

# A SERIES OF CLINICAL CASES ON THE SURGICAL TREATMENT OF: SEVERE PERI-IMPLANTITIS

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# DIAGNOSIS: PERI-IMPLANT CONDITIONS

## PERI-IMPLANT HEALTH/ PERI-IMPLANT MUCOSITIS/MILD/ MODERATE & SEVERE PERI-IMPLANT DISEASE

Osseointegration in the field of dentistry is a very predictable outcome and it has been regarded as a procedure with a high survival rate. Latest Scandinavian concepts however questioned the long term validity of such indicator and promoted the use of different and more democratic tests. Effectiveness seems to be a more inclusive way to study these specific variables since it is based on the everyday conditions. Using this test on a population basis, the authors could establish which is the real prevalence of peri-implantitis among other variables. Today we know that under specific thresholds and more than 8 years between two examinations, severe peri-implantitis could be better measured, affecting 14.5% of the Scandinavian population with implants, regardless of the implant brand and surface selected. The resultant figure says that one of each seven patients with implants has severe peri-implantitis which differs from the figure of 98% survival rate we have been working with. This problem is brand new in the oral health scene and need to have proposals for its solution. As usual with most chronic diseases, this one is multifactorial, smoking and history of periodontitis as well as peri-implant mucositis are some of the factors that are involved in the pathogenesis.

It was common belief that implant surfaces and other technological advancements would help stopping or slowing down the problem but,

unfortunately, while results seem to be good in many cases over the short and medium term as the data in the Swedish study shows with even bone gains in the first 2 years, long term has a completely different evolution. This creates the need of a deeper industry discussion on what are the key advancements required to ensure the long term success of the procedure. Things like implant surface technology, procedures to maintain and repair the implant, progression and causes of the disease, repair and regeneration of the bone, dexterity of the surgeon are some of the aspects health administrators, insurance authorities, patients, dentists and other industry players are and should be looking forward to discuss.

The aims of these series of cases are to:

- . Illustrate the clinical and radiographic protocol to establish the diagnosis following the most accepted case definition, as well as to
- . Propose and carry out a corrective treatment plan explained below in material and methods and
- . Define the variables to analyze at reexamination and follow up.

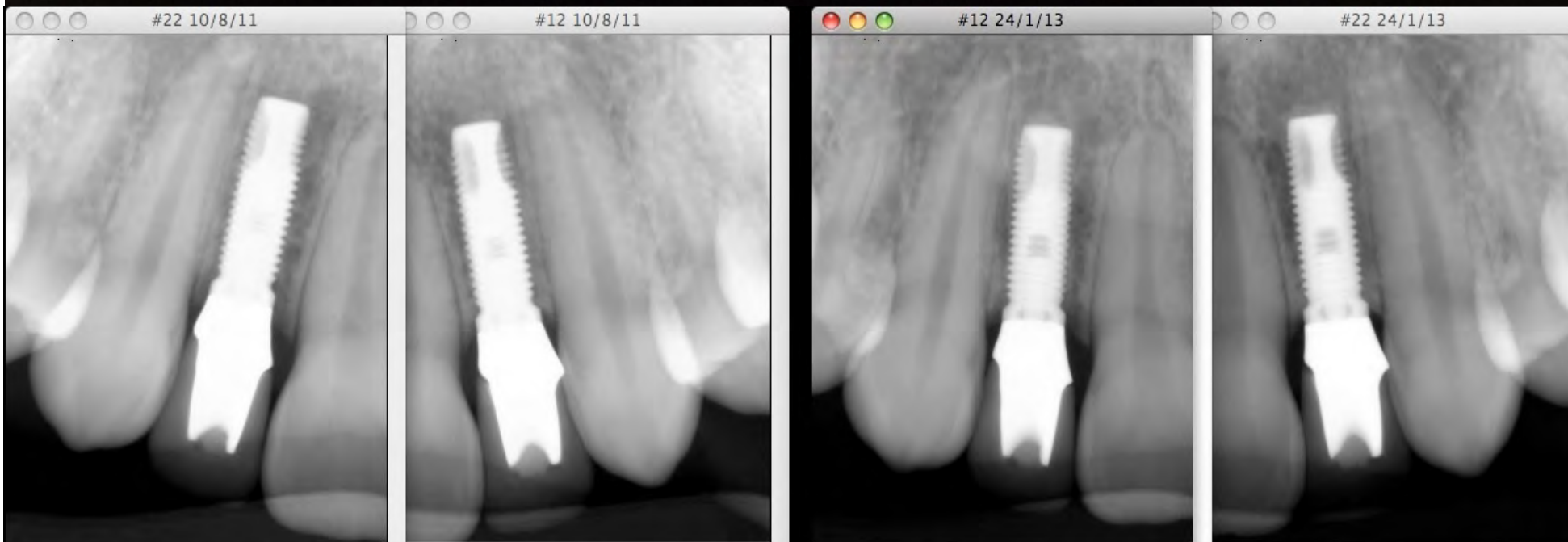
# PERI-IMPLANT CONDITIONS

## PERI-IMPLANT HEALTH/ PERI-IMPLANT MUCOSITIS/ MILD/MODERATE & SEVERE PERI-IMPLANT DISEASE

Criteria description	Diagnosis	Tooth/Implant level
Absence of BoP/Supuration	Peri-implant health	Case 1
BoP/Supuration but no detectable bone loss	Peri-implant mucositis	Case 2
BoP/Supuration and detectable Bone Loss (0.5 mm) exceeding the measurement error	Mild Peri-implantitis	Case 3
BoP/Supuration and Bone Loss > 2mm	Moderate/Severe peri-implantitis	Case 4a, Case 4b, case 4c, case 4d

*Effectiveness of implant therapy analyzed in a Swedish population: Prevalence of peri-implantitis. Jan Derks, Dennis Schaller, Jan Hakansson, Jan Wennström, Cristiano Tomasi, and Tord Berglundh. PhD Thesis. 2015 Gothenburg University Shalgreńska-*

# CASE 1: HEALTHY PERI-IMPLANT TISSUES



Tooth	Baseline 1A mesial	Baseline 1A distal	Reexam 2A mesial	Reexam 2A distal	Difference mesial	Difference distal
12	2.7	3.6	3.2	2.9	-0.5	0.7
22	2.5	3.6	2.5	3.4	0.0	0.2

## CASE 1: HEALTHY PERI- IMPLANT TISSUES

. Woman 23 years old who illustrate the clinical and radiographic protocol to establish the diagnosis following the most accepted case definition as defined in the table. Two times of examination in 2011 and in 2013.

