

# Allogeneic Block Graft vs. Particulate Grafting

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# Disclosure

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The following potential conflict of interest relationships are germane to my presentation.

**Equipment: None**  
**Speakers Bureau: None**  
**Stock Shareholder: None**  
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**Consultant: None**

Status of FDA devices used for the material being presented  
**NA/Non-Clinical**

Status of off-label use of devices, drugs or other materials that constitute the subject of this presentation  
**NA/Non-Clinical**



# Objectives

- ▶ Effectiveness of Socket Preservation
- ▶ Allogeneic block grafting
  - ▶ Our Surgical Outcomes
  - ▶ Applications
  - ▶ What the Literature Says
  - ▶ Comparison
- ▶ Titanium Mesh
  - ▶ Our Surgical Outcomes
  - ▶ Applications
  - ▶ What the Literature Says
  - ▶ Comparison



# Alveolar Ridge Defects

- Main causes of alveolar bone loss
  - Dental Extraction
  - Periodontal disease
  - Atrophy
  - Trauma
  - Pathology
- Considerations
  - IAN position
  - Maxillary Sinus
  - Bone Type
  - Blood Supply



# Resorption from Dental Extraction

- ▶ Pre-planning with restorative mindset
- ▶ Avoiding need for future soft/hard tissue augmentation
- ▶ Elimination of need for second surgery for site preparation
- ▶ Socket preservation techniques are predictable

# Socket Preservation

- Extraction only vs. Socket preservation using FDBA 24 patients

	Extraction only	Socket Preservation	EO vs. SP
<b>Loss Width</b>	2.7mm	1.2mm	1.5mm
<b>Loss Height</b>	0.9mm	+1.3mm	2.2mm



## Socket Preservation: DFBA vs FDBA

- ▶ Wood and Mealey: 40 extraction sockets were divided into 2 groups.
  - ▶ No significant differences alveolar ridge dimensions of the two groups.
  - ▶ Vital Bone: DFDBA 38.42% vs. FDBA at 24.63%.
  - ▶ Residual Graft Particulate: DFDBA 8.88% vs. FDBA 25.42%.

Wood, Robert A, and Brian L Mealey. "Histologic Comparison of Healing after Tooth Extraction with Ridge Preservation Using Mineralized versus Demineralized Freeze-dried Bone Allograft." *Journal of Periodontology* 83.3 (2012): 329-36. Web.

# Allogeneic block grafting: Our Experience

## Use of Corticocancellous Allogeneic Bone Blocks for Augmentation of Alveolar Bone Defects

Michael Peleg, DMD<sup>1</sup>/Yoh Sawatari, DDS<sup>2</sup>/Robert N. Marx, DDS<sup>3</sup>/Joseph Santoro, DDS<sup>3</sup>/  
Jonathan Cohen, DDS<sup>3</sup>/Pablo Bejarano, MD<sup>4</sup>/Theodore Malinin, MD<sup>5</sup>

**Purpose:** The use of autogenous block bone grafts in bone regeneration procedures for alveolar ridge augmentation can be limited by donor site morbidity and complications. The purpose of the present study was to evaluate the efficacy of allogeneic corticocancellous iliac block grafts used for ridge augmentation prior to implant placement. **Materials and Methods:** Forty-one patients with severe ridge volume deficiency underwent augmentation using allogeneic corticocancellous iliac block bone grafts. After rigid fixation of the graft, the site was covered with a freeze-dried allogeneic dura mater membrane, and the wound was closed with tension-free suturing. Implants were placed 3 to 4 months after surgery. Three to 6 months after implant placement, panoramic radiographs were taken and implants were uncovered for prosthetic restoration. **Results:** Of the 57 grafts placed, one showed 2.5 mm of resorption at the superior buccal aspect of the graft. No other clinical problems were observed. The block grafts were clinically well integrated into the recipient sites and the augmented bone remained stable throughout the implant placement procedures. Of the 84 implants placed, only one failed to integrate. **Conclusion:** These results demonstrate that the use of allogeneic corticocancellous iliac block bone grafts in conjunction with guided bone regeneration principles is a viable alternative to autogenous grafts in selected patients with alveolar ridge deficiencies. INT J ORAL MAXILLOFAC IMPLANTS 2010;25:153-162

**Key words:** allograft, alveolar ridge augmentation, block bone grafts, dental implants, guided bone regeneration, membranes

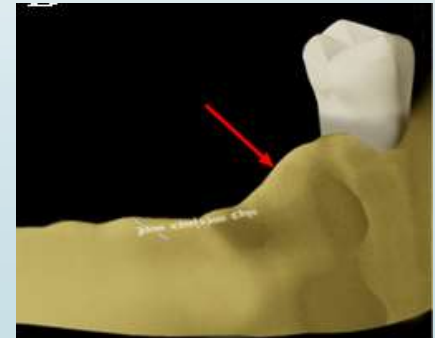


## Allogeneic block grafting: Our Experience

	Study #1	Study #2
<b>Block Grafts</b>	57	137
<b>Graft Failure</b>	0	11
<b>Partial Failure</b>	0	10
<b>Implants</b>	84	271
<b>Implant Success %</b>	98%	95%

# Block Grafting: Our Approach

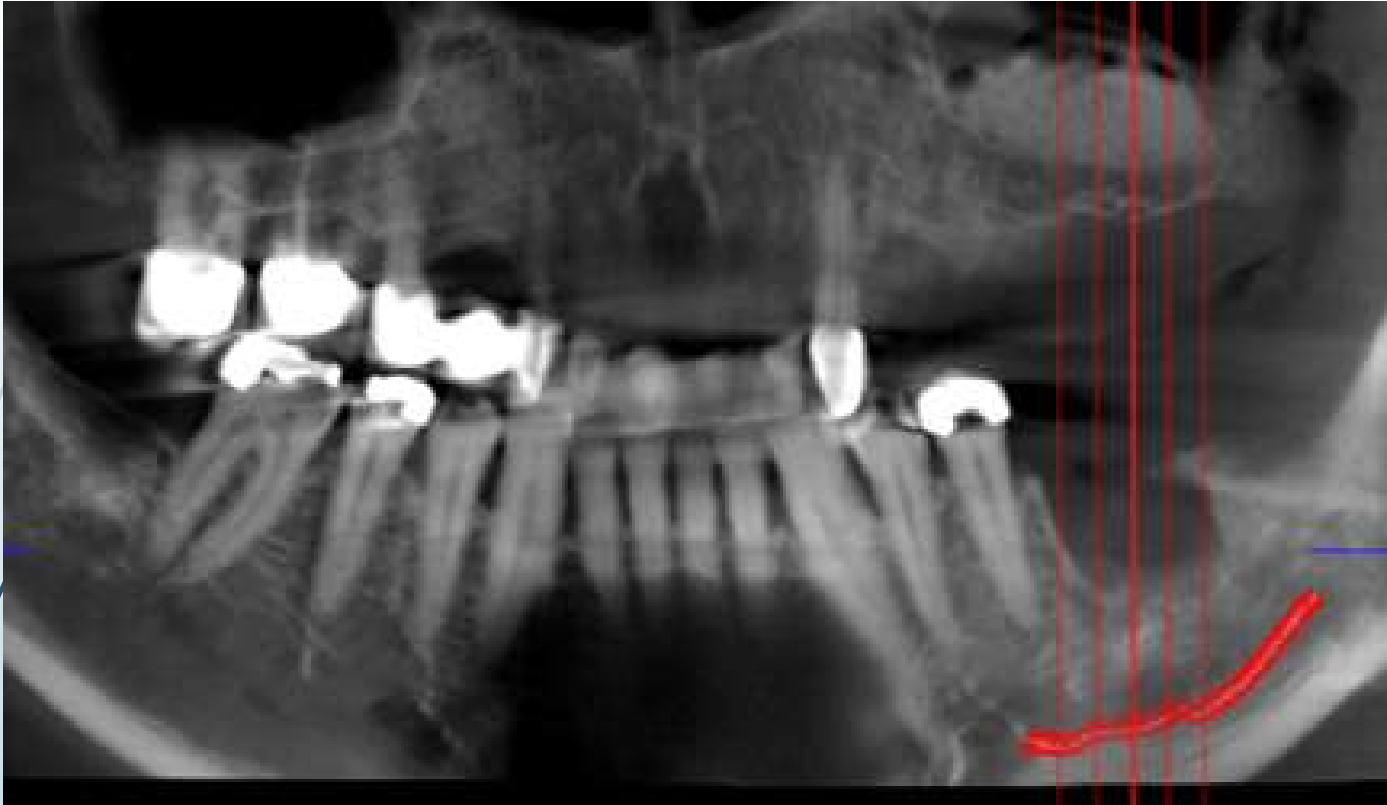
- ▶ Use of either allogeneic or autogenous
- ▶ Adequate adaptation
- ▶ Lag screw technique for static fixation
- ▶ Developing adequate soft tissue envelope
- ▶ Case Selection
  - ▶ Flat ridged defects, single and multi tooth defects
- ▶ Technique sensitive and time intensive



