E-BOOK

ABCA™
AUGMA BONE CEMENT ACADEMY

Bone Graft Cements
Full Arch Surgery

Augma™ BIOMATERIALS

Contents

OVERVIEW

KEY POINTS & CASE BREAKDOWN

Full Arch Using Bone Graft Cement | Key Points

All-in-One Smart Syringe - Augma presents in a preloaded syringe, ready to be applied to the host site. This allows the grafting workflow of the case to be time saving and efficient.

A Cement – Augma Bone Graft cement is self adherent, thus once properly compacted it will stay in place.

No Membrane – Augma Bone Graft cement is self contained therefore membrane containment is not required.

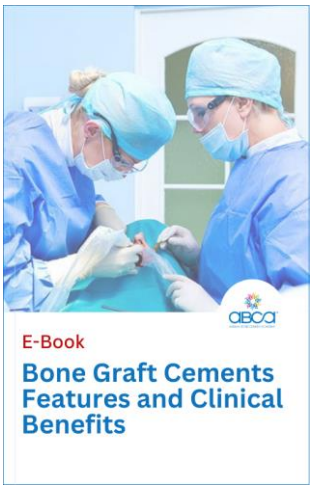
Bioactivity – Biphasic Calcium Sulfate, Augma's key component, has bioactive properties, thus stimulating the host to direct resources to the graft site for bone regeneration.

True Bone Regeneration – Biphasic Calcium Sulfate serves as a scaffold until true bone is formed.

Explore each of these benefits by viewing Augma's Bone Graft Cement – Features & Clinical Benefits E-Book

Including clinical cases, research & histological evidence and instructional videos

Access the E-Book



Graft Application | Step-by-Step

All surgeries in this e-book were performed with Augma Bond Apatite®. Watch the videos below for step-by-step instructions for site preparation, graft application and closure using Bond Apatite®.

Instructional Video
Lateral Augmentation Protocol

Watch

Animated Protocol
Lateral Augmentation
Step-by-Step Instructions

Watch

Augma How-To
Step-by-Step Instructions

Watch

Case Level Breakdown

This e-book contains 17 full arch cases by bone cement expert Dr. José Camelo Ferreira from Portugal. The cases are divided into 4 levels, from minimal to significant grafting volume using Augma Bond Apatite® bone graft cement.

- **Level I | Minimal Grafting Volume –** Socket grafting and gingival enhancement. Full arch cases where you want to reconstruct the sockets without losing vertical and horizontal volume, and at the same time get an enhancement in the keratinized tissue quality.

  For most level I cases, 1-3 Augma Bond Apatite® syringes are required.

- **Level II | Low Grafting Volume -** Full arch rehabilitation cases that include bone defects of the dental sockets without the buccal wall and/or with voluminous cystic cavities, with enhancement of the keratinized tissue.

  For most level II cases, 2-5 Augma Bond Apatite® syringes are required.

- **Level III | Medium Grafting Volume -** Socket grafting, soft tissue enhancement and lateral augmentation.

  For most level 3 cases, 4-6 Augma Bond Apatite® syringes are required.

- **Level IV | High Grafting Volume -** Socket grafting, soft tissue enhancement, lateral augmentation and sinus lift (one side or both).

  For most level IV cases, 9-12 Augma Bond Apatite® syringes are required.

Most cases on this e-book contain additional videos of digital planning, live surgery, and more. Click on ▶ to explore more.

Clinical Cases Per Level

View specific cases by clicking on the case title

Level I | Minimal Grafting Volume

- Mandible Rehabilitation with All-On-Four Technique
- Complete Oral Rehabilitation (Mandible)
- Maxillary Rehabilitation with Locator Abutments
- Bi-Maxillary Rehabilitation with Immediate Load
- Immediate Mandibular All-on-5 with Immediate Load

Level II | Low Grafting Volume

- Two-Stage Mandible Rehabilitation
- Mandible Full Arch Rehabilitation with an Immediate All-on-5 and Immediate Load
- Mandibular Rehabilitation with Replacement of Old Implants and Immediate All-on-4
- Maxillary Rehabilitation with Immediate All-on-4

Level III | Medium Grafting Volume

- Maxilla Rehabilitation with Bone Augmentation and Immediate Load
- Extreme Mandible All-on-4 with Immediate Load
- Maxilla and Mandible Total Rehabilitation

Level IV | High Grafting Volume

- Complete Oral Rehabilitation (Maxilla)
- 2-Phase Total Maxillary Rehabilitation with Bone Reconstruction and an All-on-6
- Total Maxillary Rehabilitation in Two Phases with Bone Reconstruction and All-on-6 (II)
- Total Maxillary Rehabilitation in 2 Phases with Bone Reconstruction and an All-on-6 (III)
- Zygomatic Surgery with Bone Augmentation and Immediate Load

LEVEL I | MINIMAL GRAFTING VOLUME

SOCKET GRAFTING AND GINGIVAL ENHANCEMENT

LEVEL I | Minimal Grafting Volume

Characterization

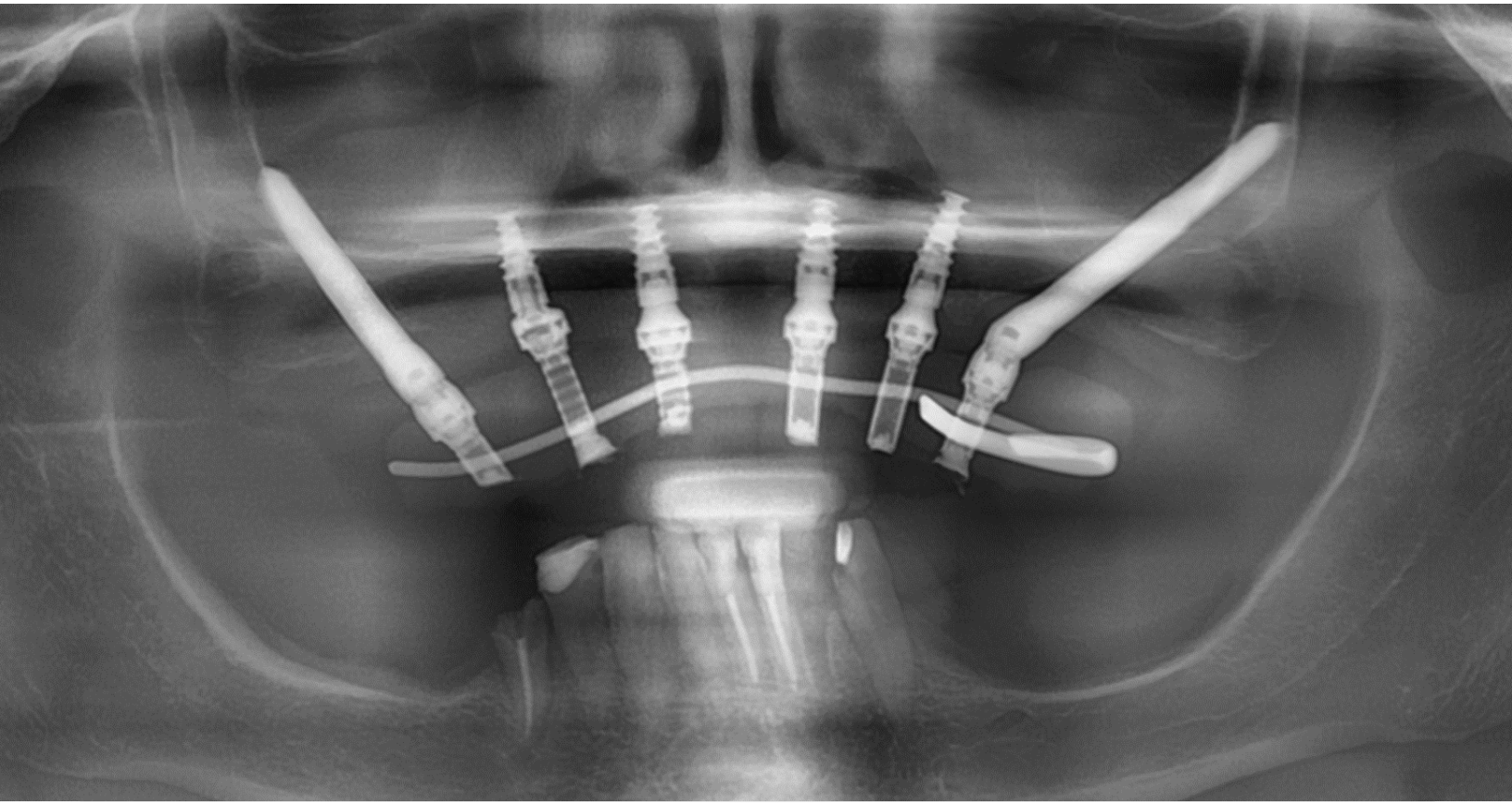
Bone defects that are simple dental sockets without loss of any of the 4 bony walls, or the existence of large cyst cavities. If during the extraction of the teeth there is a fracture of the socket wall, usually the buccal, the case becomes a Level II.

For most level I cases, 1-3 Augma Bond Apatite® syringes are required.

LEVEL I, CASE #1 | CASE DESCRIPTION

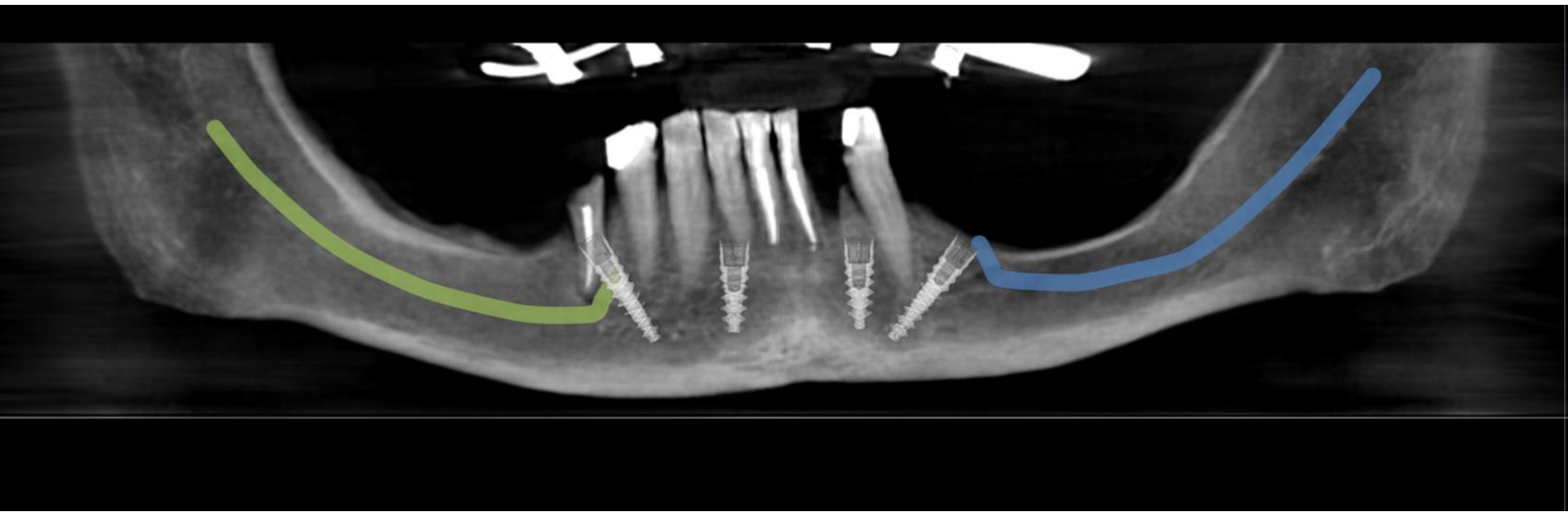
Mandible Rehabilitation with All-On-Four Technique

- The patient is a healthy, 65-year-old female with a fixed prosthesis and 6 remaining teeth in the mandible. She has difficulty chewing and a poor aesthetic.
- The patient does not want to use a removable prosthesis.



Mandible Rehabilitation with All-On-Four Technique

- The treatment plan includes the extraction of 6 teeth, two conventional implants, 2 angled implants, immediate load and bone stabilization.



CLINICAL EVIDENCE

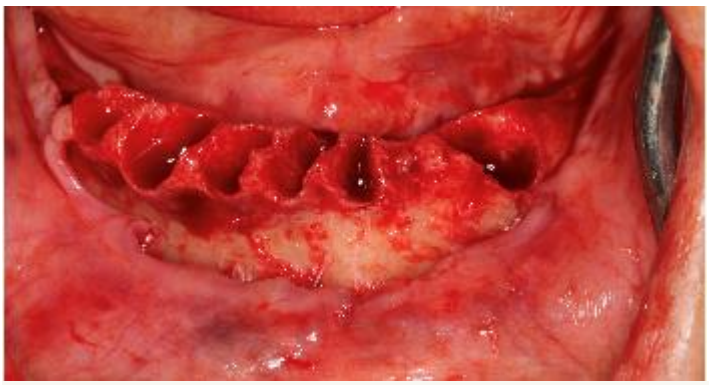
Initial aspect

Initial aspect

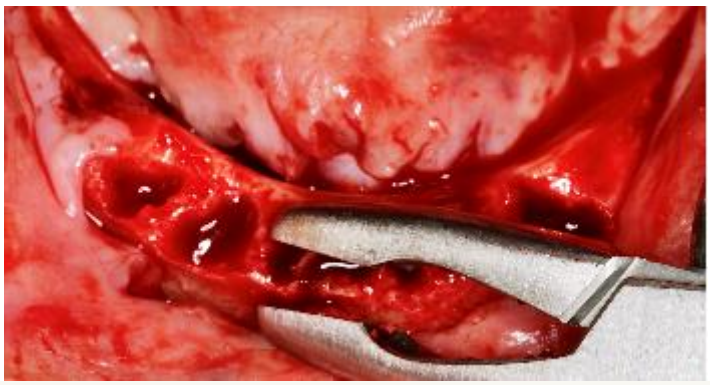
Initial aspect

Extractions

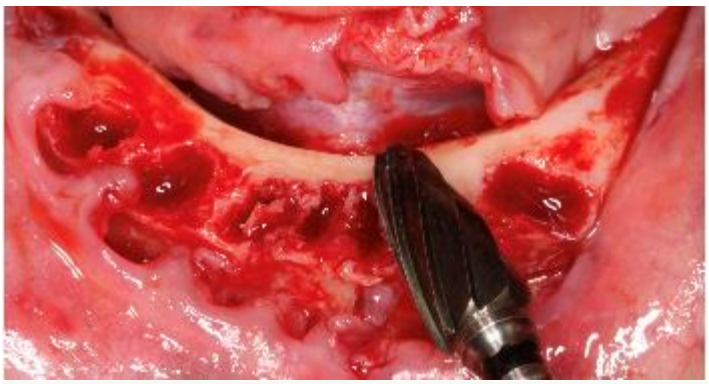
CLINICAL EVIDENCE



After extractions



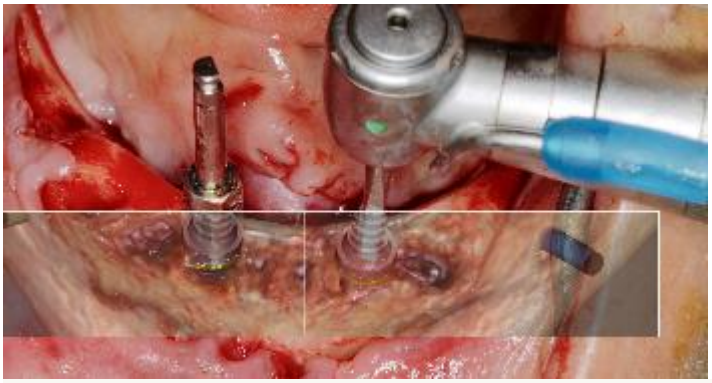
Bone regularization



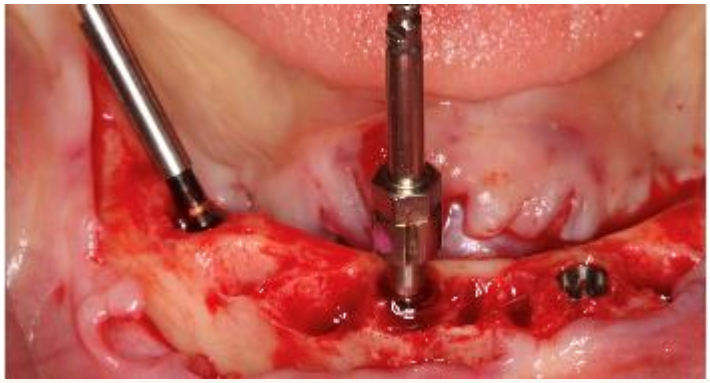
Bone regularization

Placing the parallel implants

CLINICAL EVIDENCE

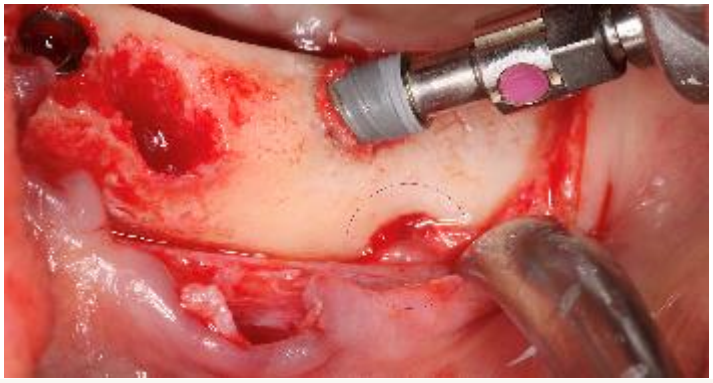


Placing the parallel implants



Placing the 1st angled implant

Placing the 1st angled implant



Insertion of the 2nd angled implant (Exposure of the dental nerve)

CLINICAL EVIDENCE

4 implants in place

Bone grafting with Augma Bond Apatite®

Bone grafting with Augma Bond Apatite®

Suture under tension.

Keeping all the soft tissue.