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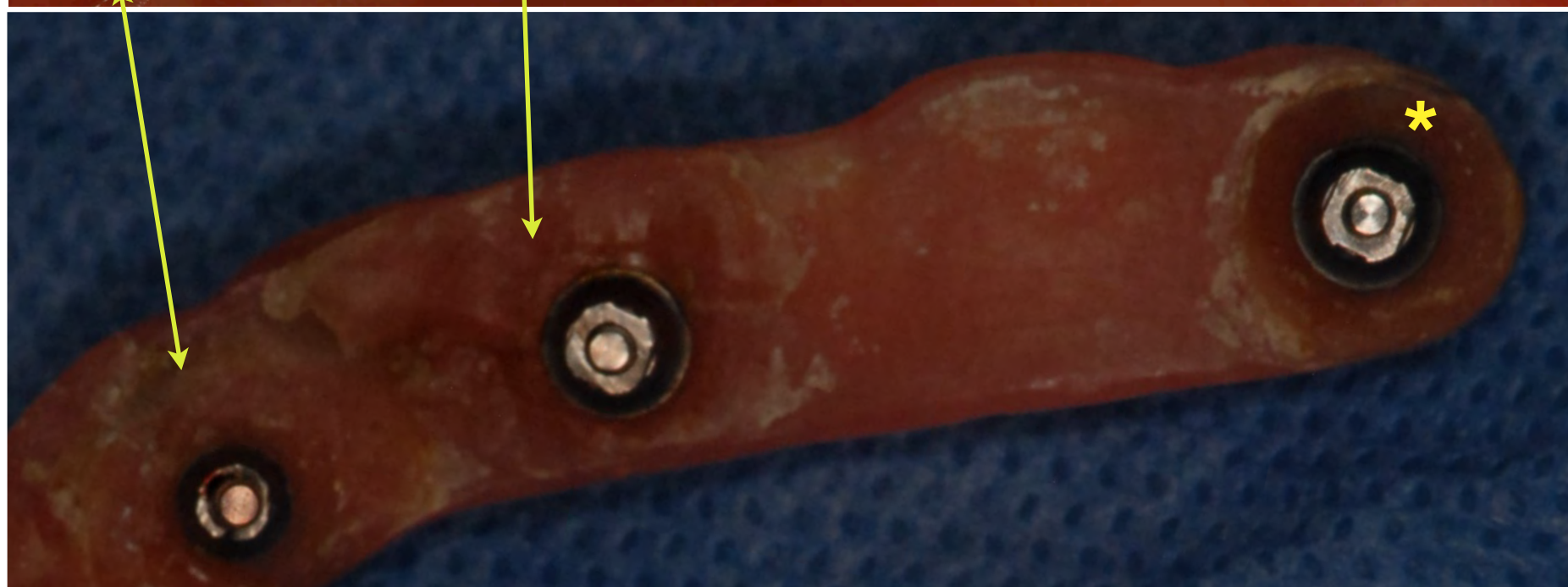
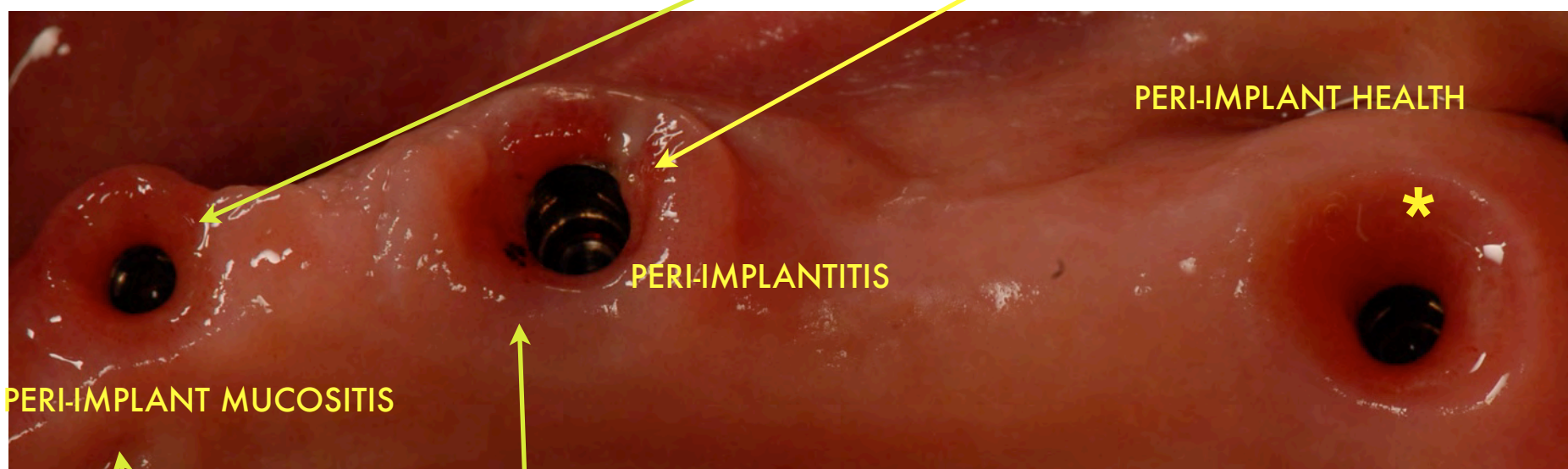
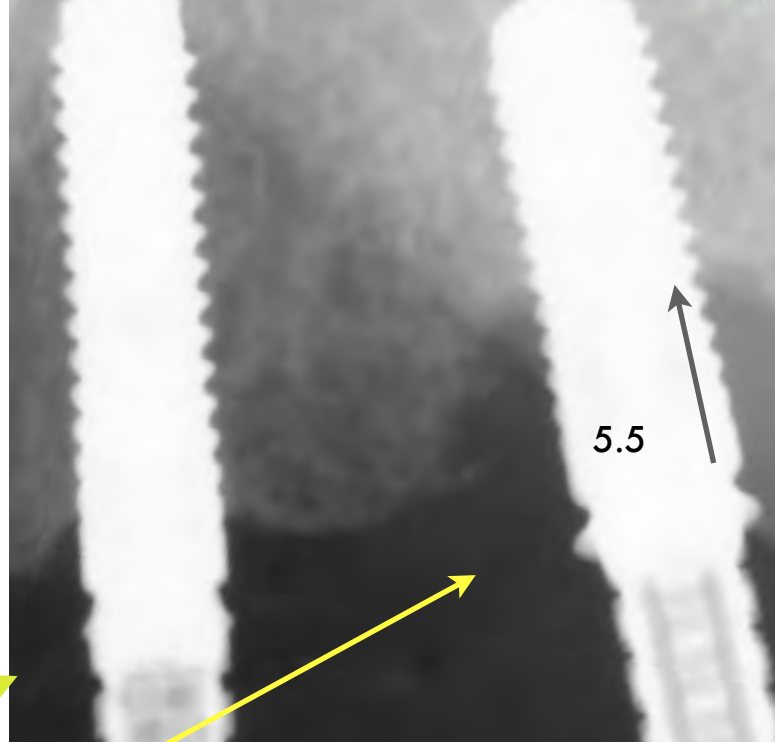
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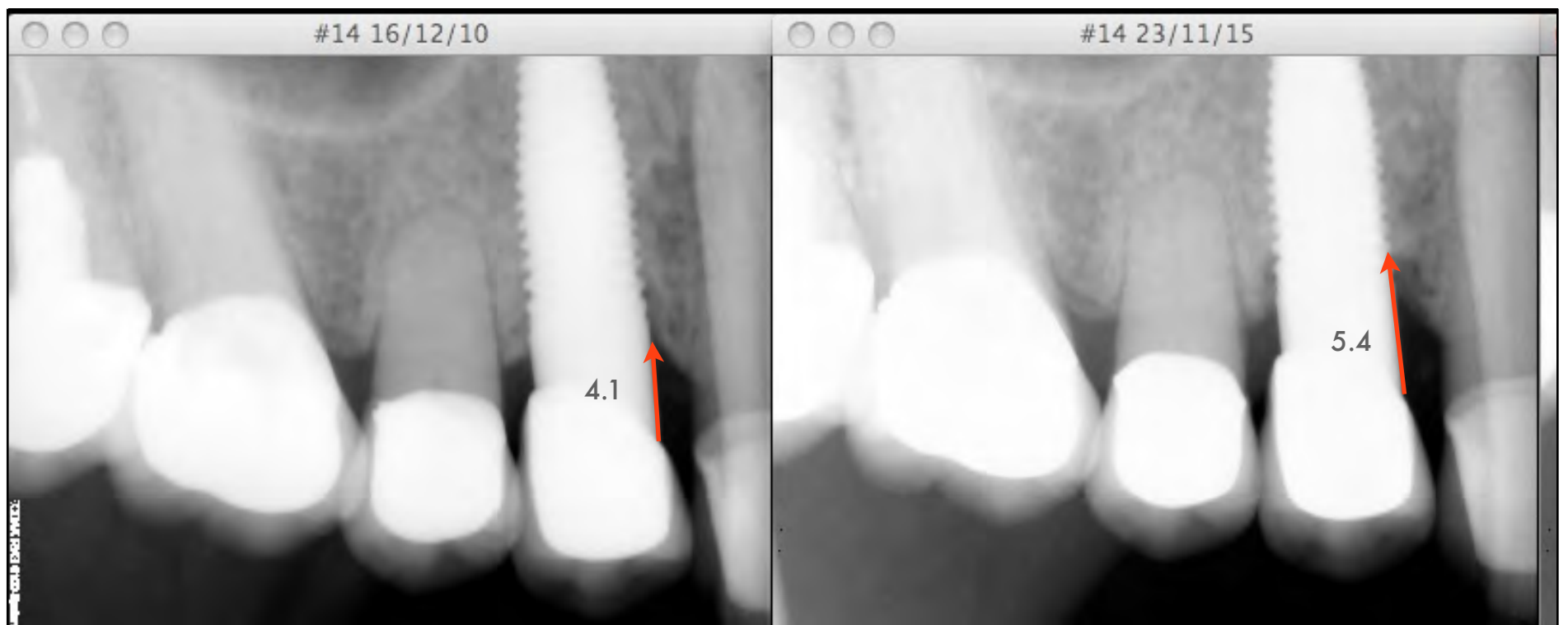
# CASE 2 PERI-IMPLANT MUCOSITIS

