



Alessandria
23 Giugno 2009



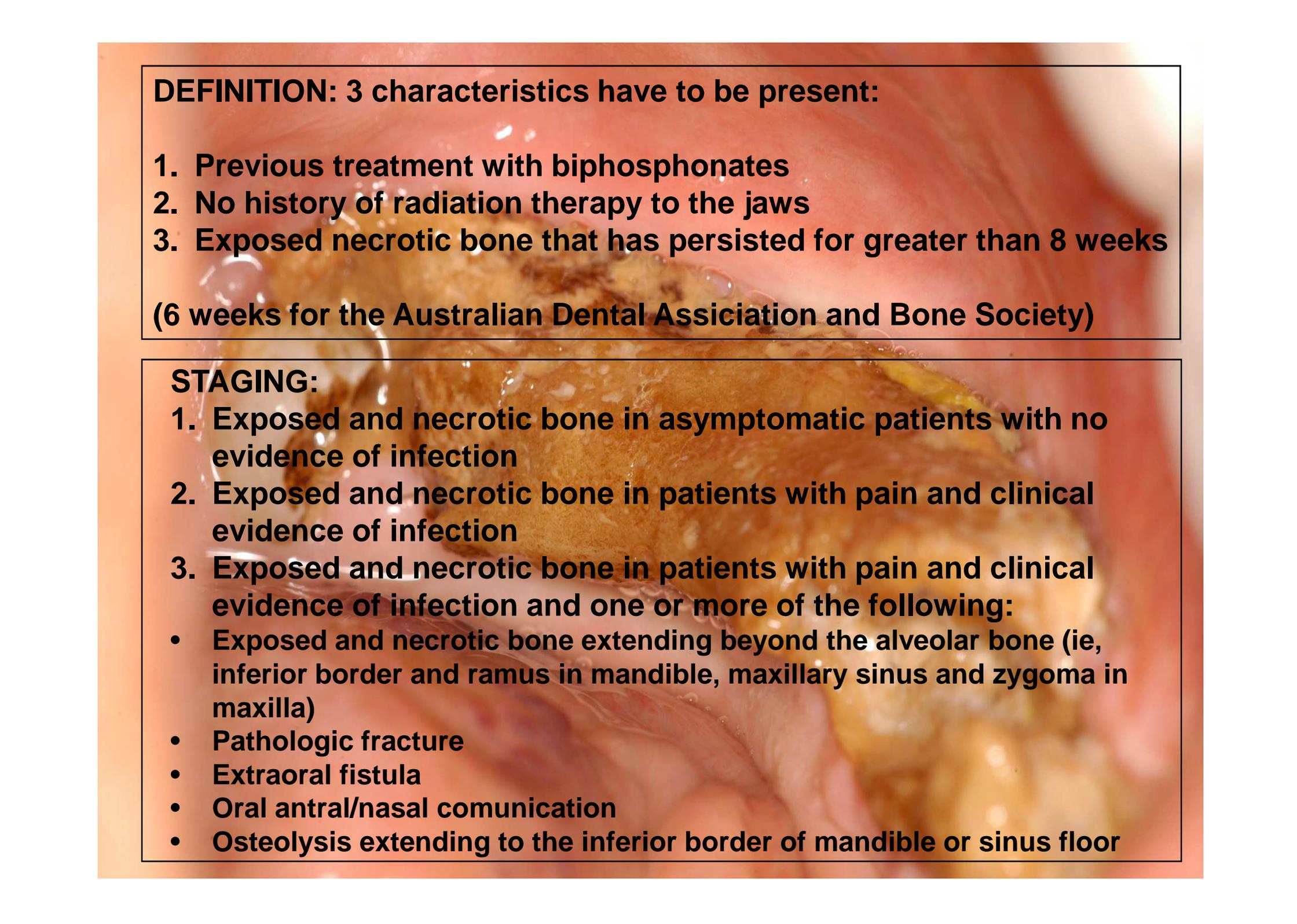
**Osteonecrosi dei mascellari (ONJ):
Prevenzione, Diagnosi, Trattamento “Update
2009”**

ONJ anche se l’osso non è esposto?

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A clinical photograph showing a patient's mouth with exposed necrotic bone. The bone is yellowish and irregularly shaped, protruding from the gum tissue. The surrounding tissue is red and inflamed. The patient's teeth are visible in the background.

