



## 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: 24):

```
[  
{'point_2d': [475, 433], 'tooth_id': '17', 'score': 0.93},  
{'point_2d': [712, 661], 'tooth_id': '45', 'score': 0.93},  
{'point_2d': [626, 649], 'tooth_id': '46', 'score': 0.93},  
{'point_2d': [522, 629], 'tooth_id': '47', 'score': 0.93},  
{'point_2d': [977, 681], 'tooth_id': '33', 'score': 0.92},  
{'point_2d': [1295, 584], 'tooth_id': '38', 'score': 0.92},  
{'point_2d': [1059, 661], 'tooth_id': '35', 'score': 0.91},  
{'point_2d': [1015, 668], 'tooth_id': '34', 'score': 0.9},  
{'point_2d': [944, 485], 'tooth_id': '22', 'score': 0.9},  
{'point_2d': [990, 487], 'tooth_id': '23', 'score': 0.9},  
{'point_2d': [429, 579], 'tooth_id': '48', 'score': 0.89},  
{'point_2d': [741, 466], 'tooth_id': '13', 'score': 0.88},  
{'point_2d': [904, 669], 'tooth_id': '31', 'score': 0.88},  
{'point_2d': [1030, 481], 'tooth_id': '24', 'score': 0.87},  
{'point_2d': [870, 665], 'tooth_id': '41', 'score': 0.86},  
{'point_2d': [696, 463], 'tooth_id': '14', 'score': 0.86},  
{'point_2d': [843, 661], 'tooth_id': '42', 'score': 0.84},  
{'point_2d': [789, 463], 'tooth_id': '12', 'score': 0.83},  
{'point_2d': [895, 478], 'tooth_id': '21', 'score': 0.83},  
{'point_2d': [800, 670], 'tooth_id': '43', 'score': 0.82},  
{'point_2d': [1081, 470], 'tooth_id': '25', 'score': 0.81},  
{'point_2d': [836, 470], 'tooth_id': '11', 'score': 0.81},  
{'point_2d': [940, 656], 'tooth_id': '32', 'score': 0.8},  
{'point_2d': [764, 661], 'tooth_id': '44', 'score': 0.75}  
]
```

Wisdom teeth detection (total: 2):

```
[  
{'box_2d': [1233, 506, 1357, 661], 'tooth_id': '38', 'is_impacted': false, 'score': 0.92},  
{'box_2d': [365, 502, 494, 655], 'tooth_id': '48', 'is_impacted': false, 'score': 0.89}  
]
```

Dental Pathological Findings (total: 2):

```
[  
{'box_2d': [988, 409, 1040, 564], 'tooth_id': '23', 'label': 'calculus', 'score': 0.37},  
{'box_2d': [791, 318, 844, 552], 'tooth_id': '11', 'label': 'calculus', 'score': 0.4}  
]
```

Historical Treatments (total: 15):

```
[  
{'box_2d': [1153, 544, 1275, 702], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.93, 'near_tooth': '38'},  
{'box_2d': [1150, 543, 1233, 612], 'tooth_id': 'unknown', 'label': 'crown', 'score': 0.92, 'near_tooth': '38'},  
{'box_2d': [1063, 565, 1161, 629], 'tooth_id': 'unknown', 'label': 'crown', 'score': 0.92, 'near_tooth': '35'},  
{'box_2d': [606, 377, 682, 551], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.9, 'near_tooth': '14'},  
{'box_2d': [606, 484, 682, 552], 'tooth_id': 'unknown', 'label': 'crown', 'score': 0.89, 'near_tooth': '14'},  
{'box_2d': [411, 502, 491, 553], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.89, 'near_tooth': '48'},  
{'box_2d': [1062, 564, 1174, 726], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.89, 'near_tooth': '35'},  
{'box_2d': [507, 378, 607, 546], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.89, 'near_tooth': '17'},  
{'box_2d': [510, 469, 607, 547], 'tooth_id': 'unknown', 'label': 'crown', 'score': 0.89, 'near_tooth': '17'},  
{'box_2d': [517, 551, 580, 583], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.84, 'near_tooth': '47'},  
]
```

```
{'box_2d': [682, 573, 767, 621], 'tooth_id': 'unknown', 'label': 'crown', 'score': 0.81, 'near_tooth': '45'},  
{'box_2d': [586, 562, 677, 608], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.79, 'near_tooth': '46'},  
{'box_2d': [1191, 368, 1251, 508], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.75, 'near_tooth': '25'},  
{'box_2d': [1026, 512, 1058, 552], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.61, 'near_tooth': '24'},  
{'box_2d': [1193, 454, 1251, 506], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.6, 'near_tooth': '38'}  
]
```

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## Medical Report

### Teeth-Specific Observations

#### 1. General Condition

A total of 24 teeth were visualized on the panoramic image. Both lower wisdom teeth (#38 and #48) are present and non-impacted. No evidence of missing teeth was observed.

#### 2. Pathological Findings

- Areas of concern noted for **calculus** on #23 (lower left first molar) and #11 (upper right central incisor).
- No radiographic signs of caries, periapical radiolucency, or impacted teeth beyond the listed findings.

#### 3. Historical Interventions

- Presence of a crown and root canal-treated (rc-treated) restoration near #38 (lower right wisdom tooth).
  - Crown and rc-treated restoration near #35 (lower left first molar).
  - Crown and rc-treated restoration near #14 (upper left first premolar).
  - Restoration near #48 (lower left third molar).
  - Crown near #45 (lower left second molar) and restoration near #46 (lower left first molar).
  - Restoration near #47 (lower left second premolar) and rc-treated restoration near #17 (upper left first molar).
  - Additional restorations noted near #25 (upper right first molar) and #24 (upper right second molar).
- 

### Clinical Summary & Recommendations

#### 1. Priority Concerns

- **Suspicious areas of calculus** on #23 and #11 require further clinical evaluation to confirm presence and extent.
- **Root canal-treated teeth** near #38 and #35 warrant radiographic follow-up to assess for secondary caries or periapical health.

#### 2. Preventive Measures

- Reinforce patient education on interdental cleaning (e.g., flossing, water flossing) to address potential calculus accumulation.
- Emphasize biofilm control around restored teeth (#24, #25, #45) to prevent recurrent caries.

#### 3. Follow-up Protocol

- Schedule a **6-month recall** to monitor calculus-prone sites (#23, #11) and assess restorative integrity.
- Referral to a **periodontist** is recommended for definitive diagnosis of calculus and scaling if confirmed.
- Radiographic review of rc-treated teeth (#38, #35) in 12 months unless clinical symptoms arise.