This is a pedagogic case in a woman 71 years old illustrating 3 different conditions in the same patient and in the same maxilla. It was suggested that after a period of provisionalization where the patient had limited access to oral hygiene as well as poor motivation to perform it the patient developed inflammation of peri-implant tissues (Peri-implant-mucositis) In contrast, the area where the patient had access was the retromolar zone where the patient cleaned better and the tissues looked healthier, See asterics\*.



Criteria description	Diagnosis	Tooth/Implant level
Absence of BoP/ Supuration	Peri-implant health	Tooth/17
BoP/Supuration but no detectable bone loss	Peri-implant mucositis	Case 2
BoP/Supuration and detectable Bone Loss (0.5 mm) exceeding the measurement error	Mild Peri-implantitis	Case 3
BoP/Supuration and Bone Loss > 2mm	Moderate/Severe peri- implantitis	Case 4a, Case 4b, case 4c, case 4d

# CASE 3: MILD PERI-IMPLANTITIS



BOP/SUPURATION AND DETECTABLE BONE LOSS (0.5 mm) EXCEEDING THE MEASUREMENT ERROR.

Woman 59 y/o that during a routine check up it was detected bleeding on probing around peri-implant tissues of tooth/implant 14. A periapical x-ray at the baseline was established. 5 years after baseline there was some progress less than 2 mm in bone loss at the x-ray. This was regarded as a Mild Peri-implantitis.

