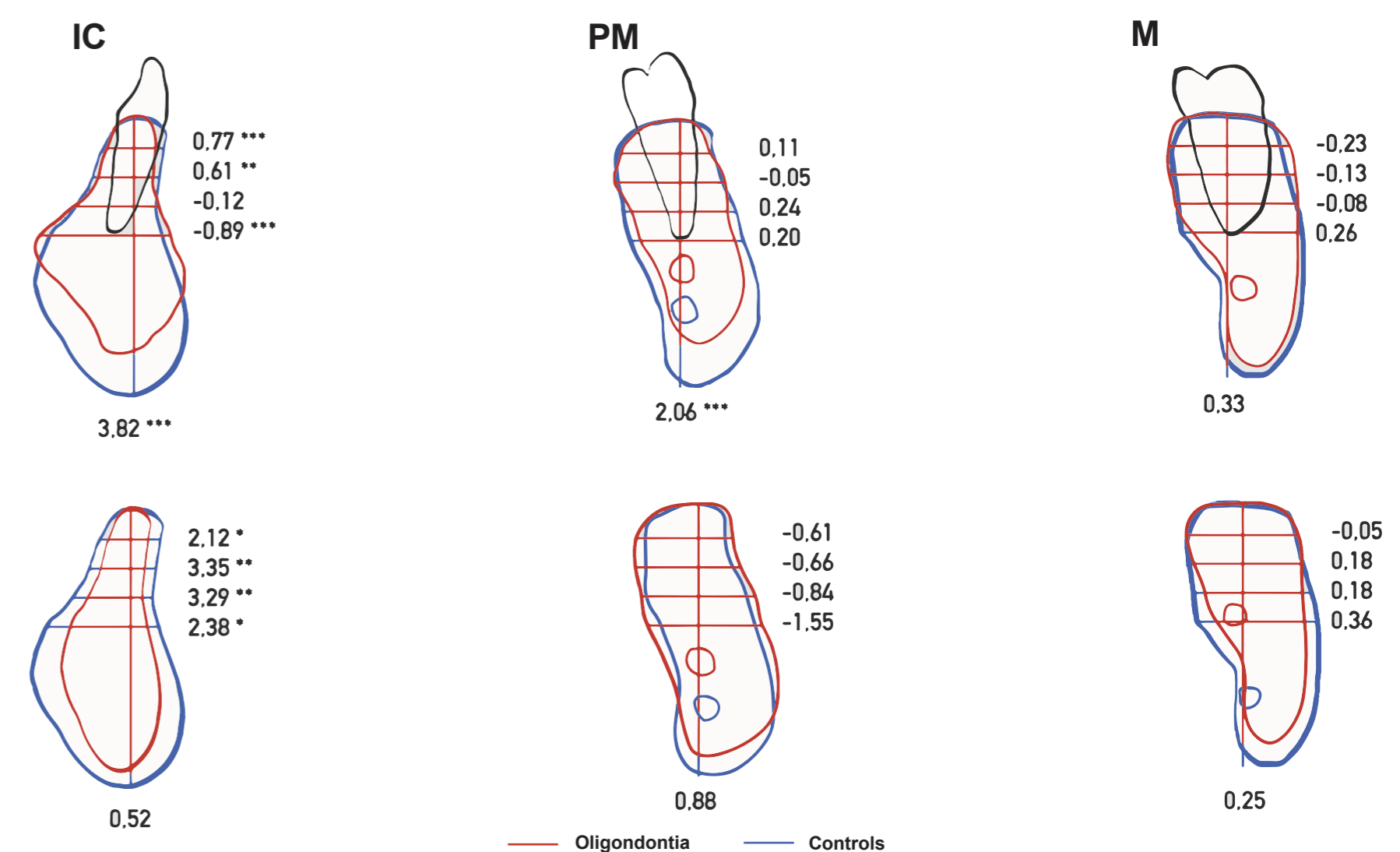


Figure 2: Mandible: Difference of means between oligodontia permanent sites and control permanent sites (up) and between oligodontia absent sites and control absent sites (down) (*: p<0.001; **: p<0.01; ***: p<0.05)

Bone height		Maxillary			Mandible		
Area	Sites	Cases	Controls	p	Cases	Controls	p
Incisive-canin	Perm (n)	17.1 ± 3.0	19.2 ± 3.9	<0.001	28.5 ± 4.1	32.3 ± 3.2	<0.001
	Dt abs (n)	15.0 ± 4.1	19.4 ± 4.4	<0.001	28.9 ± 2.3	29.4 ± 1.4	NS
Premolar	Perm (n)	14.5 ± 3.5	17.2 ± 5.2	NS	27.8 ± 4.0	29.9 ± 3.1	<0.001
	Dt abs (n)	9.6 ± 4.8	13.3 ± 8.6	<0.001	27.2 ± 4.4	28.1 ± 2.8	NS