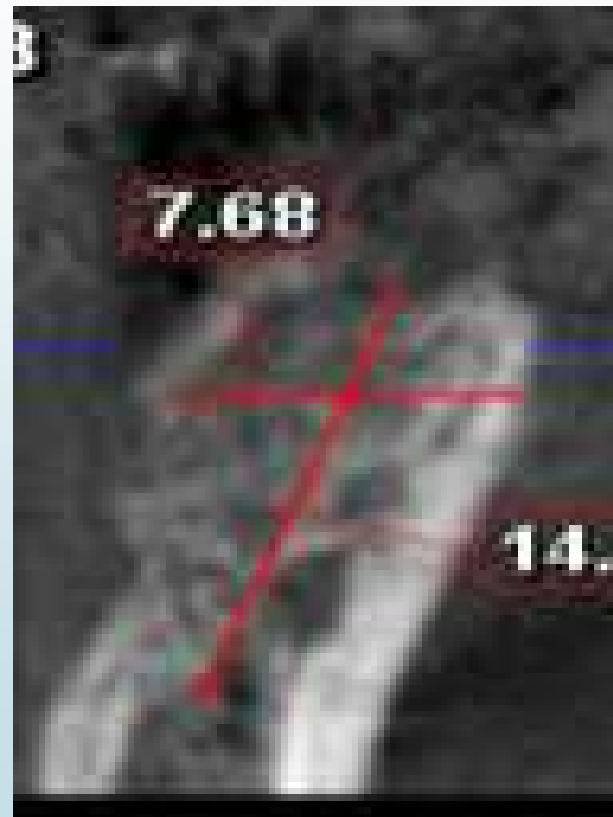


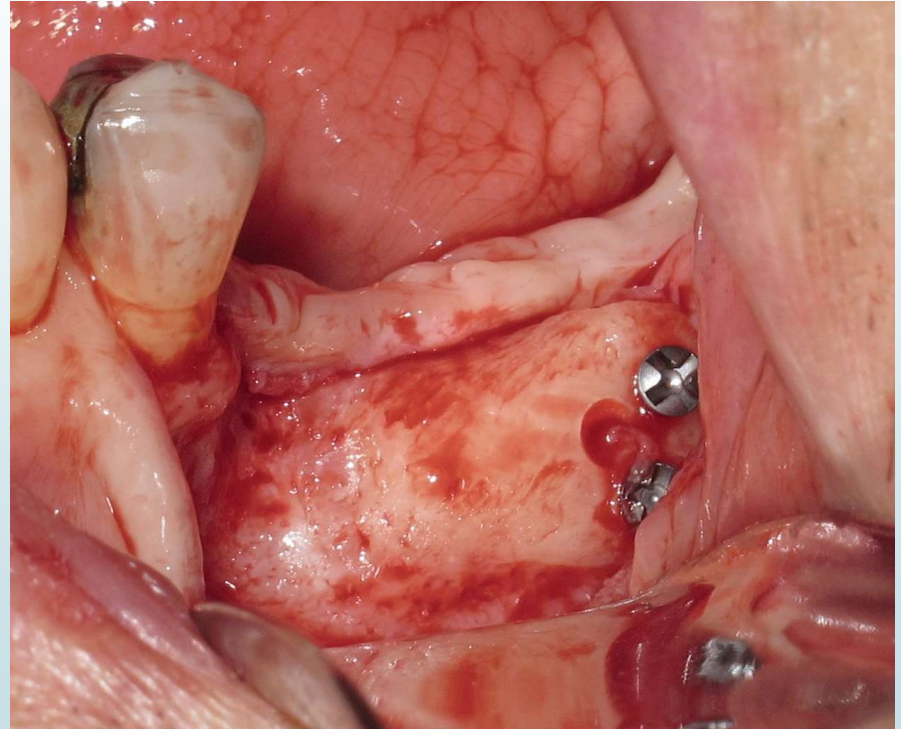
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Edentulous Posterior Mandible

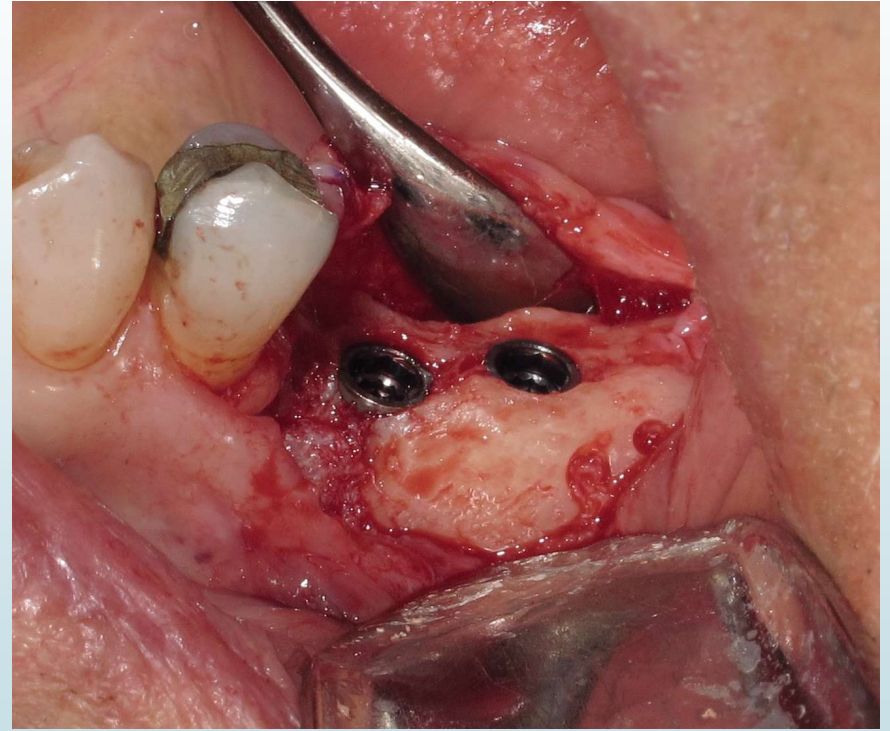
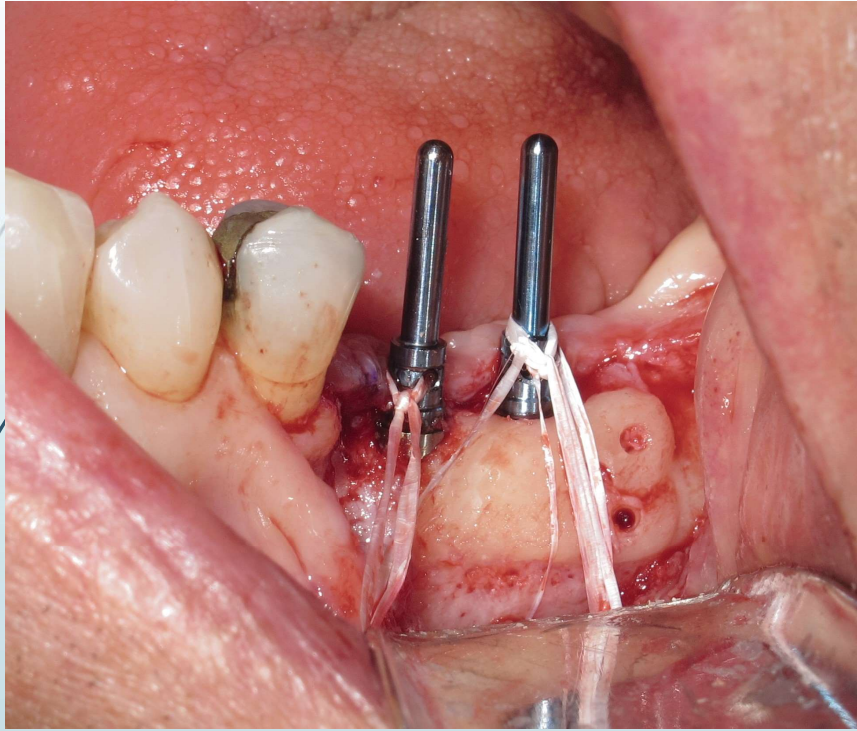