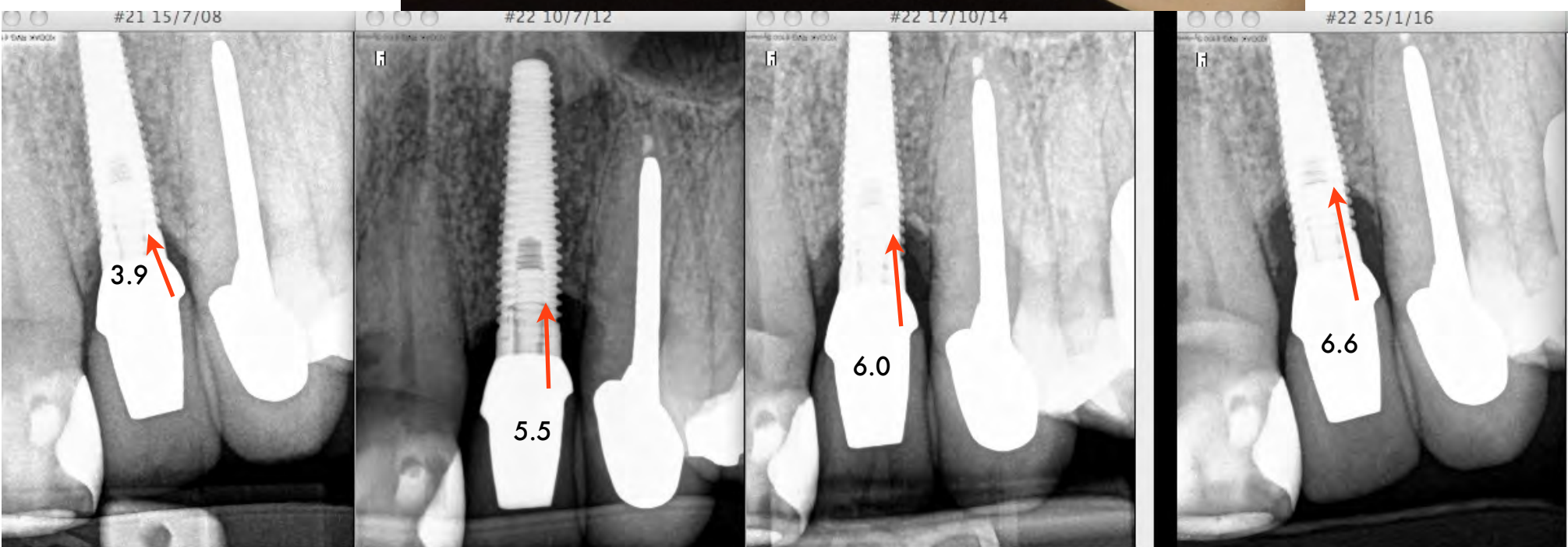
Baseline	Reexam	Difference
4.1	5.4	-1.3

*Baseline and reexam after 5 years. This resultant measurement is not > 2mm which means it is a mild form of Peri-implantitis.*



# CASE 4A: MODERATE/SEVERE PERI-IMPLANTITIS

BoP/Supuration and BoneLoss > 2mm



Male 74 years old with evidence of periodontitis during previous years. He received this implant in 2008 but some years after, 2012, 2014, 2016, he experienced some inflammatory activity and after a clinical and radiographic examination there was a diagnosis of Severe Peri-implantitis.

Measurement A	Measurement B	Difference
3.9	6.6	-2.7

*Measurement A is Baseline and Measurement B after 8 years. This resultant measurement is > 2mm which means it is a severe form of Peri-implantitis.*

# TREATMENT: PERI-IMPLANT CONDITIONS

## PERI-IMPLANT HEALTH/ PERI-IMPLANT MUCOSITIS/MILD/MODERATE & SEVERE PERI-IMPLANT DISEASE

### *INITIAL TREATMENT*

1. The solution of piperacilin and tazobactam should be applied in the peri-implant pocket in two seccions, 4-7 days appart. Blend the tip of the needle mimicking a periodontal probe, and carefully insert it into the pocket similar to perioodntal probing. When reaching the bottom of the pocket , apply the solutionuntil the pocket is completly filled. Make sure that all of the surface of the infected implant is covered with the liquid.

### *IMPLANT DECONTAMINATION PROTOCOL*

2. Release a full thickness flap to get proper acces to the treatment area . If possible, remove the crown as well.

3. Perform a thorough curtetage of the infected bone

4. Use bur number 1(Black ring) to clean the implant surface in the crestal part.

5. Use bur number 2(green ring) to clean the more apical aspect of the implant surface

6. Place the steril gauze arround the implant to protect the bony walls and then moisten it with saline solution to improve adherence

7. Now apply the gel of 37% orthophosphoric acid and 2% clorhexidine on the entered surfase of the implant using the two chamber

syring. Leave the gel for two minutes to facilitate the desintegration of the biofilm

8. Afetr two minutes, remove the gel with sterilecannula

9. Wash the surface of the implant by irrigating with saline solution for 10 sconds and then remove the remaining saline solution with a steril cannule.

10. Remove the gauze

11. Wrap the implant with sterile gauze and impregnate it with the solution hyaluronate-piperacilin-tazobactemsolution. Wait for 5 minutes