CLINICAL EVIDENCE

Suture under tension

Temporary prosthesis

Temporary prosthesis

Temporary prosthesis

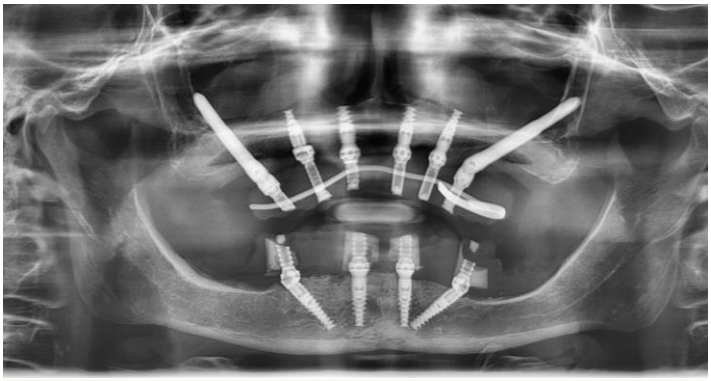
CLINICAL EVIDENCE

2-month post-op

Multi-unit abutments

2-month post-op

Temporary prosthesis



Radiographic appearance 2-month post-op

CLINICAL EVIDENCE

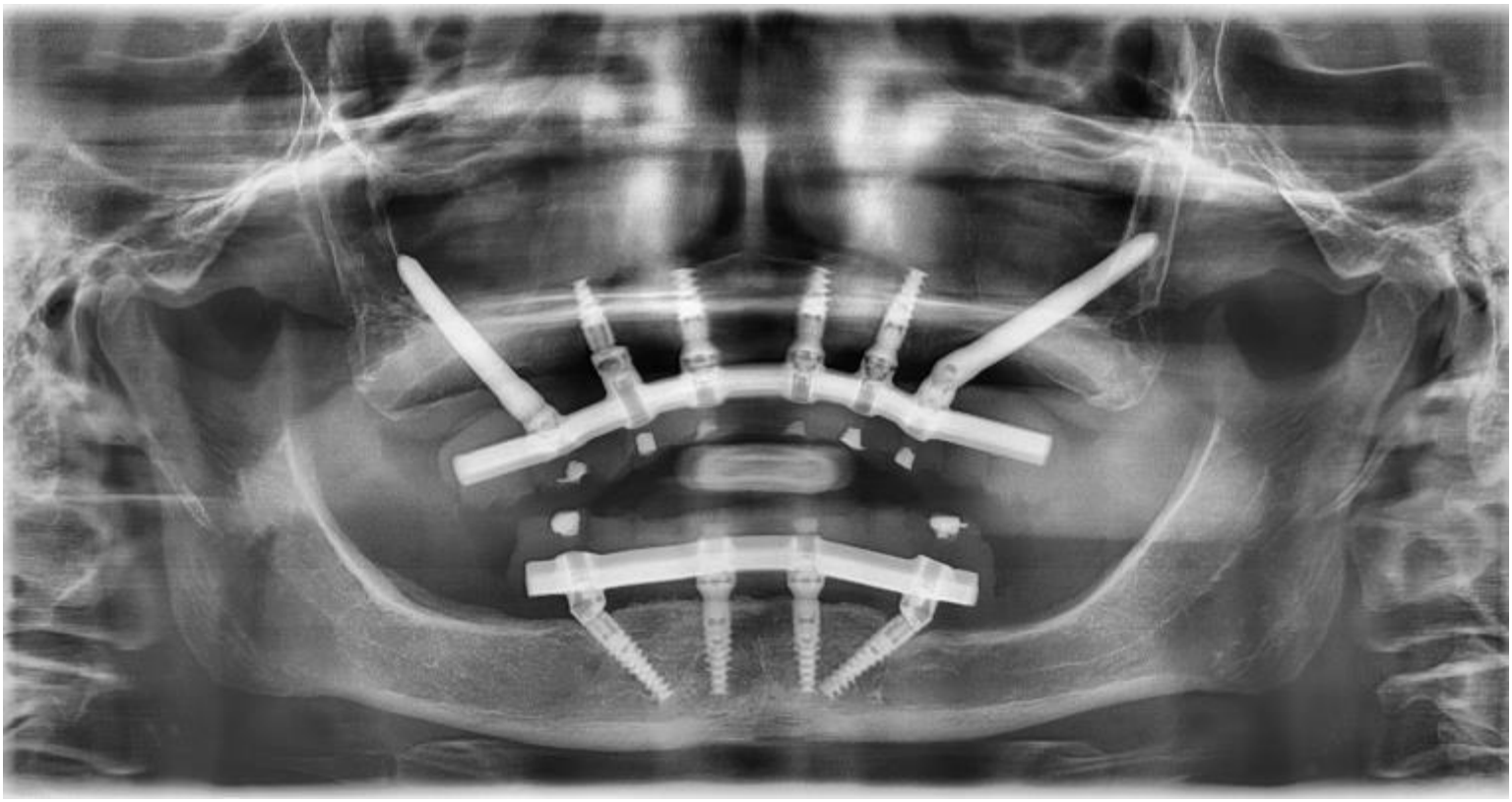
2.5-year follow up

2.5-year follow up

2.5-year follow up

2.5-year follow up

CLINICAL EVIDENCE



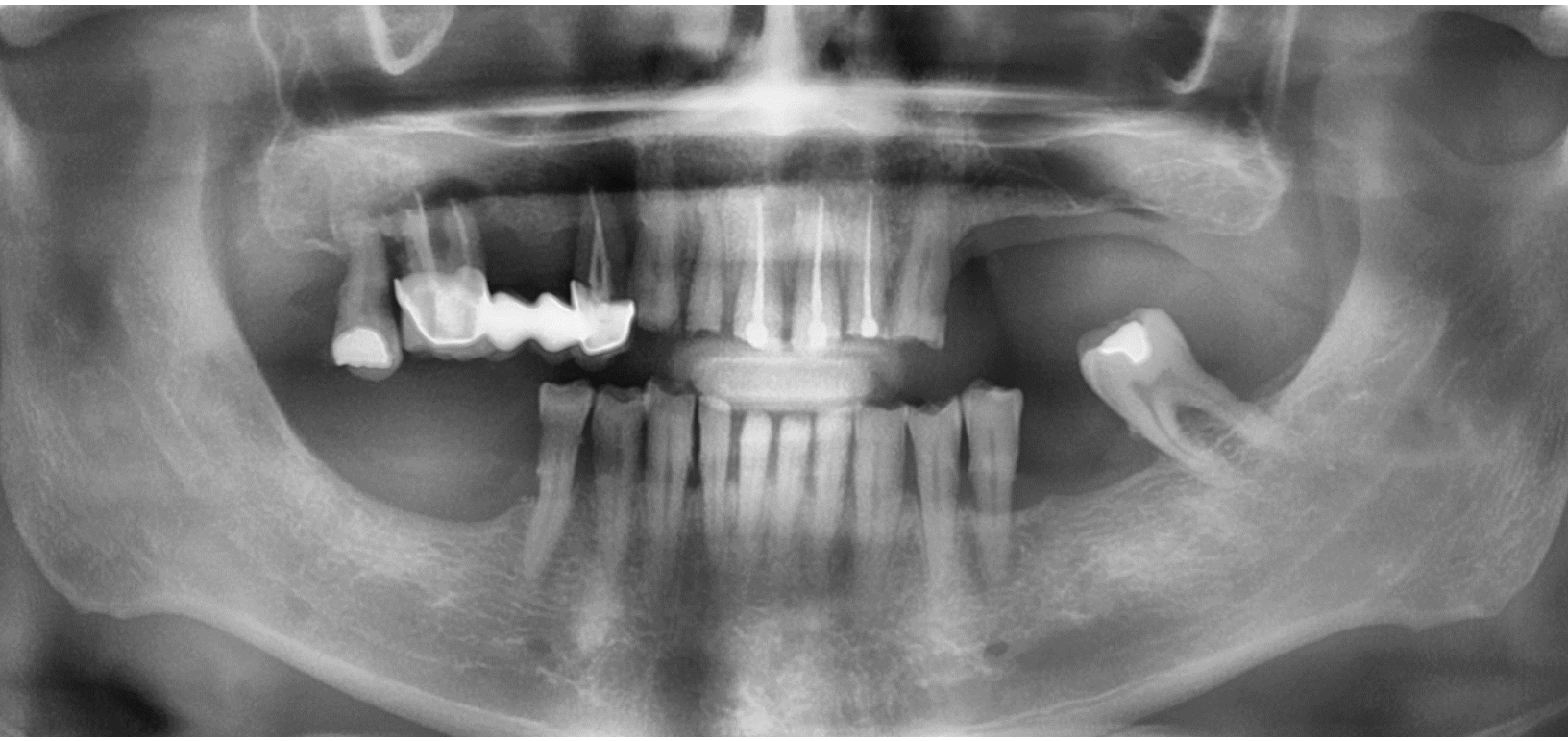
Radiographic appearance - 2.5-year follow up

Watch videos for this case

LEVEL I, CASE #2 | CASE DESCRIPTION

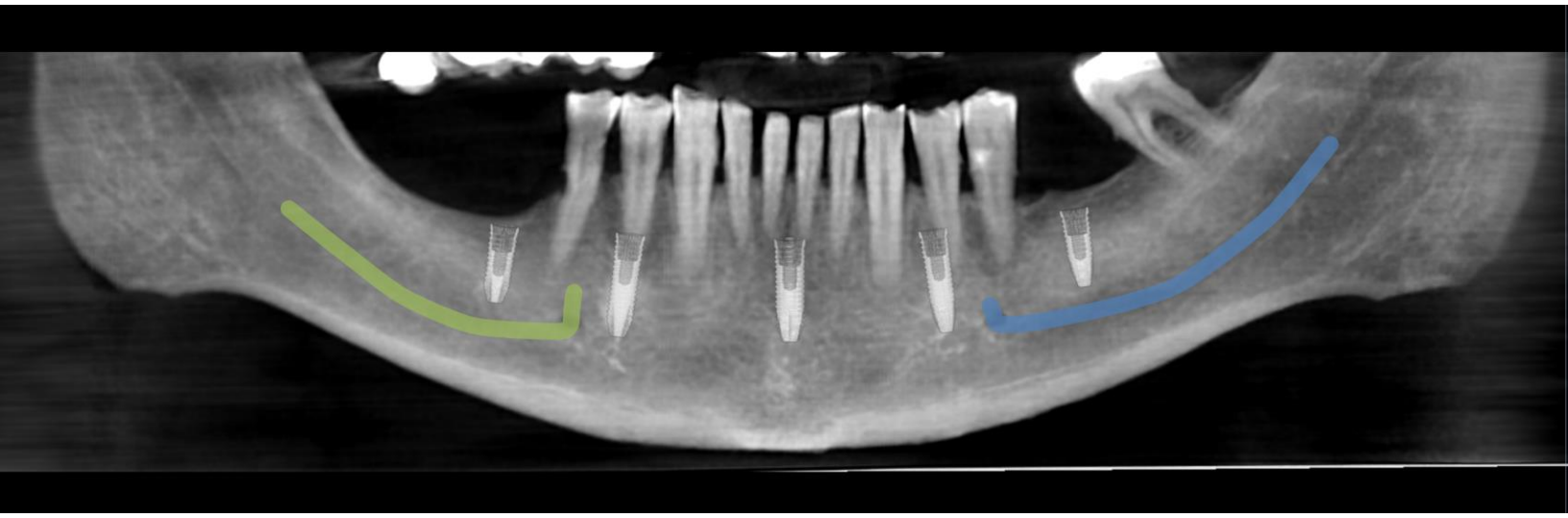
Complete Oral Rehabilitation (Mandible)

- The patient presented with movement of the 1st quadrant bridge and difficulty chewing.
- They showed extreme tooth wear with nerve exposure.



Complete Oral Rehabilitation (Mandible)

- The treatment plan included extraction of all mandible and maxillary teeth, and the placement of 5 implants in the mandible with immediate load.
- Bone defects of the mandible and maxilla are repaired, a bilateral sinus lift is performed, and maxillary implants are placed 6 months after the sinus lift.



CLINICAL EVIDENCE

Initial aspect

Initial aspect

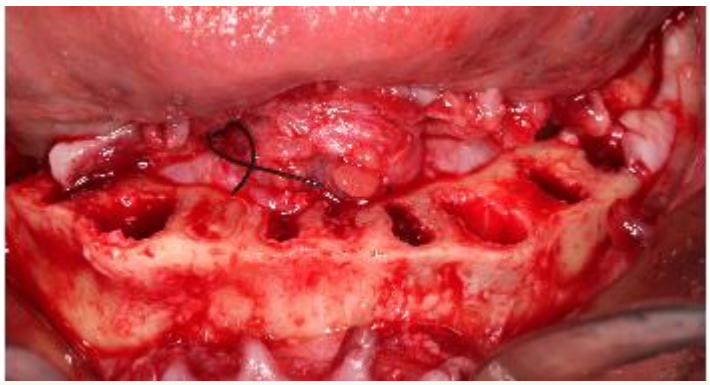
Mandible extractions

Mandible surgery

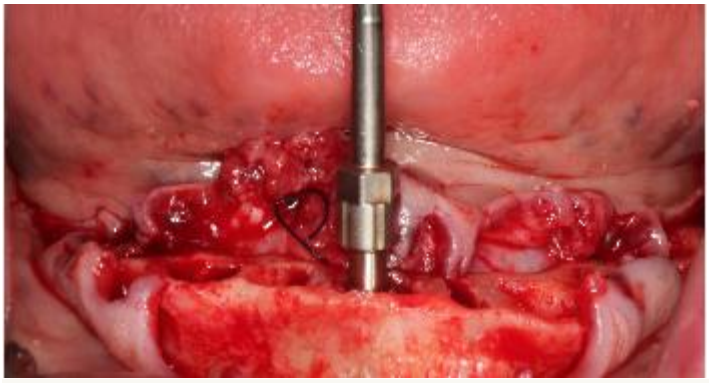
Opening of the flap

CLINICAL EVIDENCE

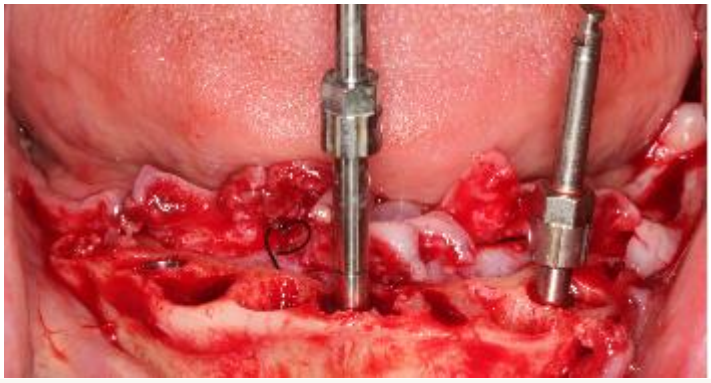
Harvesting autogenous bone



Bone platform regularization



Implant insertion

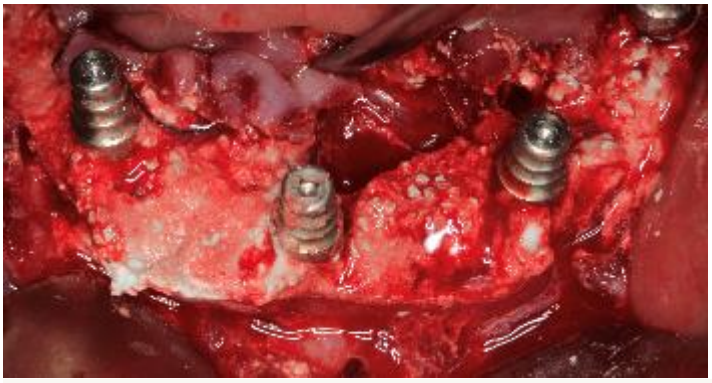


Implant insertion

CLINICAL EVIDENCE

5 implant view

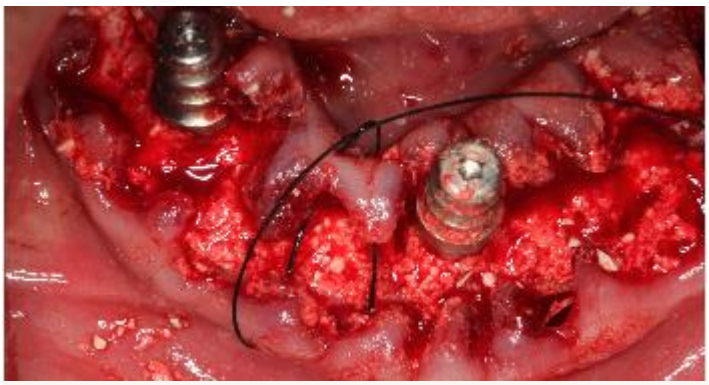
Multi-unit abutments



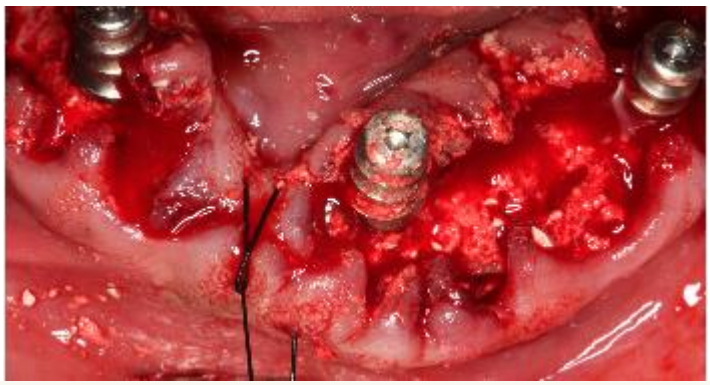
Augma Bond Apatite®

Augma Bond Apatite®

CLINICAL EVIDENCE



Suture under tension



Suture under tension

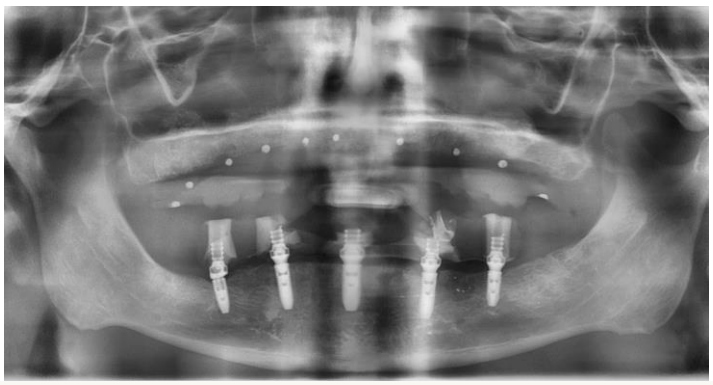
The flap is stretched for closure, (no periosteal releasing incision and no tension free flap).

Suture – final aspect

Prosthodontics post-op aspect.

CLINICAL EVIDENCE

Panoramic X-ray immediate post-op

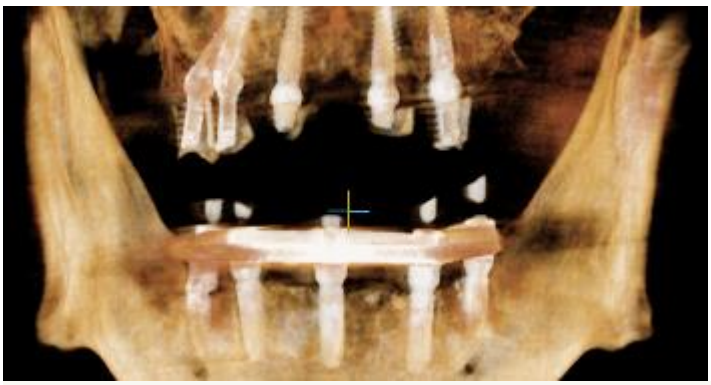


Panoramic X-ray 6 months post-op

Clinical appearance 1-year post-op.

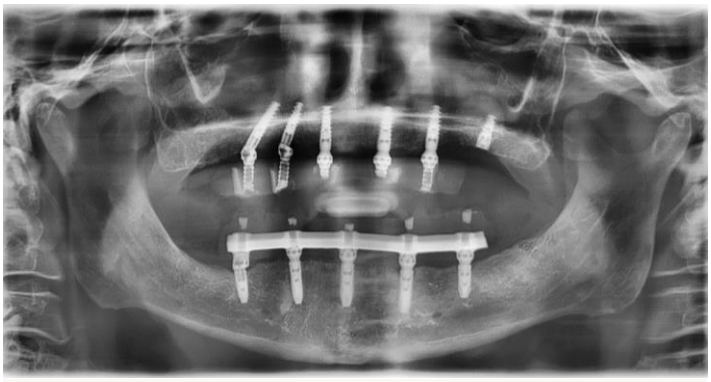
Prosthesis in place 1-year post-op.

CLINICAL EVIDENCE



1-year post-op

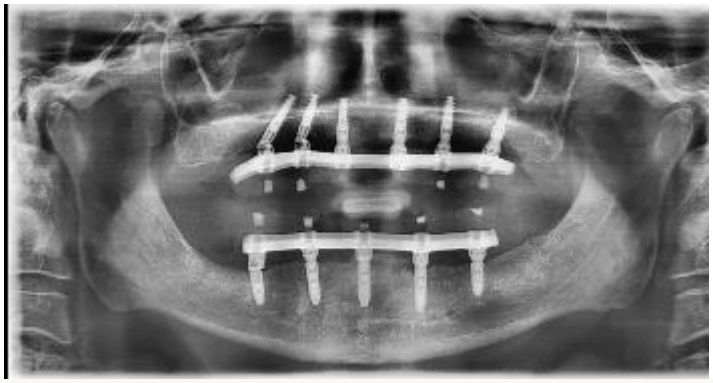
1-year post-op



Panoramic X-ray 1-year post-op.

CLINICAL EVIDENCE

2-year follow up



2-year follow up

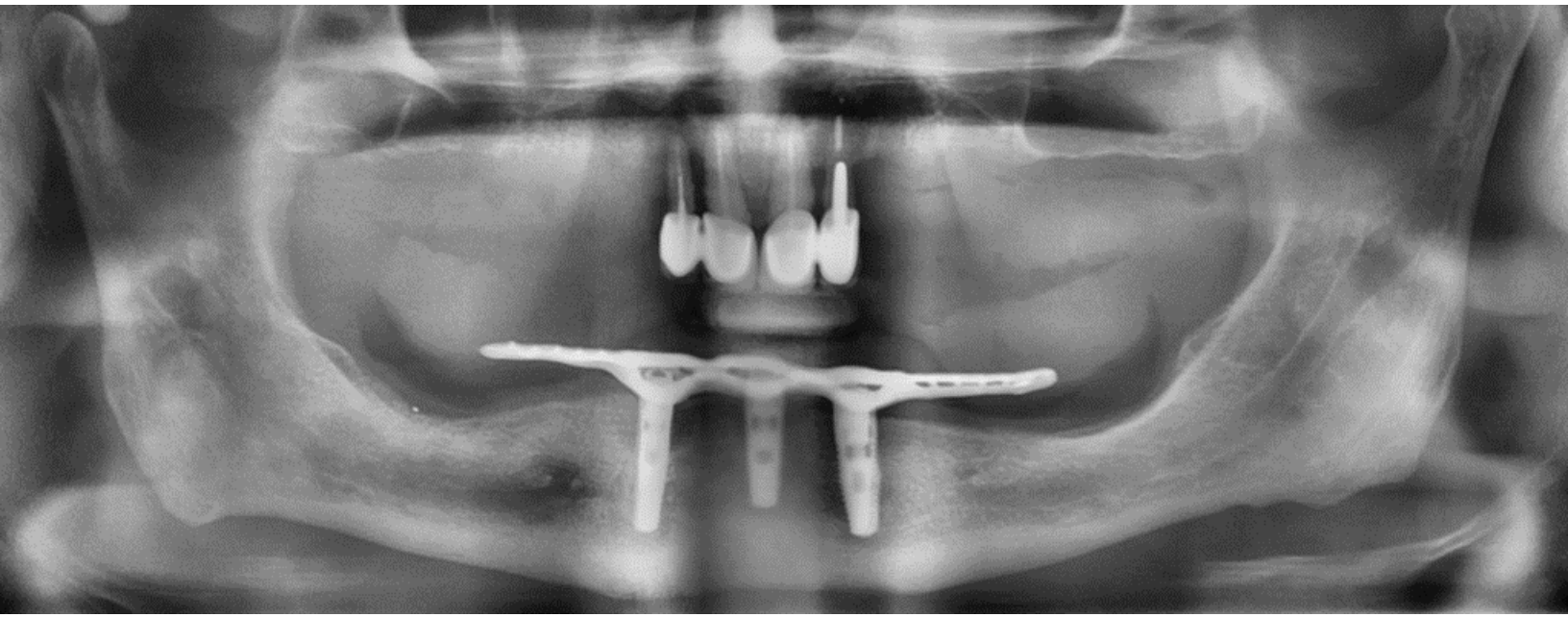
3-year follow up

Watch videos for this case

LEVEL I, CASE #3 | CASE DESCRIPTION

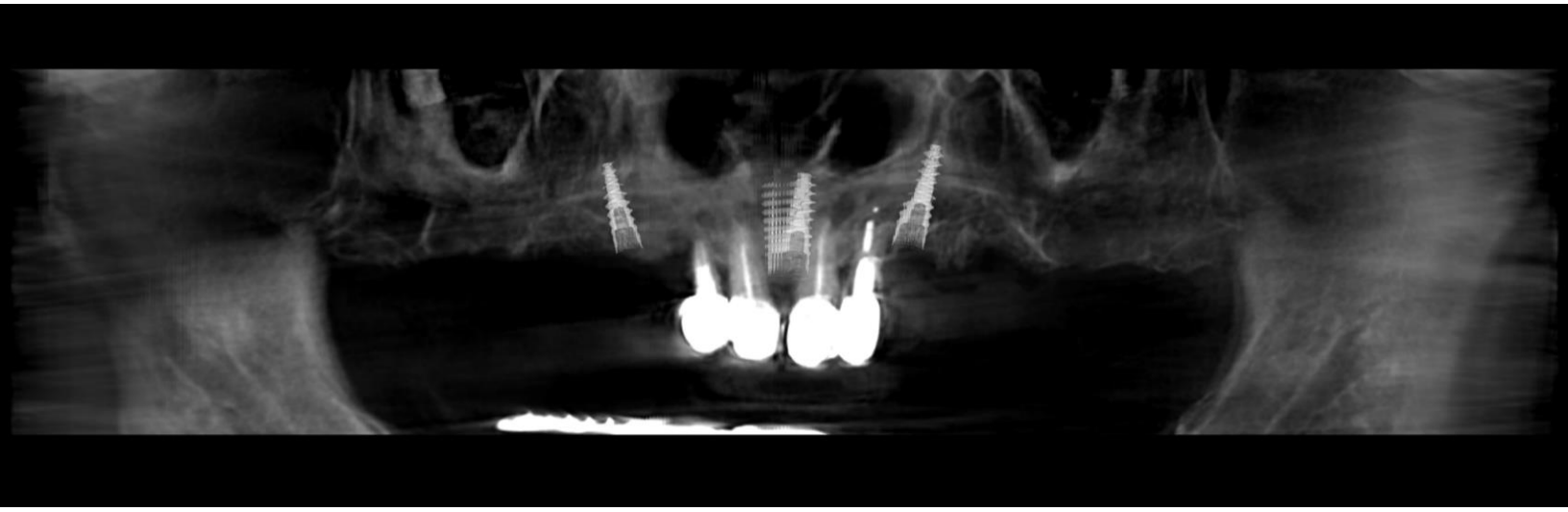
Maxillary Rehabilitation with Locator Abutments

- The patient presented with a cyst in their 4 remaining teeth, dental mobility and a lack of teeth for chewing.
- Poor aesthetics.