DEFINITION: 3 characteristics have to be present:

- 1. Previous treatment with biphosphonates**
- 2. No history of radiation therapy to the jaws**
- 3. Exposed necrotic bone that has persisted for greater than 8 weeks**

(6 weeks for the Australian Dental Association and Bone Society)

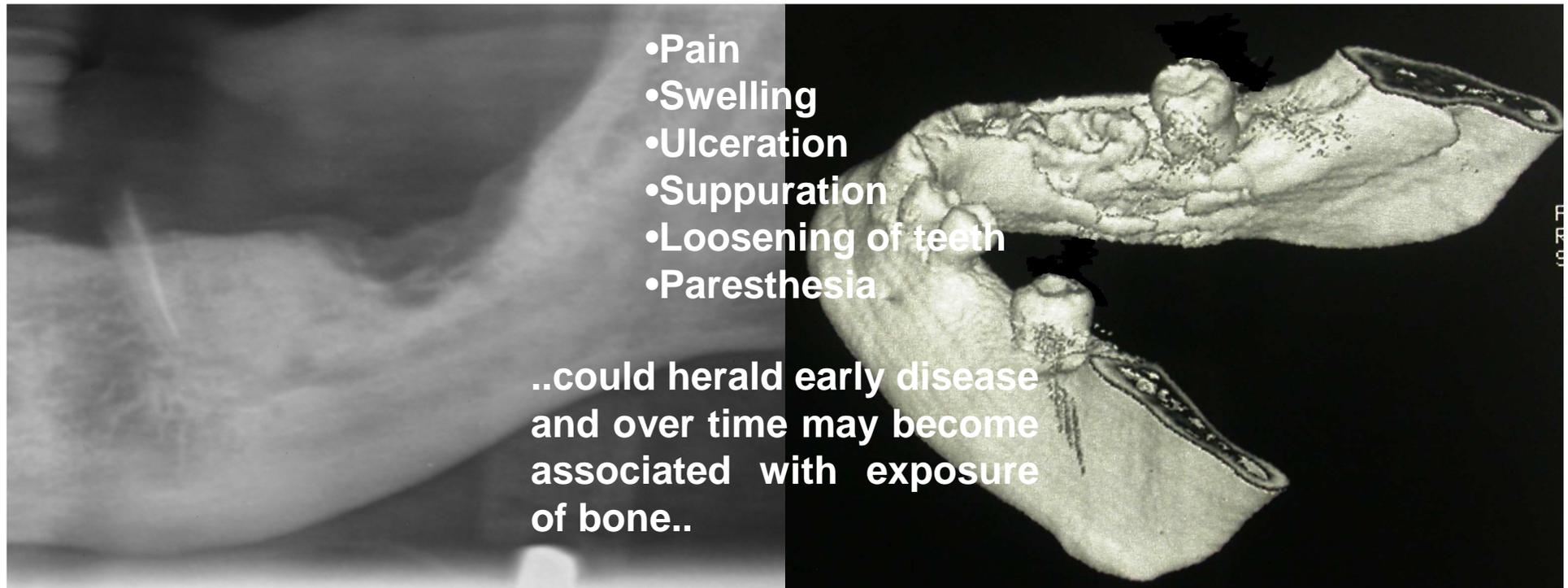
STAGING:

- 1. Exposed and necrotic bone in asymptomatic patients with no evidence of infection**
- 2. Exposed and necrotic bone in patients with pain and clinical evidence of infection**
- 3. Exposed and necrotic bone in patients with pain and clinical evidence of infection and one or more of the following:**
 - Exposed and necrotic bone extending beyond the alveolar bone (ie, inferior border and ramus in mandible, maxillary sinus and zygoma in maxilla)**
 - Pathologic fracture**
 - Extraoral fistula**
 - Oral antral/nasal communication**
 - Osteolysis extending to the inferior border of mandible or sinus floor**

Bisphosphonate-associated osteonecrosis of the jaw: report of a task force of the American Society for Bone and Mineral Research.

Khosla S, Burr D, Cauley J, Dempster DW, Ebeling PR, Felsenberg D, Gagel RF, Gilsanz V, Guise T, Koka S, McCauley LK, McGowan J, McKee MD, Mohla S, Pendry DG, Raisz LG, Ruggiero SL, Shafer DM, Shum L, Silverman SL, Van Poznak CH, Watts N, Woo SB, Shane E; American Society for Bone and Mineral Research.

J Bone Miner Res. 2007 Oct;22(10):1479-91



Staging bisphosphonate-related osteonecrosis of the jaw should include early stages of disease.

**McMahon RE, Bouquot JE, Glueck CJ, Griep JA, Adams WR, et al.
J Oral Maxillofac Surg. 2007 Sep;65(9):1899-900.**

..6 stages: stages 1 to 3 were patients do not have necrotic exposed bone but may exhibit other signs such as pain, edema, erythema, and significant radiographic findings by radioisotope scans, CT, RMN. Stages 4 to 6 have exposed bone of less than 2 cm. (stage 4) or greater than 4 cm. (stage 5,6) with increasing pain and severity of radiographic findings..