12. Remove the gauze

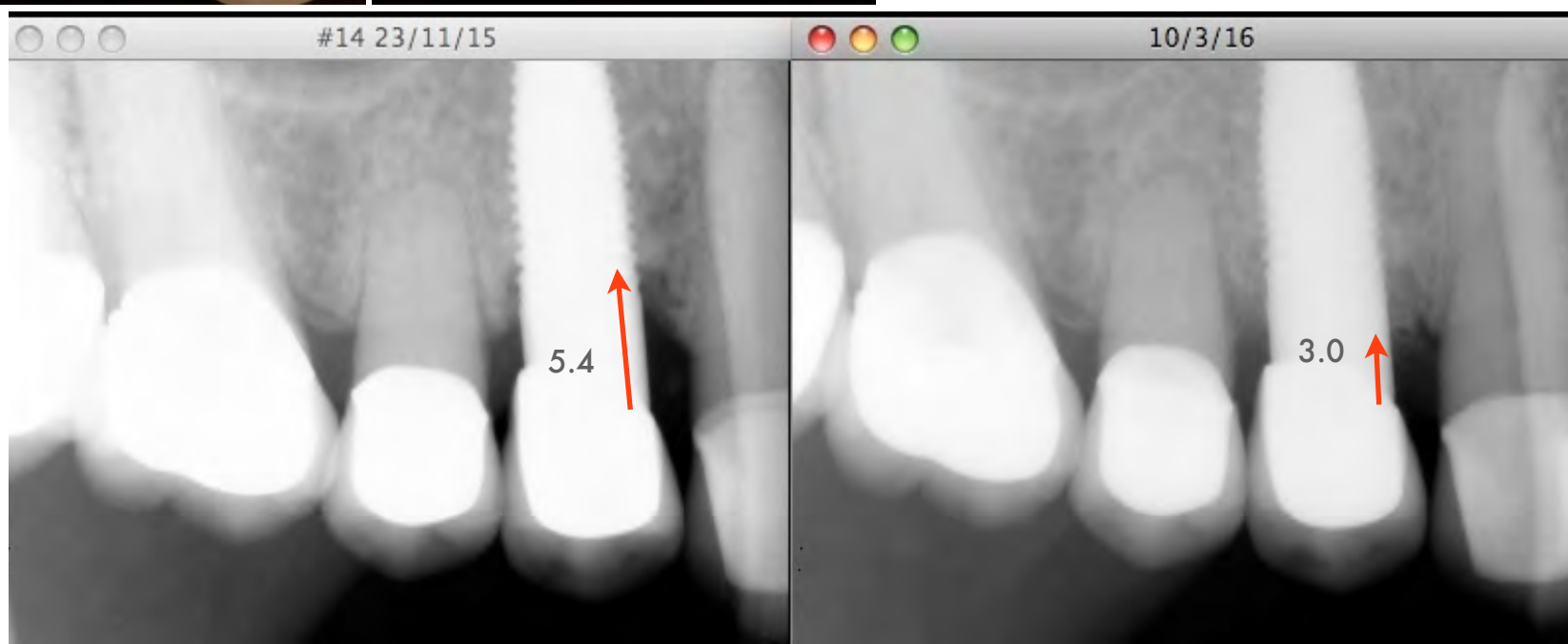
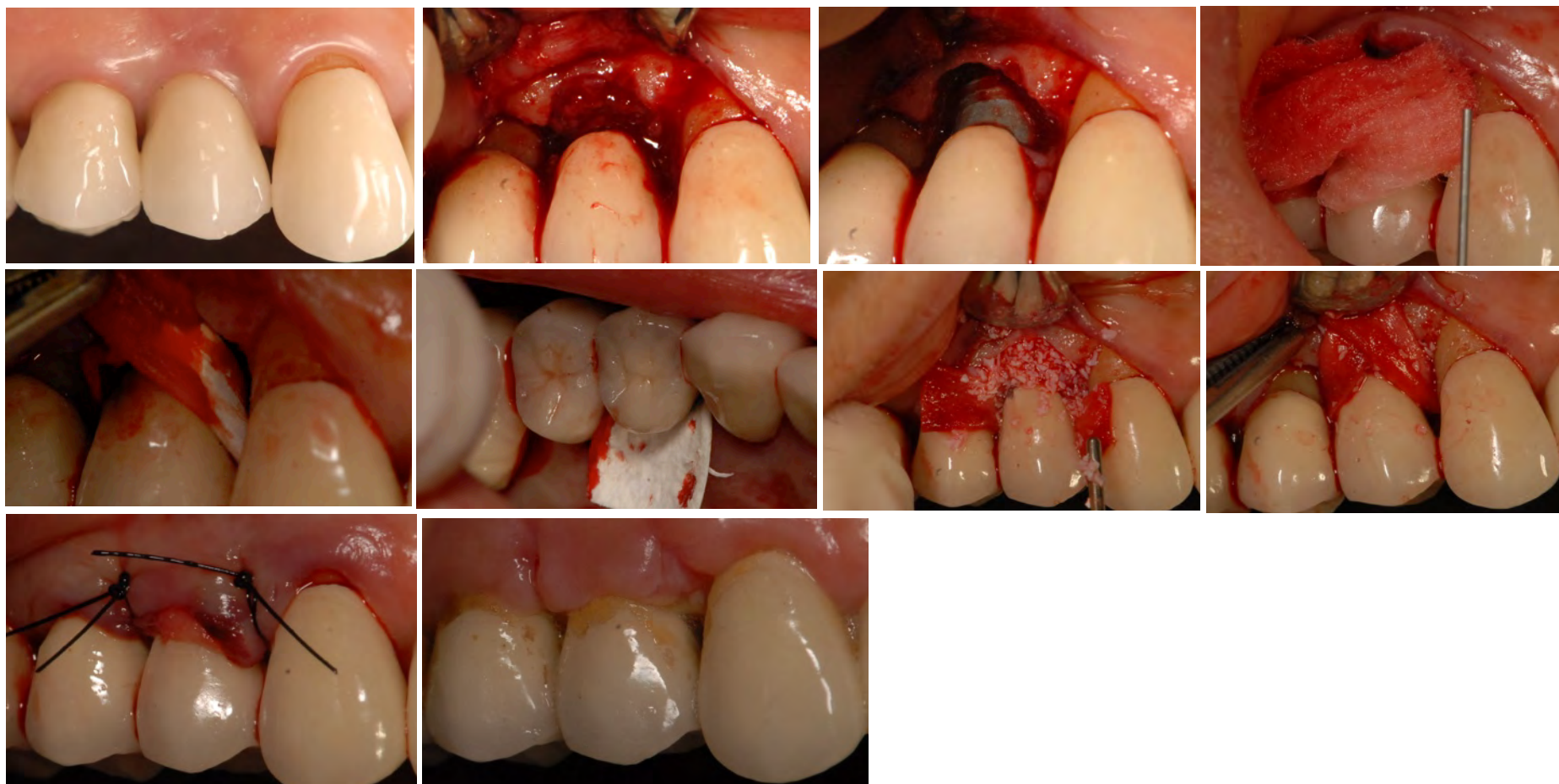
13. Use bur number 3(Red ring) to polish the surface of the implant that will be in contact with the bone graft when repositioning the flap with apical extention /elongation of the epithelial attachment

14.Mix the bone graft with the sodium hyaluronate-piperacilin-tazobactam solution in a sterile container

15.Place the bone graft in the defect and cover the area with a collagen membrane previously soaked with the sodium hyaluronate-piperacilin-tazobactam. Wound closure and suturing

# CASE 3. MILD PERI-IMPLANTITIS:

BoP/SUPURATION AND DETECTABLE BONE LOSS (0.5 MM) EXCEEDING THE MEASUREMENT ERROR.



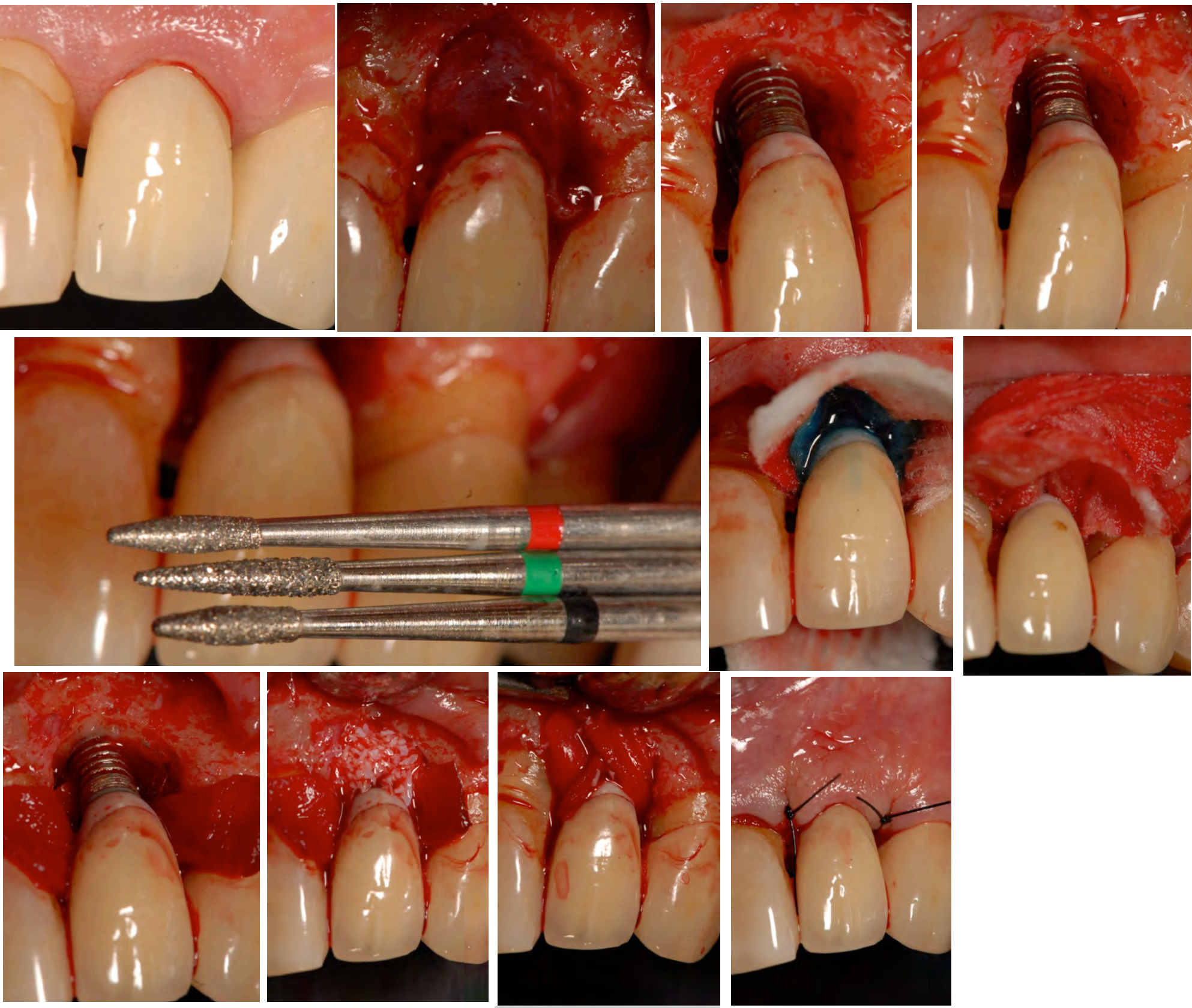
BoP/Supuration and detectable Bone Loss (0.5 mm) exceeding the measurement error.