IC bone width		Maxillary			Mandible		
Sites		Cases	Controls	p	Cases	Controls	p
Perm	3mm	7.5 ± 1.1	8.1 ± 1.3	<0.001	7.0 ± 1.4	7.8 ± 1.6	<0.001
	6mm	7.4 ± 1.4	8.1 ± 1.6	<0.001	6.8 ± 1.5	7.4 ± 1.5	<0.01
	9mm	7.9 ± 2.0	8.4 ± 2.1	<0.001	7.4 ± 1.6	7.3 ± 1.5	NS
	12mm	9.4 ± 2.6	9.1 ± 2.4	NS	8.6 ± 1.8	7.7 ± 1.6	<0.001
Abs	3mm	4.5 ± 1.1	4.7 ± 1.9	NS	4.4 ± 2.2	6.5 ± 1.3	<0.05
	6mm	5.4 ± 1.8	5.5 ± 2.5	NS	5.6 ± 2.3	9.0 ± 0.9	<0.01
	9mm	7.1 ± 2.5	6.7 ± 2.6	NS	7.0 ± 2.3	10.3 ± 0.7	<0.01
	12mm	9.1 ± 3.2	8.3 ± 2.7	NS	8.8 ± 2.6	11.2 ± 0.9	<0.05

Intrinsic bone height		Maxillary			Mandible		
IC	Perm VS Abs	17.1 ± 3.0	15.0 ± 4.1	<0.01	28.5 ± 4.1	28.9 ± 2.3	<0.05
	Temp VS Abs	17.3 ± 2.9	15.0 ± 4.1	<0.01	30.7 ± 2.8	28.9 ± 2.3	<0.01
PM	Perm VS Abs	14.5 ± 3.5	9.5 ± 4.8	<0.001	27.8 ± 4.0	27.2 ± 4.4	NS
M	Perm VS Abs	9.4 ± 3.3	5.7 ± 4.2	<0.001	26.0 ± 3.7	24.3 ± 4.0	NS

Maxillary bone width		PM			M		
Sites		Cases	Controls	p	Cases	Controls	p
Perm	3mm	8.3 ± 1.9	9.6 ± 1.3	<0.001	12.5 ± 1.8	13.3 ± 1.1	<0.001
	6mm	8.4 ± 2.0	9.4 ± 1.6	<0.001	12.8 ± 2.1	13.4 ± 1.2	<0.05
	12mm	9.8 ± 2.2	9.6 ± 2.2	NS	12.5 ± 2.3	13.4 ± 1.5	<0.01
Abs	3mm	5.3 ± 2.5	4.7 ± 1.7	<0.05	6.0 ± 2.8	10.4 ± 2.6	<0.001
	6mm	6.6 ± 2.9	7.8 ± 1.0	NS	8.4 ± 3.2	11.3 ± 2.5	<0.05

Intrinsic bone width		Maxillary			Mandible			
IC		Perm VS Abs	Temp VS Abs	p	Cases	Controls	p	
IC	3mm	Perm VS Abs	7.5 ± 1.1	4.5 ± 1.1	<0.001	7.0 ± 1.4	4.4 ± 2.2	<0.001
		Temp VS Abs	6.4 ± 1.4	4.5 ± 1.1	<0.001	6.4 ± 2.9	4.4 ± 2.2	<0.01
		Perm VS Abs	7.4 ± 1.4	5.4 ± 1.8	<0.001	6.8 ± 1.5	5.6 ± 2.3	<0.01
PM	3mm	Perm VS Abs	7.9 ± 2.0	7.1 ± 2.5	<0.05	7.4 ± 1.6	7.0 ± 2.3	NS
		Temp VS Abs	8.9 ± 2.3	5.3 ± 2.5	<0.001	9.6 ± 2.2	5.8 ± 2.0	<0.001
		Perm VS Abs	8.4 ± 2.0	6.6 ± 2.9	<0.01	8.8 ± 2.0	7.5 ± 2.0	<0.05
M	3mm	Perm VS Abs	8.3 ± 2.0	6.0 ± 2.8	<0.001	11.4 ± 2.0	8.2 ± 3.0	<0.001
		Temp VS Abs	8.9 ± 2.0	8.0 ± 3.4	NS	9.9 ± 2.3	8.4 ± 2.0	<0.05
		Perm VS Abs	12.5 ± 1.8	6.0 ± 2.8	<0.001	12.8 ± 2.1	8.4 ± 3.2	<0.001
M	6mm	Perm VS Abs	12.4 ± 2.4	9.5 ± 2.4	<0.001	12.8 ± 2.0	11.0 ± 2.4	<0.001
		Temp VS Abs	12.5 ± 2.3	12.3 ± 2.1	NS	11.9 ± 2.1	10.2 ± 1.9	<0.01
		Perm VS Abs	12.5 ± 2.3	12.3 ± 2.1	NS	11.9 ± 2.1	10.2 ± 1.9	<0.01

