Supplementary Materials

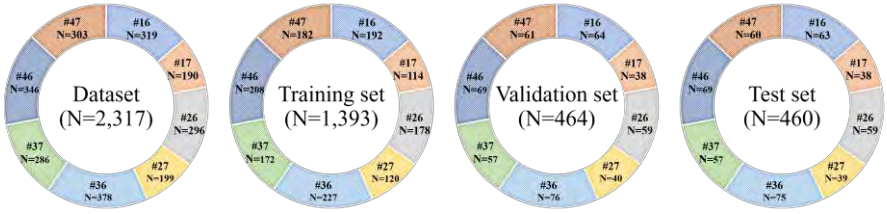

Fig. S1. Tooth distribution on our training, validation, and test sets. The tooth numbering is presented using the FDI tooth numbering system. #16, #17, #26, #27, #36, #37, #46, and #47 denote the upper right first molar, upper right second molar, upper left first molar, upper left second molar, lower left first molar, lower left second molar, lower right first molar, and lower right second molar.

Table S1. Performance comparison of DCrownFormer with existing point completion networks combined with SAP on each tooth. Compared with other methods, our DCrownFormer achieves the best performance in all metrics except for NC on each tooth.

#16						
Networks	CD (↓)	F-score (↑)	NC (↑)	MAE (↓)	R^2 (↑)	SDE (↓)
PCN+SAP	19.55±3.33	0.859±0.078	0.754±0.036	5.66±1.71	0.312±0.187	11.07±3.05
GRNet+SAP	17.72±1.94	0.914±0.049	0.640±0.037	6.64±2.03	0.480±0.102	11.70±1.46
TopNet+SAP	18.78±2.80	0.880±0.064	**0.856±0.021**	2.80±0.66	0.509±0.168	8.63±1.67
PointTr+SAP	63.98±8.45	0.290±0.059	0.706±0.037	47.30±110.63	0.303±0.149	28.92±15.27
DCrownFormer	**15.22±2.22**	**0.956±0.043**	0.796±0.035	**2.01±0.45**	**0.711±0.128**	**6.47±1.58**
#17						
PCN+SAP	22.29±4.74	0.802±0.090	0.738±0.031	5.97±1.64	0.216±0.196	13.71±3.85
GRNet+SAP	19.18±3.97	0.876±0.084	0.637±0.043	5.84±1.74	0.438±0.102	12.16±2.28
TopNet+SAP	19.74±5.22	0.859±0.010	**0.838±0.035**	2.94±0.66	0.457±0.187	8.63±1.67
PointTr+SAP	63.98±8.45	0.290±0.056	0.697±0.050	61.42±152.08	0.310±0.126	33.50±28.43
DCrownFormer	**16.14±3.21**	**0.931±0.071**	0.760±0.049	**2.10±0.58**	**0.624±0.179**	**7.13±2.06**
#26						
PCN+SAP	20.99±6.11	0.834±0.118	0.752±0.044	6.45±2.12	0.398±0.257	12.72±4.85
GRNet+SAP	18.13±4.27	0.903±0.087	0.651±0.038	6.57±2.04	0.443±0.132	11.69±2.25
TopNet+SAP	20.04±5.99	0.856±0.117	**0.844±0.040**	2.85±0.82	0.471±0.222	9.23±2.95
PointTr+SAP	71.49±9.63	0.227±0.061	0.688±0.050	25.24±9.92	0.136±0.094	25.98±5.12
DCrownFormer	**15.87±5.02**	**0.943±0.085**	0.797±0.056	**2.01±0.62**	**0.700±0.162**	**6.83±3.25**
#27						
PCN+SAP	18.79±3.51	0.871±0.083	0.753±0.027	6.33±1.86	0.357±0.255	11.42±3.40