Although this is a mild peri-implantitis it is recommended to start a surgical procedure to gain access to clean de implant surface decontaminate it, alter the surface of the implant and then apply the material together with the combination of antibiotics to deliver the antimicrobial agent slowly to allow the population of host tissue with connective tissue. From now it will be named: THE IMPLANT DECONTAMINATION PROTOCOL (TIDP)

Measurement A	Measurement B	Difference
5.4	3.0	2.4

*Measurement A is Baseline and Measurement C after 4 months of healing. This resultant measurement is showing 2.4 of bone gain*

# CASE 4A: MODERATE/SEVERE PERI-IMPLANTITIS

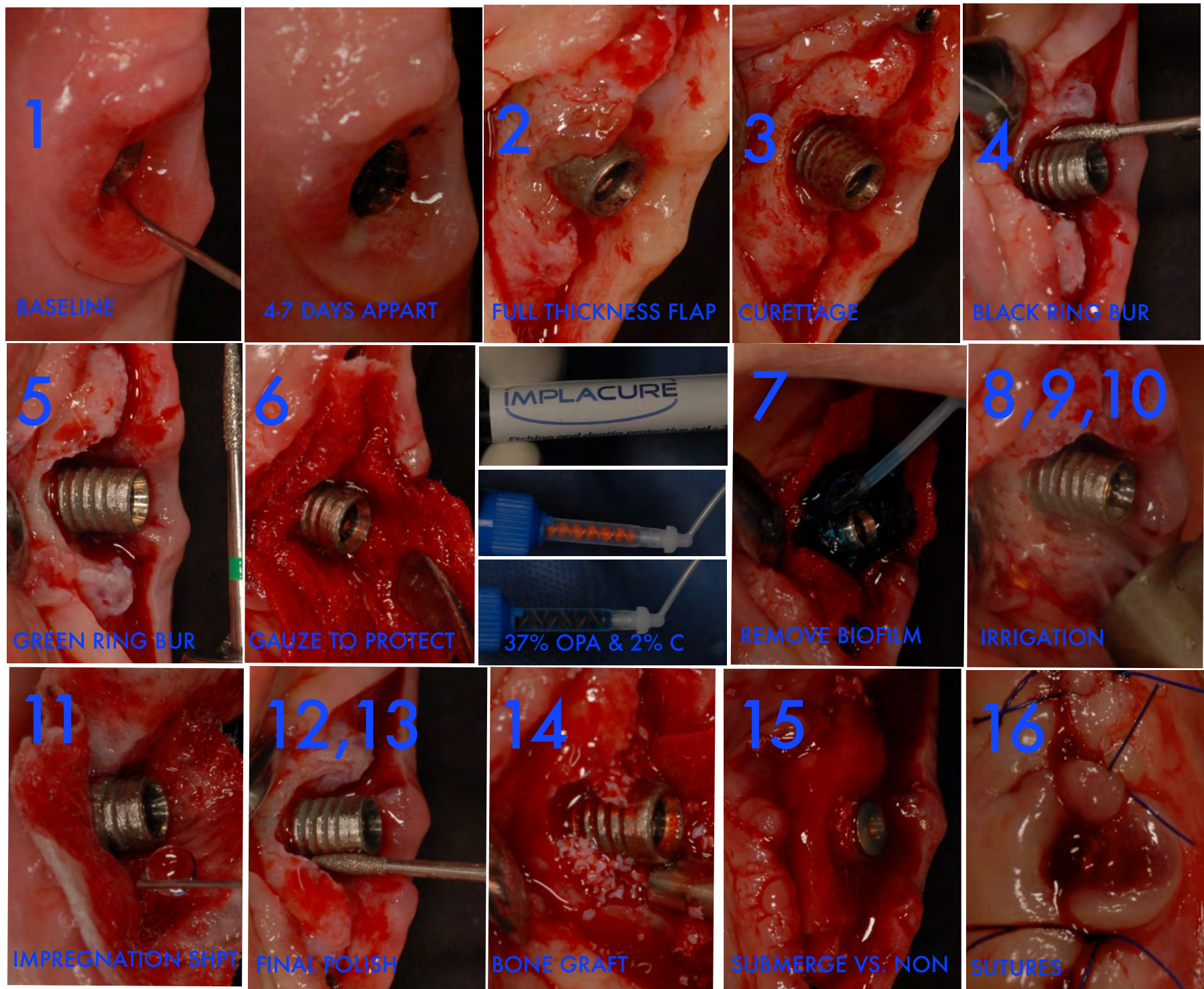


This is a Severe Peri-implantitis. It will receive the same TIDP

Measurment A	Measurment C	Difference
3.4	3.0	0.4

Measurment A is Baseline and Measurment C immediatly after surgery. This resultant measurment is showing 0.4 mm of bone gain