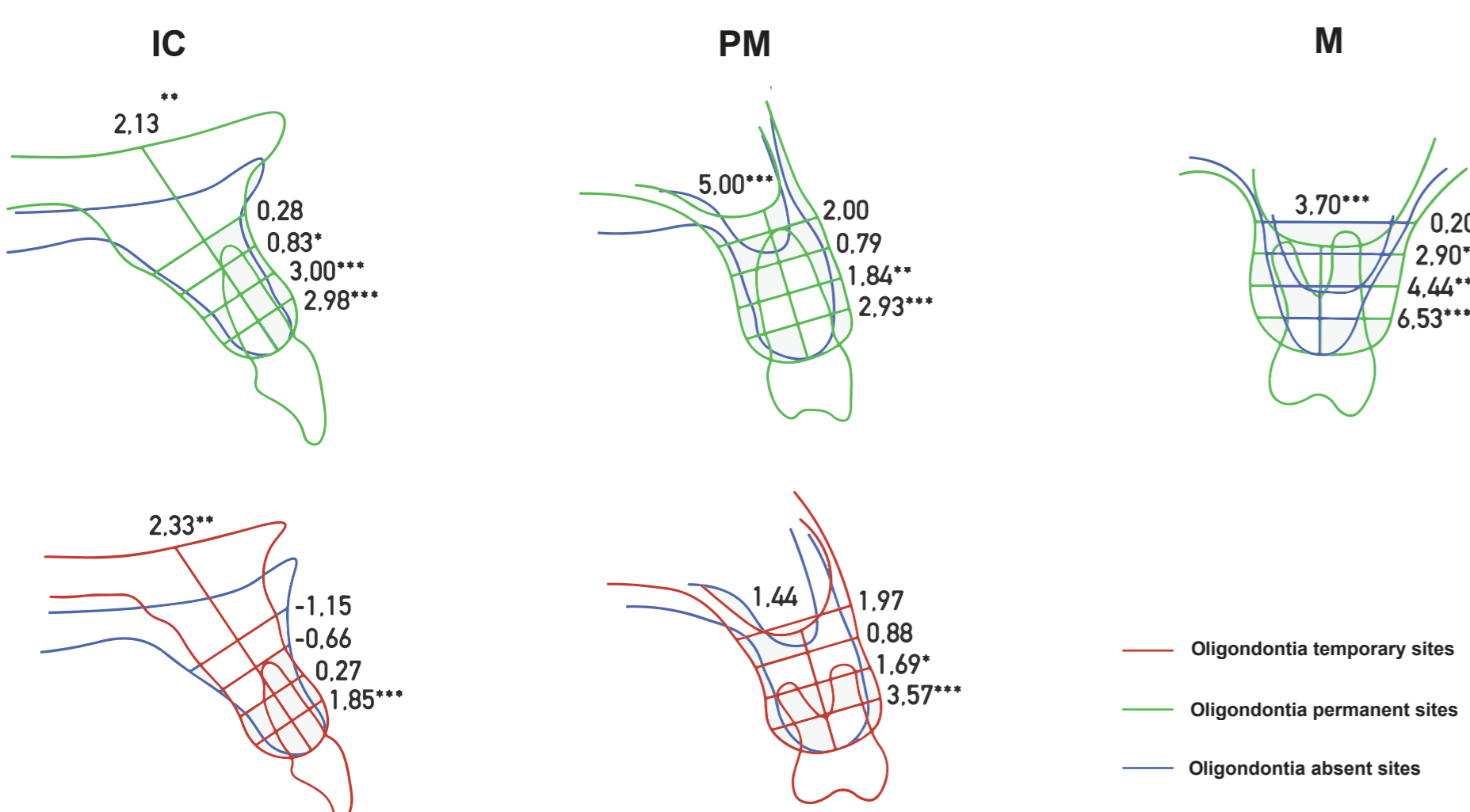


Figure 3: Maxillary: Intrinsic difference of means between oligodontia permanent sites and absent sites (up) and between oligodontia temporary sites and oligodontia absent sites (down) (*: p<0.001; **: p<0.01; ***: p<0.05)