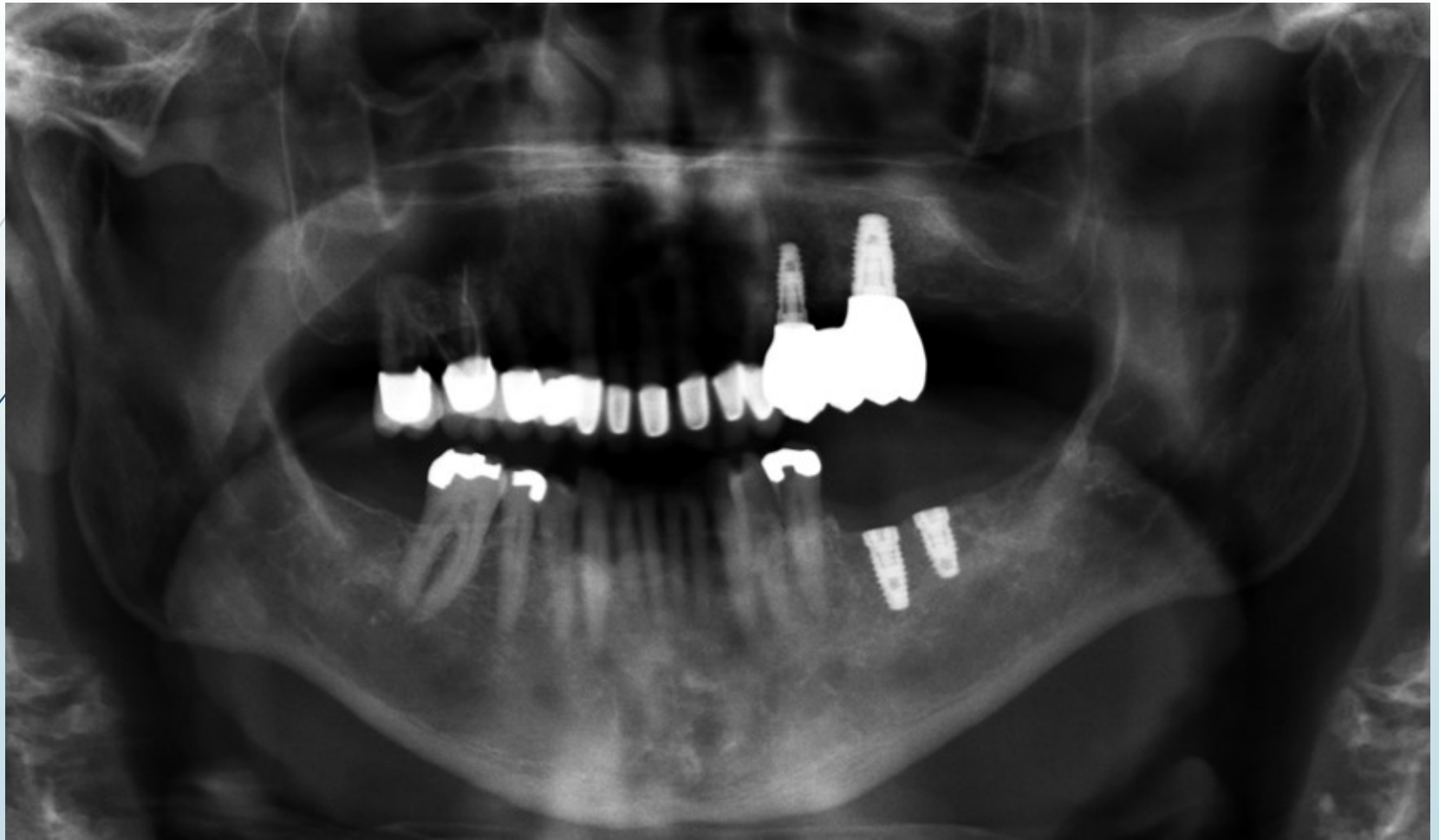










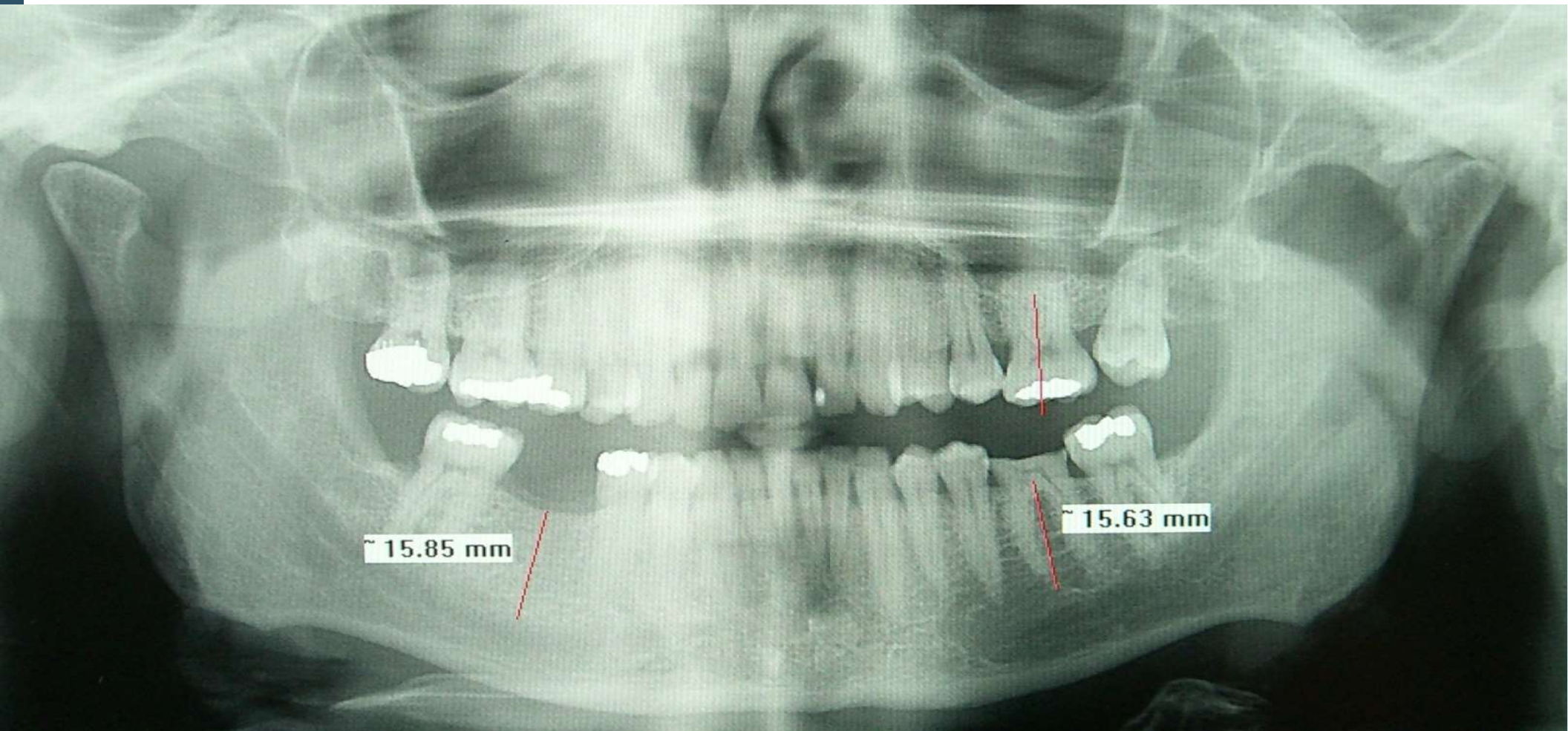






## Case 2

Single Tooth Defect



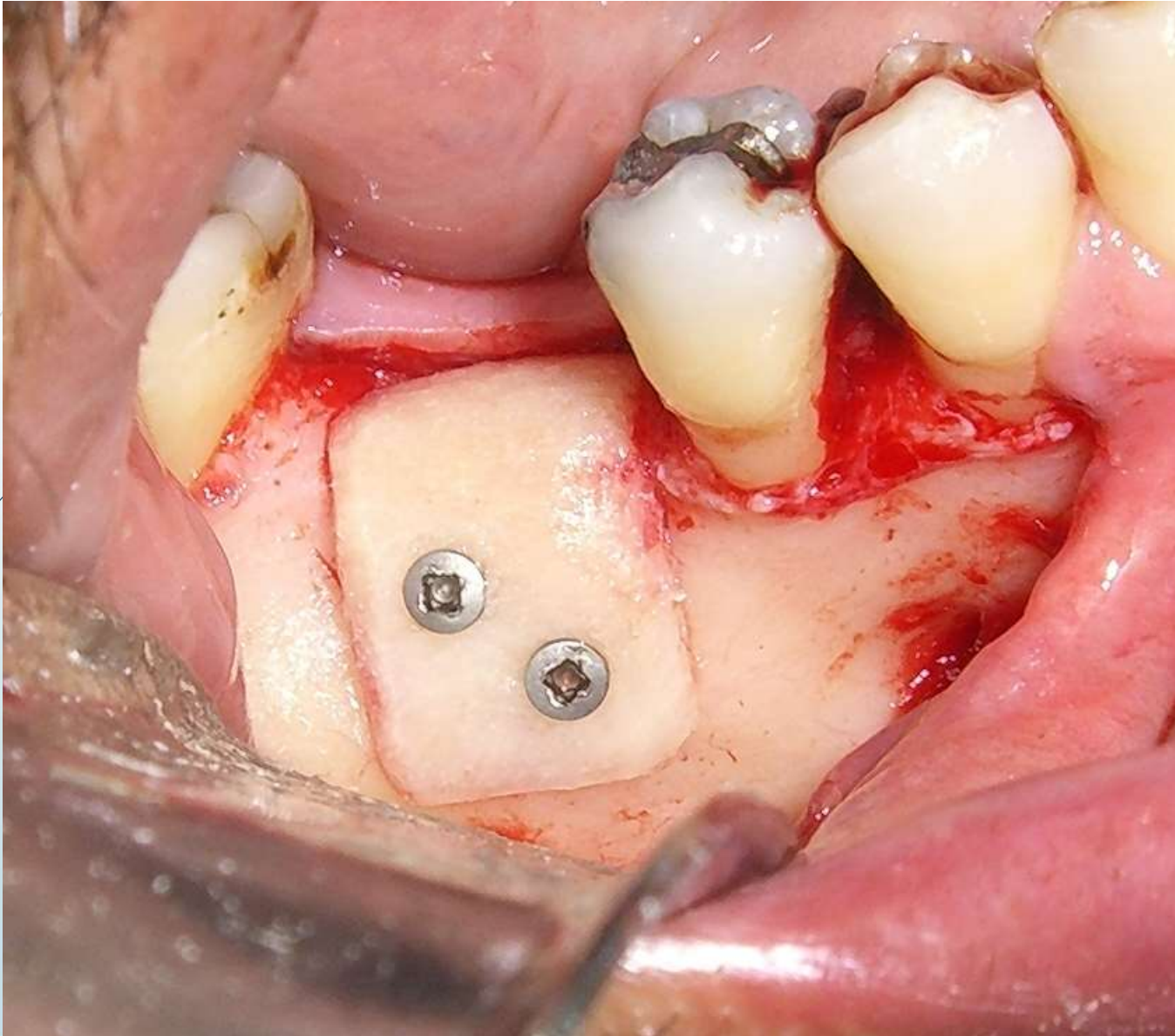




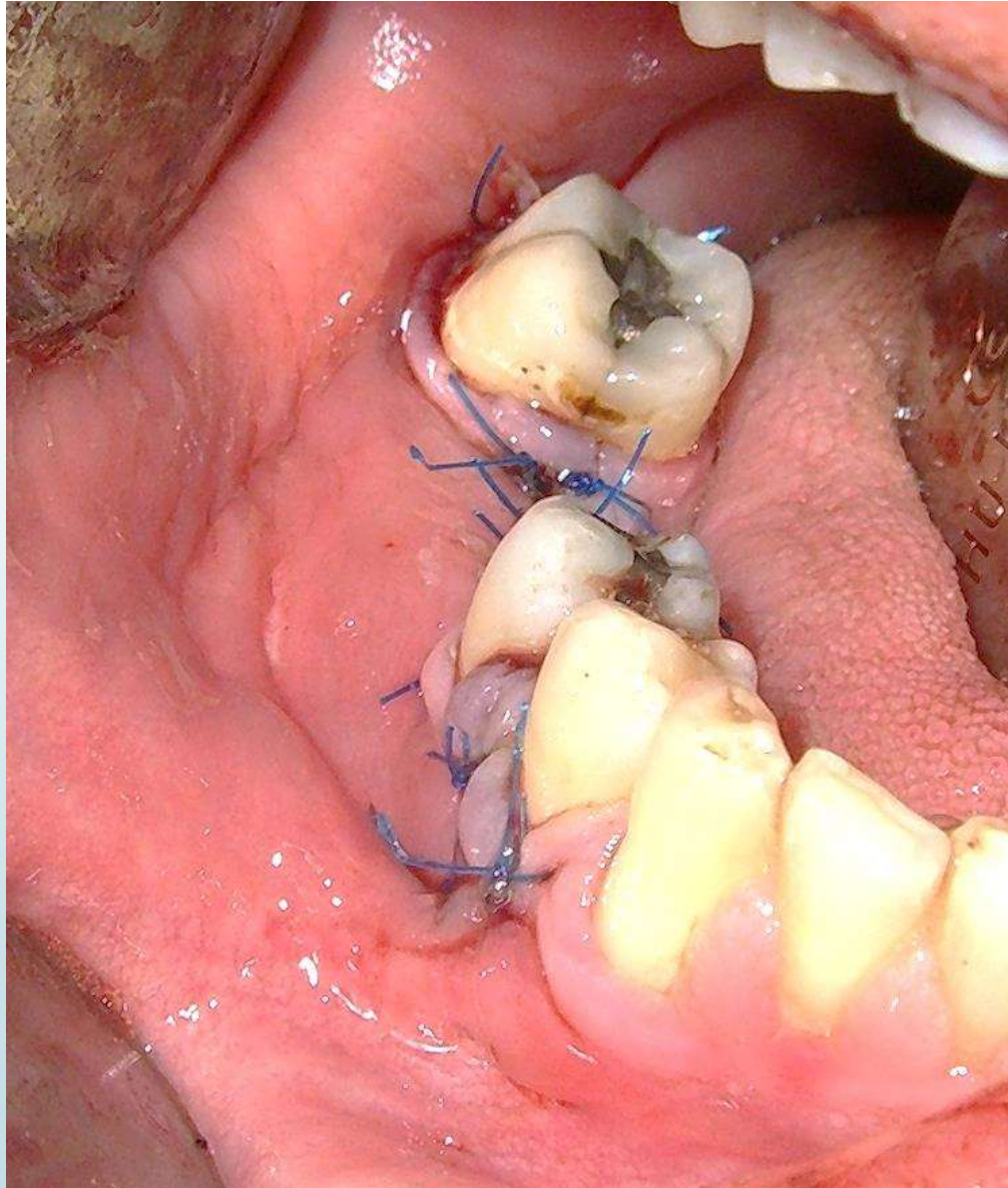


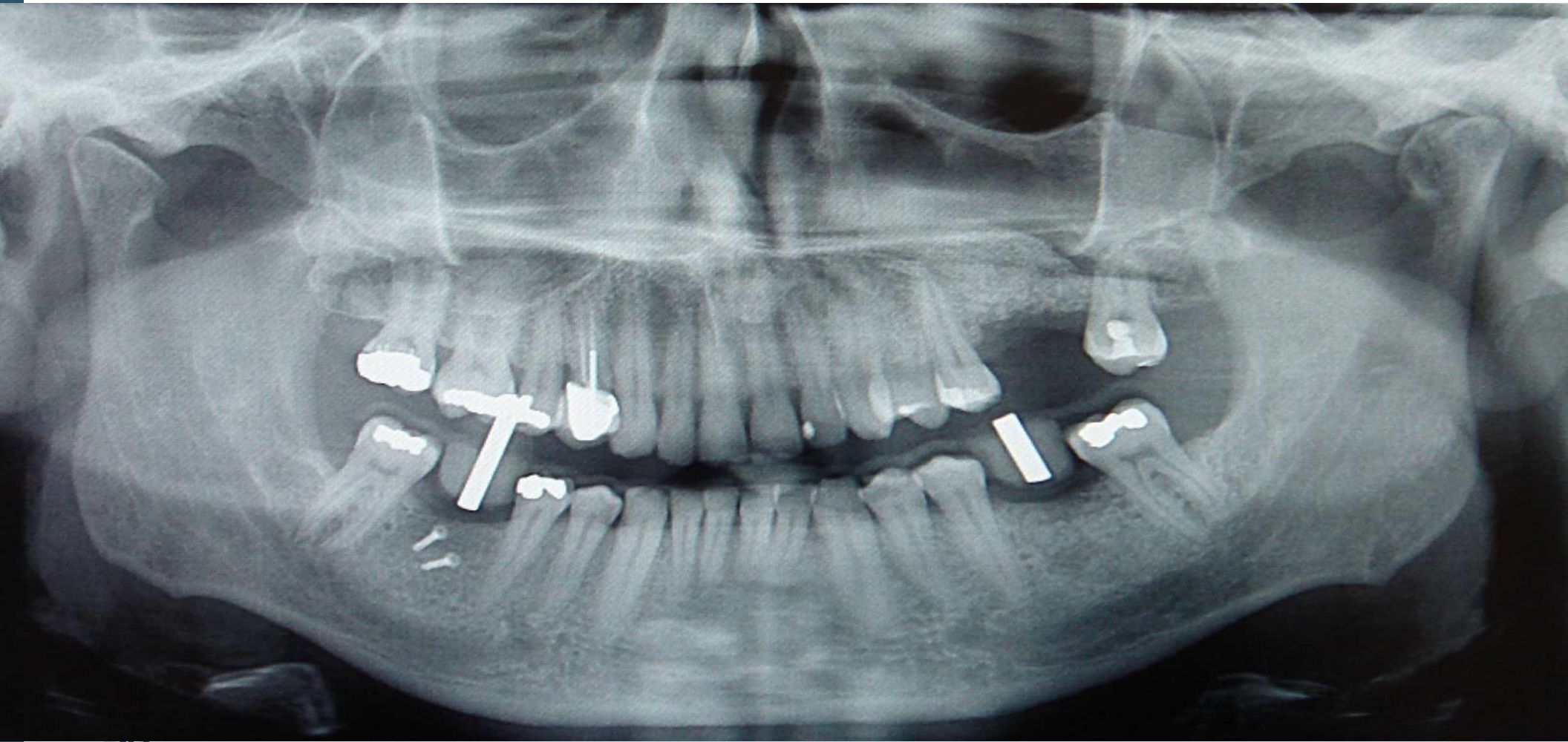










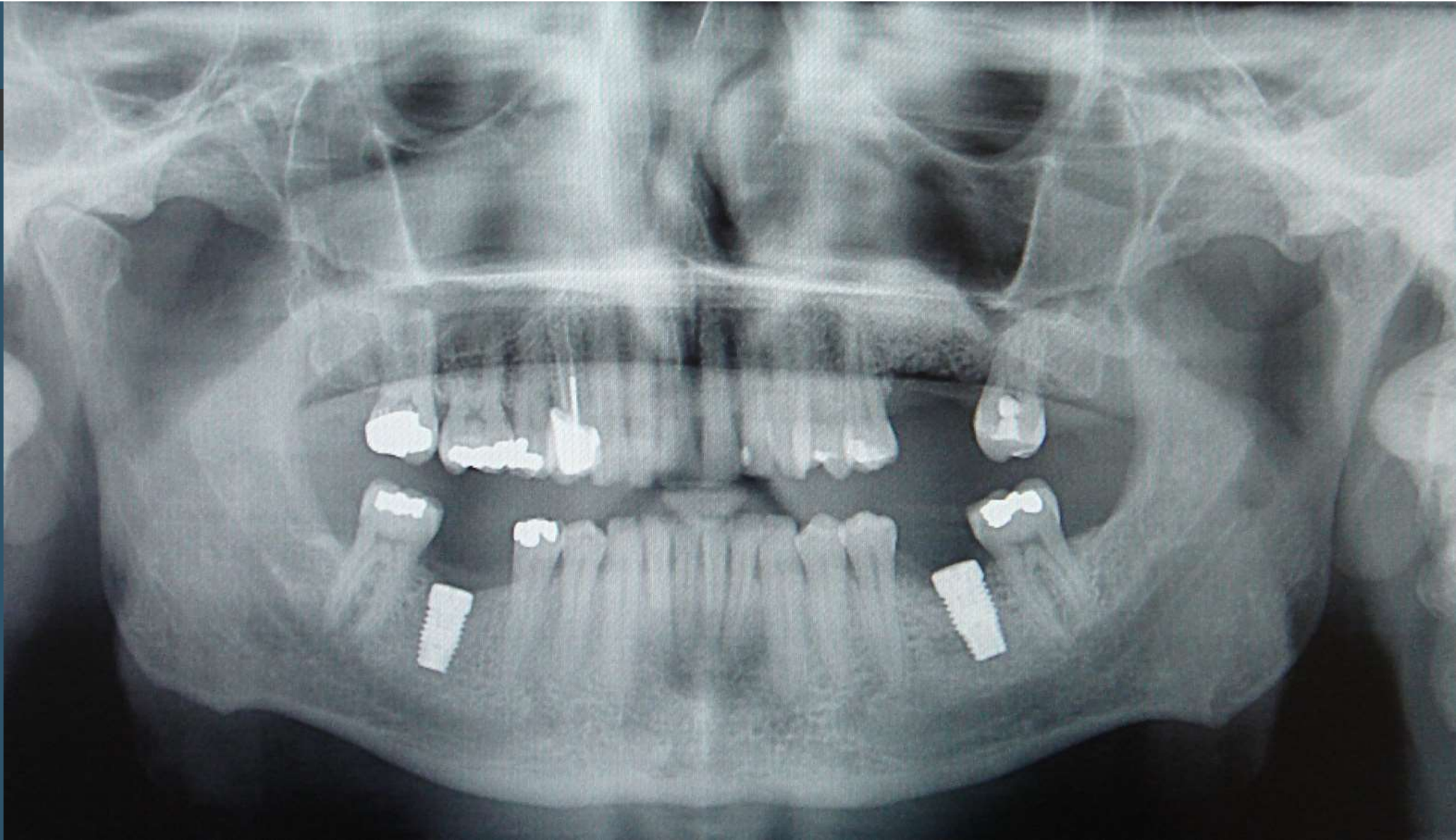












# Literature: Allogeneic block grafting

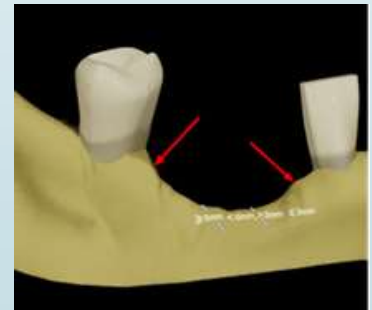
- ▶ 2014 systematic review of maxillary block grafts
  - ▶ 361 block grafts included
- ▶ Average horizontal bone
  - ▶ 4.79mm
- ▶ Average vertical bone
  - ▶  $2 \pm 0.5$  mm
- ▶ Failures
  - ▶  $\leq 2$  months
  - ▶ #1-Early membrane exposure
  - ▶ #2-Fixation screw loosening

## Block Grafting

	Our Research	Literature
Block Grafts	194	361
Graft Failure	8%	2.4%
Implants	355	228
Implant Success	96.3%	96.9%

# Titanium Mesh: Our Approach

- ▶ Graft Material
  - ▶ Allogeneic, Autogenous, BMP, BMAC