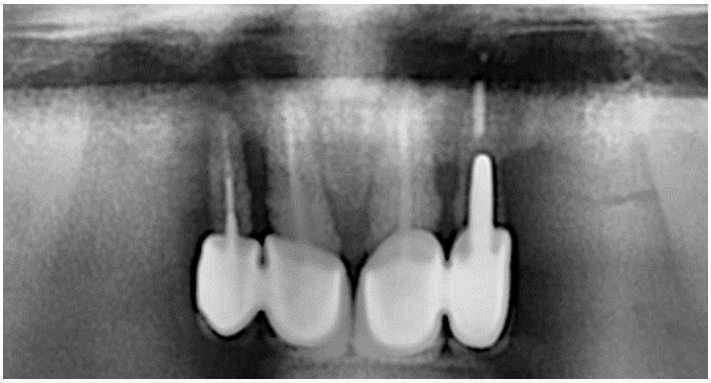


Maxillary Rehabilitation with Locator Abutments

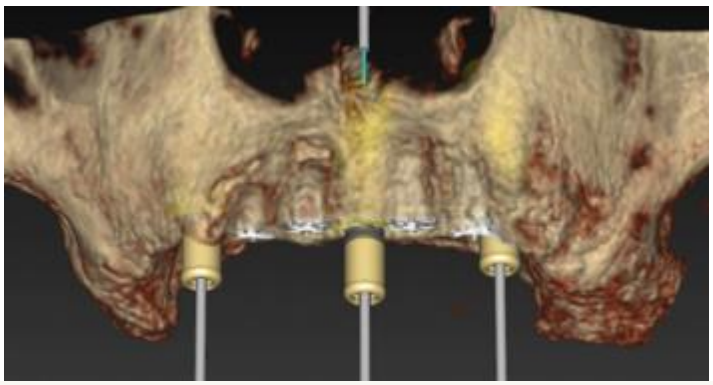
- The treatment plan includes the extraction of the 4 remaining teeth and cyst removal. Three implants are placed along with reconstruction and regularization of maxillary bone defects.
- Rehabilitation is done with a temporary removable prosthesis.
- Three locator abutments and the fixation of the temporary removable prosthesis is placed 6 months post-op.
- Construction and adaptation of a final skeletal prosthesis.



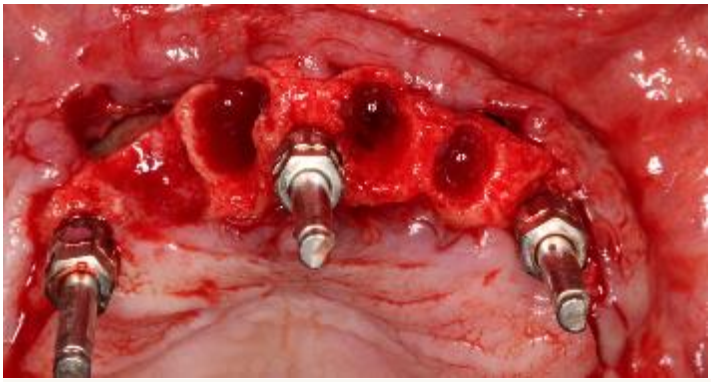
CLINICAL EVIDENCE



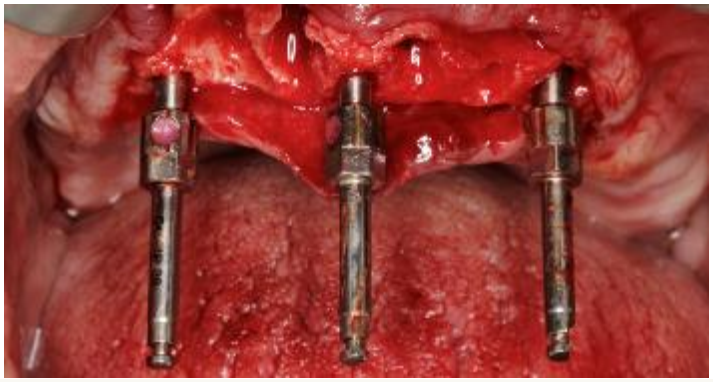
Initial radiographic aspect



Planning



Placement of 3 post extraction implants.



Placement of the 3 parallel implants.

CLINICAL EVIDENCE

Augma Bond Apatite®

Augma Bond Apatite®

The flap is stretched for closure under tension and sutured.

Sutures

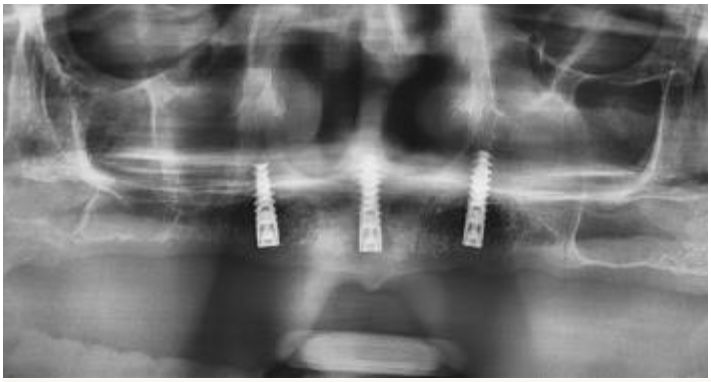
CLINICAL EVIDENCE

Prosthodontics

Provisional removable prothesis

Prosthodontics

Provisional removable prothesis



Immediate post-op X-ray

Clinical appearance 3-month post-op

CLINICAL EVIDENCE

Clinical appearance 6 months post-op

Implant exposure

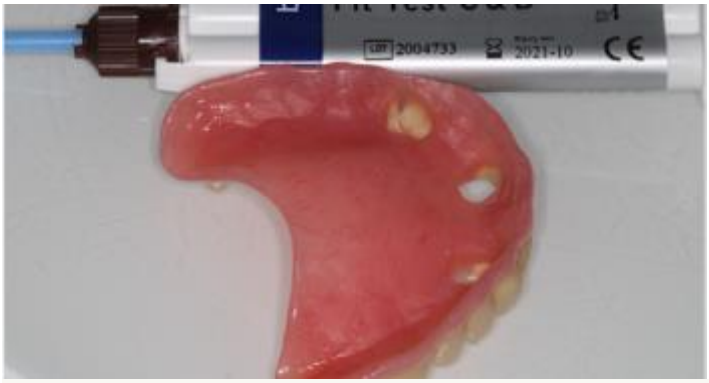
Mechanical surgical punch

Implant exposure

Placement of the locators

3 locator abutments in place

CLINICAL EVIDENCE



Prothesis adaptation

Prothesis adaptation

Locator female placement

CLINICAL EVIDENCE

Adapted prothesis

Adapted prothesis

Prosthodontics

Removable prosthesis adaptation

CLINICAL EVIDENCE

Prosthodontics

Final skeletal prosthesis

Prosthodontics

Final skeletal prosthesis

Prosthodontics

Final skeletal prosthesis

Prosthodontics

Final skeletal prosthesis

CLINICAL EVIDENCE

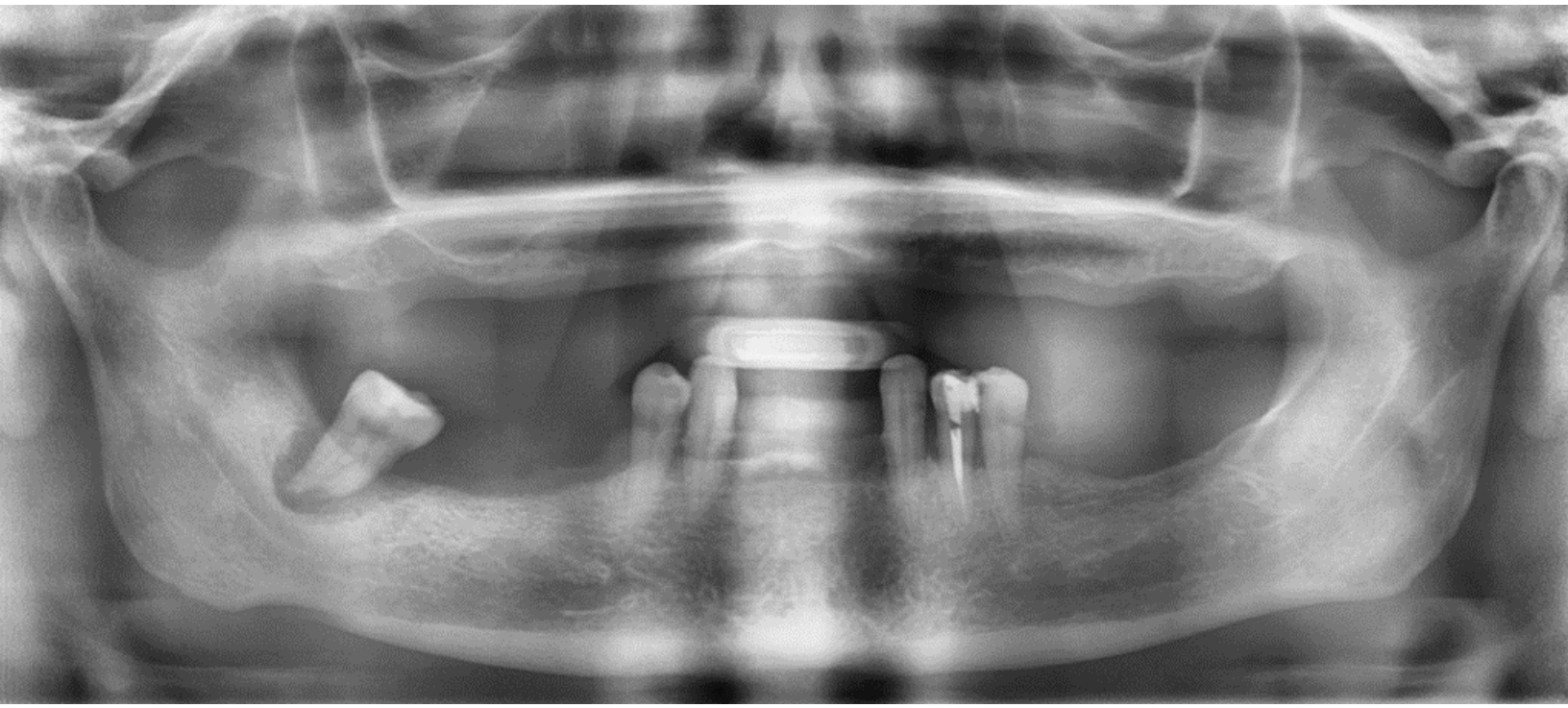
Prosthodontics – final aspect

Watch videos for this case

LEVEL I, CASE #4 | CASE DESCRIPTION

Bi-Maxillary Rehabilitation with Immediate Load

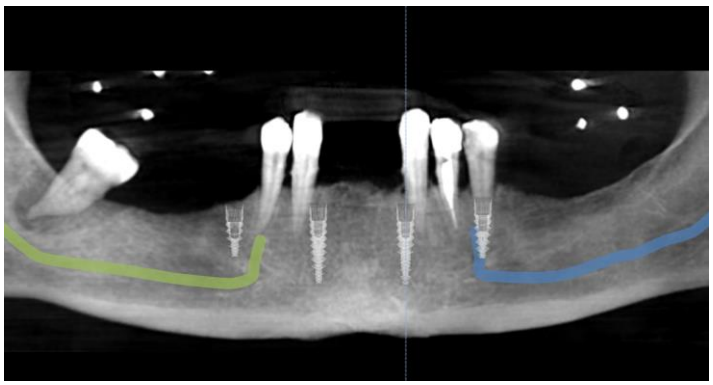
- The patient had no maxillary teeth and very few teeth left in the mandible.
- The patient also had a large periodontal lesion on tooth #48 (32). The patient had a very difficult time chewing, and she wanted to laugh freely for the first time in many years and increase her self-esteem.
- She also wanted to throw away the uncomfortable and unsightly old acrylic prostheses.



LEVEL I, CASE #4 | TREATMENT PLAN

Bi-Maxillary Rehabilitation with Immediate Load

- The maxillary surgical guide is made based on the old removable prosthesis.
- 5 implants are placed using semi-guided surgery (for the 2.0mm drill). Despite the guided surgery, a full thickness flap is opened dividing the keratinized tissue into buccal and palatal. No surgical releases are performed. Grafting is then done with bone cement to enhance the quality of the soft tissue around the implants and to augment the keratinized gingiva. An immediate temporary hybrid prosthesis is placed after suturing.
- Extraction of the 6 remaining teeth in the mandible is followed by meticulous cleaning of the sockets and regularization of the bony platform.
- Placement of 4 implants in the mandible (All-on-4).
- Socket grafting of all sockets.
- Immediate placement of a temporary hybrid prosthesis over the 4 implants.
- 6 months later the final Procera Hybrid Prosthesis is made and placed on both arches.



CLINICAL EVIDENCE

Intraoral view

Intraoral view

Intraoral view

Intraoral view

CLINICAL EVIDENCE

Intraoral view

Guided surgery in the maxilla

Guided surgery

Opening the surgical flap

CLINICAL EVIDENCE

Augma Bond Apatite®

Sutures

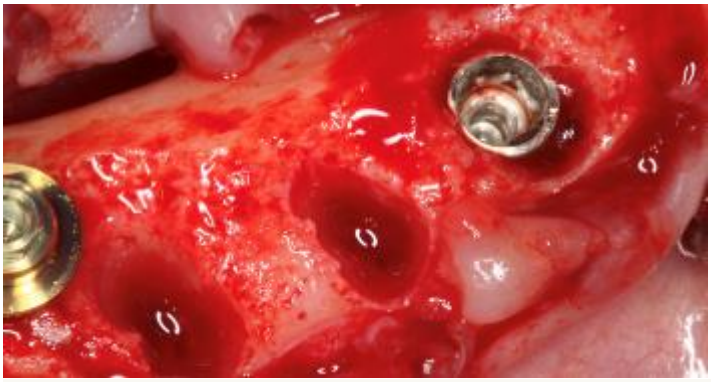
Extractions in the mandible

Flap opening

CLINICAL EVIDENCE

4 implants

Locator abutments



Bone deficiency aspect

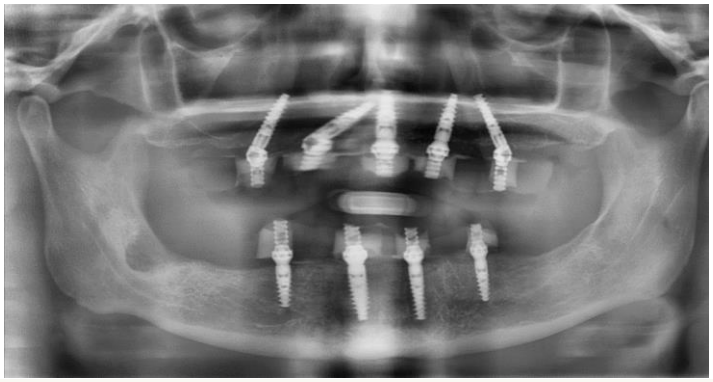
Augma Bond Apatite®

CLINICAL EVIDENCE

Sutures

Temporary abutments

Provisional hybrids



Immediate post-op X-ray

CLINICAL EVIDENCE

2-week post-op

2-week post-op

6-month post-op

6-month post-op

CLINICAL EVIDENCE

6-month post-op

Final aspect

Final aspect

Final aspect

CLINICAL EVIDENCE

Final prosthesis

Final prosthesis

Before

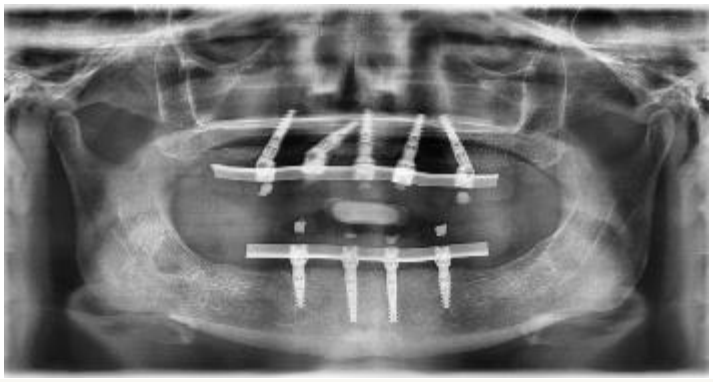
With the final prosthesis

CLINICAL EVIDENCE

2-year follow up

2-year follow up

2-year follow up



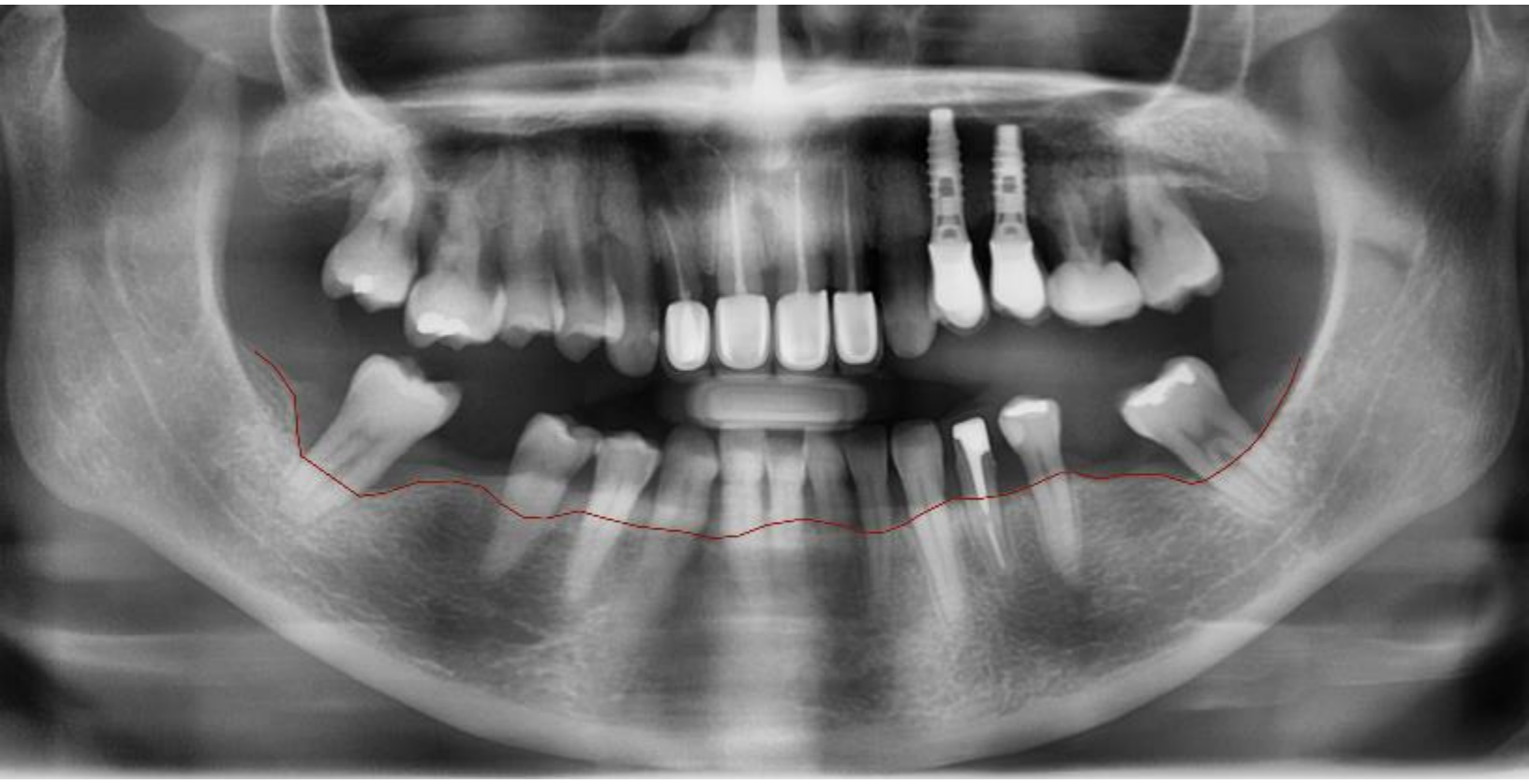
Radiographic appearance - 2-year follow up

Watch videos for this case

LEVEL I, CASE #5 | CASE DESCRIPTION

Immediate Mandibular All-on-5 with Immediate Load

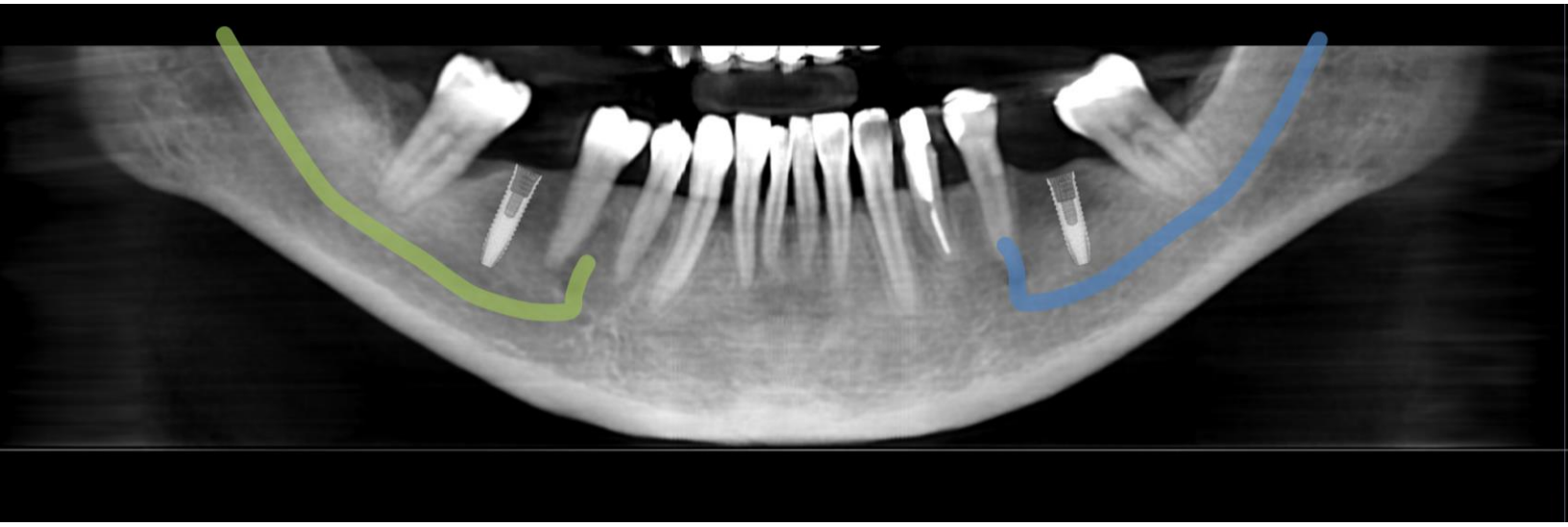
- The patient is a healthy, 45-year-old female. She presented with mandibular periodontitis, which was treated but left her with high root exposure and dental mobility.
- The patient is embarrassed to smile.
- The 2 posterior implants were already in place.



LEVEL I, CASE #5 | TREATMENT PLAN

Immediate Mandibular All-on-5 with Immediate Load

- The treatment plan includes the extraction of all mandibular teeth, regularization of the bony platform and 5 implants with immediate load.
- 4 months later a hybrid prosthesis is placed.



