



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: 21):

```
[
{'point_2d': [844, 456], 'tooth_id': '33', 'score': 0.94},
{'point_2d': [1102, 450], 'tooth_id': '38', 'score': 0.93},
{'point_2d': [1052, 318], 'tooth_id': '27', 'score': 0.93},
{'point_2d': [856, 286], 'tooth_id': '23', 'score': 0.93},
{'point_2d': [606, 285], 'tooth_id': '13', 'score': 0.92},
{'point_2d': [538, 333], 'tooth_id': '15', 'score': 0.91},
{'point_2d': [807, 445], 'tooth_id': '32', 'score': 0.91},
{'point_2d': [642, 461], 'tooth_id': '44', 'score': 0.91},
{'point_2d': [1038, 471], 'tooth_id': '37', 'score': 0.91},
{'point_2d': [682, 455], 'tooth_id': '43', 'score': 0.9},
{'point_2d': [652, 288], 'tooth_id': '12', 'score': 0.9},
{'point_2d': [879, 458], 'tooth_id': '34', 'score': 0.89},
{'point_2d': [577, 300], 'tooth_id': '14', 'score': 0.89},
{'point_2d': [756, 288], 'tooth_id': '21', 'score': 0.88},
{'point_2d': [396, 441], 'tooth_id': '48', 'score': 0.87},
{'point_2d': [771, 441], 'tooth_id': '31', 'score': 0.87},
{'point_2d': [704, 281], 'tooth_id': '11', 'score': 0.87},
{'point_2d': [719, 445], 'tooth_id': '42', 'score': 0.86},
{'point_2d': [745, 441], 'tooth_id': '41', 'score': 0.76},
{'point_2d': [418, 329], 'tooth_id': '18', 'score': 0.7},
{'point_2d': [1091, 432], 'tooth_id': '47', 'score': 0.68}
]
```

Wisdom teeth detection (total: 3):

```
[
{'box_2d': [1057, 386, 1146, 515], 'tooth_id': '38', 'is_impacted': false, 'score': 0.93},
{'box_2d': [343, 388, 450, 494], 'tooth_id': '48', 'is_impacted': false, 'score': 0.87},
{'box_2d': [376, 270, 461, 387], 'tooth_id': '18', 'is_impacted': false, 'score': 0.7}
]
```

Dental Pathological Findings (total: 10):

```
[
{'box_2d': [535, 447, 610, 479], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.9, 'near_tooth': '44'},
{'box_2d': [454, 430, 522, 485], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.86, 'near_tooth': '48'},
{'box_2d': [780, 226, 825, 333], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.75, 'near_tooth': '21'},
{'box_2d': [944, 289, 1010, 347], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.75, 'near_tooth': '27'},
{'box_2d': [1043, 349, 1062, 377], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.65, 'near_tooth': '27'},
{'box_2d': [449, 276, 504, 342], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.64, 'near_tooth': '18'},
{'box_2d': [987, 307, 1024, 363], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.64, 'near_tooth': '27'},
{'box_2d': [888, 284, 953, 335], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.58, 'near_tooth': '23'},
{'box_2d': [921, 402, 950, 438], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.55, 'near_tooth': '34'},
{'box_2d': [1044, 435, 1065, 461], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.41, 'near_tooth': '37'}
]
```

Historical Treatments (total: 1):

```
[
{'box_2d': [897, 392, 952, 544], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.91, 'near_tooth': '34'}
]
```

Medical Report

Teeth-Specific Observations

1. General Condition

A total of 21 teeth are visualized. Wisdom teeth (#38, #48) are present and non-impacted; #18 is partially visible with uncertain position. No significant bone resorption or structural anomalies affecting the dental arch are observed.

2. Pathological Findings

- **Caries:** Suspicious for carious lesions near #27 (score: 0.65) and #34 (score: 0.55).
- **Root Stumps:** Root stumps present near #44 (score: 0.9) and #48 (score: 0.86). Suspicious root stumps noted near #21 (score: 0.75), #27 (score: 0.64), and #18 (score: 0.64). Areas of concern for residual root fragments near #23 (score: 0.58) and #27 (score: 0.64).

3. Historical Interventions

Evidence of root canal treatment near #34. No restorations, crowns, or implants detected.

Clinical Summary & Recommendations

1. Priority Concerns

- Suspicious carious lesions near #27 and #34 require clinical correlation.
- Root stumps near #44 and #48 necessitate evaluation for residual apical pathology.
- Uncertain root fragments near #21, #23, #27, and #18 may require further imaging (e.g., CBCT) to assess for infection or impingement.

2. Preventive Measures

- Reinforce oral hygiene protocols to mitigate caries risk in posterior teeth.
- Monitor suspicious root stumps for signs of inflammation or resorption.

3. Follow-up Protocol

- Schedule clinical examination and intraoral radiographs for #27 and #34 within 1 month.
- Refer to endodontist for evaluation of root stumps near #44 and #48.
- 6-month recall for panoramic imaging to assess stability of residual root fragments.