- ▶ Horizontal and Vertical augmentation
- ▶ 0.3mm titanium mesh
- ▶ Technique sensitive
- ▶ Soft tissue envelope
- ▶ Clinical Applications
  - ▶ Large bony defects/resections
  - ▶ Resorption with adjacent bony landmarks







## Titanium Mesh: Our Experience

- ▶ 2013 article regarding reconstruction of large vertical defects
  - ▶ 40 grafted sites
  - ▶ 4 failures due to mesh exposure and infection (10%)
    - ▶ Adequate contouring lingual aspect
  - ▶ 6 late mesh exposures that did not affect graft (15%)

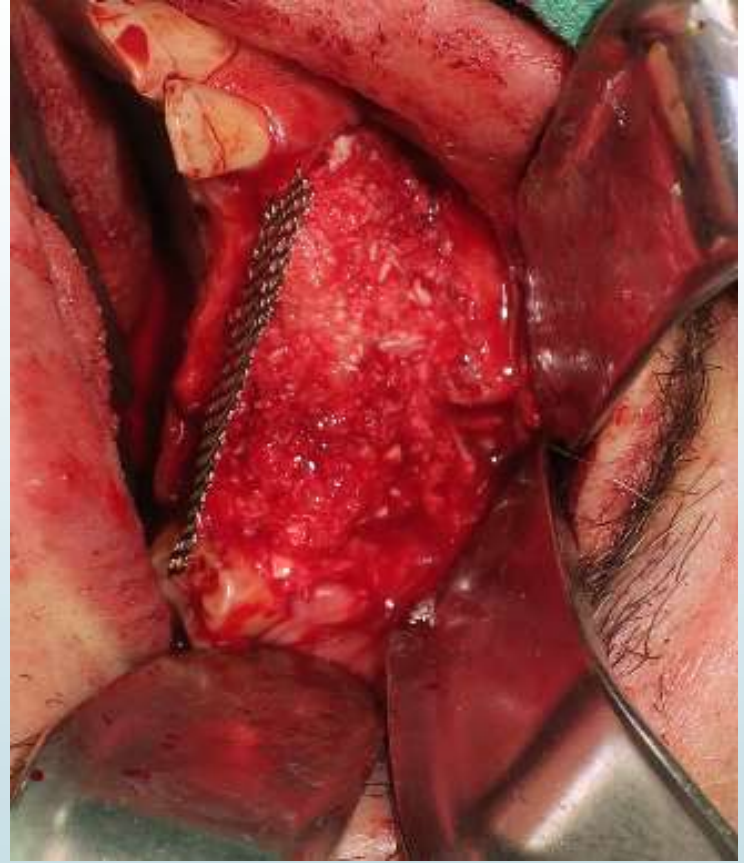
Marx RE, Armentano L, Olavarria A, Samaniego J. rhBMP-2/ACS grafts versus autogenous cancellous marrow grafts in large vertical defects of the maxilla: an unsponsored randomized open-label clinical trial. *Int J Oral Maxillofac Implants*. 2013 Sep-Oct;28(5):e243-51. doi: 10.11607/jomi.te04. PubMed PMID: 24066341.



