



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: 28):

```
[
{'point_2d': [1197, 723], 'tooth_id': '36', 'score': 0.96},
{'point_2d': [1263, 708], 'tooth_id': '37', 'score': 0.96},
{'point_2d': [741, 708], 'tooth_id': '45', 'score': 0.94},
{'point_2d': [663, 708], 'tooth_id': '46', 'score': 0.93},
{'point_2d': [514, 549], 'tooth_id': '18', 'score': 0.93},
{'point_2d': [1012, 716], 'tooth_id': '33', 'score': 0.93},
{'point_2d': [588, 707], 'tooth_id': '47', 'score': 0.93},
{'point_2d': [1063, 716], 'tooth_id': '34', 'score': 0.92},
{'point_2d': [813, 511], 'tooth_id': '13', 'score': 0.92},
{'point_2d': [956, 522], 'tooth_id': '21', 'score': 0.91},
{'point_2d': [1282, 543], 'tooth_id': '27', 'score': 0.91},
{'point_2d': [578, 533], 'tooth_id': '17', 'score': 0.91},
{'point_2d': [659, 521], 'tooth_id': '16', 'score': 0.9},
{'point_2d': [503, 693], 'tooth_id': '48', 'score': 0.89},
{'point_2d': [1007, 524], 'tooth_id': '22', 'score': 0.89},
{'point_2d': [790, 705], 'tooth_id': '44', 'score': 0.89},
{'point_2d': [1053, 511], 'tooth_id': '23', 'score': 0.88},
{'point_2d': [866, 522], 'tooth_id': '12', 'score': 0.88},
{'point_2d': [1138, 537], 'tooth_id': '25', 'score': 0.88},
{'point_2d': [1361, 561], 'tooth_id': '28', 'score': 0.87},
{'point_2d': [936, 696], 'tooth_id': '31', 'score': 0.86},
{'point_2d': [902, 694], 'tooth_id': '41', 'score': 0.86},
{'point_2d': [972, 709], 'tooth_id': '32', 'score': 0.85},
{'point_2d': [873, 703], 'tooth_id': '42', 'score': 0.85},
{'point_2d': [777, 522], 'tooth_id': '14', 'score': 0.85},
{'point_2d': [1095, 526], 'tooth_id': '24', 'score': 0.83},
{'point_2d': [836, 726], 'tooth_id': '43', 'score': 0.83},
{'point_2d': [908, 518], 'tooth_id': '11', 'score': 0.76}
]
```

Wisdom teeth detection (total: 3):

```
[
{'box_2d': [478, 478, 550, 620], 'tooth_id': '18', 'is_impacted': false, 'score': 0.93},
{'box_2d': [461, 621, 544, 764], 'tooth_id': '48', 'is_impacted': false, 'score': 0.89},
{'box_2d': [1322, 483, 1399, 638], 'tooth_id': '28', 'is_impacted': false, 'score': 0.87}
]
```

Dental Pathological Findings (total: 5):

```
[
{'box_2d': [947, 425, 1020, 611], 'tooth_id': '21', 'label': 'calculus', 'score': 0.42},
{'box_2d': [814, 451, 939, 605], 'tooth_id': '12', 'label': 'calculus', 'score': 0.4},
{'box_2d': [502, 559, 543, 602], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.45, 'near_tooth': '18'},
{'box_2d': [1312, 648, 1351, 691], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.42, 'near_tooth': '37'},
{'box_2d': [1282, 567, 1310, 596], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.28, 'near_tooth': '27'}
]
```

Historical Treatments (total: 4):

```
[
{'box_2d': [1084, 641, 1144, 825], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.92, 'near_tooth': '34'},
{'box_2d': [665, 444, 751, 539], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.92, 'near_tooth': '16'},
]
```

```
{'box_2d': [1296, 636, 1389, 766], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.91, 'near_tooth': '37'},  
{'box_2d': [1084, 643, 1140, 693], 'tooth_id': 'unknown', 'label': 'crown', 'score': 0.88, 'near_tooth': '34'}  
]
```

Medical Report

Teeth-Specific Observations

1. General Condition

A total of 28 teeth are visualized, with most anatomical landmarks detectable. All visualized teeth demonstrate normal anatomical orientation. Wisdom teeth (#18, #28, and #48) are fully erupted and non-impacted. Tooth #11 (FDI #11) is not clearly visualized, suggesting potential underdevelopment or poor image clarity.

2. Pathological Findings

- Suspicious for carious lesions near #18, #37, and #27, with areas of radiolucency noted in proximity to these teeth.
- Suspicious for calculus deposits on #12 and #21, with localized radiopaque accumulations observed.

3. Historical Interventions

- Root canal-treated teeth identified near #16, #34, and #37, with visible post-treatment restorations.
 - A crown restoration is present on #34, with radiographic evidence of a metallic radiopacity.
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Clinical Summary & Recommendations

1. Priority Concerns

- Areas of suspicious caries near #18, #37, and #27 require immediate evaluation for potential restoration or caries management.
- Suspected calculus deposits on #12 and #21 should be prioritized for professional scaling and polishing.

2. Preventive Measures

- Reinforce biofilm control measures (e.g., interdental brushing, flossing) around #12, #21, #18, #37, and #27 to mitigate further carious or plaque-related progression.
- Educate on dietary modifications to reduce cariogenic risk in high-risk areas.

3. Follow-up Protocol

- Schedule a 6-month recall for re-evaluation of suspected calculus and caries, including re-imaging if necessary.
- Referral to a general dentist for confirmation of carious lesions near #18, #37, and #27.
- Monitor #11 for developmental anomalies or missing tooth etiology during routine visits.