# CASE 4B: MODERATE/SEVERE PERI-IMPLANTITIS

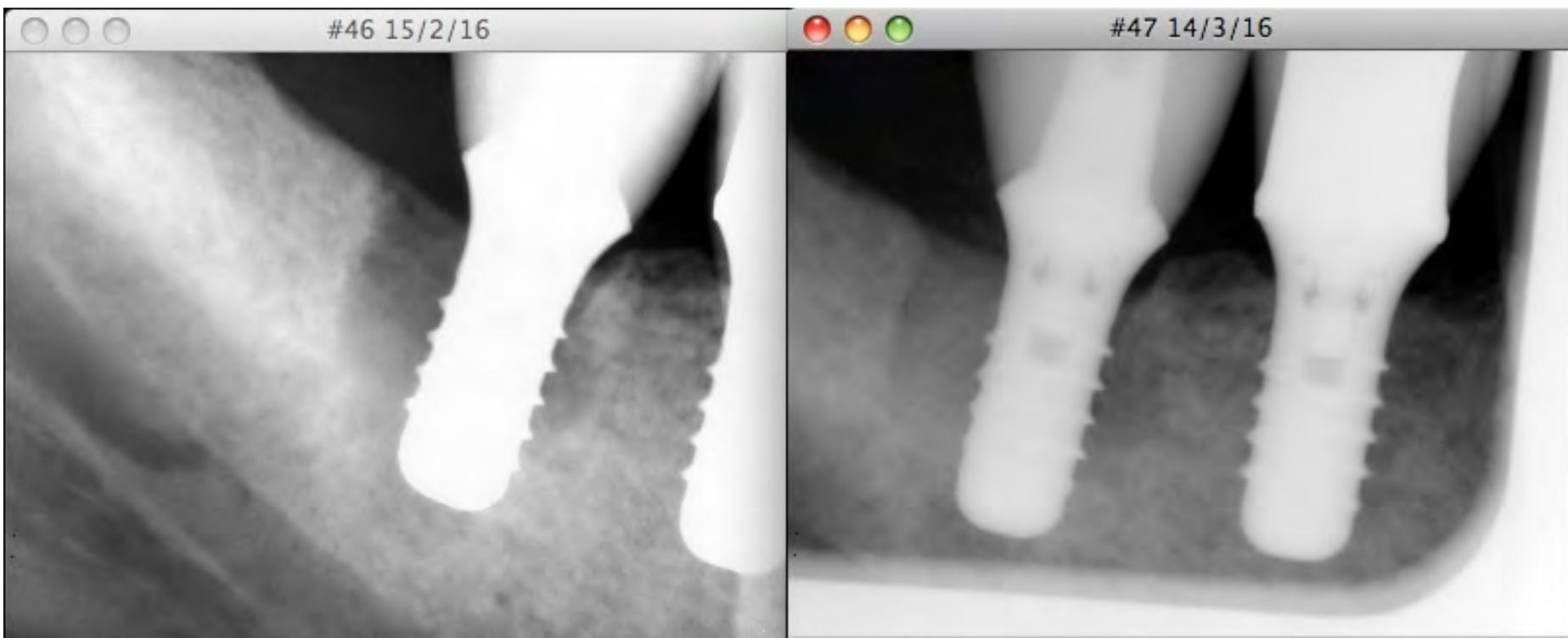


Measurment A	Measurment C	Difference
$5.5 - 1.5 = 4$	$1.4 - 1.5 = -0.1$	$4 - (-0.1) = 3.9$

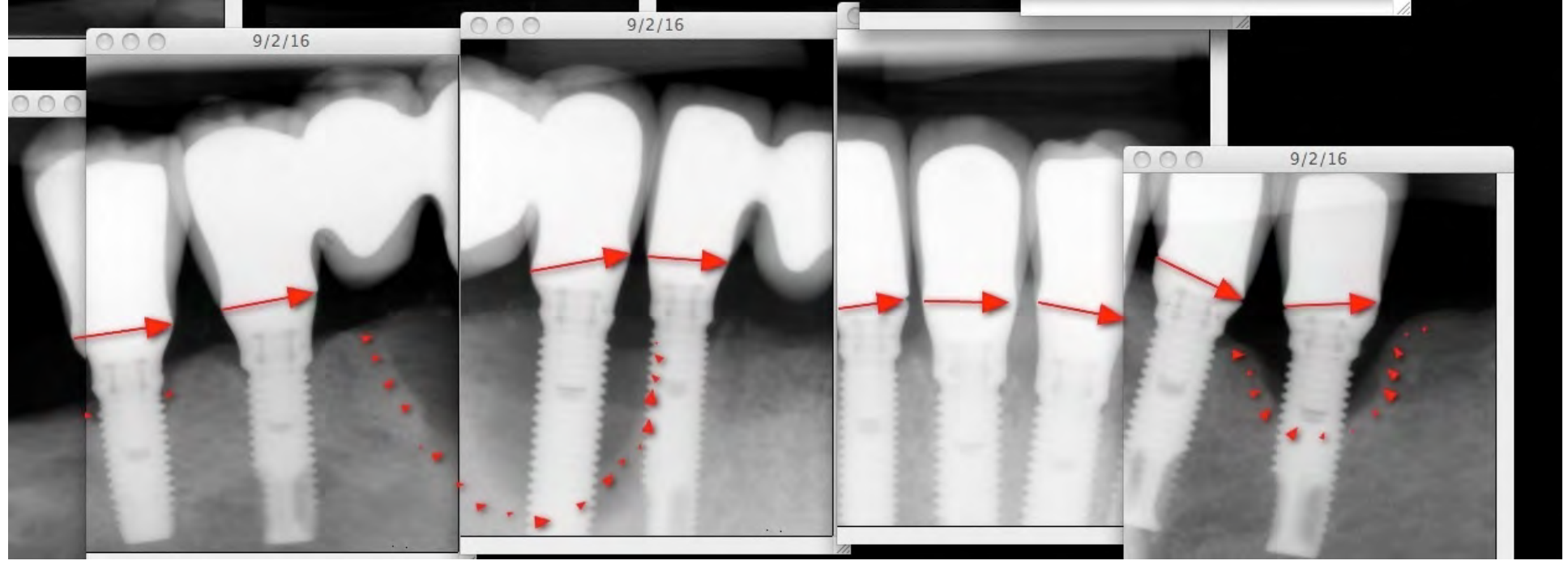
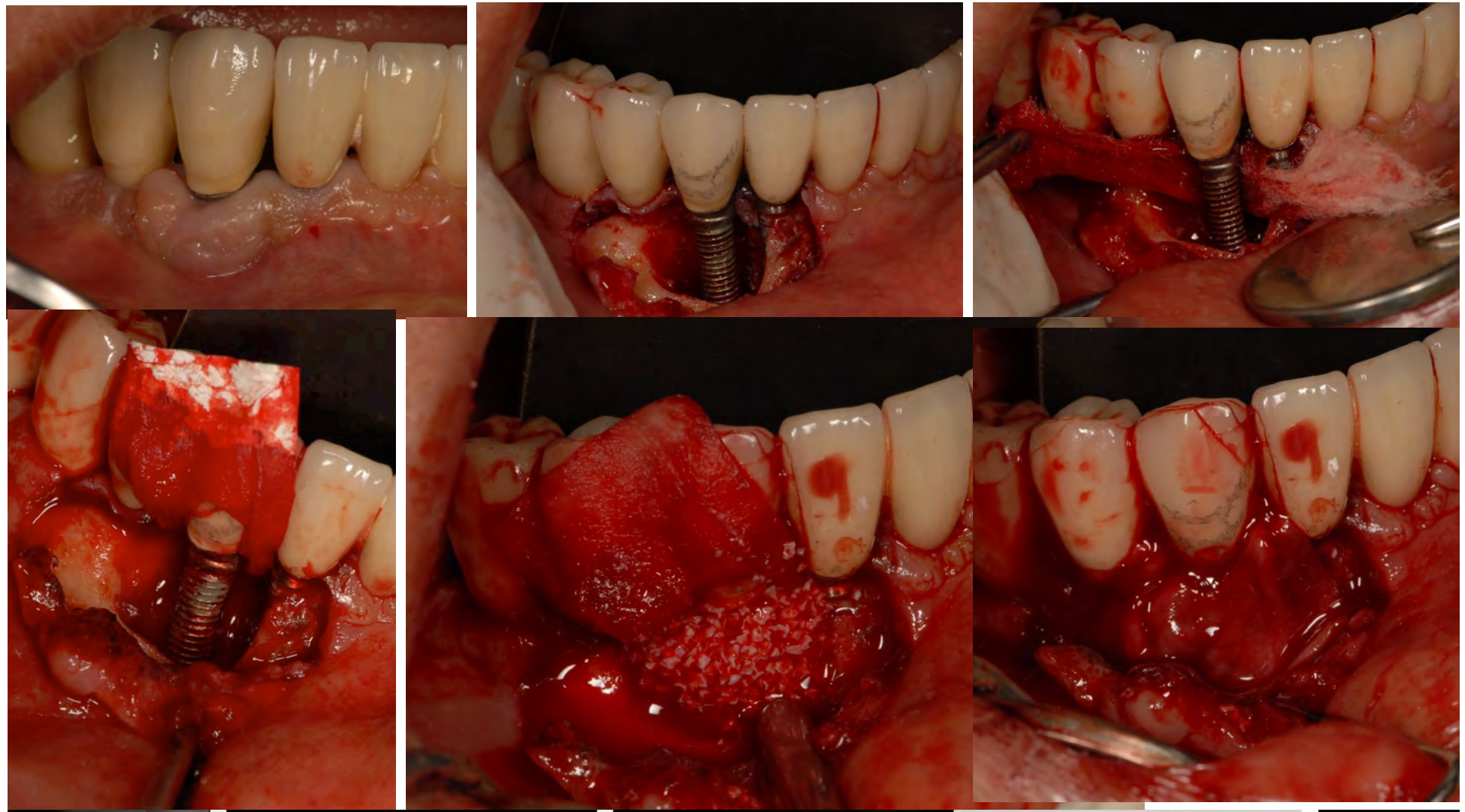
This particular case will be used to show in pictures the whole protocol described in detail in the above