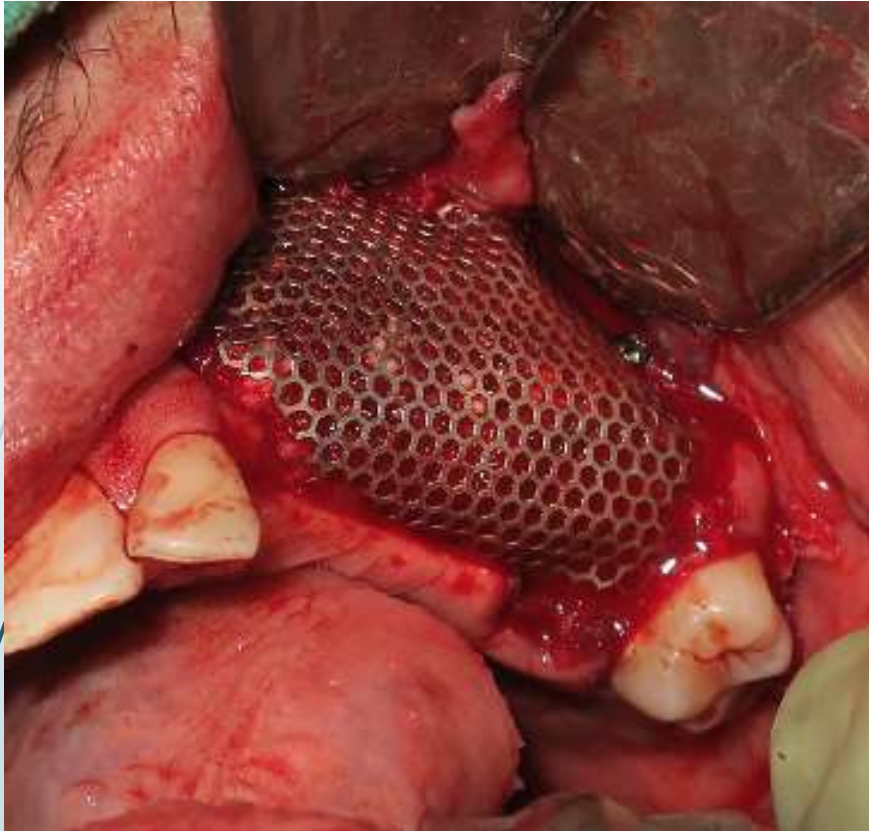
# Case 1

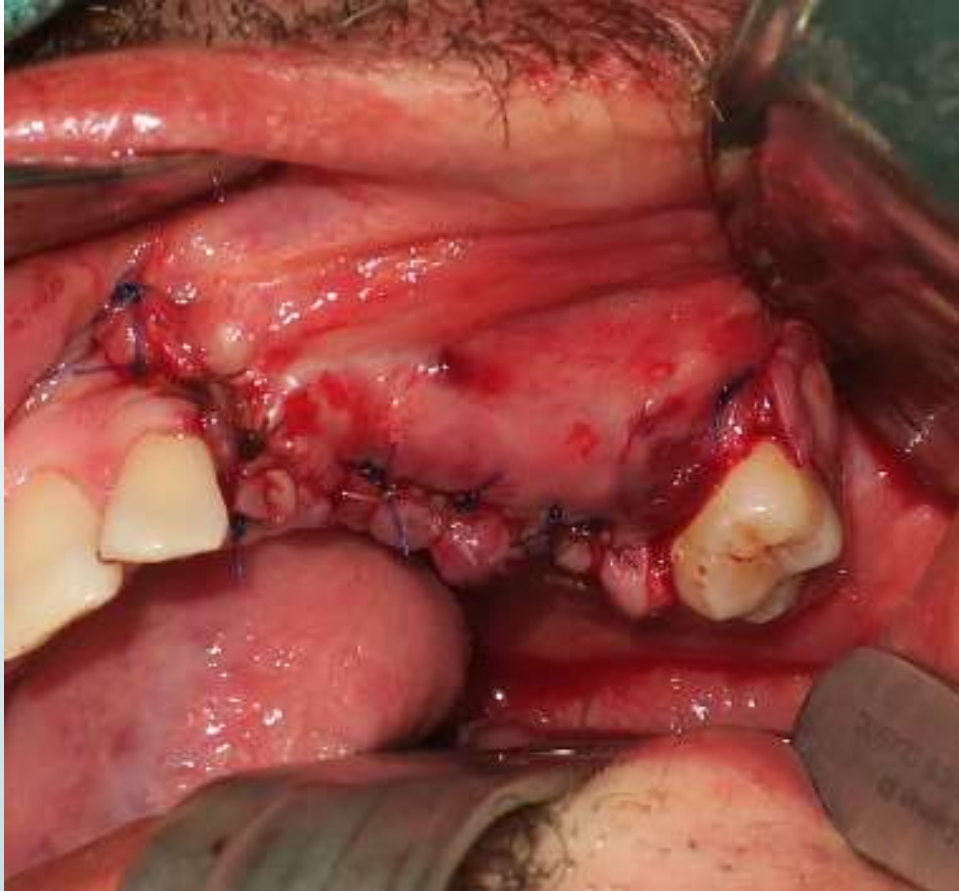
Three Tooth Defect

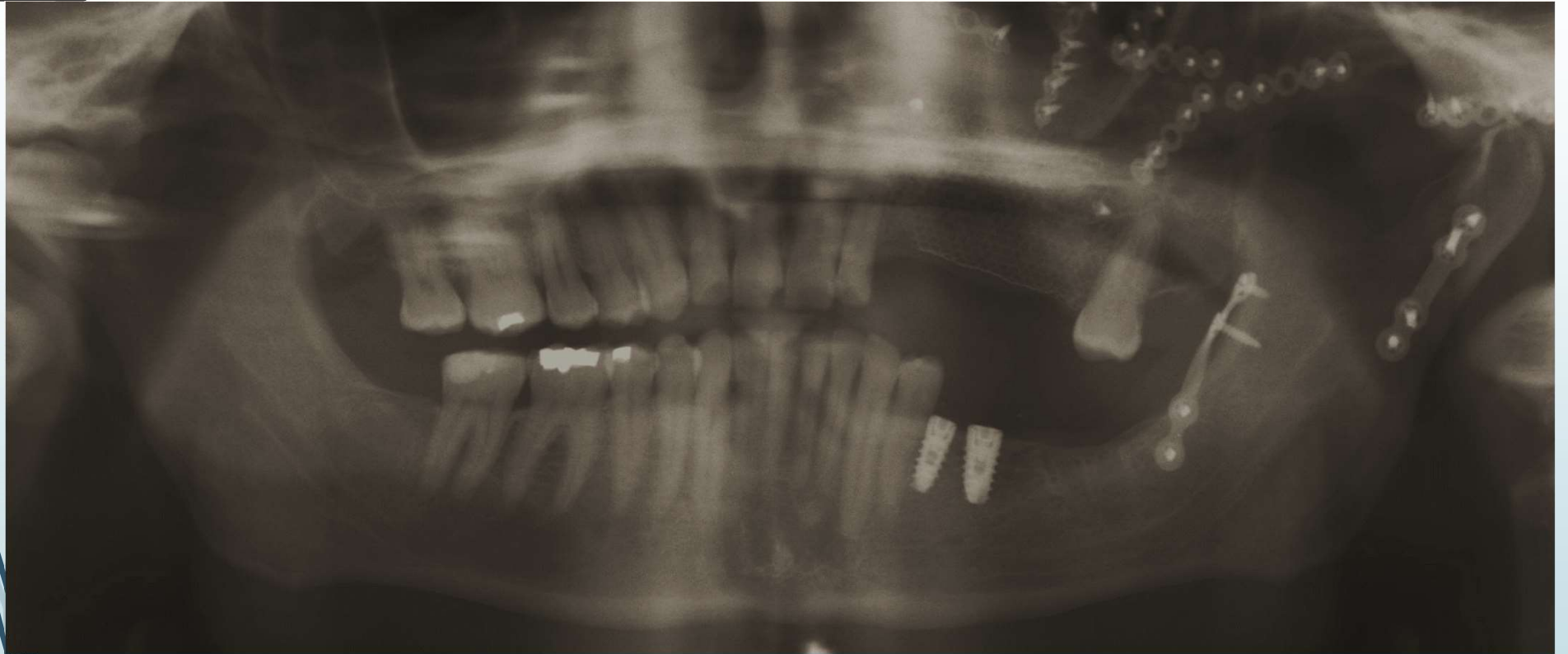














## Case 2

Posterior Mandible



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Jackson Health System  
LUZI, NORALBA  