CLINICAL EVIDENCE

Initial aspect

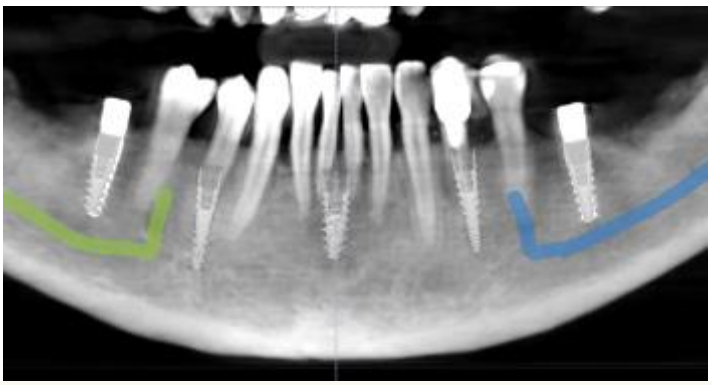
Intraoral appearance

Photographic evaluation

Photographic evaluation

CLINICAL EVIDENCE

Photographic evaluation

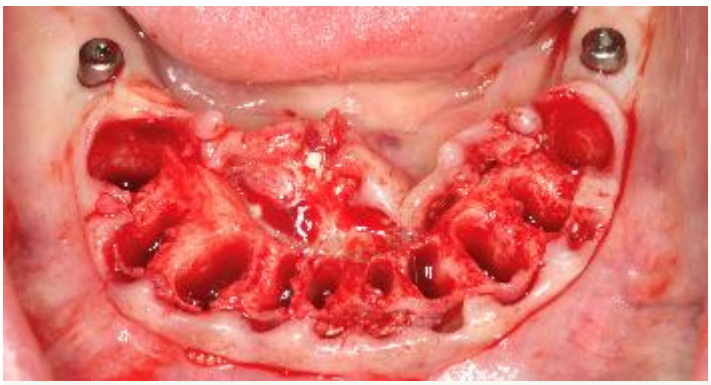


Planning

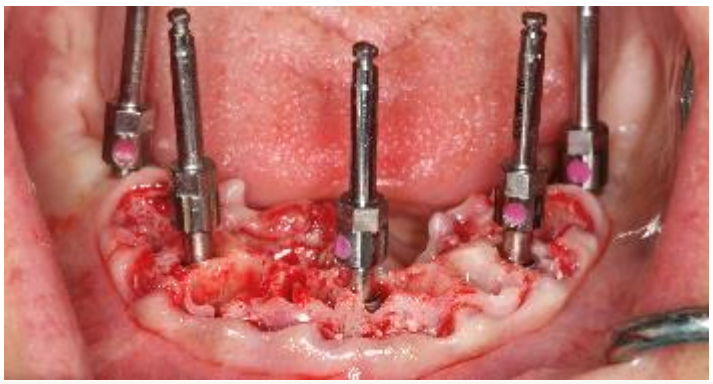
Intraoral appearance

Extractions

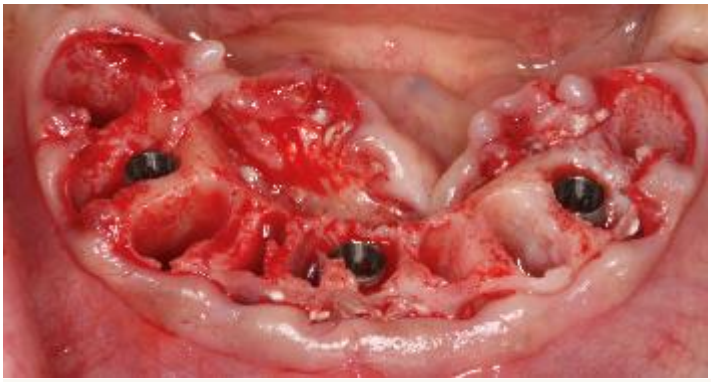
CLINICAL EVIDENCE



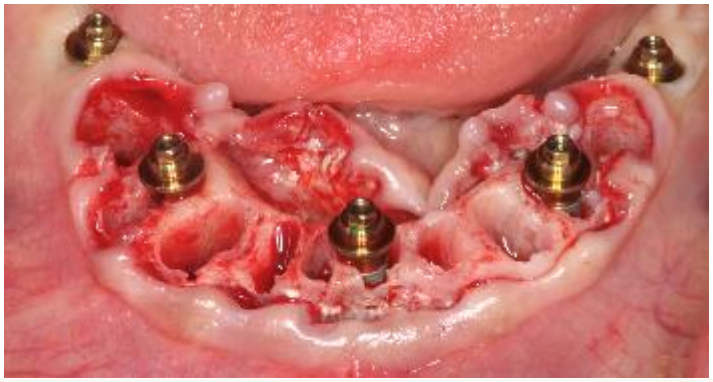
Minimal flap opening



Placement of the 3 anterior implants



5 implants in place



Multi-unit abutments

CLINICAL EVIDENCE

Intraoral aspect after implant placement.

Augma Bond Apatite®

Augma Bond Apatite®

Sutures

CLINICAL EVIDENCE

Temporary hybrid prosthesis

Immediate post-op

Immediate post-op radiography

CLINICAL EVIDENCE

2-week post-op

2-week post-op

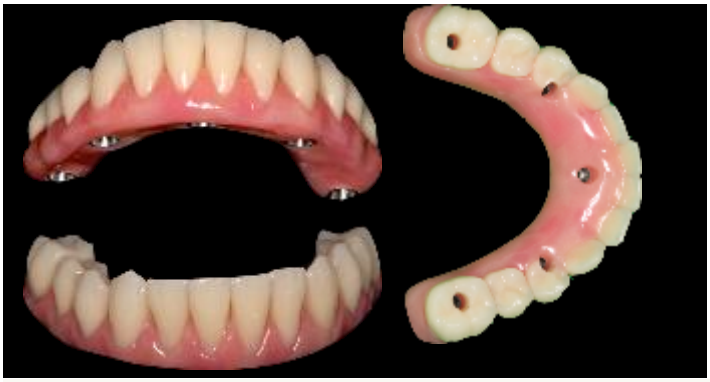
5-month post-op

Ferulization of the implants

CLINICAL EVIDENCE

Final impression

Placement of the final prosthesis

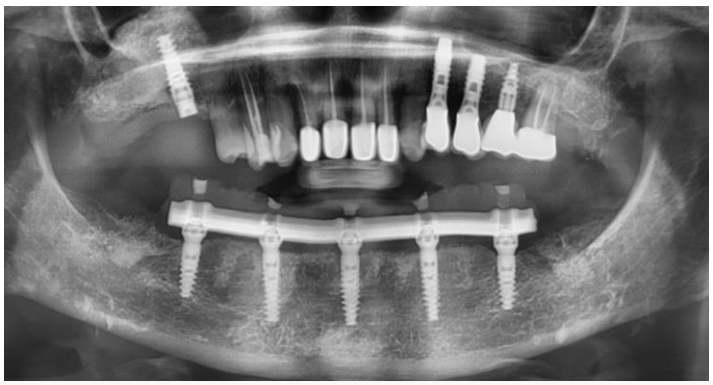


Final prosthesis

Final result

CLINICAL EVIDENCE

Final result



Final panoramic image

Before

After

CLINICAL EVIDENCE

1.5-year follow up

1.5-year follow up

Watch videos for this case

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ABCA AUGMA BONE CEMENT ACADEMY | Augma™ BIOMATERIALS

LEVEL II | LOW GRAFTING VOLUME

SOCKETS WITH MODERATE CYSTS OR BONE CAVITIES

LEVEL II | Low Grafting Volume

Characterization

Full arch rehabilitation cases that include bone defects of the dental sockets without the buccal wall and/or with voluminous cystic cavities. If in addition to the absence of part of the buccal bone, there is a large horizontal bone loss, then the procedure fits to level III.

For most level II cases, 2-5 Augma Bond Apatite® syringes are required.

LEVEL II, CASE #1

CASE DESCRIPTION

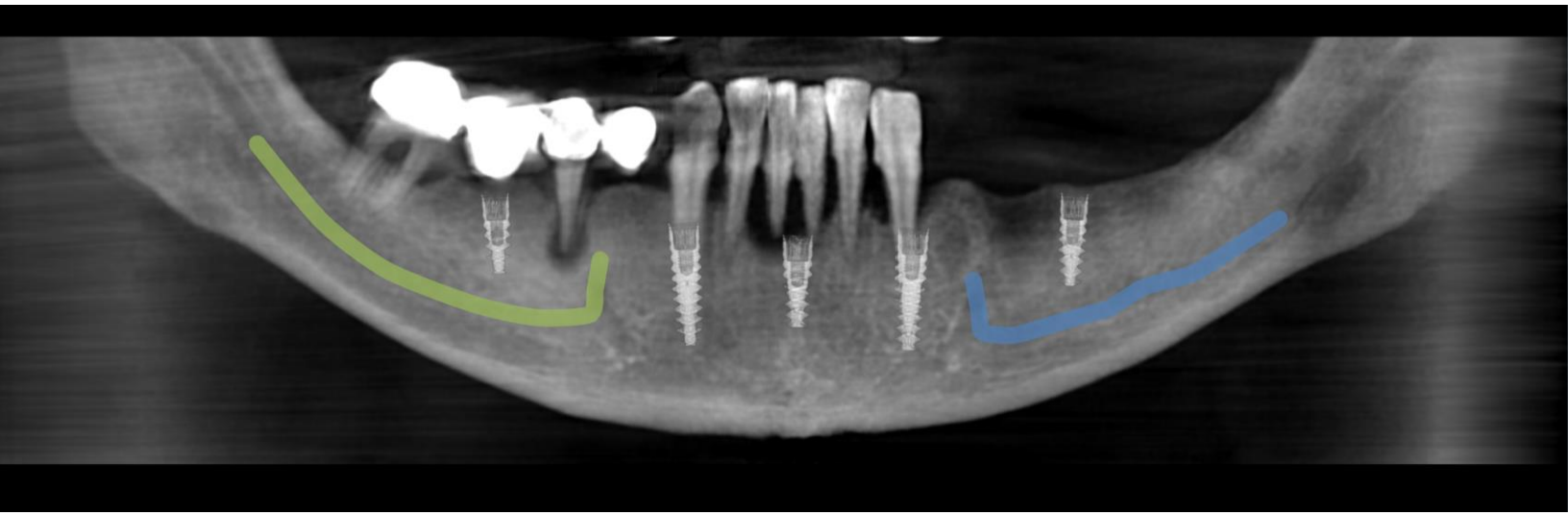
Two-Stage Mandible Rehabilitation

- The patient is a healthy 50-year-old male, presenting with periodontitis.
- All mandibular teeth are in bad condition.
- He has difficulty chewing, loose teeth and poor aesthetics.

LEVEL II, CASE #1 | TREATMENT PLAN

Two-Stage Mandible Rehabilitation

- The surgical plan involves the extraction of 8 teeth, the placement of 2 implants, 2 locator abutments, bone stabilization and a future All-on-4.

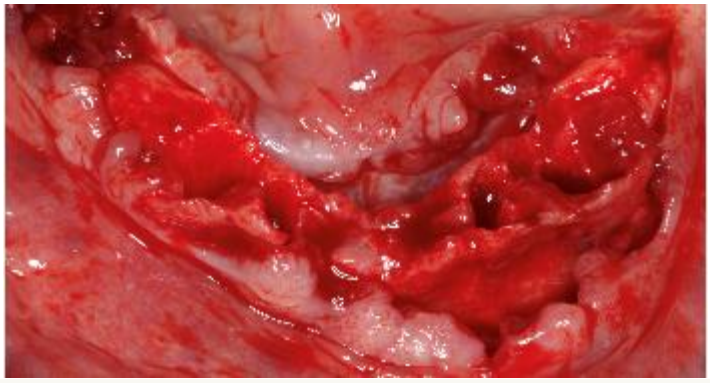


CLINICAL EVIDENCE

Initial intraoral aspect

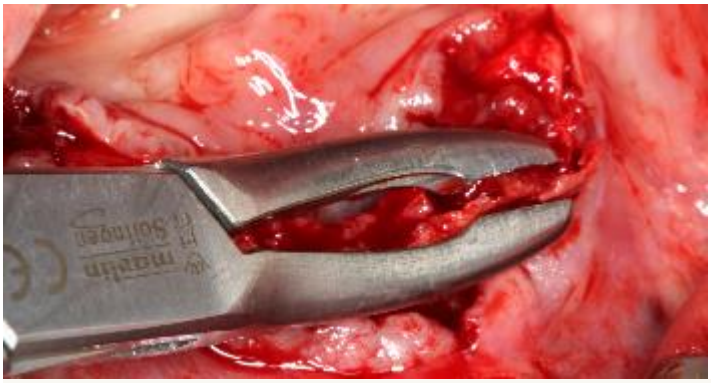
Initial intraoral aspect

Extractions

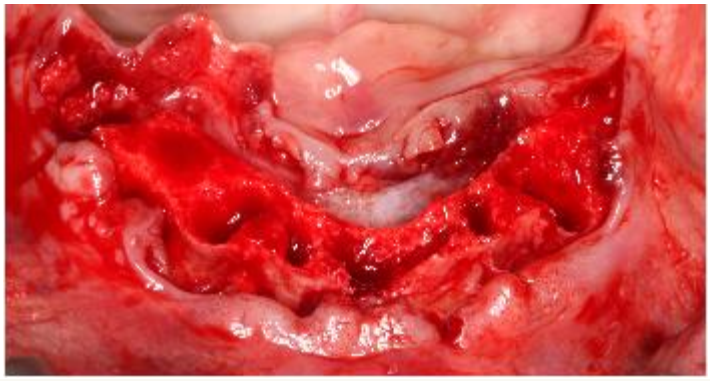


Minimal flap opening

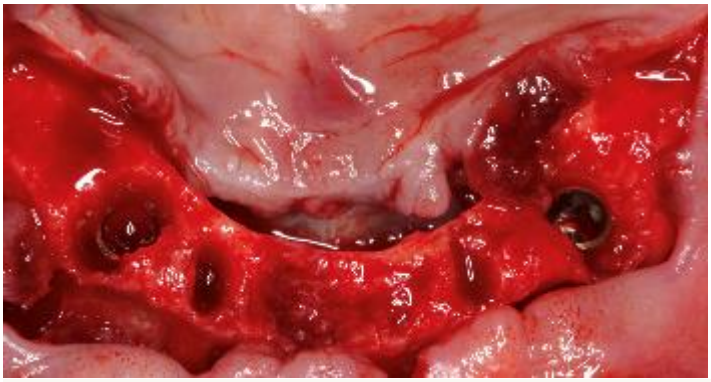
CLINICAL EVIDENCE



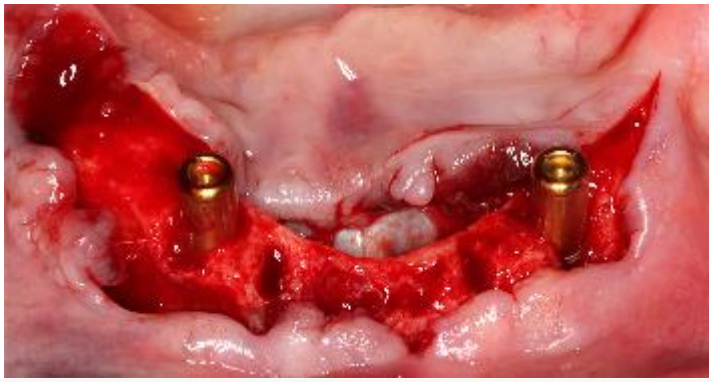
Bone harvesting-regularization



Bone harvesting-regularization

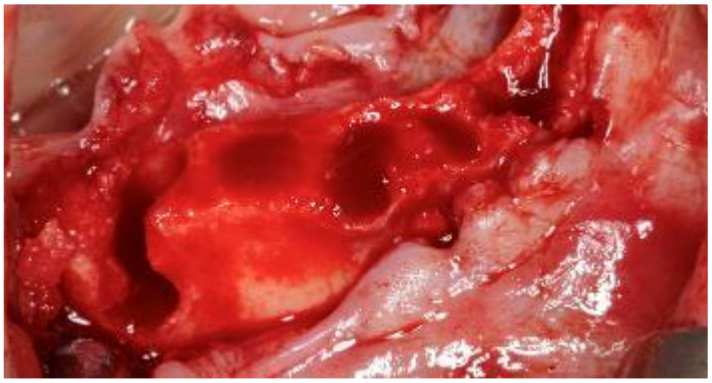


Placing the parallel implants

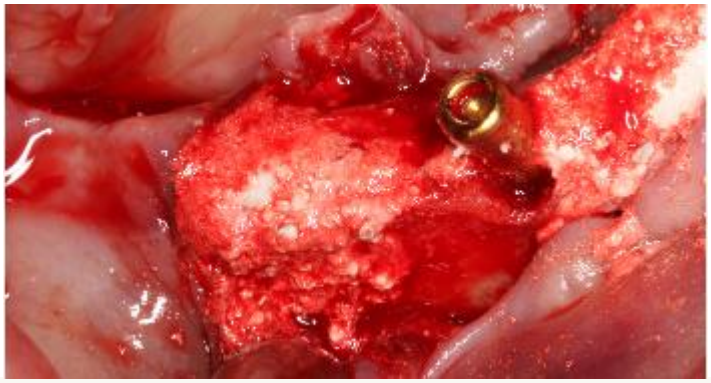


Placing the locator abutments

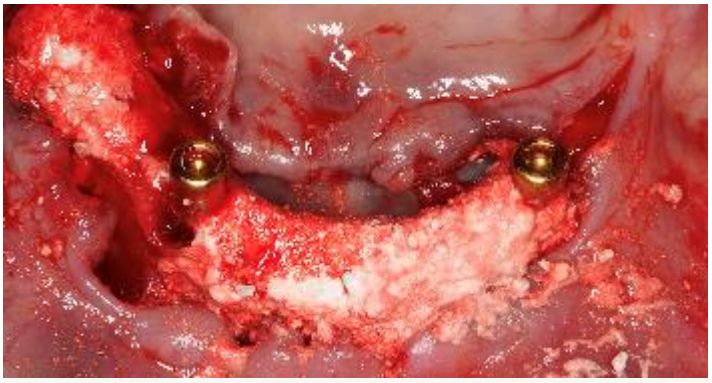
CLINICAL EVIDENCE



Bone defects



Augma Bond Apatite®



Augma Bond Apatite®

Sutures under tension

CLINICAL EVIDENCE

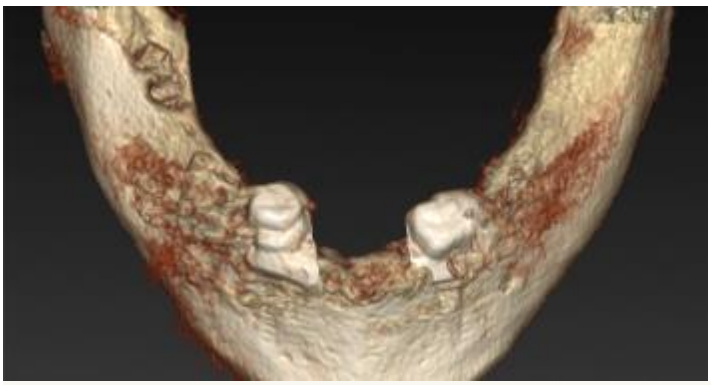
Temporary prosthesis

Temporary prosthesis

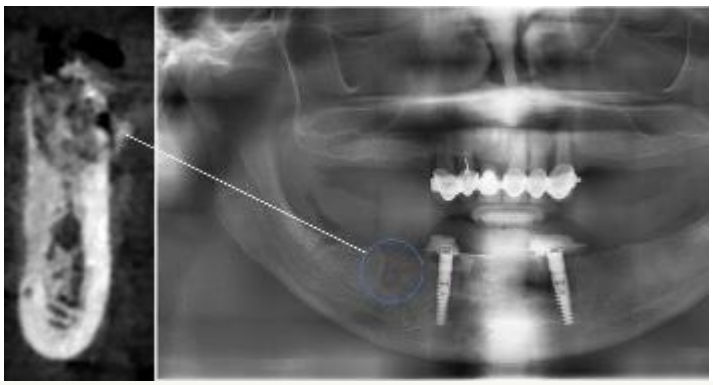
Temporary prosthesis

Immediate post-op

CLINICAL EVIDENCE



Immediate post-op



Immediate post-op

1-week post-op

1-month post-op

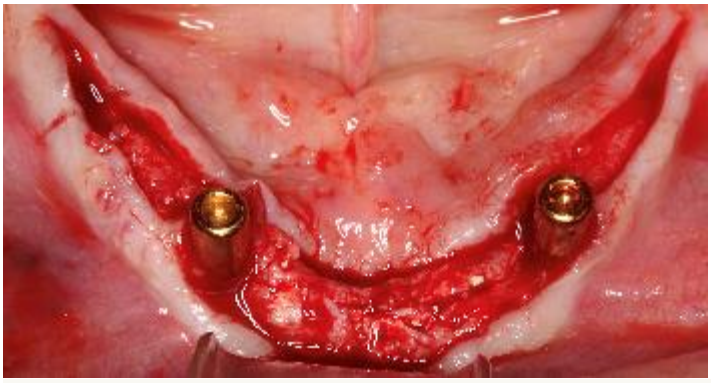
CLINICAL EVIDENCE

3-month post-op

2nd surgery

Turning locators into All-on-5

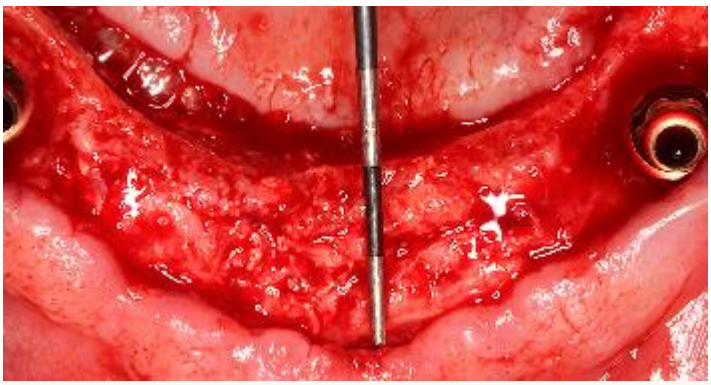
Incision



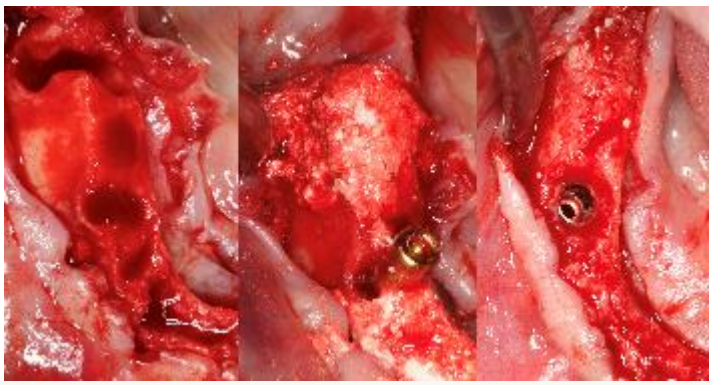
Opening of the flap

Bone regeneration 3 months after grafting with Bond Apatite®

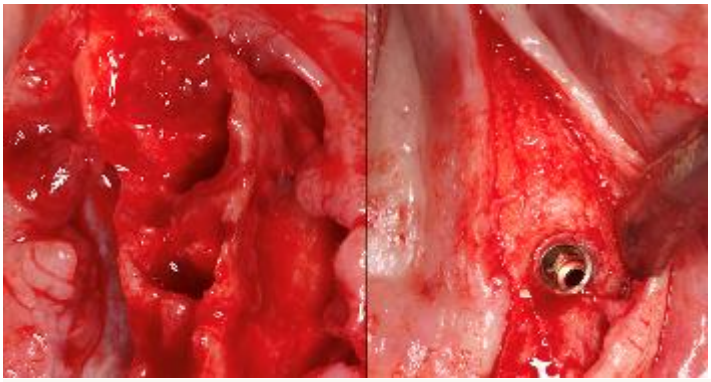
CLINICAL EVIDENCE



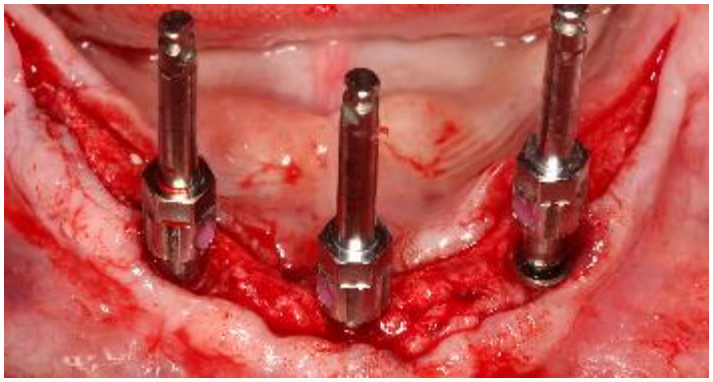
Bone regeneration 3 months after grafting with Bond Apatite®



