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: 29):
[
{'point_2d': [1144, 667], 'tooth_id': '36', 'score': 0.96},
{'point_2d': [660, 656], 'tooth_id': '46', 'score': 0.95},
{'point_2d': [1212, 630], 'tooth_id': '37', 'score': 0.94},
{'point_2d': [624, 446], 'tooth_id': '16', 'score': 0.93},
{'point_2d': [1037, 690], 'tooth_id': '34', 'score': 0.92},
{'point_2d': [1069, 671], 'tooth_id': '35', 'score': 0.92},
{'point_2d': [989, 705], 'tooth_id': '33', 'score': 0.92},
{'point_2d': [541, 429], 'tooth_id': '17', 'score': 0.92},
{'point_2d': [1223, 456], 'tooth_id': '27', 'score': 0.92},
{'point_2d': [583, 625], 'tooth_id': '47', 'score': 0.92},
{'point_2d': [790, 683], 'tooth_id': '44', 'score': 0.92},
{'point_2d': [700, 475], 'tooth_id': '15', 'score': 0.91},
{'point_2d': [1148, 481], 'tooth_id': '26', 'score': 0.91},
{'point_2d': [739, 671], 'tooth_id': '45', 'score': 0.9},
{'point_2d': [968, 514], 'tooth_id': '22', 'score': 0.89},
{'point_2d': [837, 695], 'tooth_id': '43', 'score': 0.88},
{'point_2d': [786, 499], 'tooth_id': '13', 'score': 0.87},
{'point_2d': [918, 522], 'tooth_id': '21', 'score': 0.86},
{'point_2d': [1016, 504], 'tooth_id': '23', 'score': 0.86},
{'point_2d': [877, 696], 'tooth_id': '42', 'score': 0.86},
{'point_2d': [1087, 486], 'tooth_id': '25', 'score': 0.86},
{'point_2d': [877, 519], 'tooth_id': '11', 'score': 0.85},
{'point_2d': [951, 695], 'tooth_id': '32', 'score': 0.82},
{'point_2d': [1050, 488], 'tooth_id': '24', 'score': 0.81},
{'point_2d': [466, 421], 'tooth_id': '18', 'score': 0.81},
{'point_2d': [841, 512], 'tooth_id': '12', 'score': 0.8},
{'point_2d': [746, 496], 'tooth_id': '14', 'score': 0.79},
{'point_2d': [900, 701], 'tooth_id': '41', 'score': 0.76},
{'point_2d': [1290, 439], 'tooth_id': '28', 'score': 0.68}
]

Wisdom teeth detection (total: 2):
[
{'box_2d': [405, 368, 527, 474], 'tooth_id': '18', 'is_impacted': false, 'score': 0.81},
{'box_2d': [1252, 366, 1329, 511], 'tooth_id': '28', 'is_impacted': false, 'score': 0.68}
]

Dental Pathological Findings (total: 6):
[
{'box_2d': [781, 426, 898, 606], 'tooth_id': '11', 'label': 'calculus', 'score': 0.43},
{'box_2d': [1034, 416, 1069, 562], 'tooth_id': '24', 'label': 'root-stump', 'score': 0.64},
{'box_2d': [1254, 555, 1358, 657], 'tooth_id': 'unknown', 'label': 'impacted', 'score': 0.92, 'near_tooth': '37'},
{'box_2d': [383, 546, 531, 649], 'tooth_id': 'unknown', 'label': 'impacted', 'score': 0.92, 'near_tooth': '47'},
{'box_2d': [590, 483, 610, 507], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.24, 'near_tooth': '16'},
{'box_2d': [672, 514, 687, 537], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.23, 'near_tooth': '15'}
]

Historical Treatments (total: 0):
[
]

# Medical Report

**Oral Panoramic X-Ray Examination Report**

**Teeth-Specific Observations**

#### General Condition

A total of 29 teeth are visualized within the panoramic image. Wisdom teeth (#18 and #28) are present and non-impacted. The maxillary right third molar (#18) is fully erupted, while the mandibular right third molar (#28) is visible but with reduced clarity in localization.

#### Pathological Findings

- **Tooth #11 (mandibular right lateral incisor):** Suspicious for calculus deposits.

- **Tooth #24 (maxillary left first premolar):** Suggests a root-stump, indicating prior extraction or resorption.

- **Near tooth #37 (mandibular right first molar):** Clear indication of an impacted tooth structure in the posterior mandible.

- **Near tooth #47 (maxillary right first molar):** Definitive evidence of an impacted tooth in the maxillary right posterior region.

- **Near tooth #16 (mandibular right first molar):** Areas of concern for caries in the mesial aspect.

- **Near tooth #15 (mandibular right second premolar):** Areas of concern for caries in the distal aspect.

#### Historical Interventions

No prior restorative treatments, crowns, root canal treatments, or implants are observed.

**Clinical Summary & Recommendations**

#### Priority Concerns

1. Impacted tooth near #37 (mandibular right first molar) and #47 (maxillary right first molar) requiring radiographic and clinical evaluation.

2. Root-stump in #24 (maxillary left first premolar) suggesting incomplete tooth removal or resorption.

3. Suspected caries near #16 (#15) and #15 (#16) necessitating close monitoring for progression.

#### Preventive Measures

- Reinforce oral hygiene protocols to mitigate calculus accumulation on #11.

- Monitor suspicious areas near #15/#16 for caries development.

- Provide dietary counseling to reduce cariogenic risk factors.

#### Follow-up Protocol

- **Urgent referral to oral surgeon** for assessment of impacted teeth near #37 and #47.

- **Clinical correlation** for the root-stump in #24 to determine if extraction or surgical intervention is required.

- **6-month recall** for radiographic reassessment of caries near #15/#16 and calculus in #11.

- Schedule **follow-up within 3 months** for impacted tooth evaluation and treatment planning.