Ground Truth | Ensemble Prediction

## Grounding Caption

This localization caption provides multi-dimensional spatial analysis of anatomical structures and pathological findings for this panoramic dental X-ray image, including:

Teeth visibility with center points (total: 19):
[
{'point_2d': [581, 511], 'tooth_id': '16', 'score': 0.94},
{'point_2d': [533, 662], 'tooth_id': '47', 'score': 0.93},
{'point_2d': [638, 509], 'tooth_id': '15', 'score': 0.91},
{'point_2d': [704, 686], 'tooth_id': '44', 'score': 0.9},
{'point_2d': [928, 528], 'tooth_id': '23', 'score': 0.89},
{'point_2d': [843, 530], 'tooth_id': '21', 'score': 0.88},
{'point_2d': [965, 702], 'tooth_id': '35', 'score': 0.86},
{'point_2d': [1104, 666], 'tooth_id': '37', 'score': 0.84},
{'point_2d': [678, 510], 'tooth_id': '14', 'score': 0.82},
{'point_2d': [767, 685], 'tooth_id': '42', 'score': 0.79},
{'point_2d': [920, 698], 'tooth_id': '34', 'score': 0.79},
{'point_2d': [1073, 513], 'tooth_id': '26', 'score': 0.78},
{'point_2d': [851, 694], 'tooth_id': '32', 'score': 0.72},
{'point_2d': [881, 702], 'tooth_id': '33', 'score': 0.72},
{'point_2d': [732, 699], 'tooth_id': '43', 'score': 0.7},
{'point_2d': [826, 693], 'tooth_id': '31', 'score': 0.67},
{'point_2d': [967, 507], 'tooth_id': '24', 'score': 0.65},
{'point_2d': [796, 685], 'tooth_id': '41', 'score': 0.61},
{'point_2d': [798, 532], 'tooth_id': '11', 'score': 0.61}
]

Wisdom teeth detection (total: 0):
[
]

Dental Pathological Findings (total: 9):
[
{'box_2d': [600, 446, 683, 635], 'tooth_id': '15', 'label': 'caries', 'score': 0.22},
{'box_2d': [903, 456, 974, 652], 'tooth_id': '23', 'label': 'caries', 'score': 0.29},
{'box_2d': [649, 445, 724, 627], 'tooth_id': '14', 'label': 'caries', 'score': 0.29},
{'box_2d': [767, 454, 840, 639], 'tooth_id': '11', 'label': 'caries', 'score': 0.18},
{'box_2d': [1039, 524, 1054, 557], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.36, 'near_tooth': '26'},
{'box_2d': [686, 444, 766, 625], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.22, 'near_tooth': '14'},
{'box_2d': [829, 463, 954, 624], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.21, 'near_tooth': '23'},
{'box_2d': [928, 460, 1033, 601], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.19, 'near_tooth': '24'},
{'box_2d': [731, 447, 808, 621], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.19, 'near_tooth': '11'}
]

Historical Treatments (total: 10):
[
{'box_2d': [776, 466, 820, 599], 'tooth_id': '11', 'label': 'rc-treated', 'score': 0.66},
{'box_2d': [929, 590, 1131, 701], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.94, 'near_tooth': '37'},
{'box_2d': [692, 454, 741, 595], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.92, 'near_tooth': '14'},
{'box_2d': [867, 471, 908, 598], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.92, 'near_tooth': '23'},
{'box_2d': [515, 594, 731, 694], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.91, 'near_tooth': '44'},
{'box_2d': [693, 539, 906, 600], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.91, 'near_tooth': '11'},
{'box_2d': [976, 450, 1043, 585], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.9, 'near_tooth': '24'},
{'box_2d': [978, 520, 1044, 584], 'tooth_id': 'unknown', 'label': 'crown', 'score': 0.87, 'near_tooth': '24'},

{'box_2d': [741, 474, 774, 597], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.67, 'near_tooth': '11'},
{'box_2d': [691, 543, 741, 595], 'tooth_id': 'unknown', 'label': 'crown', 'score': 0.55, 'near_tooth': '14'}
]

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# Medical Report

**Teeth-Specific Observations**

### General Condition

A total of 19 teeth were visualized within the panoramic image. No wisdom teeth (third molars) were detected bilaterally. All remaining teeth demonstrate normal anatomical positioning, with no evidence of gross structural displacement or fractures.

### Pathological Findings

- **#15 (#15)**: Suspicious for early caries on the distal aspect, with areas of concern noted for demineralization.

- **#23 (#23)**: Suspected caries on the mesial surface, with radiolucent changes consistent with interproximal decay.

- **#14 (#14)**: Radiolucent lesion suspicious for caries on the occlusal surface.

- **#11 (#11)**: Areas of concern for caries on the mesial aspect.

- **Near #26 (#26)**: Radiolucent region suspicious for caries adjacent to the distal root.

- **Near #14 (#14)**: Suspected caries lateral to the existing root canal-treated tooth.

- **Near #23 (#23)**: Radiolucent changes adjacent to the interproximal restoration.

- **Near #24 (#24)**: Suspicious for caries near the cervical margin of a crown.

- **Near #11 (#11)**: Radiolucent region adjacent to the root canal-treated tooth, suggesting possible secondary caries.

### Historical Interventions

- **#11 (#11)**: Presence of root canal-treated tooth with a composite restoration on the mesial surface. A second root canal-treated tooth is noted adjacent to this region.

- **Near #37 (#37)**: A restoration is present on the buccal aspect of the apical region.

- **Near #14 (#14)**: Root canal-treated tooth with a crown placed on the adjacent structure.

- **Near #23 (#23)**: Root canal-treated tooth identified proximal to the restoration.

- **Near #44 (#44)**: Restoration on the distal surface of a missing wisdom tooth area.

- **Near #24 (#24)**: Crown placed on the cervical region of a root canal-treated tooth.

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### Clinical Summary & Recommendations

#### Priority Concerns

1. **Caries risk in multiple locations**: High suspicion of caries on #15, #23, #14, and #11, with additional concerns near #26, #14, #23, #24, and #11.

2. **Secondary caries near restorations**: Noted near #23 and #24, requiring evaluation for recurrent decay.

3. **Root canal-treated teeth**: #11 and #23 demonstrate potential secondary caries or marginal breakdown.

#### Preventive Measures

- Reinforce meticulous interproximal plaque control using floss or interdental brushes, particularly between #15/#14 and #23/#24.

- Implement fluoride therapy for caries-prone regions to enhance remineralization.

- Monitor areas near restorations and crowns for recurrent decay during routine evaluations.

#### Follow-up Protocol

- **6-month recall** for radiographic and clinical reassessment of caries-prone teeth (#15, #23, #14, #11) and adjacent suspicious regions.

- Referral to endodontic evaluation for #11 and #23 if apical radiolucencies suggest root canal compromise.

- Consider prophylactic restoration for #14 and #15 if caries progression is confirmed on follow-up imaging.