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: 20):
[
{'point_2d': [1130, 540], 'tooth_id': '27', 'score': 0.93},
{'point_2d': [631, 515], 'tooth_id': '16', 'score': 0.91},
{'point_2d': [689, 522], 'tooth_id': '15', 'score': 0.9},
{'point_2d': [474, 459], 'tooth_id': '18', 'score': 0.89},
{'point_2d': [555, 502], 'tooth_id': '17', 'score': 0.87},
{'point_2d': [976, 540], 'tooth_id': '24', 'score': 0.87},
{'point_2d': [1061, 568], 'tooth_id': '26', 'score': 0.87},
{'point_2d': [768, 737], 'tooth_id': '43', 'score': 0.86},
{'point_2d': [998, 742], 'tooth_id': '35', 'score': 0.85},
{'point_2d': [1191, 530], 'tooth_id': '28', 'score': 0.83},
{'point_2d': [930, 756], 'tooth_id': '33', 'score': 0.82},
{'point_2d': [831, 547], 'tooth_id': '11', 'score': 0.81},
{'point_2d': [947, 538], 'tooth_id': '23', 'score': 0.8},
{'point_2d': [964, 740], 'tooth_id': '34', 'score': 0.8},
{'point_2d': [740, 511], 'tooth_id': '14', 'score': 0.77},
{'point_2d': [766, 530], 'tooth_id': '13', 'score': 0.75},
{'point_2d': [870, 554], 'tooth_id': '21', 'score': 0.74},
{'point_2d': [905, 547], 'tooth_id': '22', 'score': 0.72},
{'point_2d': [898, 747], 'tooth_id': '32', 'score': 0.69},
{'point_2d': [796, 546], 'tooth_id': '12', 'score': 0.67}
]

Wisdom teeth detection (total: 2):
[
{'box_2d': [429, 385, 519, 532], 'tooth_id': '18', 'is_impacted': false, 'score': 0.89},
{'box_2d': [1160, 471, 1222, 589], 'tooth_id': '28', 'is_impacted': false, 'score': 0.83}
]

Dental Pathological Findings (total: 11):
[
{'box_2d': [1027, 484, 1124, 666], 'tooth_id': '26', 'label': 'caries', 'score': 0.22},
{'box_2d': [756, 479, 810, 642], 'tooth_id': '13', 'label': 'calculus', 'score': 0.37},
{'box_2d': [1074, 660, 1168, 742], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.89, 'near_tooth': '35'},
{'box_2d': [995, 479, 1041, 580], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.85, 'near_tooth': '24'},
{'box_2d': [1145, 602, 1268, 718], 'tooth_id': 'unknown', 'label': 'impacted', 'score': 0.75, 'near_tooth': '28'},
{'box_2d': [1019, 680, 1074, 722], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.62, 'near_tooth': '35'},
{'box_2d': [1182, 545, 1219, 584], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.57, 'near_tooth': '28'},
{'box_2d': [451, 468, 510, 531], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.47, 'near_tooth': '18'},
{'box_2d': [548, 615, 604, 662], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.4, 'near_tooth': '16'},
{'box_2d': [996, 549, 1026, 579], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.36, 'near_tooth': '24'},
{'box_2d': [1132, 720, 1165, 744], 'tooth_id': 'unknown', 'label': 'periapical radiolucency', 'score': 0.35, 'near_tooth': '35'}
]

Historical Treatments (total: 2):
[
{'box_2d': [467, 589, 626, 746], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.94, 'near_tooth': '17'},
{'box_2d': [699, 663, 735, 813], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.61, 'near_tooth': '43'}
]

# Medical Report

**Teeth-Specific Observations**

### 1. General Condition

A total of 20 teeth were visualized, including the mandibular right first molar (#26) and maxillary left second premolar (#15) with high confidence. Wisdom teeth (#18 and #28) are present and unimpacted.

### 2. Pathological Findings

- **#26**: Suspicious for caries.

- **#13**: Suspicious for calculus.

- **Near #35**: Clear indication of a root stump.

- **Near #24**: Clear indication of a root stump.

- **Near #28**: Suspicious for impacted tooth fragment.

- **Near #28**: Suspicious for caries.

- **Near #18**: Suspicious for caries.

- **Near #16**: Suspicious for caries.

- **Near #24**: Suspicious for caries.

- **Near #35**: Suspicious for periapical radiolucency.

### 3. Historical Interventions

- Root canal-treated tooth noted near #17.

- Root canal-treated tooth noted near #43.

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**Clinical Summary & Recommendations**

### 1. Priority Concerns

- Root stumps near #35 and #24 require extraction evaluation.

- Suspected impacted fragment near #28 should be assessed for surgical removal.

- Caries on #26 and near #28, #18, #16, and #24 demand prompt intervention to prevent progression.

- Periapical radiolucency near #35 warrants investigation for apical pathology or residual infection.

### 2. Preventive Measures

- Reinforce oral hygiene protocols, emphasizing interdental cleaning for calculus-prone areas (#13).

- Monitor suspicious caries (near #18, #16, #24) for radiographic progression during follow-up.

### 3. Follow-up Protocol

- Schedule a 6-month recall for reassessment of suspicious caries and calculus.

- Refer to endodontist for #26 and #35 to evaluate periapical radiolucency.

- Consult oral surgeon for impacted fragment near #28 and root stumps near #35/#24.

- Recheck #43 rc-treated tooth for long-term success if symptoms arise.