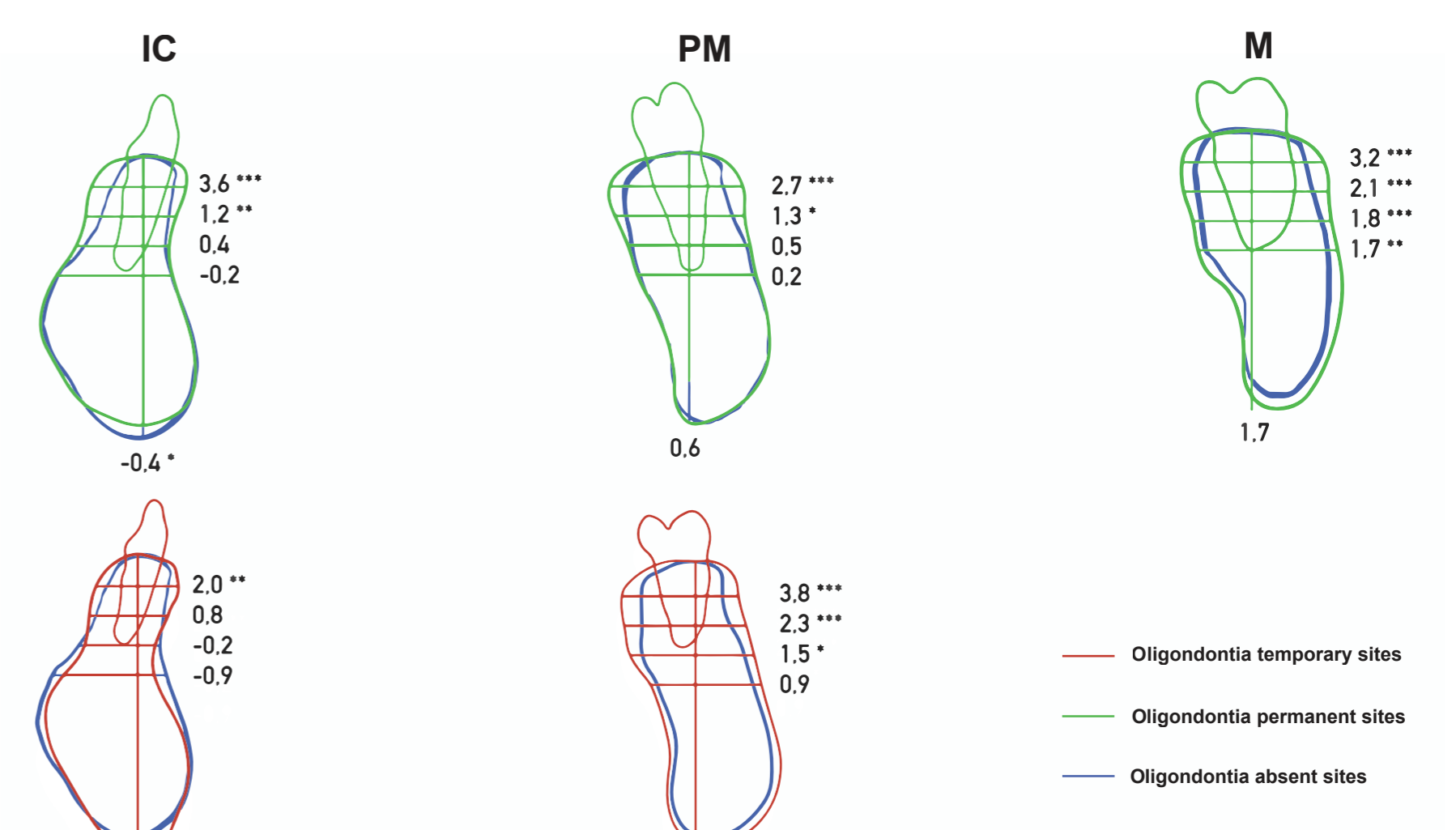


Figure 4: Mandible: Intrinsic difference of means between oligodontia permanent sites and absent sites (up) and between oligodontia temporary sites and oligodontia absent sites (down) (*: p<0.001; **: p<0.01; ***: p<0.05)

CONCLUSION

Maxillary and mandibular bone volume is decreased in OD patients compared to controls. Since the absence of teeth in OD patients is associated with volume deficit, it may be beneficial to keep temporary teeth functional to limit alveolar bone resorption.