Comparison of the original state of the bone during the first surgery with the bone regeneration 3 months after grafting with Bond Apatite®

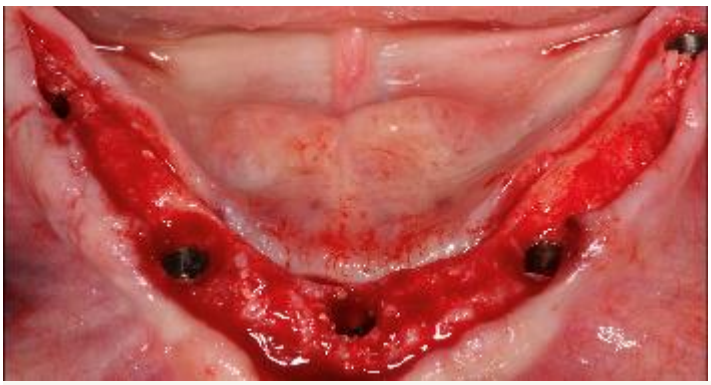


Comparison of the original state of the bone during the first surgery with the bone regeneration 3 months after grafting with Bond Apatite®



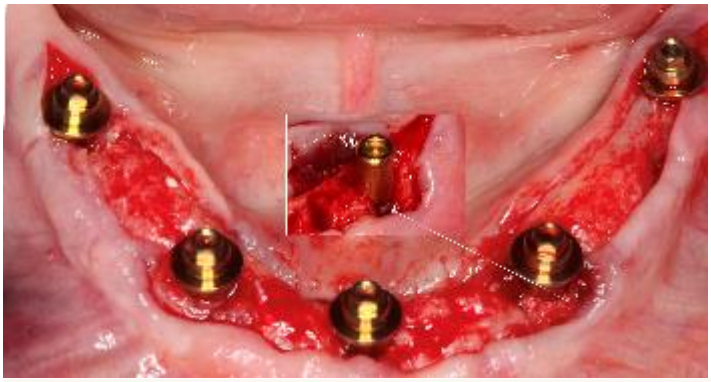
Intraoral aspect with implants in place

CLINICAL EVIDENCE



5 implants in place

Bone mill



Mutli-unit abutments

Temporary abutments

CLINICAL EVIDENCE

Augma Bond Apatite®

Temporary titanium abutments

Mutli-unit abutments

CLINICAL EVIDENCE

Post-op appearance

Post-op appearance

Post-op appearance

Post-op appearance

CLINICAL EVIDENCE

Post-op X-ray

2.5-year follow up

2.5-year follow up

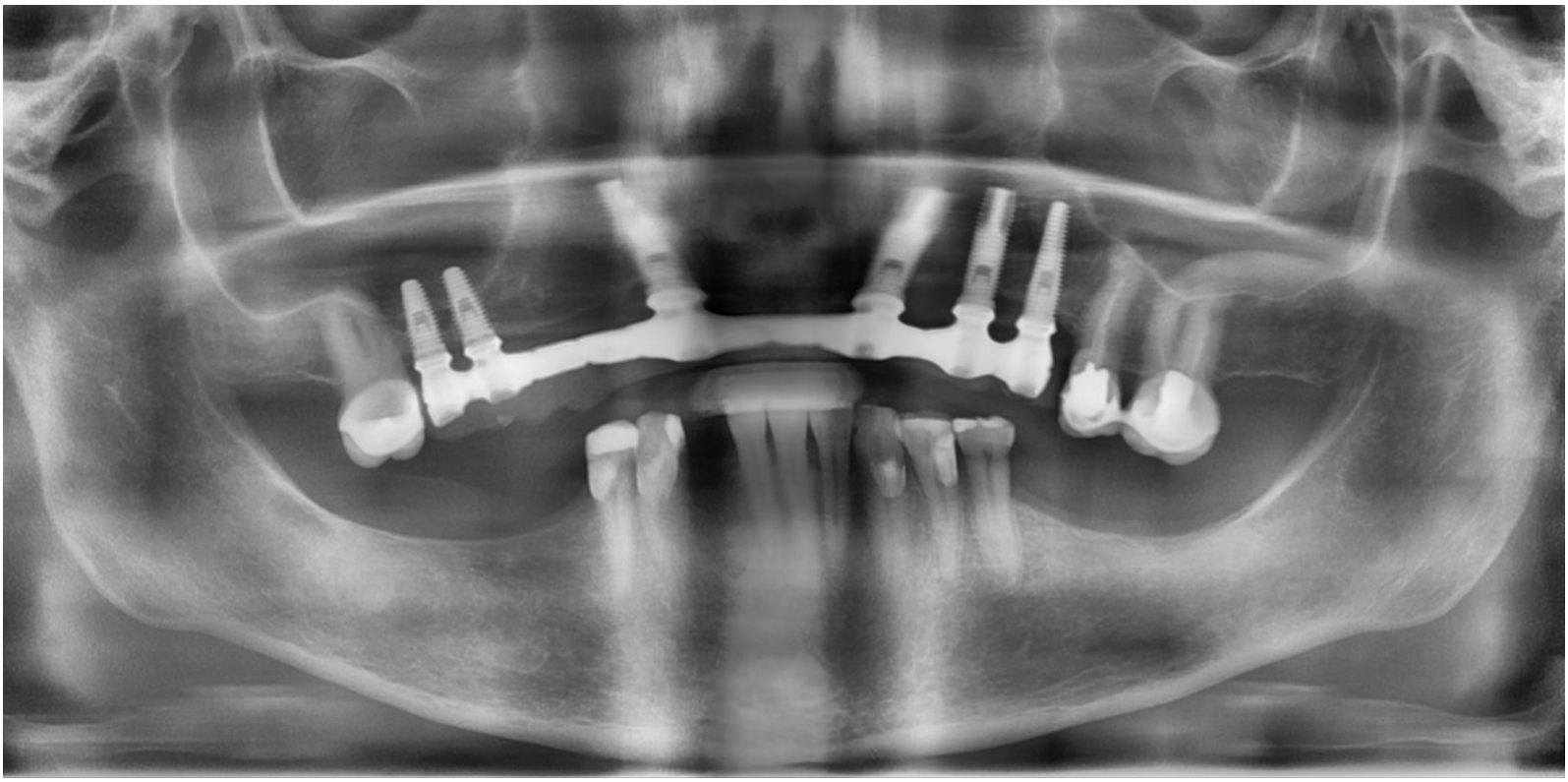
Watch videos for this case

LEVEL II, CASE #2

CASE DESCRIPTION

Mandible Full Arch Rehabilitation with an Immediate All-on-5 and Immediate Load

- The patient is a healthy, 64-year-old woman who attended the consultation with complaints about an old, maxilla rehabilitation. She had discomfort and was unhappy with the general aesthetic of her teeth.
- The patient had an old mandibular removable partial prothesis and 8 remaining teeth, most of them with big, unesthetic reconstructions and a type III occlusion positioning.
- The patient wanted a fixed solution for the mandible and to improve her smile.

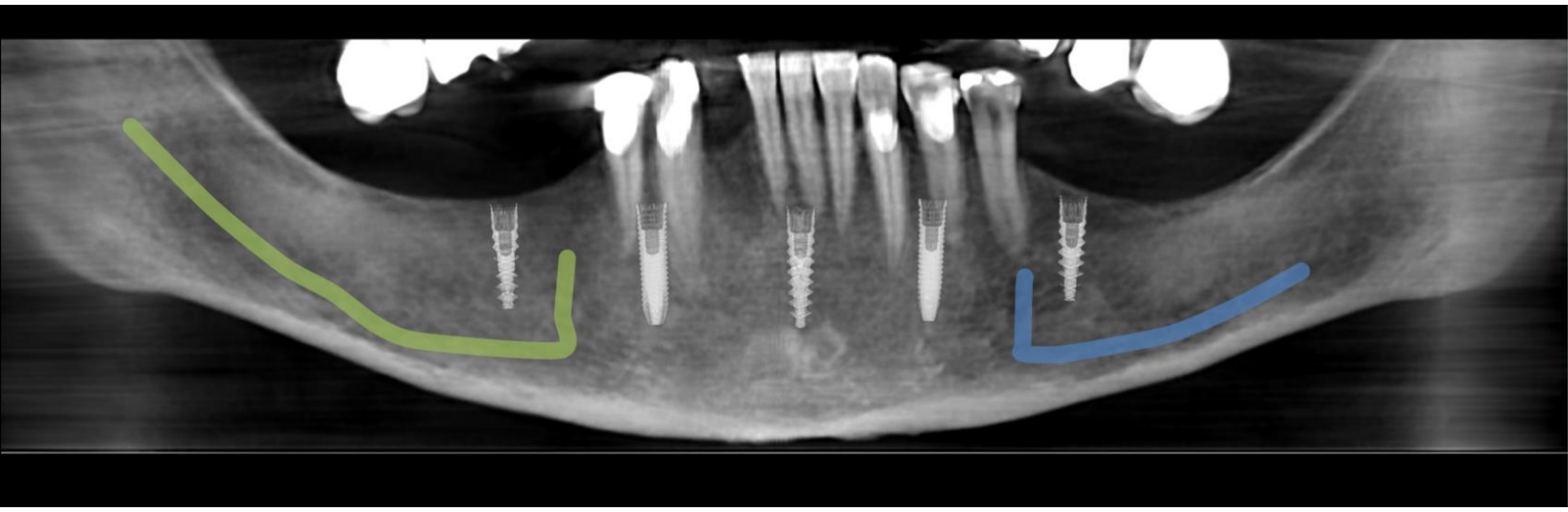


LEVEL II, CASE #2

TREATMENT PLAN

Mandible Full Arch Rehabilitation with an Immediate All-on-5 and Immediate Load

- A new maxillary hybrid prothesis made at the same time as the mandible temporary hybrid to able us to correct the type III bite.
- 1 month later, surgery with extraction of all the mandible teeth, regularization off the bony platform, placement of 5 implants, socket grafting and immediate load.
- The final Procera hybrid maxillary prothesis is placed just before placing the temporary hybrid on the mandible.
- 4 months later, the final mandible Procera hybrid prosthesis is made.



CLINICAL EVIDENCE

Intraoral aspect

Extraoral aspect

Extraoral aspect

Extraoral aspect

CLINICAL EVIDENCE

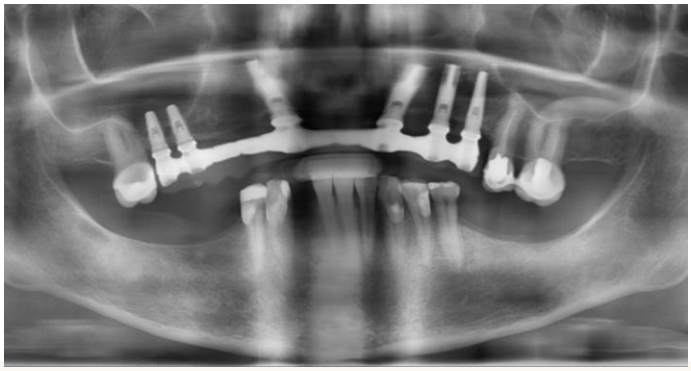
Intraoral aspect

Intraoral aspect

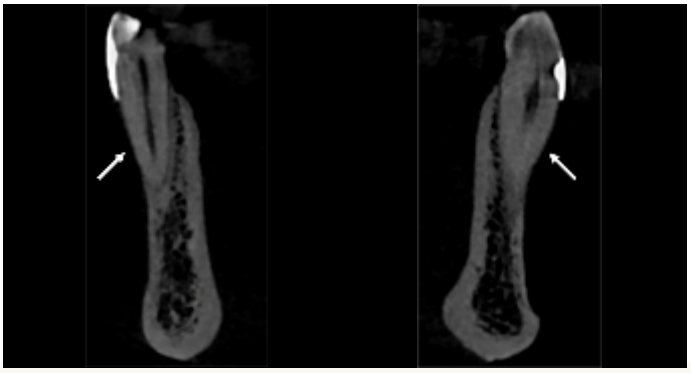
Intraoral aspect

Intraoral aspect

CLINICAL EVIDENCE

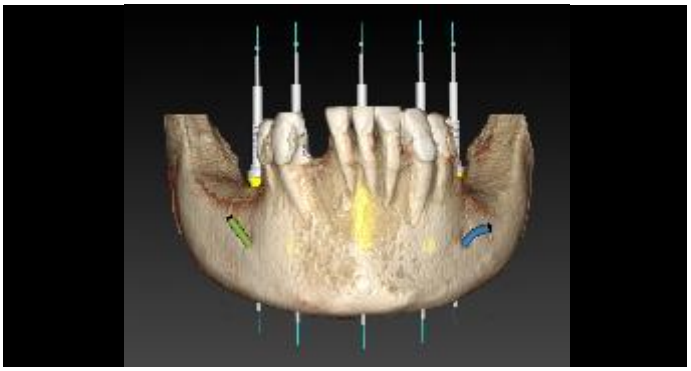


Initial orthopantomography



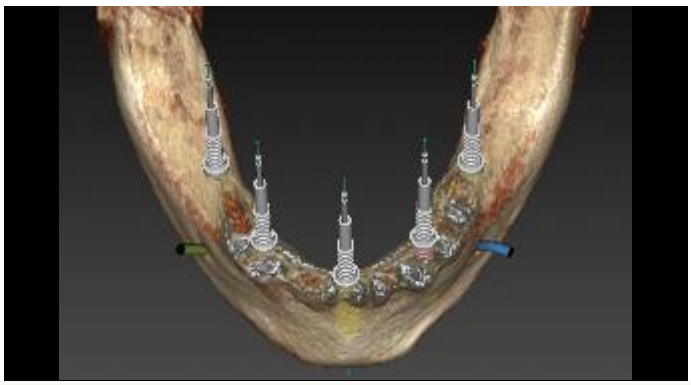
Very thin buccal plates that are difficult to keep during extraction.

Planning, before extractions and platform regularization

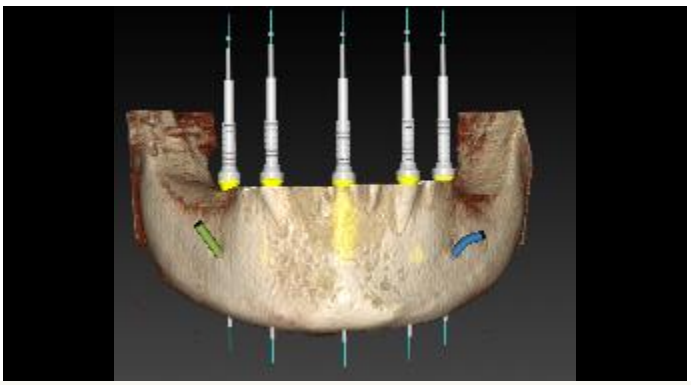


Planning, before extractions and platform regularization

CLINICAL EVIDENCE



Planning, after the extractions and platform regularization



Planning, after the extractions and platform regularization

Intraoral aspect before surgery

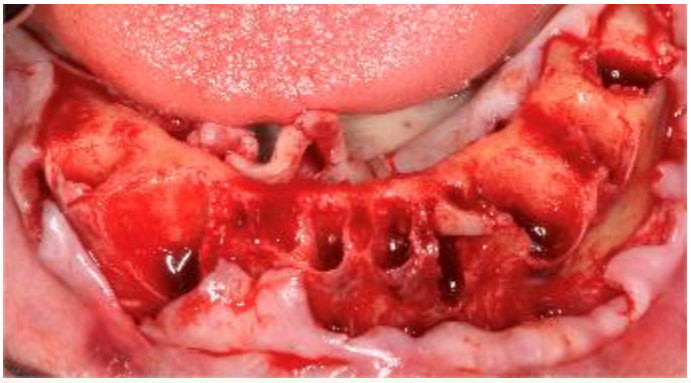
Extractions

CLINICAL EVIDENCE

Minimal flap opening demonstrates the absence of the buccal plates.

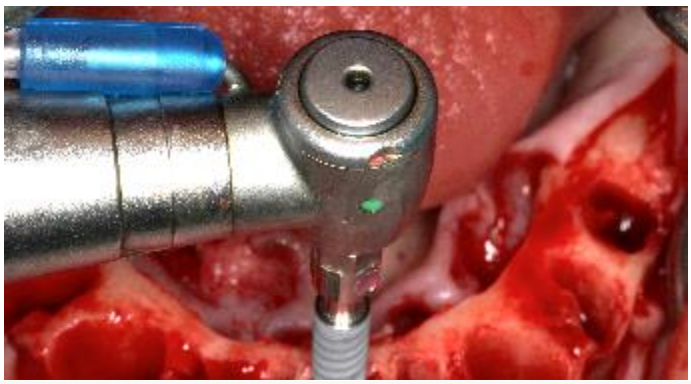
Osteotomy

Goiva tweezers

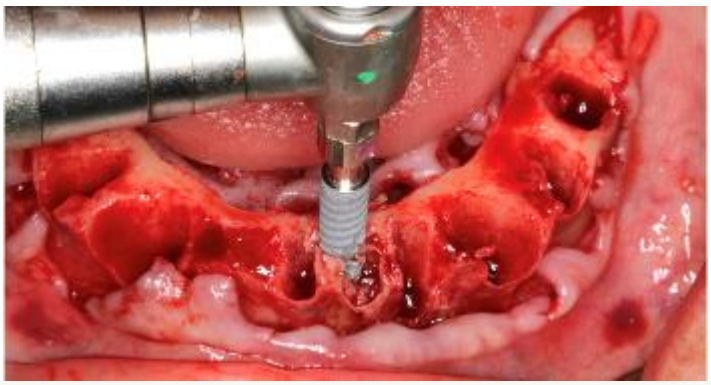


Regularized platform

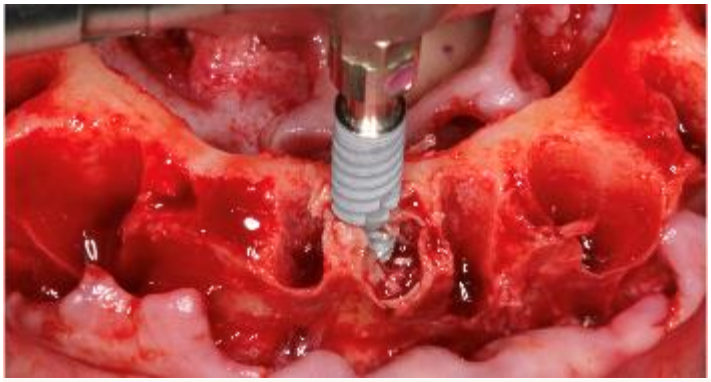
CLINICAL EVIDENCE



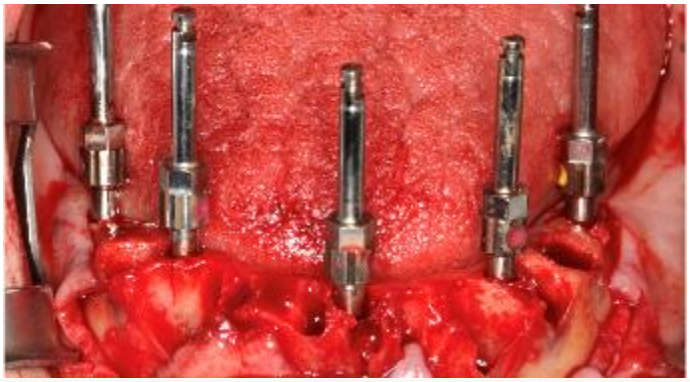
Implant placement



Implant placement

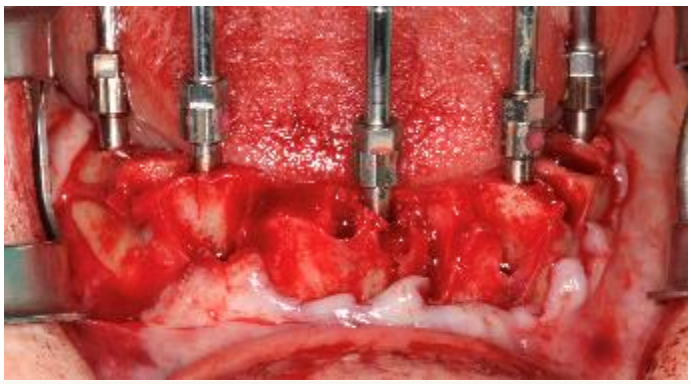


Implant placement

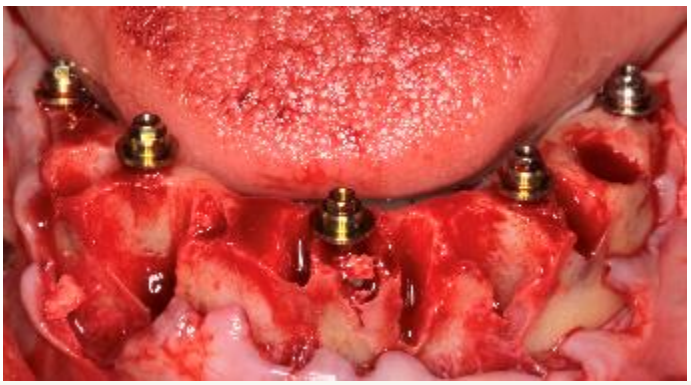


Implant placement

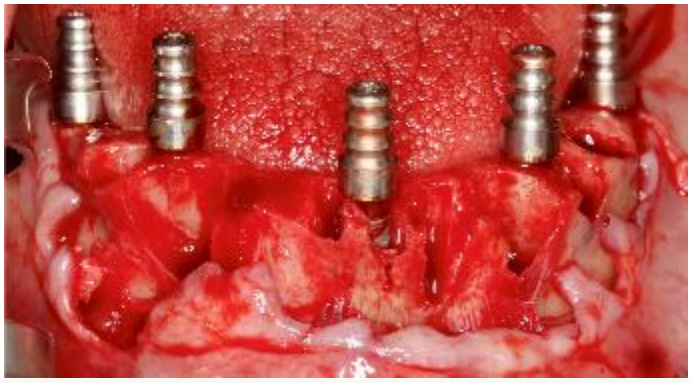
CLINICAL EVIDENCE



Implants placed



Multi-unit abutments



Multi-units in place before grafting

Augma Bond Apatite®

CLINICAL EVIDENCE

Flap closure under tension and sutures.