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Staging based on the development of osteonecrosis in other bones (eg, hip and femoral head) where the process begin in the medullary compartment (evident on RMN only)

LIMITATIONS:

- 1. Nonspecific broad criteria in stage 1-3**
- 2. Imaging expensive with unspecific findings**
- 3. 30 to 40% of ONJ patients do not fit into any of the 6 stages**

DEFINITION OF ONJ: 3 characteristics have to be present:

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(6 weeks for the Australian Dental Association and Bone Society)

[Sinus tracts--an early sign of bisphosphonate-associated osteonecrosis of the jaws?](#)

**Mawardi H, Treister N, Richardson P, Anderson K, Munshi N, Faiella RA, Woo SB.
J Oral Maxillofac Surg. 2009 Mar;67(3):593-601.**

[Nonexposed bisphosphonate-related osteonecrosis of the jaws: another clinical variant?](#)

Junquera L, Gallego L.

J Oral Maxillofac Surg. 2008 Jul;66(7):1516-7.

- Sinus tracts--an early sign of bisphosphonate-associated osteonecrosis of the jaws?
- [Mawardi H](#), [Treister N](#), [Richardson P](#), [Anderson K](#), [Munshi N](#), [Faiella RA](#), [Woo SB](#).
- Department of Oral Medicine, Infection and Immunity, Harvard School of Dental Medicine, Boston, MA, USA. hmawardi@partners.org

PURPOSE: Bisphosphonate-associated osteonecrosis of the jaw (BONJ) is defined as the presence of exposed bone for at least 8 weeks in patients with exposure to bisphosphonates and no history of radiotherapy to the jaw. We report 5 patients with a history of bisphosphonate use, sinus tracts or deep periodontal pockets and radiographic findings typical for BONJ but with no evidence of exposed necrotic bone at the first evaluation visit. **PATIENTS AND METHODS:** The mean age was 70 years (range 66-77) and all were males. Patients had multiple myeloma (2), multiple myeloma and prostate cancer (1), monoclonal gammopathy of unknown significance (1) and osteoporosis (1). Three cases involved the mandible and 2 the maxilla. Four patients were on intravenous pamidronate and/or zoledronic acid and 1, alendronate. **All cases except 1 (with deep periodontal pockets) presented with intraoral draining sinus tracts. RESULTS:** Radiographic findings included persistence of extraction socket (2), mottled radio-opacity and radiolucency (1), presence of sequestrum (1) and no significant findings (1). **Subsequently, 4 patients developed exposed bone and 1 patient had necrotic bone removed from the jaws.** **CONCLUSION:** We report 5 patients with a history of bisphosphonate therapy where 4 patients had persistent sinus tracts and a fifth, severe bone loss. Four patients had radiographic findings typical for BONJ, and all subsequently

- Pain
- Swelling
- Paresthesia
- Fistula
- Loosening of teeth
- Dry socket



- Alveolar bone loss
- Bone resorption
- Changes in trabeculae
- Thickening lamina dura
- Alveolar canal narrowing

[American Association of Oral and Maxillofacial Surgeons position paper on bisphosphonate-related osteonecrosis of the jaws--2009 update.](#)

Ruggiero SL, Dodson TB, Assael LA, Landesberg R, Marx RE, Mehrotra B; American Association of Oral and Maxillofacial Surgeons.

J Oral Maxillofac Surg. 2009 May;67(5 Suppl):2-12

[Oral bisphosphonates as a cause of bisphosphonate-related osteonecrosis of the jaws: clinical findings, assessment of risks, and preventive strategies.](#)

Assael LA.

J Oral Maxillofac Surg. 2009 May;67(5 Suppl):35-43.

- Pain:
- Odontalgia, Bone, Sinus and Neuropathic pain
- Swelling
- Paresthesia/Dysesthesia
- Periapical/periodontal Fistula
- Loosening of teeth
- Postextraction persistent Dry socket (for more than 6 weeks)



[American Association of Oral and Maxillofacial Surgeons position paper on bisphosphonate-related osteonecrosis of the jaws--2009 update.](#)

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- Alveolar bone loss
- Bone resorption
- Changes in trabecular pattern:dense woven bone and persistence of unremodeled bone in extraction sockets
- Thickening/obscuring of periodontal ligament with thickening of lamina dura
- Decreased size of the periodontal ligament space
- Inferior alveolar canal narrowing