GRNet+SAP	17.31±2.10	0.913±0.046	0.643±0.033	6.75±2.13	0.426±0.093	11.17±1.44
TopNet+SAP	18.60±3.53	0.882±0.083	**0.856±0.020**	2.69±0.65	0.458±0.196	8.69±1.89
PointTr+SAP	76.31±9.12	0.180±0.084	0.667±0.048	23.05±9.65	0.134±0.131	27.65±4.31
DCrownFormer	**14.71±2.00**	**0.961±0.043**	0.785±0.028	**1.80±0.47**	**0.666±0.153**	**6.28±1.37**
#36						
PCN+SAP	17.31±3.16	0.907±0.074	0.766±0.024	3.95±1.09	0.472±0.170	8.61±2.03
GRNet+SAP	16.47±2.38	0.934±0.053	0.612±0.031	5.29±1.60	0.502±0.114	9.37±1.85
TopNet+SAP	17.37±5.19	0.910±0.093	**0.861±0.035**	2.34±0.85	0.616±0.171	7.84±3.08
PointTr+SAP	18.05±3.83	0.895±0.090	0.816±0.037	6.02±0.91	0.482±0.179	8.12±2.18
DCrownFormer	**14.02±2.23**	**0.972±0.037**	0.826±0.037	**1.63±0.40**	**0.757±0.109**	**5.79±1.50**
#37						
PCN+SAP	18.97±4.51	0.872±0.098	0.761±0.034	4.28±1.55	0.445±0.167	9.81±2.78
GRNet+SAP	17.95±3.08	0.900±0.069	0.620±0.034	5.63±1.77	0.385±0.117	10.77±2.15
TopNet+SAP	19.64±5.47	0.861±0.106	**0.846±0.039**	2.77±0.92	0.492±0.182	9.11±3.05
PointTr+SAP	19.81±4.11	0.854±0.091	0.797±0.044	6.80±1.42	0.393±0.154	9.39±2.35
DCrownFormer	**15.43±2.87**	**0.942±0.062**	0.788±0.046	**1.94±0.54**	**0.640±0.176**	**6.85±1.95**
#46						
PCN+SAP	17.36±3.29	0.908±0.073	0.775±0.029	3.98±0.78	0.547±0.141	8.58±2.07
GRNet+SAP	16.94±7.14	0.934±0.097	0.620±0.029	5.47±1.10	0.493±0.105	10.16±3.50
TopNet+SAP	17.37±3.32	0.911±0.075	**0.854±0.027**	2.30±0.59	0.607±0.166	7.84±1.91
PointTr+SAP	18.47±4.69	0.889±0.098	0.807±0.030	5.80±0.86	0.490±0.149	8.41±2.51
DCrownFormer	**14.28±3.63**	**0.968±0.065**	0.816±0.044	**1.65±0.47**	**0.762±0.124**	**5.56±2.22**
#47						
PCN+SAP	18.27±3.73	0.889±0.082	0.771±0.031	4.21±0.95	0.461±0.165	9.32±2.01
GRNet+SAP	17.68±3.44	0.900±0.076	0.622±0.037	5.56±1.35	0.399±0.145	10.69±2.11
TopNet+SAP	19.23±5.33	0.872±0.102	**0.836±0.027**	2.57±1.38	0.513±0.180	9.05±3.04
PointTr+SAP	19.64±3.50	0.857±0.084	0.796±0.035	6.19±1.03	0.419±0.130	9.14±1.87
DCrownFormer	**15.51±3.29**	**0.942±0.068**	0.783±0.047	**1.78±0.53**	**0.625±0.204**	**7.00±2.13**

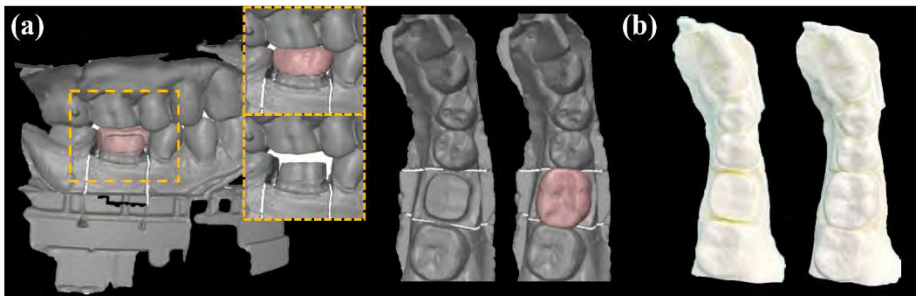

Fig. S2. A 3D printing result of a generated dental crown from DCrownFormer. (a) A 3D scan of antagonist and preparation teeth (grey), and corresponding generated dental crown (red). (b) A 3D printing result of preparation teeth and corresponding generated dental crown.