Maxilla molar extractions

Maxilla prosthesis replacement

Prosthodontics, new and old maxillary hybrids.

CLINICAL EVIDENCE

Immediate post-op

Prosthesis

Prosthesis

Post-op orthopantomography

CLINICAL EVIDENCE

2-week post-op

2-week post-op,appearance before suture removal.

Soft tissue appearance 4-month post-op.

Final impression 4-month post-op.

CLINICAL EVIDENCE

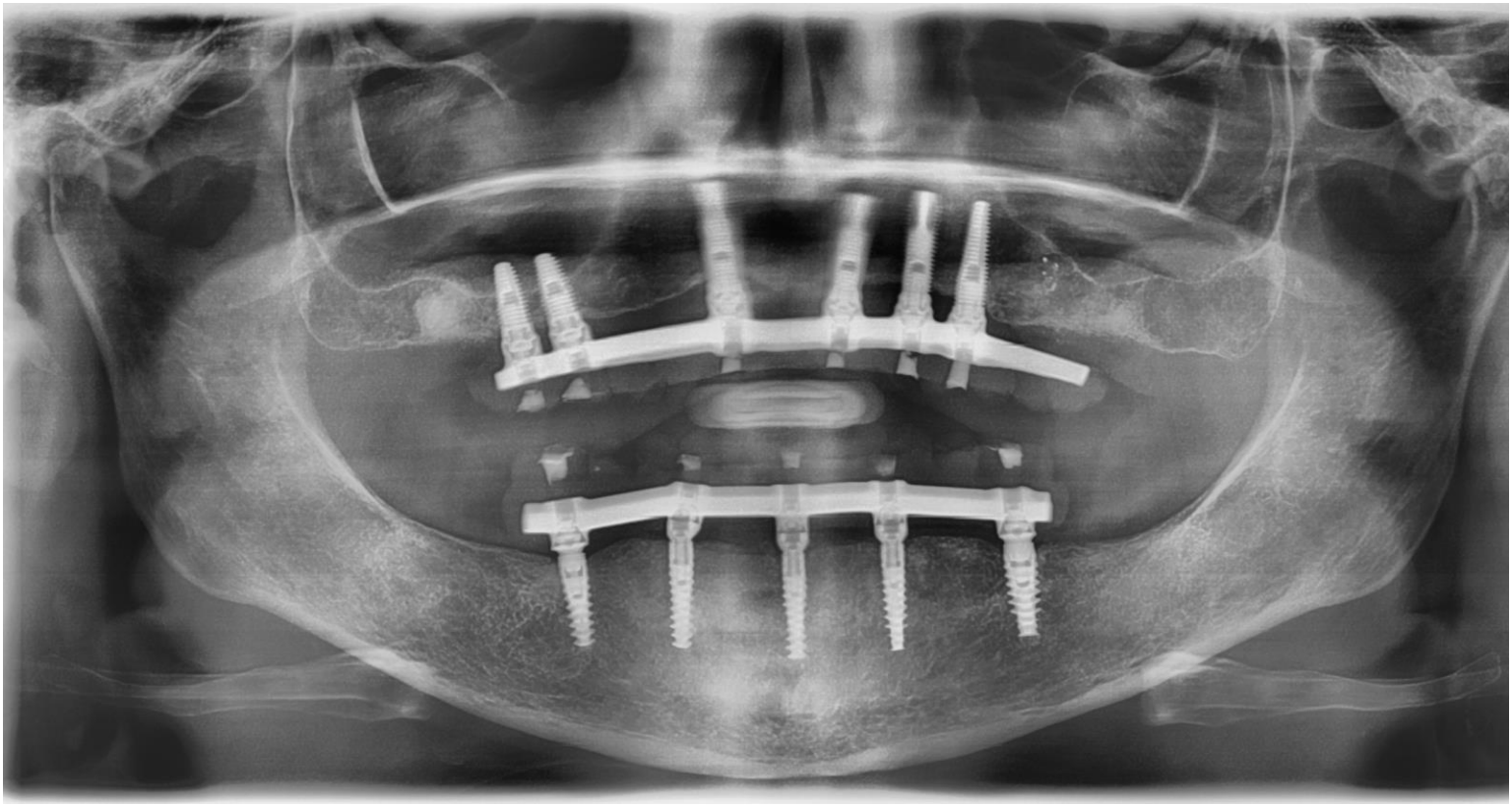
Final aspect

Final aspect

Final aspect

Final aspect

CLINICAL EVIDENCE



Final orthopantomography

CLINICAL EVIDENCE

Before

After

Beginning

Final aspect

CLINICAL EVIDENCE

Before

After

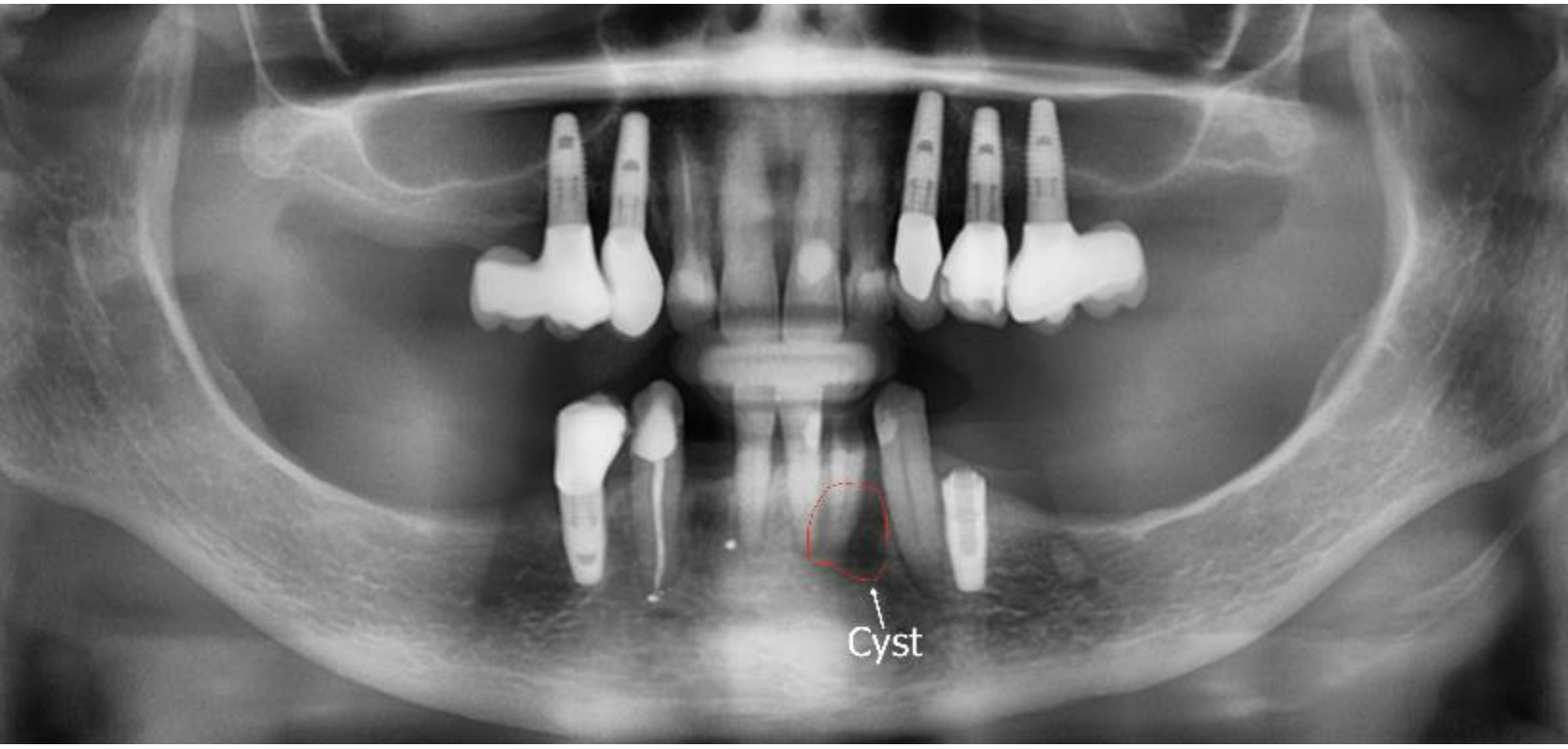
Watch videos for this case

LEVEL II, CASE #3

CASE DESCRIPTION

Mandibular Rehabilitation with Replacement of Old Implants and Immediate All-on-4

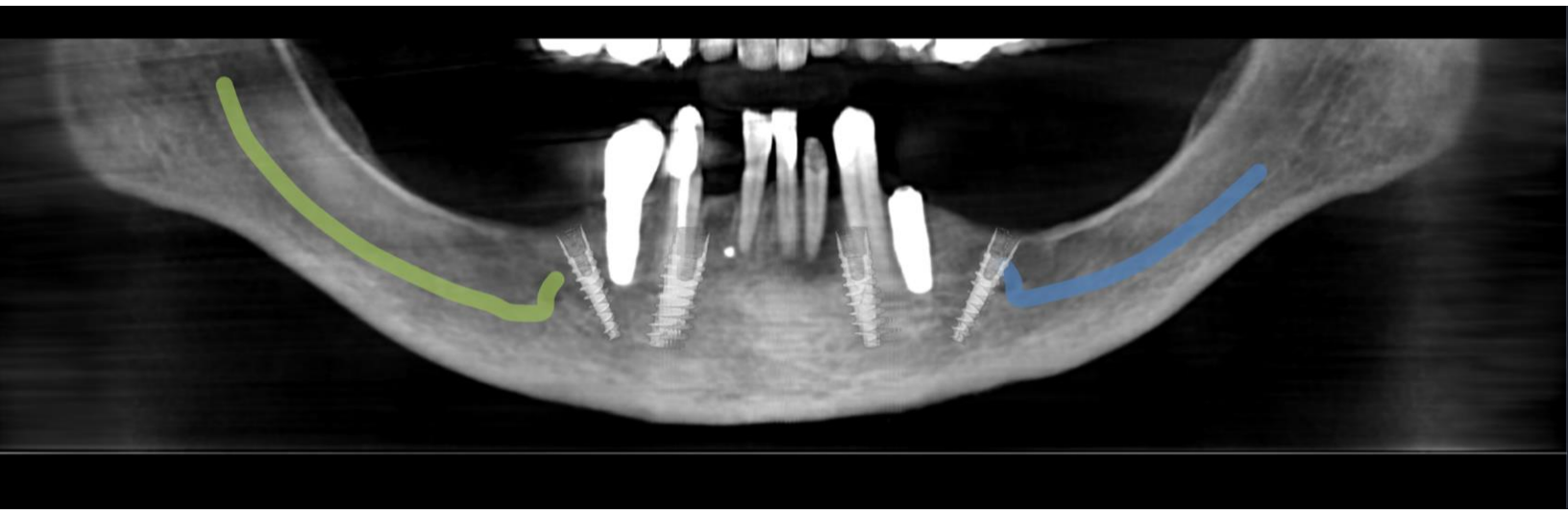
- The patient is a 76-year-old female. She complained of difficulties chewing, a lack of aesthetics and discomfort in the mandible.
- After the intra-oral examination and the completion of the complementary tests, we verified the existence of 4 remaining mandibular teeth in very poor condition.
- She had one root with a big cyst, and 2 old implants with a less than ideal position to be used in a total rehabilitation.



LEVEL II, CASE #3 | TREATMENT PLAN

Mandibular Rehabilitation with Replacement of Old Implants and Immediate All-on-4

- The treatment plan includes extraction of all the remaining teeth and roots in the mandible.
- Extraction of the two old implants.
- Leveling off the bony platform.
- Bone grafting of all the bony defects.
- Placement of 4 immediate implants with immediate load.



CLINICAL EVIDENCE

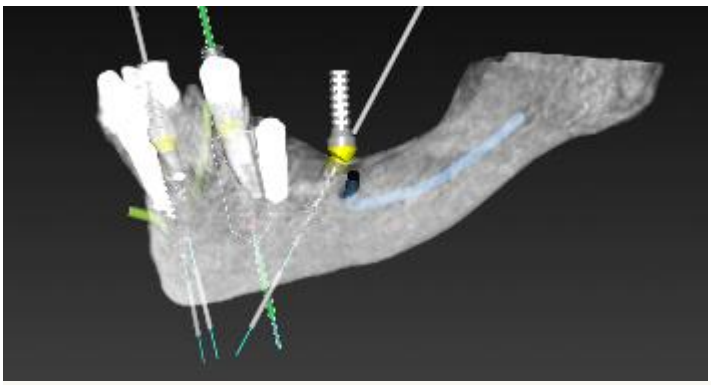
Initial aspect

Initial aspect

Initial aspect

Initial aspect

CLINICAL EVIDENCE



All-on-4 planning

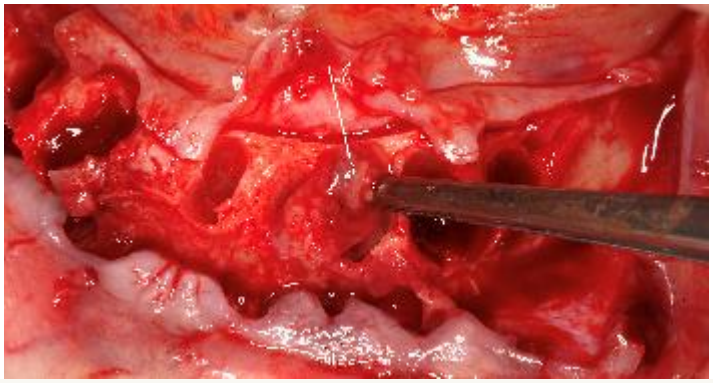
All-on-4 planning

Intraoral appearance before surgery.

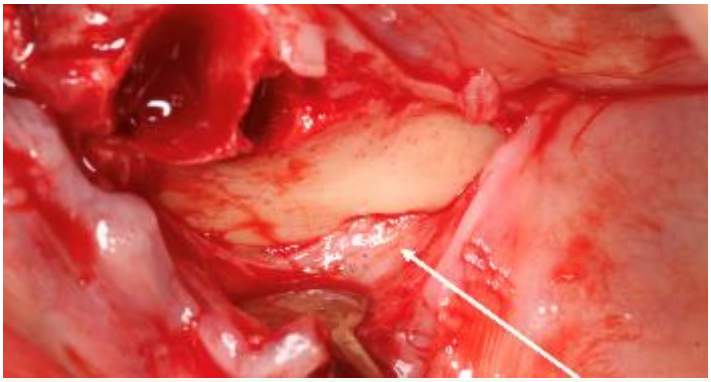
Removal of the implant crowns

CLINICAL EVIDENCE

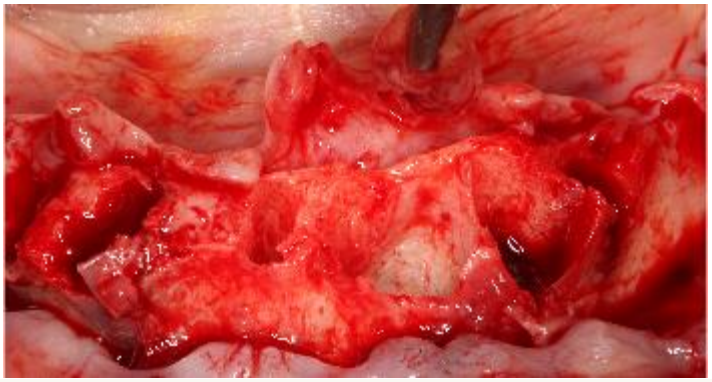
Extractions



Minimal flap opening and cyst removal.

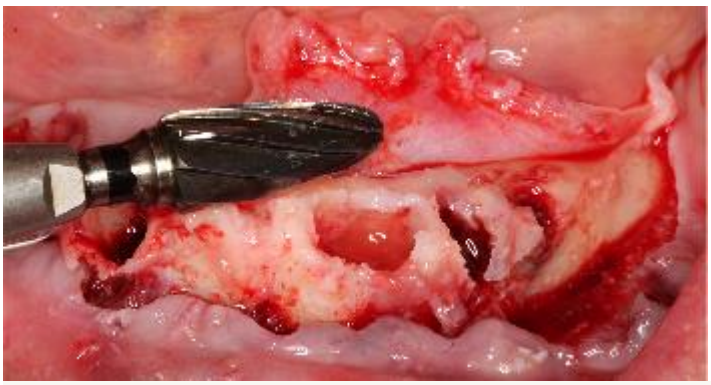


Identification of the nerve foramen

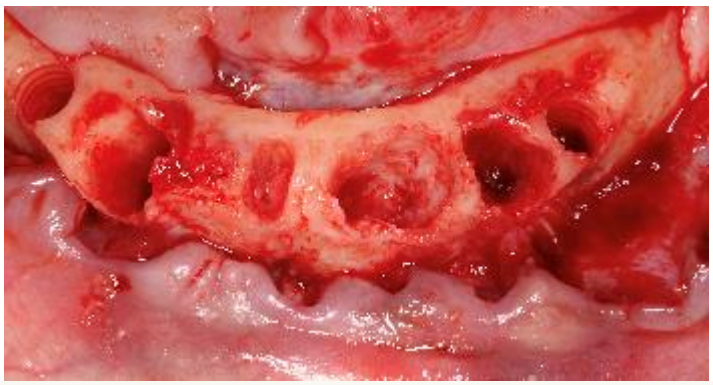


Intraoral bone deficiency aspect after cyst removal.

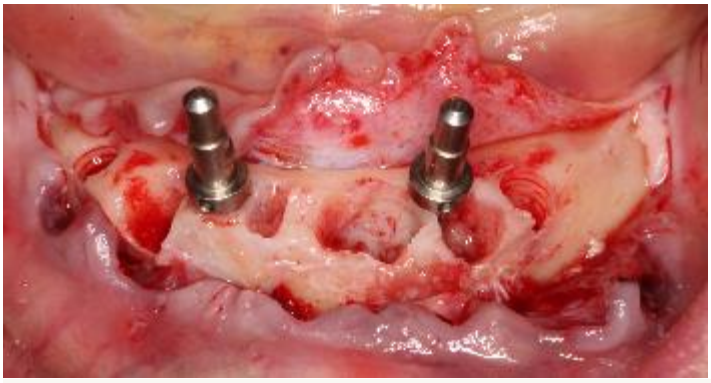
CLINICAL EVIDENCE



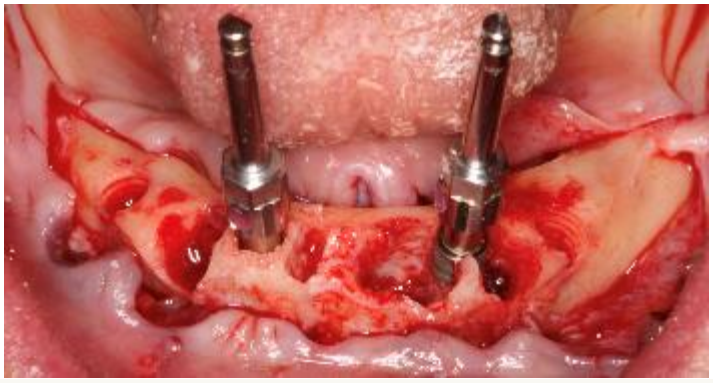
Bone leveling



Regularized bony platform

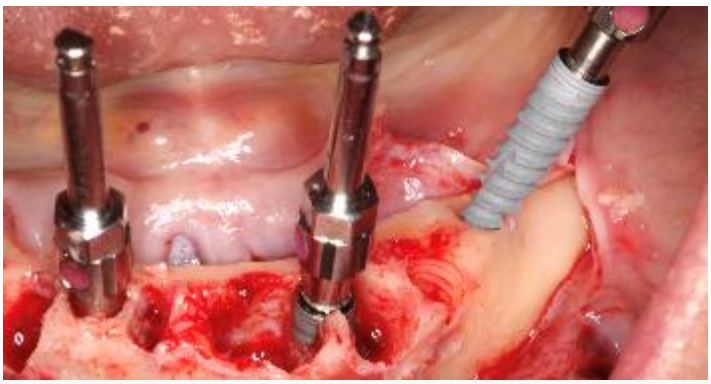


Localisation of the anterior implants

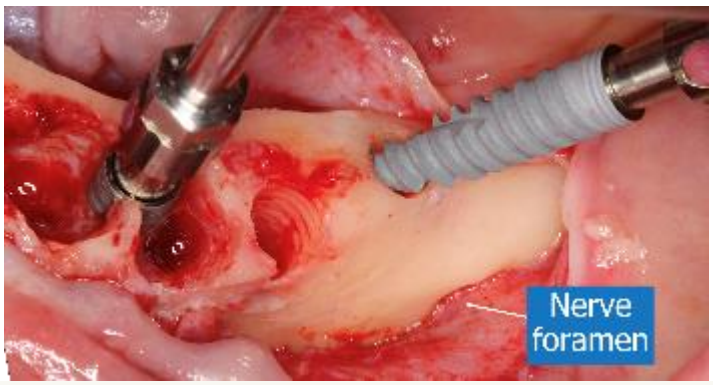


Anterior implants placed

CLINICAL EVIDENCE

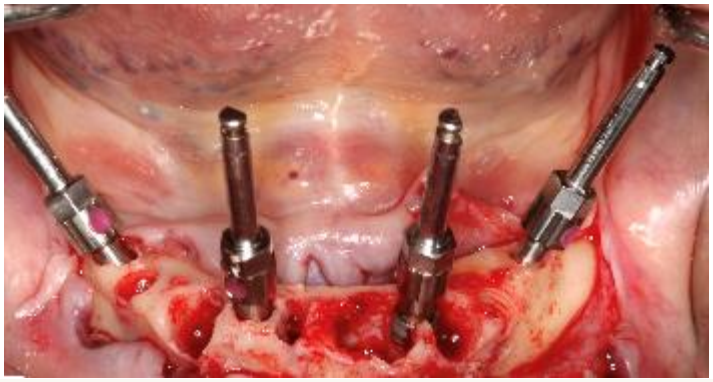


Placement of the angulated



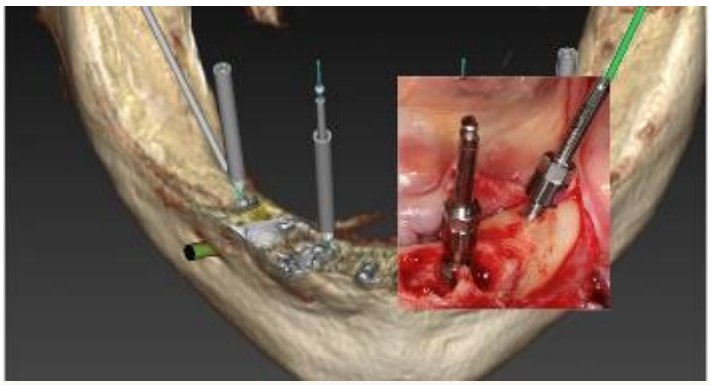
Implant placements

4 Implants in place



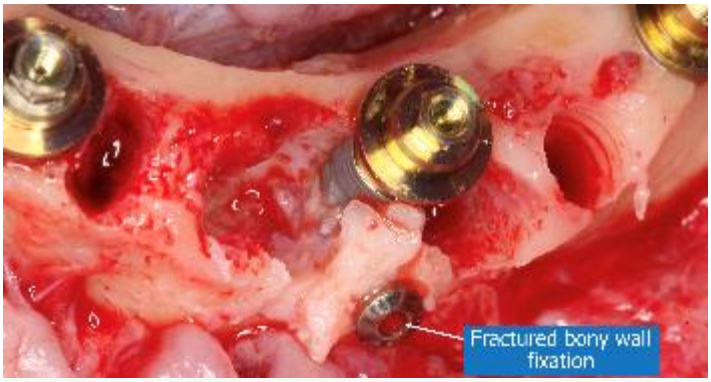
4 implant in place

CLINICAL EVIDENCE



4 implants in place

Multi-unit abutments



Implants in place and bone deficiency occlusal aspect.