Measurment A is Baseline and Measurment C immediatly after surgery. This resultant measurement is showing 6 mm of bone gain

# CASE 4C MODERATE/SEVERE PERI-IMPLANTITIS



# CASE 4D: MODERATE/SEVERE PERIMPLANTITIS

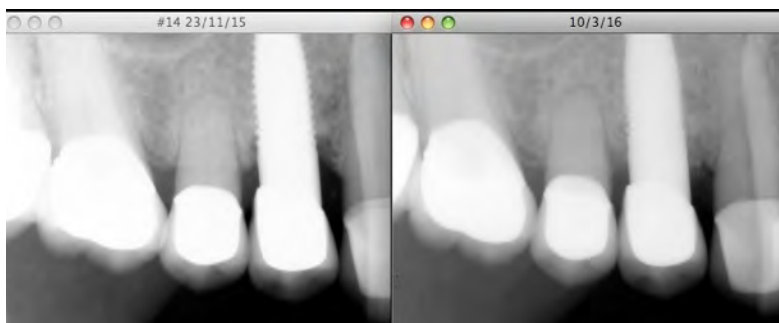


# RESULTS: PERI-IMPLANT CONDITIONS

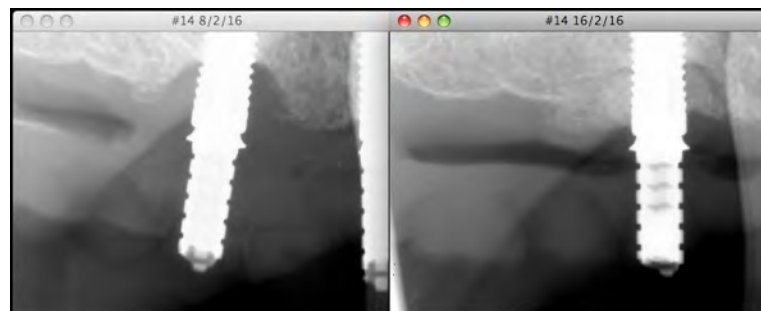
## PERI-IMPLANT HEALTH/ PERI-IMPLANT MUCOSITIS/MILD/MODERATE & SEVERE PERI-IMPLANT DISEASE

Criteria description	Diagnosis	Tooth/Implant level	BoP/Supuration	Marginal Bone loss	PPD≤5mm
Absence of BoP/Supuration	Peri-implant health	Case 1	No		
BoP/Supuration but no detectable bone loss	Peri-implant mucositis	Case 2	Yes		
BoP/Supuration and detectable Bone Loss (0.5 mm) exceeding the measurment error	Mild Peri-implantitis	Case 3	Yes		
BoP/Supuration and Bone Loss > 2mm	Moderate/Severe peri-implantitis	Case 4a, Case 4b, case 4c, case 4d	Yes		

CASE 3



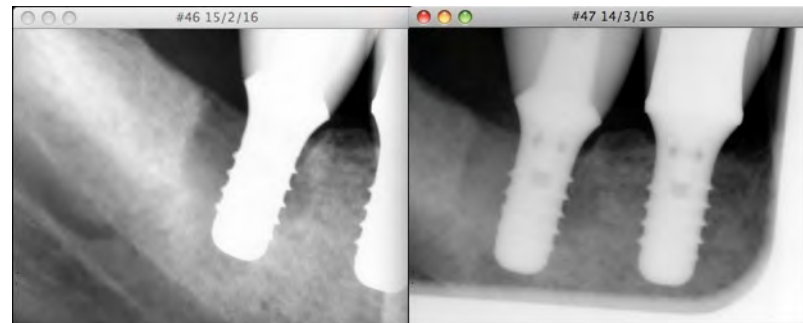
CASO 4B



CASE 4A



CASE 4C



CASE 4D