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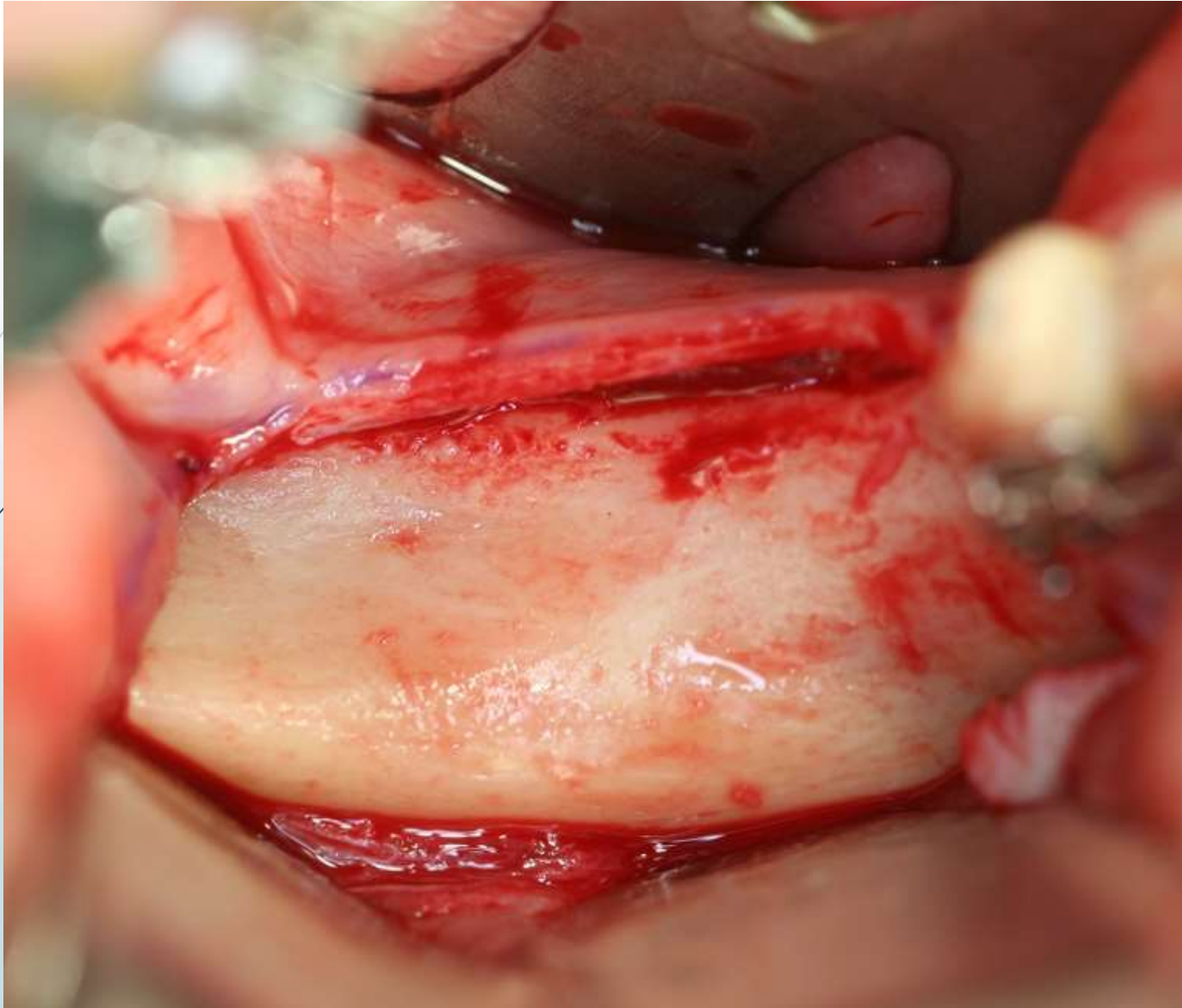
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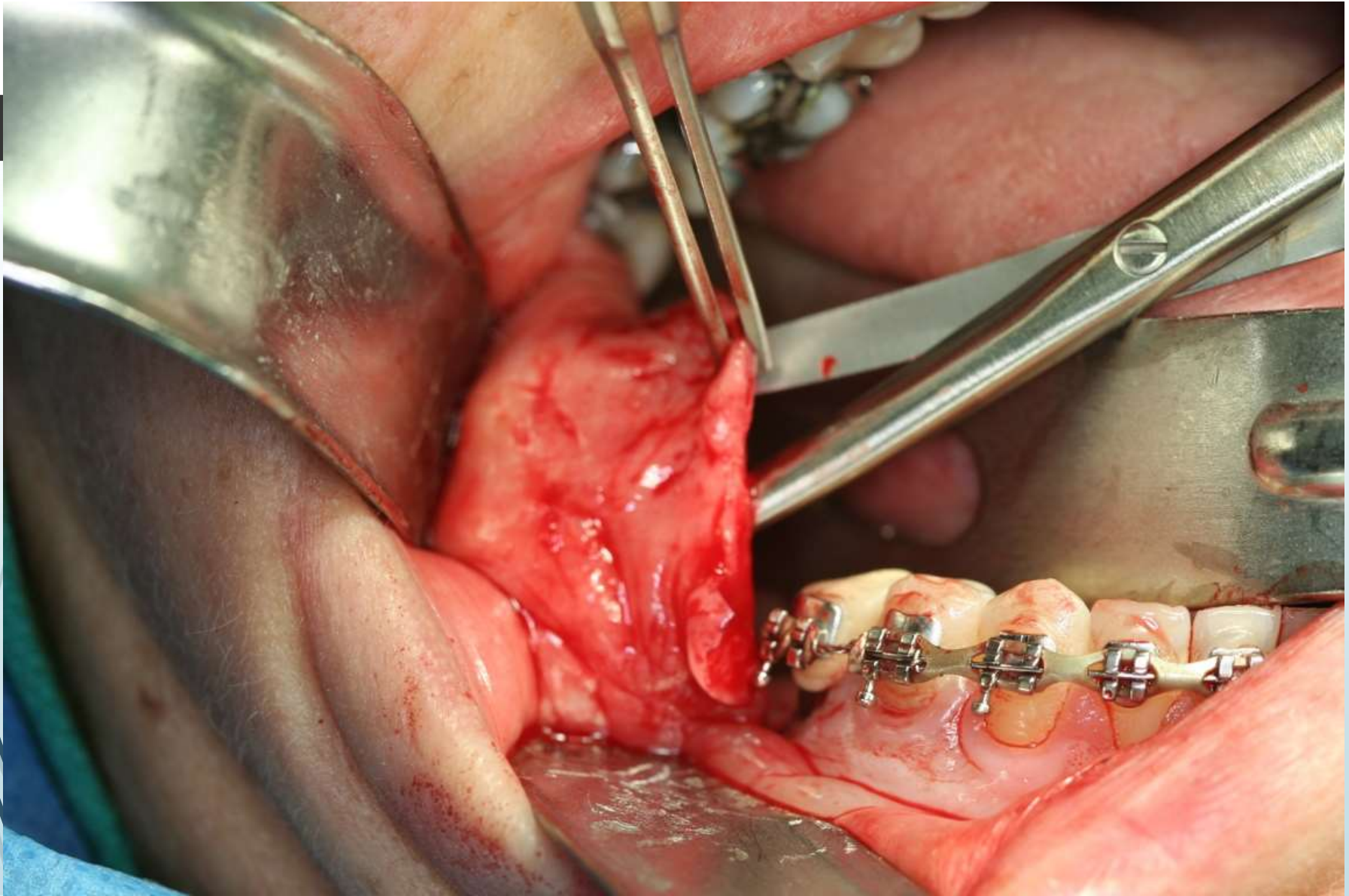
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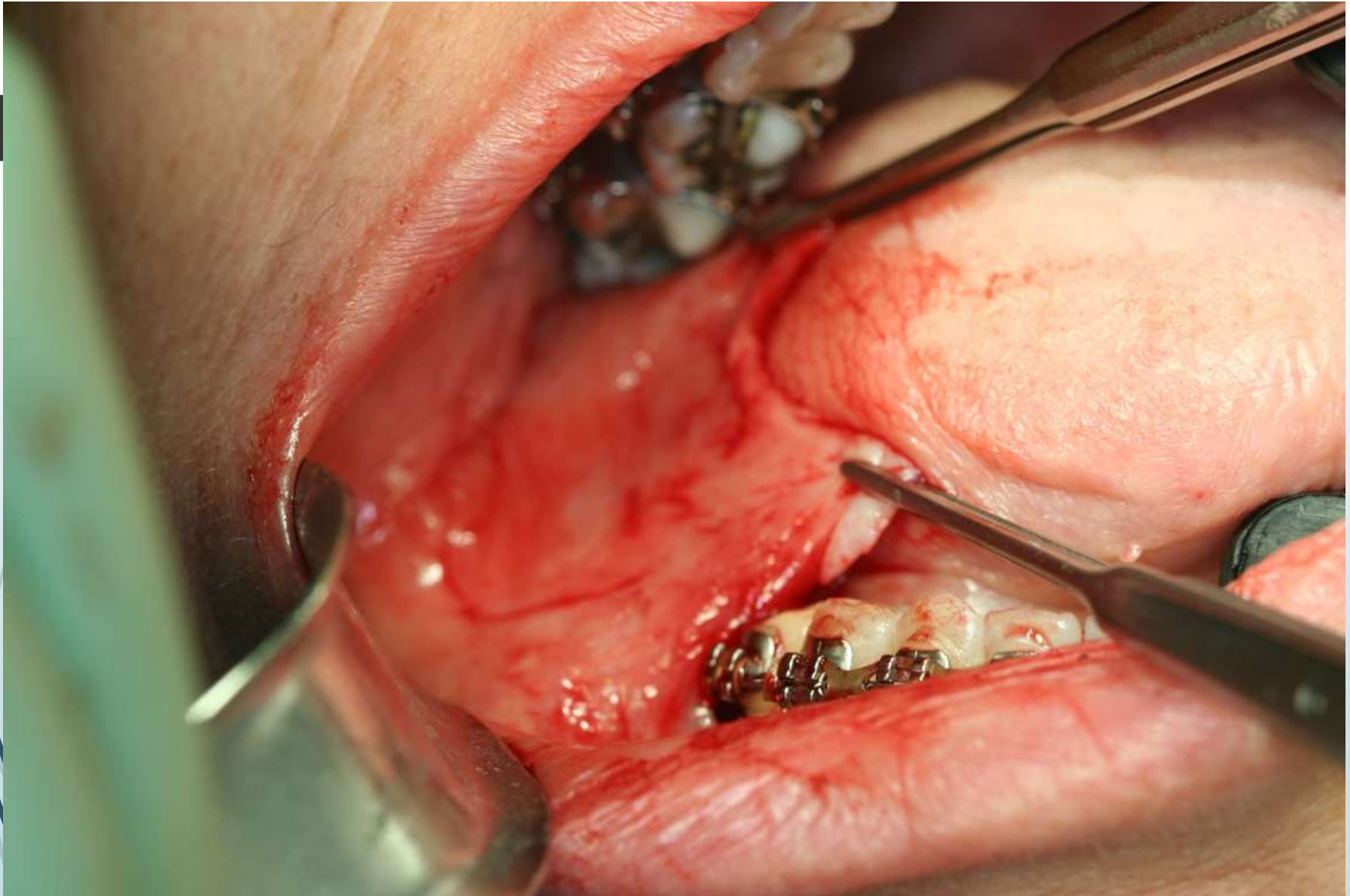
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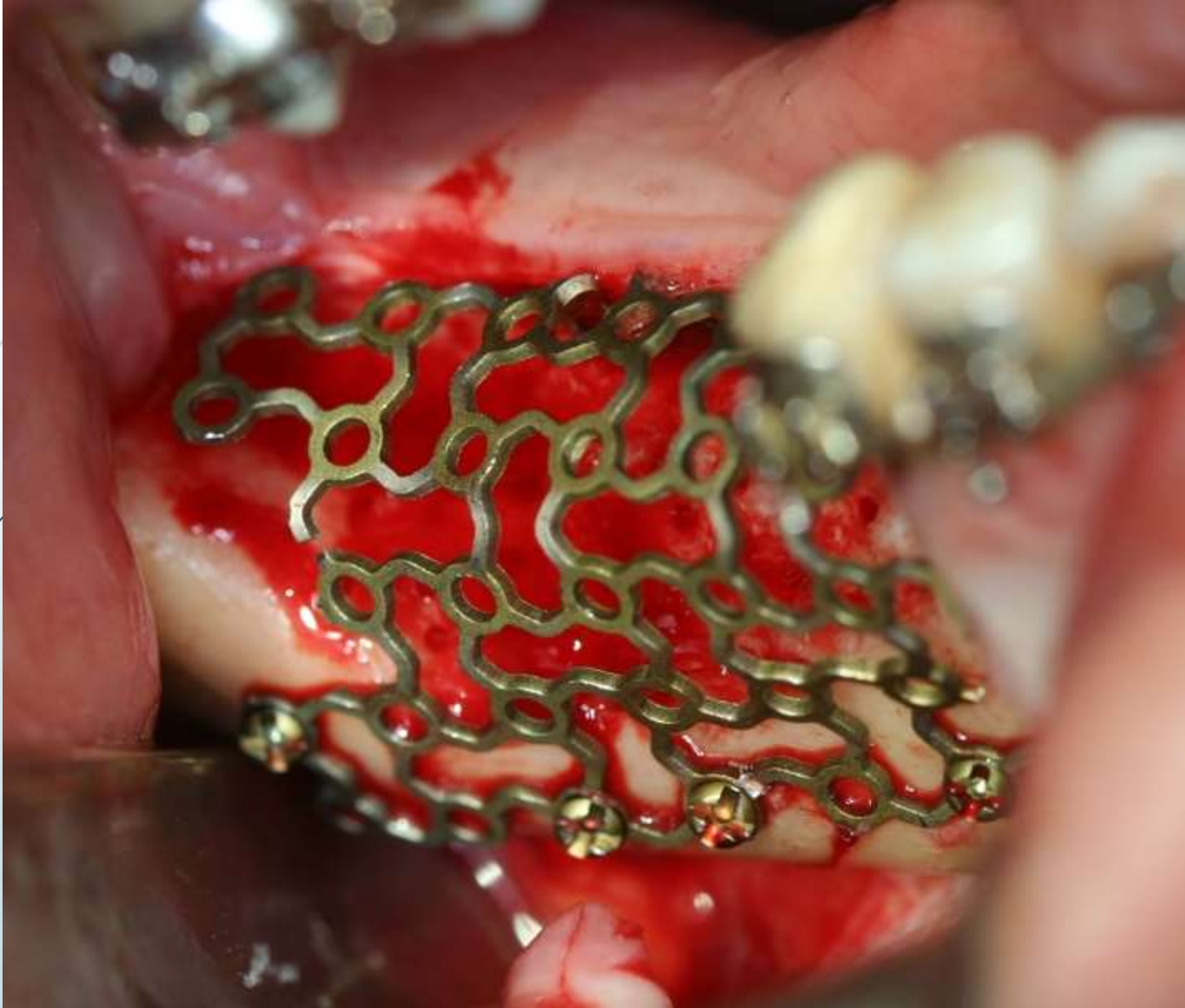