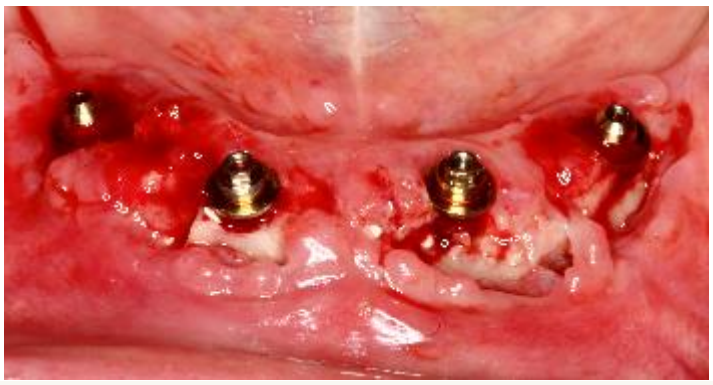
Augma Bond Apatite® in place

CLINICAL EVIDENCE

Sutures

Prosthesis in place after suturing

Tuberosity STG for the posterior left implant.



2-week post-op

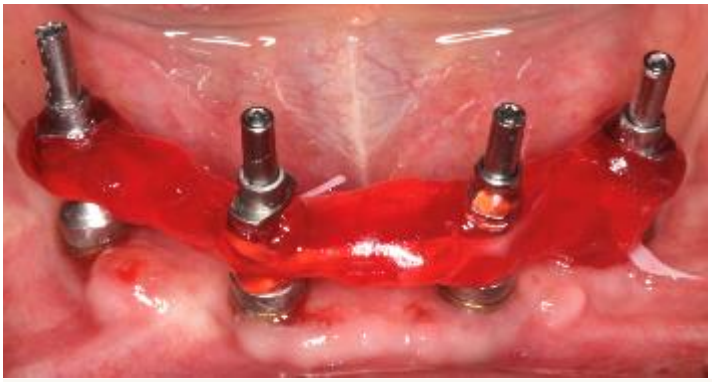
Bone exposure area due to the patient's lack of care.

CLINICAL EVIDENCE

6-week post-op

4-month post-op

Gingival appearance



4-month post-op

Final Impression

5-month post-op

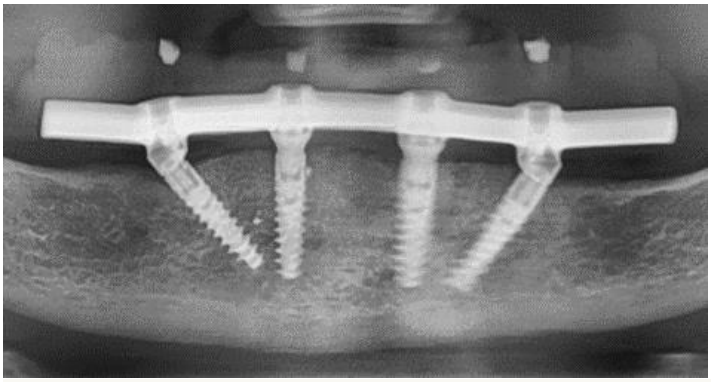
Gingival appearance

CLINICAL EVIDENCE

5-month post-op

Final hybrid prosthesis

Final appearance



Final appearance

Final appearance

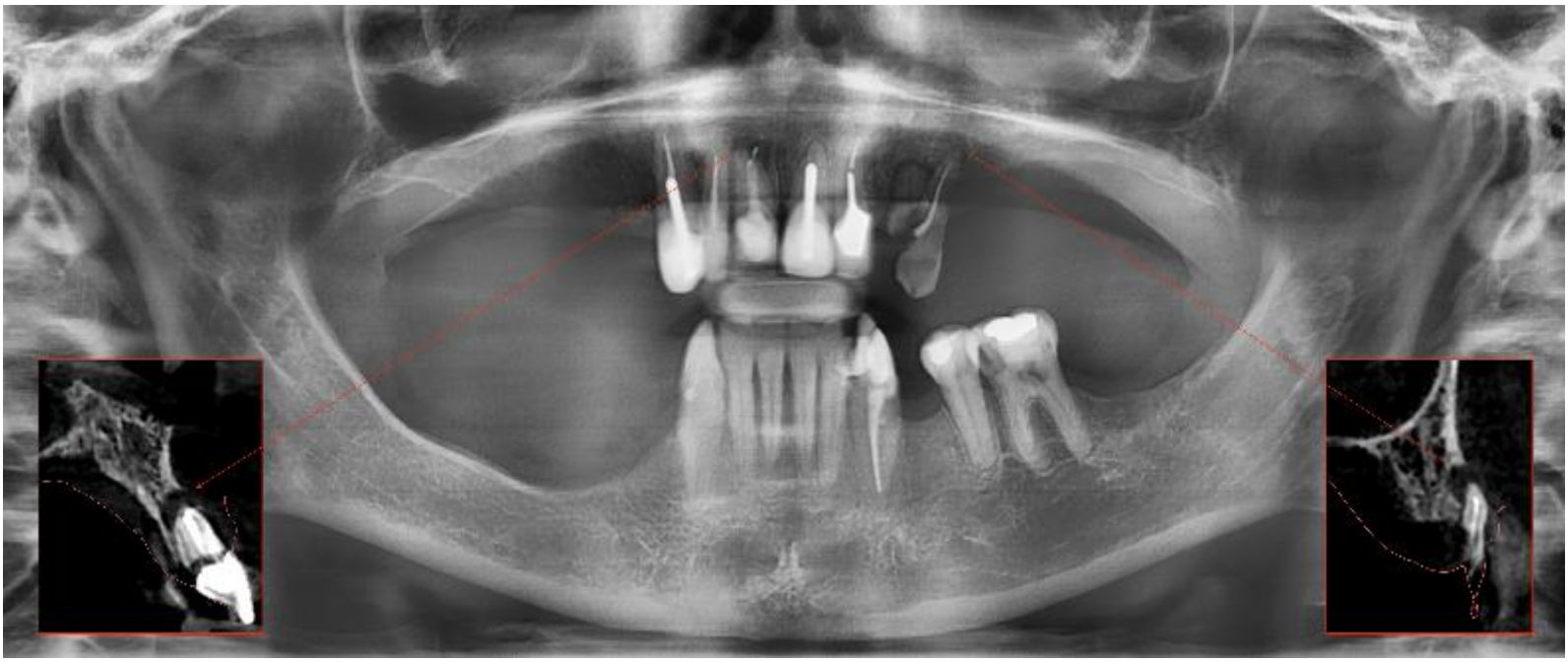
Watch videos for this case

LEVEL II, CASE #4

CASE DESCRIPTION

Maxillary Rehabilitation with Immediate All-on-4

- The patient is a healthy 46-year-old woman who attended the consultation with pain and a fistula on the first right incisor. She also complained about the aesthetics of her smile.
- She wanted to laugh freely without being ashamed and exchange the top removable plate for a fixed solution.
- The patient had an active apical infection on the #11 (23) and the complementary exams showed lack of buccal bone plate in the socket. There was also a submerged root of the left canine #23 (32) with apical infection and a very damaged first left premolar with apical problems.
- The remaining 5 maxillary teeth also had bad aesthetics with old repeated treatments.



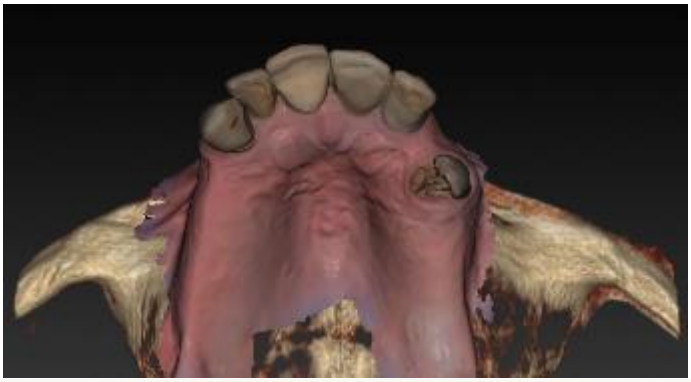
Maxillary Rehabilitation with Immediate All-on-4

- The treatment plan for the maxilla included pre antibiotic therapy for a week. Then extraction of all remaining teeth.
- Immediate maxillary All-on-4 with socket and cyst cavity bone grafting and immediate load with a temporary hybrid prosthesis.
- The treatment plan for the mandible included extraction of the damaged and poorly positioned premolar and 1st molar on the left side.
- Immediate implant and single implant with an immediate locator abutment on the right side to help stabilize the new immediate inferior removable prostheses.

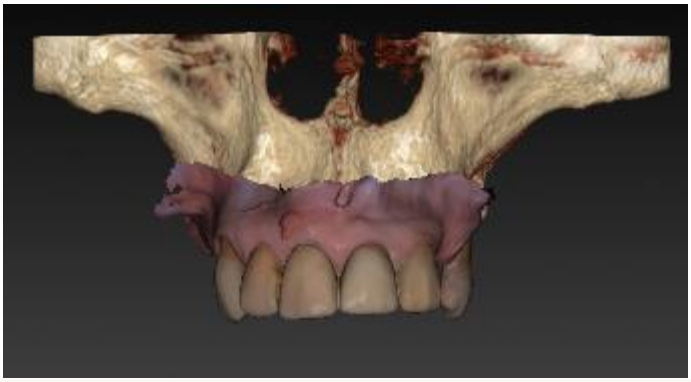
CLINICAL EVIDENCE

Initial orthopantomogram

Initial aspect



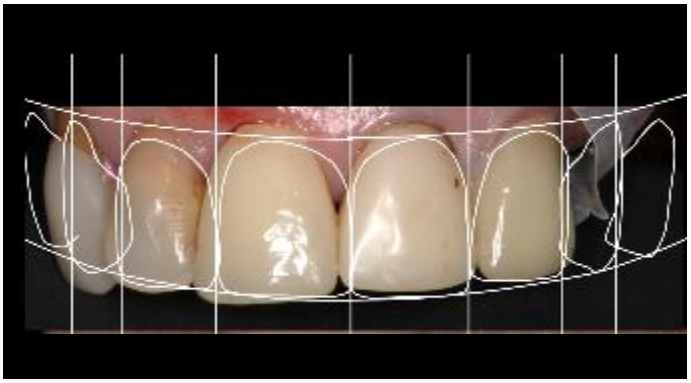
CBCT with oral scanner



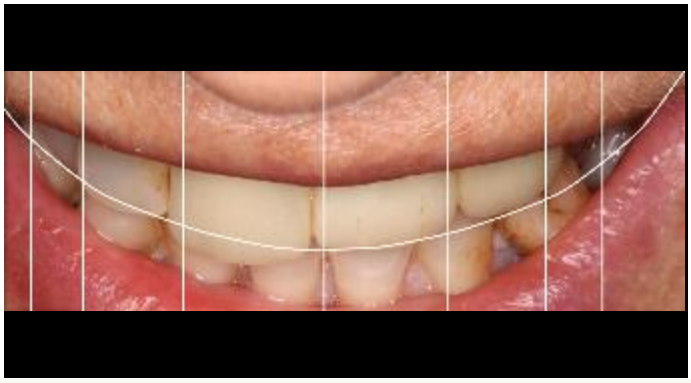
CBCT with oral scanner

CLINICAL EVIDENCE

Treatment planning



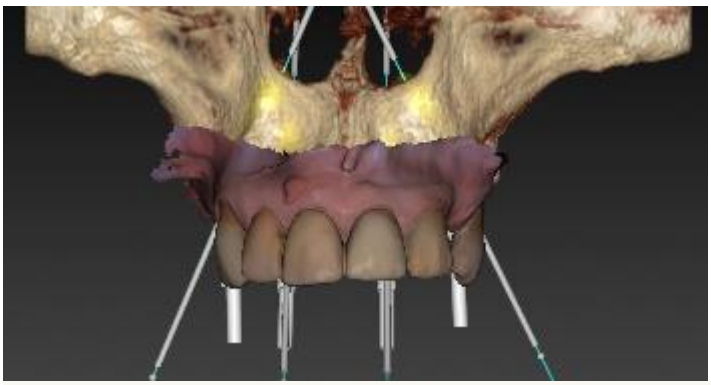
Treatment planning



Treatment planning

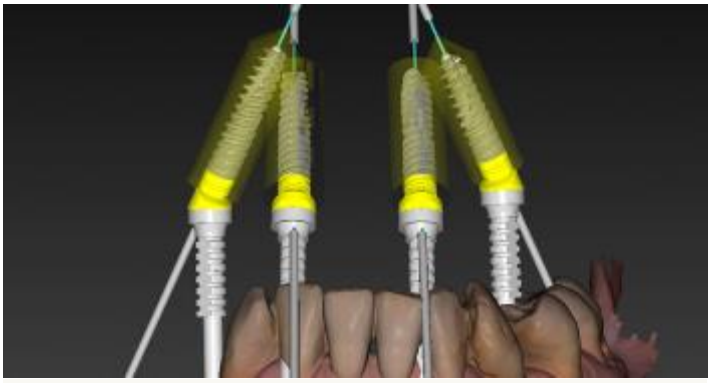
Treatment planning

CLINICAL EVIDENCE



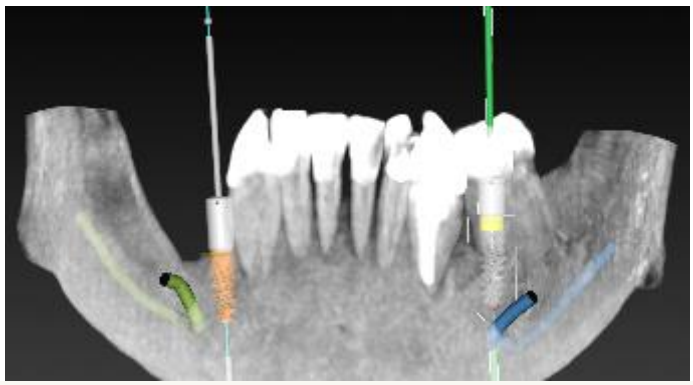
Maxilla planning

Maxilla planning

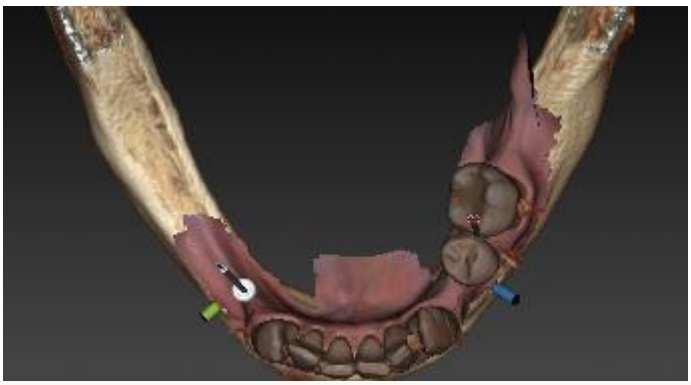


Maxilla planning

CLINICAL EVIDENCE



Mandible planning



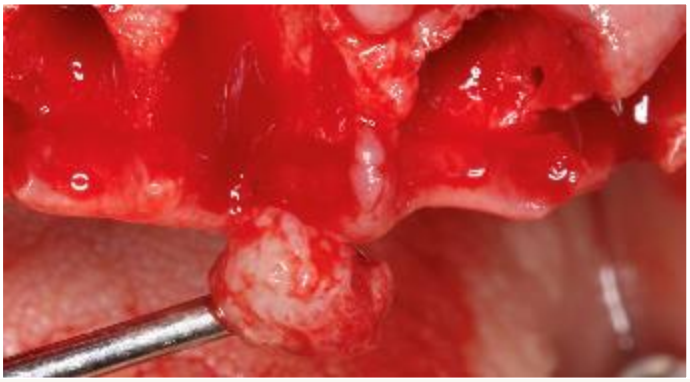
Mandible planning

Mandible planning

CLINICAL EVIDENCE

Initial appearance with fistula

Extractions

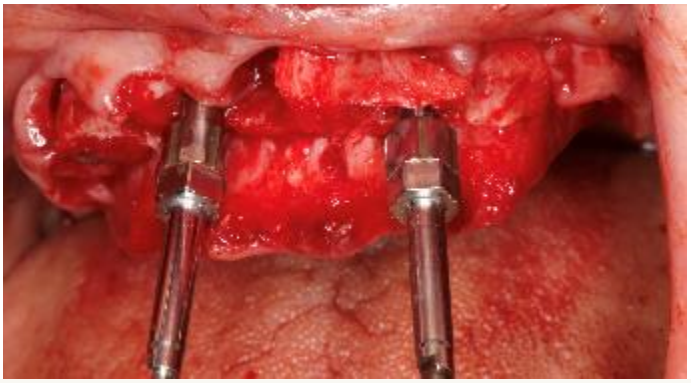


Cyst removal

Flap opening

CLINICAL EVIDENCE

Smile line osteotomy



Implant placement

All-on-4

4 implants in place

CLINICAL EVIDENCE

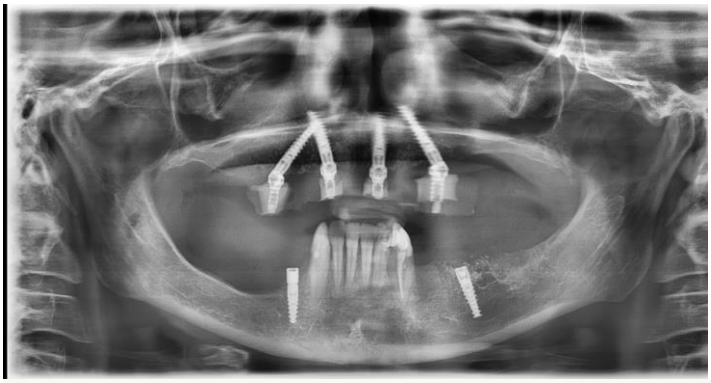
Multi-unit abutment

Augma Bond Apatite®

Sutures

Temporary prostheses

CLINICAL EVIDENCE



Immediate post-op

2-week post-op

1.5-month post-op

1.5-month post-op

CLINICAL EVIDENCE

2.5-month post-op

9-month post-op

2.5-month post-op

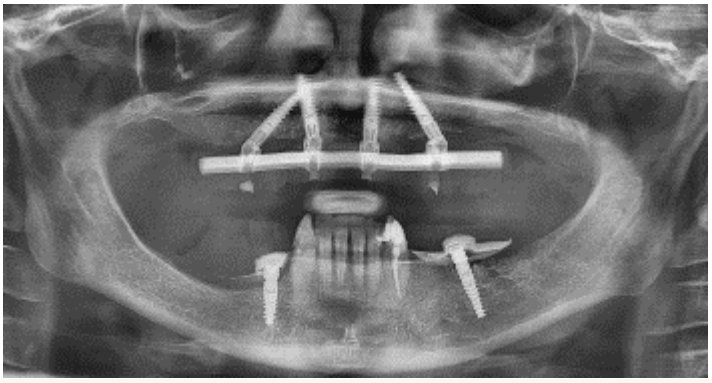
9-month post-op

CLINICAL EVIDENCE

Prosthodontics final impression

Prosthodontics final impression

Final prosthesis



Final orthopantomogram

CLINICAL EVIDENCE

Final prosthesis

Final prosthesis

Pre-op

1-year post-op

CLINICAL EVIDENCE

Pre-op

1-year post-op

Initial aspect

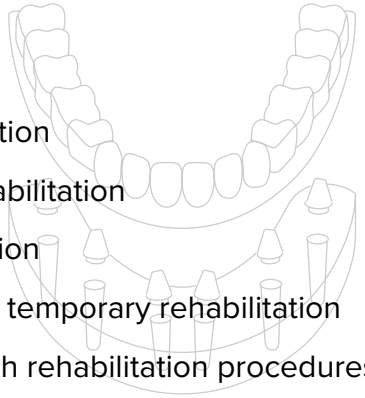
Final result

4-Day Live Surgery Course

Full Arch Using Bone Cement

23-26 May, 2023 Algarve, Portugal

Learning Objectives:



- Learn how to plan the temporary immediate rehabilitation
- Understand the right surgical steps in a total arch rehabilitation
- Gain the confidence to perform a total arch rehabilitation
- Gain the confidence to adapt and place an immediate temporary rehabilitation
- Learn the steps for performing future definitive full arch rehabilitation procedures
- Learn the clinical approach for sinus lift using bone graft cements
- Learn the proper suture techniques for Full Arch cases

Instructors

Dr. Lucio Faria
Oral Surgeon
Portugal

Dr. José Camelo Ferreira
Oral Surgeon
Portugal

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LEVEL III | MEDIUM GRAFTING VOLUME

SOCKET GRAFTING
SOFT TISSUE ENHANCEMENT
LATERAL AUGMENTATION

LEVEL III | Medium Grafting Volume

Characterization

Full arch rehabilitation cases that have dental sockets with or without vestibular wall and/or with voluminous cystic cavities, as well as horizontal bone loss volume in one or more parts of the arch.