Bisphosphonate-associated ONJ: Stage 0

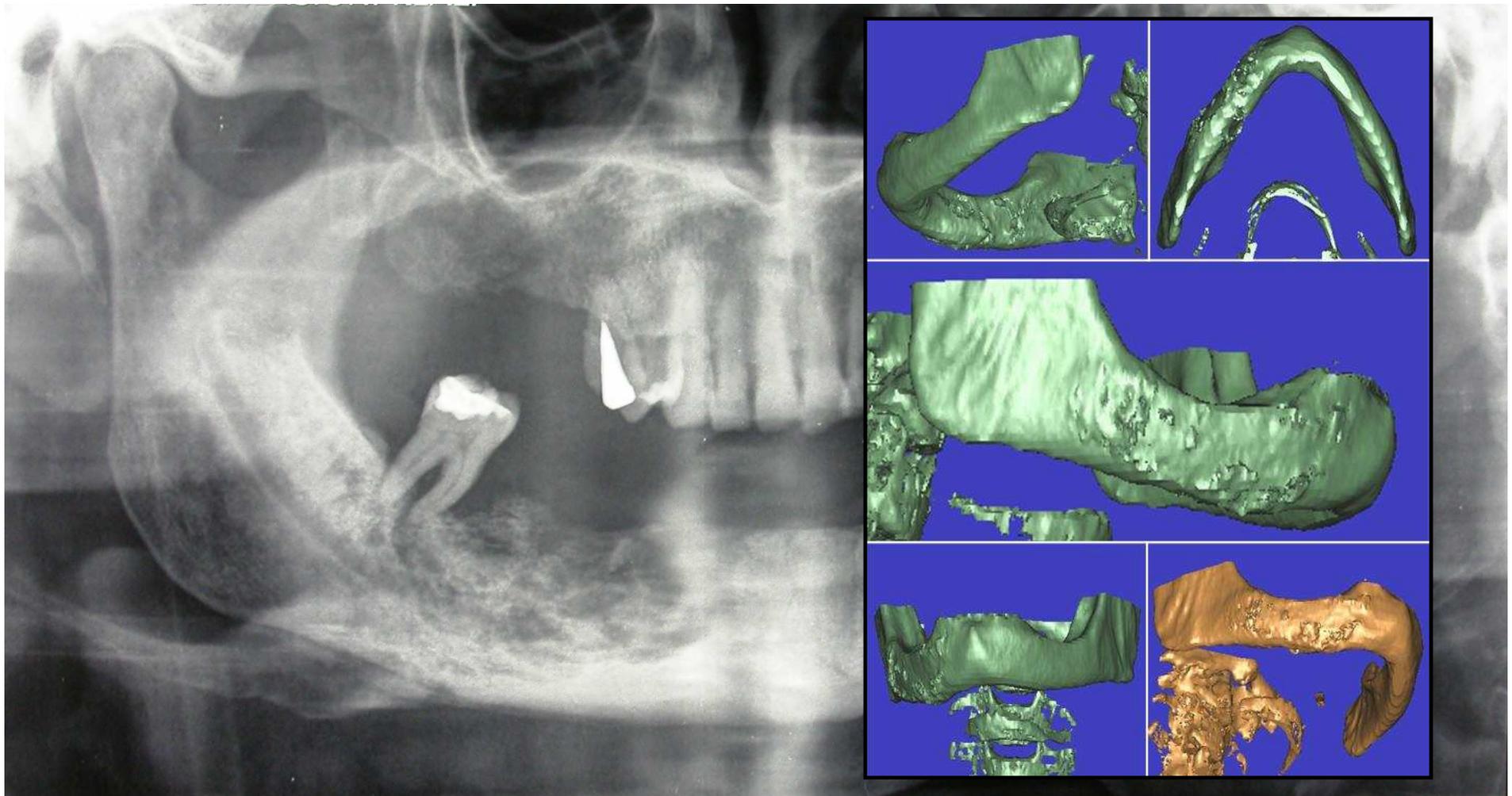
Patients with no clinical evidence of necrotic bone, but who present with nonspecific symptoms or clinical and radiographic findings

- Pain:
- Odontalgia, Bone, Sinus and Neuropathic pain
- Swelling
- Paresthesia/Dysesthesia
- Periapical/periodontal Fistula
- Loosening of teeth
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- Alveolar bone loss
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These nonspecific findings which characterized stage 0, can occur in patients with a history of stage 1, 2 or 3 disease who have healed and have no clinical evidence of exposed bone



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STAGE 0_{ss/sa}

**SS: Suspicious symptomatic (on therapy)
SA: Suspicious asymptomatic (off therapy)**

**..exposure of bone in the oral cavity represents at the
end-stage a process of altered and dysfunctional bone
turnover that started many months prior..**