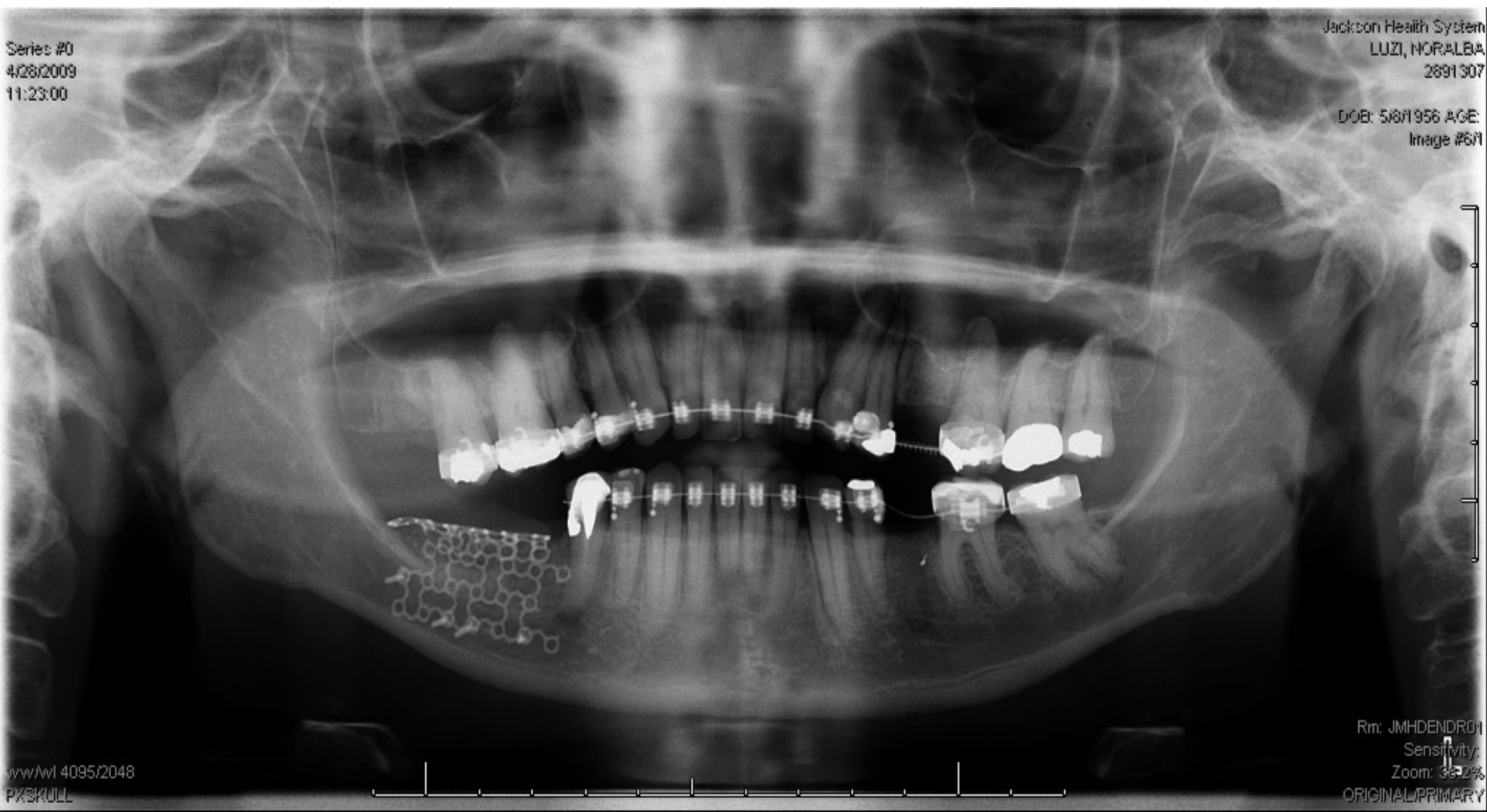




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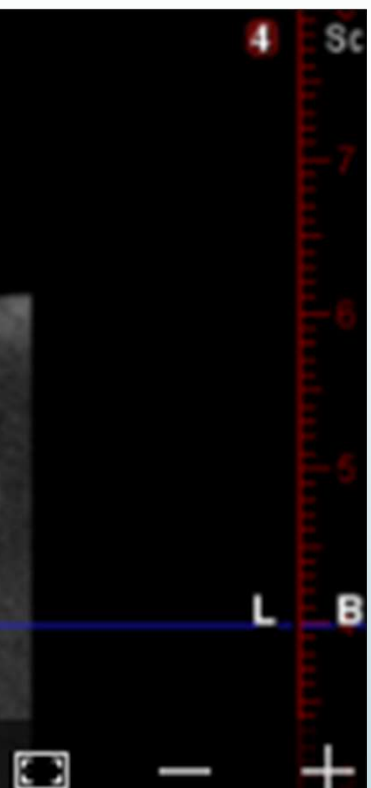
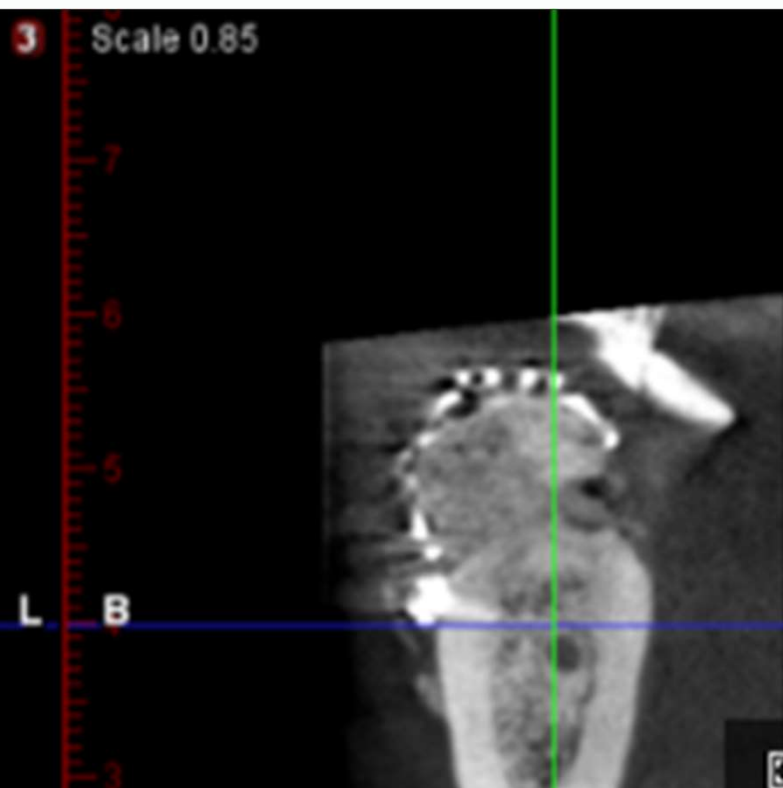
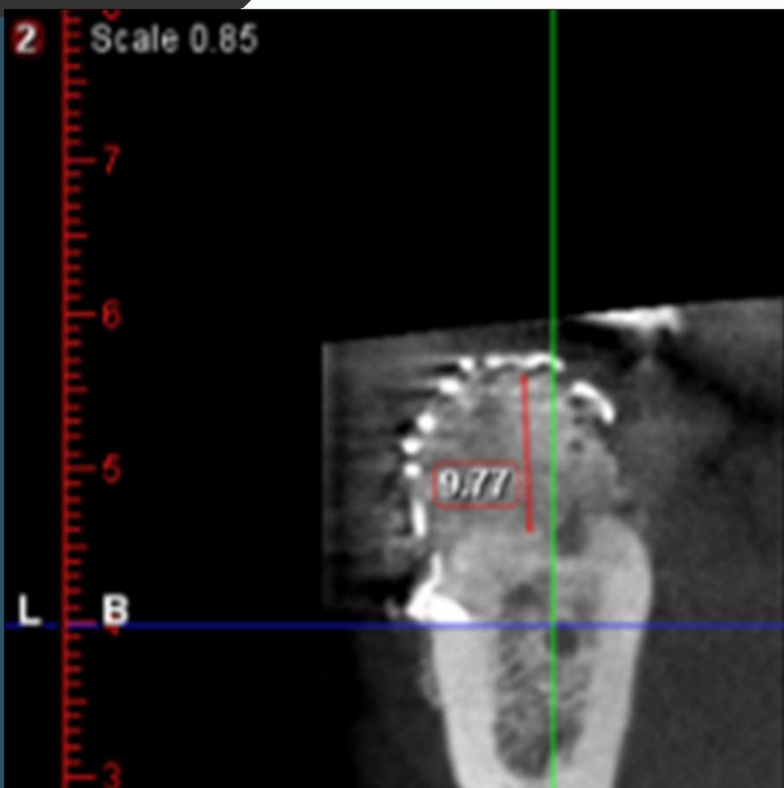
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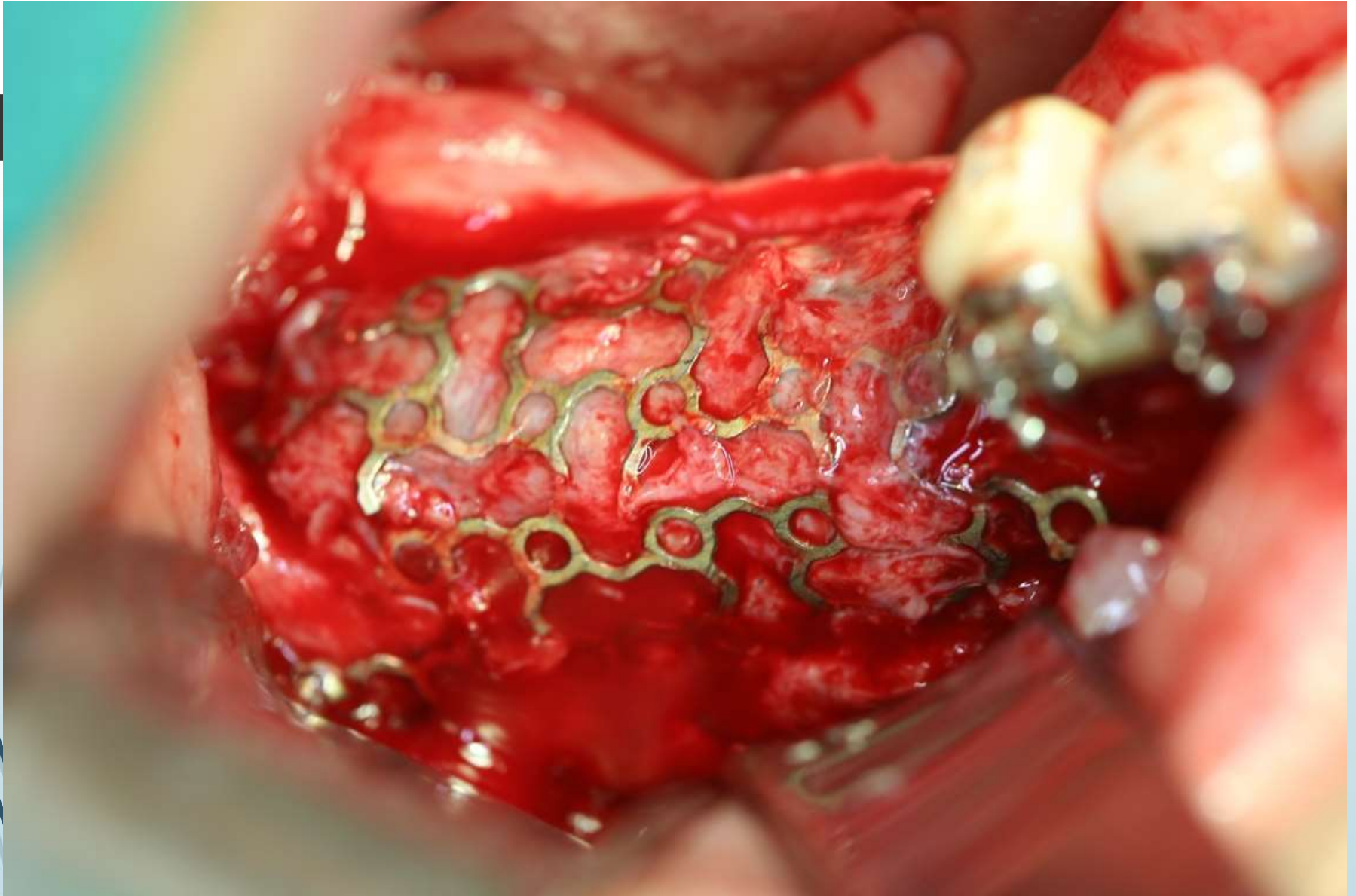
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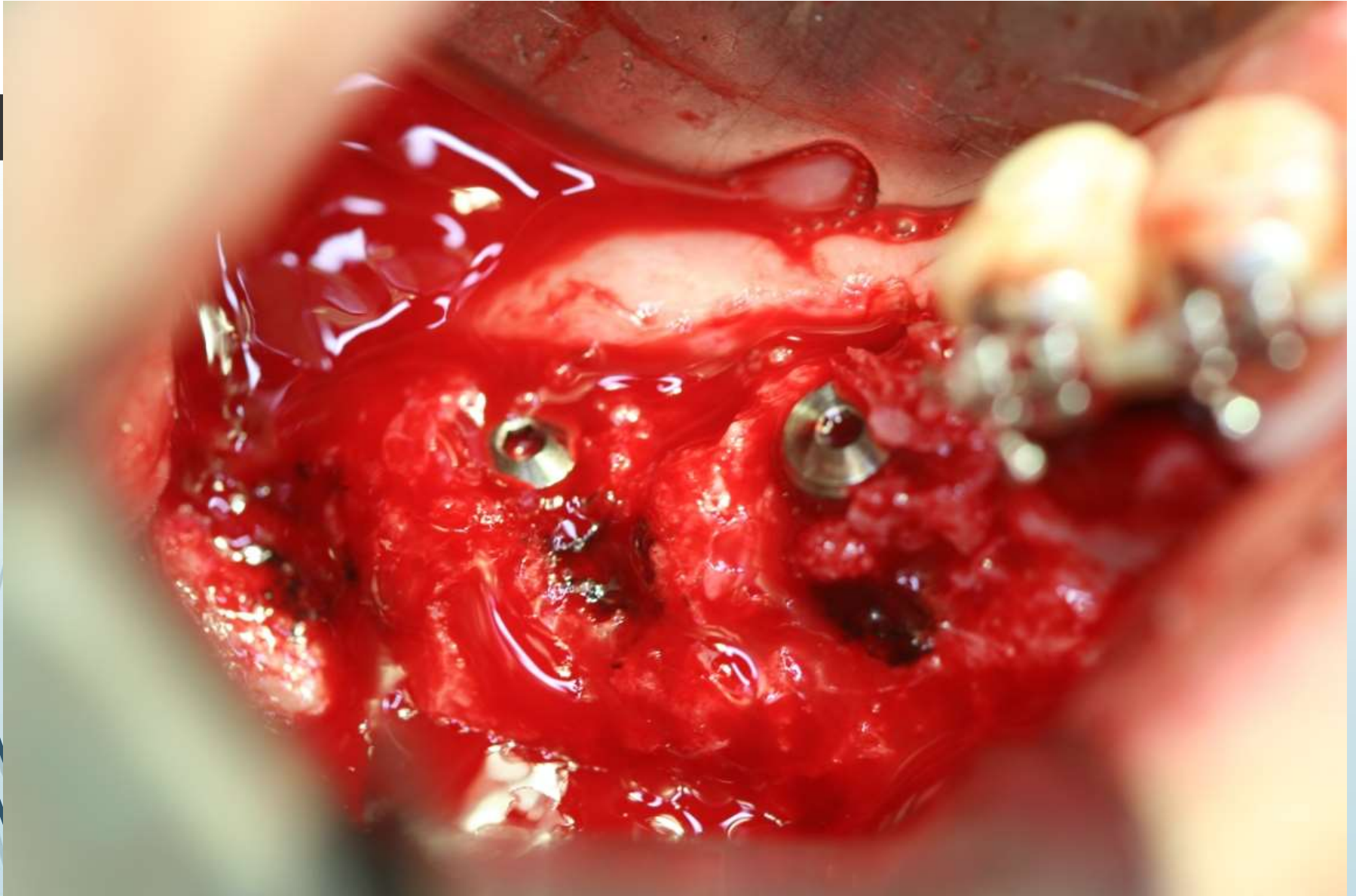


















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289130

DOB: 5/8/1956 AGE  
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PKSKULL

Rm: JMHENDRO  
Sensitivity  
Zoom: 33.2  
ORIGINAL/PRIMAR



# Literature: Titanium Mesh

- Study of 175 mesh sites

	<b>Brigualio et al</b>
Mesh Sites	175
Vertical Augmentation	2.56-6mm
Horizontal Augmentation	4mm
Mesh Exposure	81
Failure	13

- Complications
  - Tx: Peridex, debridement
  - Average mesh exposure 2 months

## Titanium Mesh

	Our Research	Literature
Titanium Mesh	40	175
Mesh Exposure	25%	46%
Graft Failure	10%	7.4%

# Graft Resorption: Block vs GBR

- 2018 study evaluated 15 studies reviewed lateral ridge augmentation.

	<b>Block Grafting</b>	<b>GBR</b>
<b>Graft Placement</b>	4.18mm	3.61mm
<b>6 month follow up</b>	0.75mm	1.22mm
<b>Percentage Resorption</b>	17%	33%

- Re-solidifies the practice of overgrafting surgical sites

## Review of Literature

	Block Graft	Titanium Mesh
Vertical Augmentation	2mm	3.4mm
Horizontal Augmentation	4.79mm	4mm
Graft Resorption	17%	33%
Complications	87%	46%
Failure Rate	2.4%	8.5%



# Conclusion

## Allogeneic block

- No donor site morbidity
- Cost effective
- Time Intensive
- High complication rate
- High Success
- Flat ridge defects

Predictable outcomes

## Titanium Mesh

- High Cost
- Decreased time of procedure
- Less complications
- Adjacent bony support

## Socket Preservation

- No donor site morbidity
- Low Cost
- No secondary surgery
- Shorter time to implant placement

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