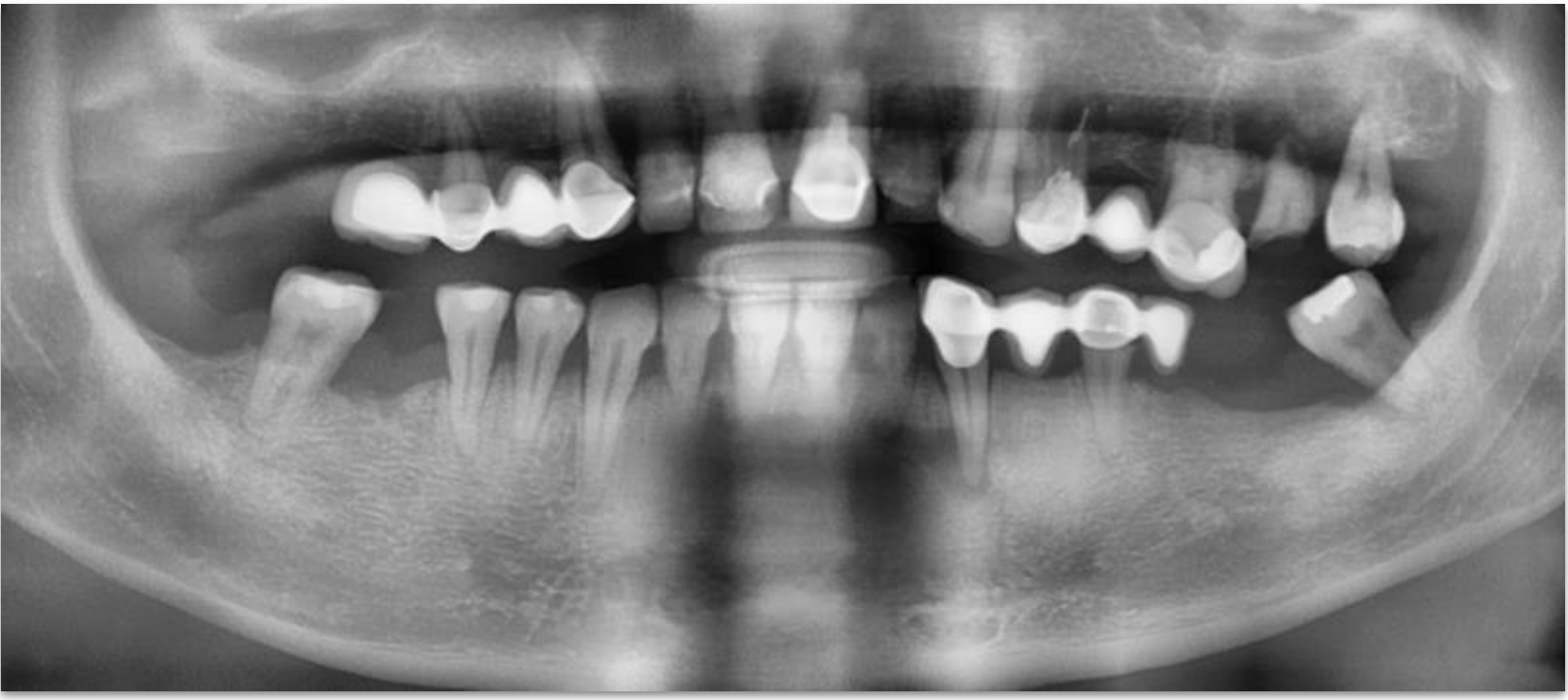
For most level III cases, 4-6 Augma Bond Apatite® syringes are required.

LEVEL III, CASE #1

CASE DESCRIPTION

Maxilla Rehabilitation with Bone Augmentation and Immediate Load

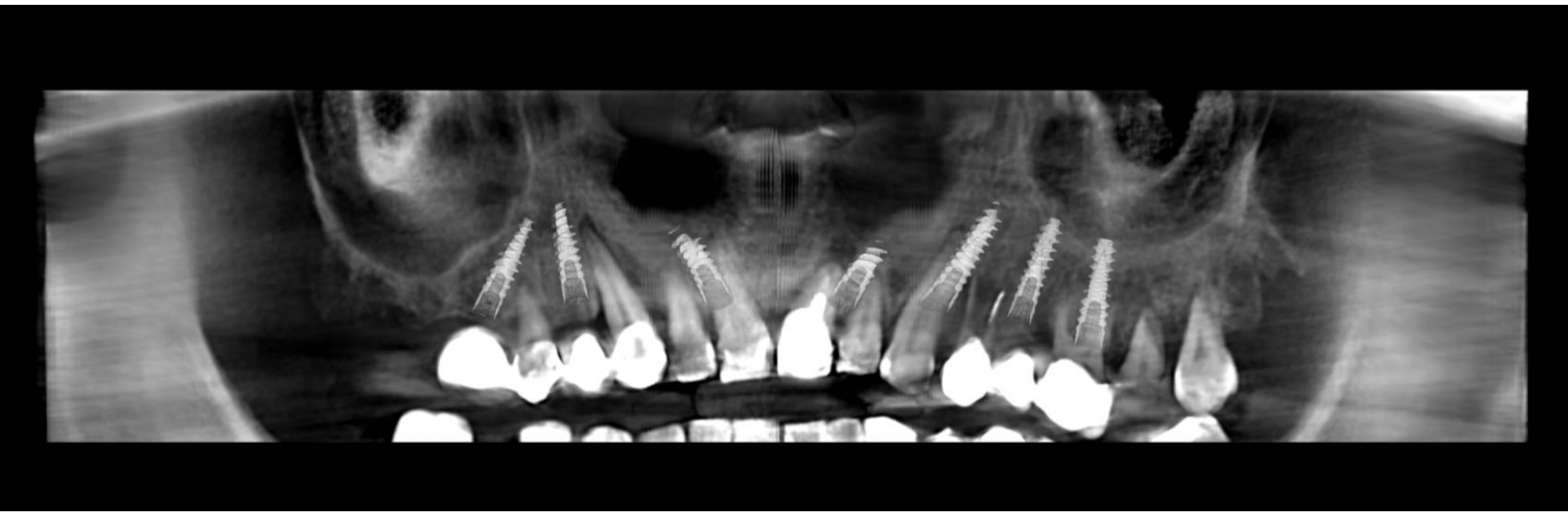
- The patient is a healthy 48-year-old male, smoker, with unaesthetic failing crowns and bridges.
- The aesthetical problems are creating low self esteem and most of the remaining teeth are failing.
- The patient experiences difficulties when chewing.



LEVEL III, CASE #1 | TREATMENT PLAN

Maxilla Rehabilitation with Bone Augmentation and Immediate Load

- The treatment includes the complete extraction of maxillary teeth and 7 immediate implants and immediate load.
- Bone grafting is done with Bond Apatite®.



CLINICAL EVIDENCE

Unesthetic old failing crowns and bridges.

Patient evaluation

Patient evaluation

Patient evaluation

CLINICAL EVIDENCE

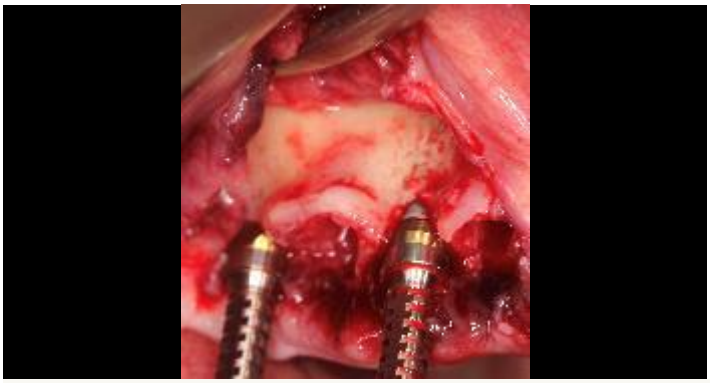
Intraoral aspect before surgery.

Atraumatic full arch extraction

Implant placement
Multi-unit abutments
Temporary abutments

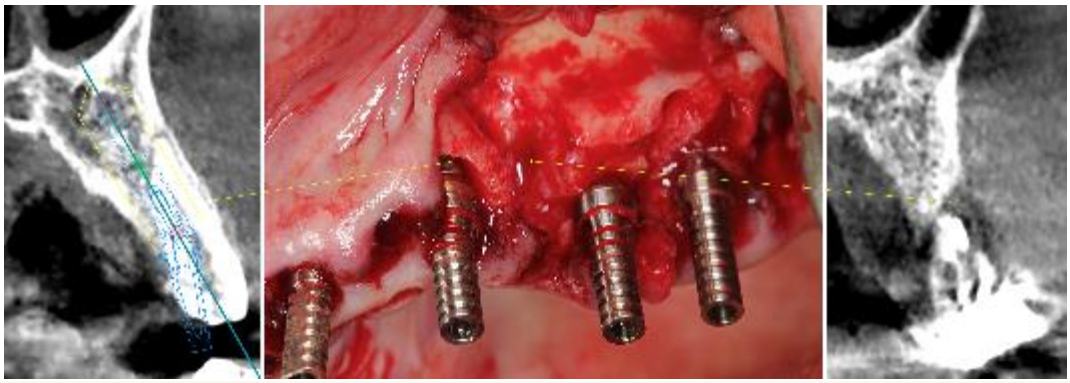
Implant placement
Multi-unit abutments
Temporary abutments

CLINICAL EVIDENCE



1st quadrant

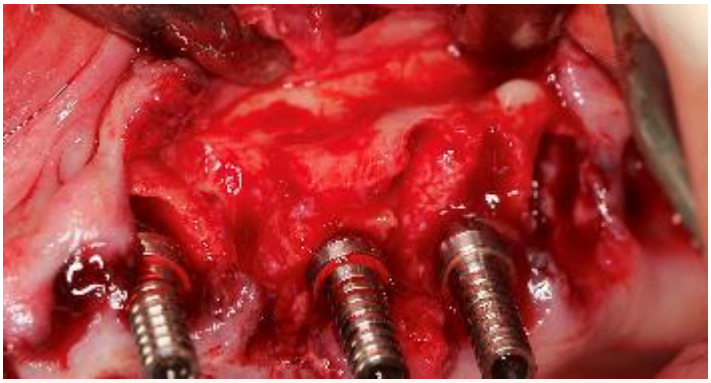
Augmentation with Augma Bond Apatite®



Surgery

2nd quadrant bond defects

CLINICAL EVIDENCE



2nd quadrant

Augmentation with Augma Bond Apatite®

Sutures

Immediate post-op

CLINICAL EVIDENCE

Immediate temporary rehabilitation

Immediate temporary rehabilitation

Immediate temporary rehabilitation

Final adaption

CLINICAL EVIDENCE

Immediate temporary rehabilitation

Final adaptation

Immediate temporary rehabilitation

Final adaptation

Temporary rehabilitation

CLINICAL EVIDENCE

Before surgery

Immediate post-op

Suture removal

Suture removal

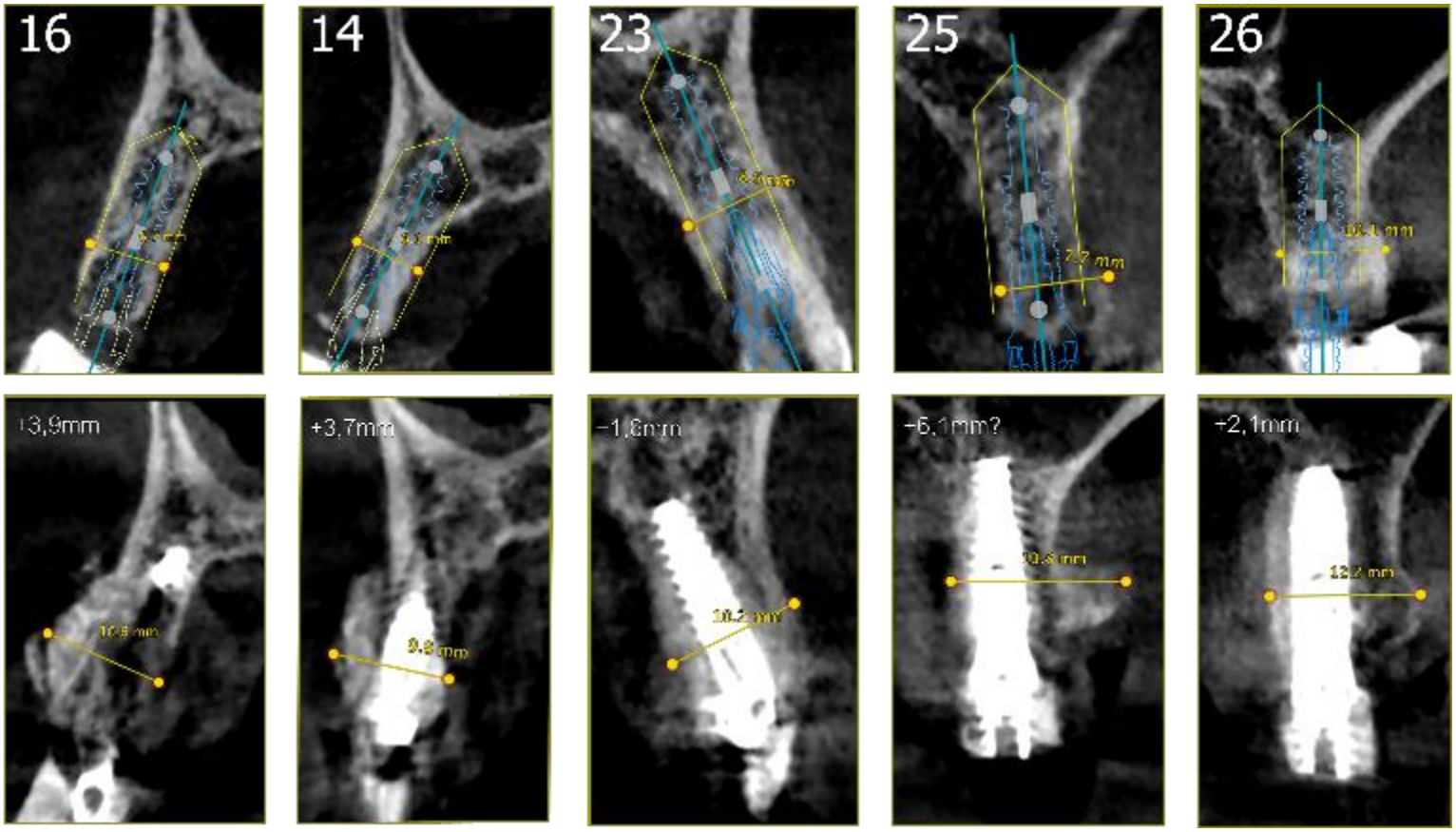
CLINICAL EVIDENCE

Suture removal

3-month post-op

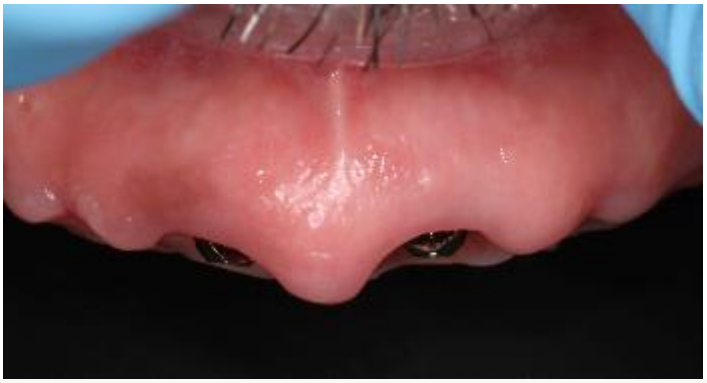
3-month post-op

CLINICAL EVIDENCE



Pre-op CBCT (above) in comparison with 9-month post-op CBCT (below).

CLINICAL EVIDENCE



9-month post-op
Gum sculpture

9-month post-op
Gum sculpture

9-month post-op
Gum sculpture

9-month post-op
Gum sculpture

CLINICAL EVIDENCE

Second temporary prosthesis

Gum sculpture

9-month post-op

Watch videos for this case

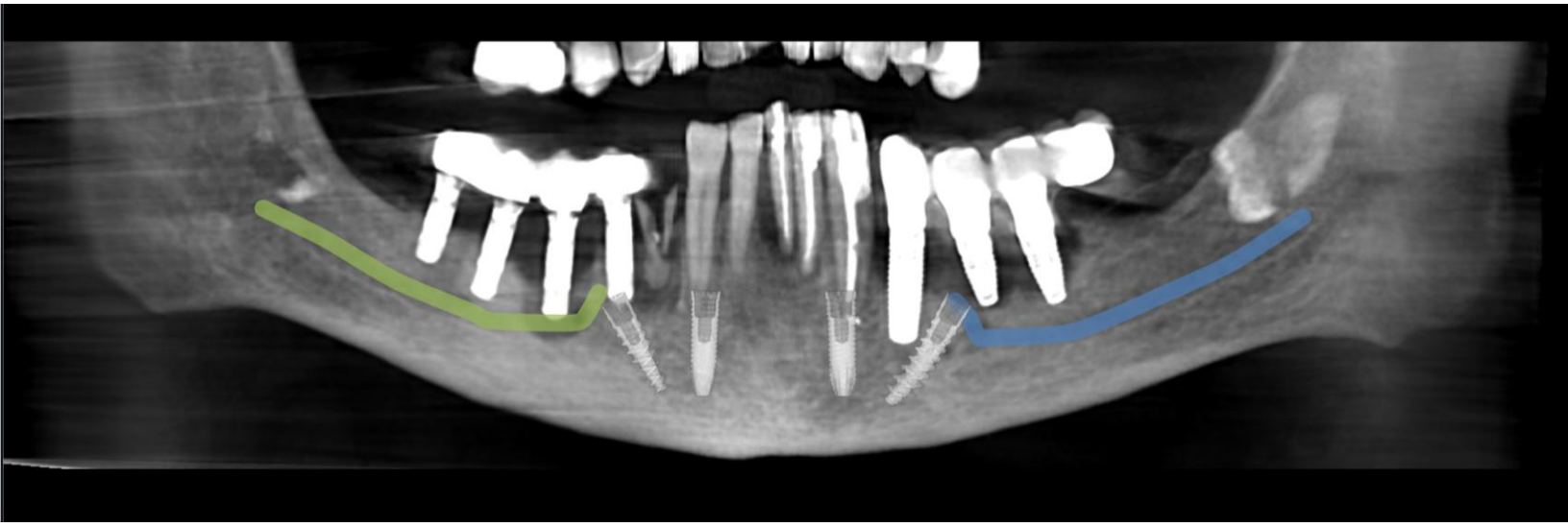
Extreme Mandible All-on-4 with Immediate Load

- The patient is an 81-year-old, healthy female with an old mandibular implant rehabilitation.
- The patient has active periimplantitis in the mandible, with suppuration and high bone sequestration.
- The patient complains of pain, difficulties chewing, bad breath and taste in her mouth.
- She does not want a removable denture.

LEVEL III, CASE #2 | TREATMENT PLAN

Extreme Mandible All-on-4 with Immediate Load

- The treatment includes the complete extraction of teeth and mandibular implants. The regularization of the bony platform. Four implants with immediate loading.
- Four months after the surgery a definitive hybrid prostheses is placed.



CLINICAL EVIDENCE

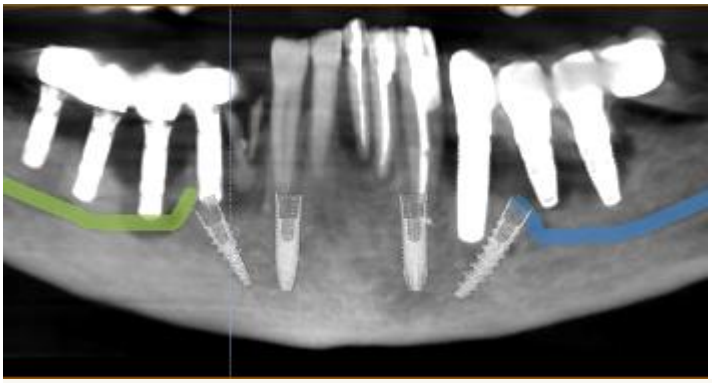
Initial aspect

Photographic evaluation

Intraoral aspect

Intraoral aspect

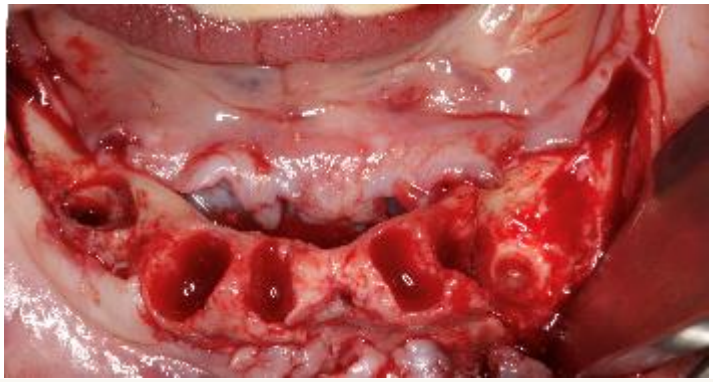
CLINICAL EVIDENCE



Pre-op radiographic

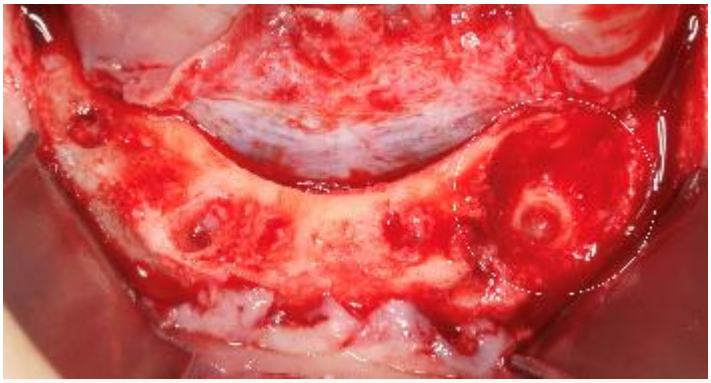
Intraoral aspect before surgery.

Extractions



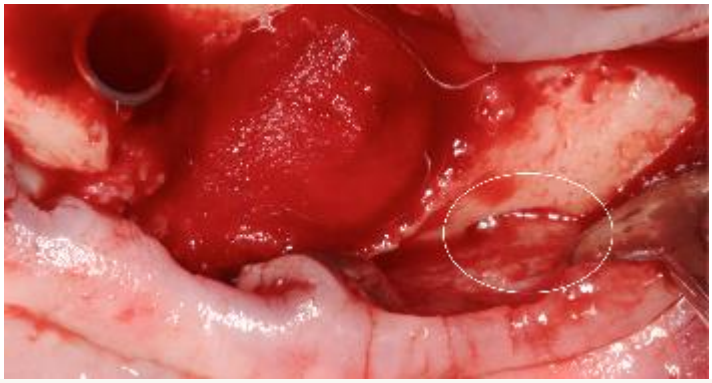
Opening of the surgical flap

CLINICAL EVIDENCE



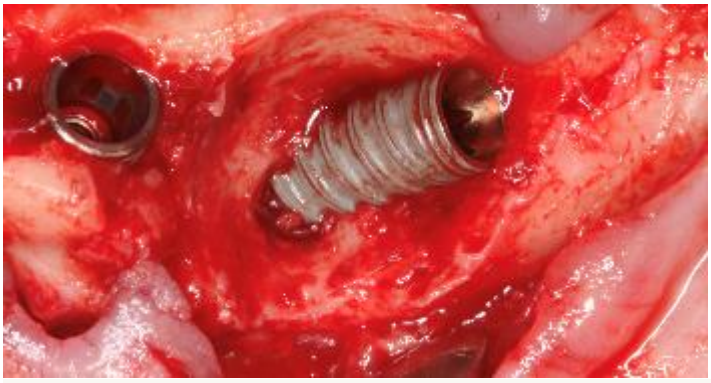
Bone regularization

Absence of the buccal bone plate can be seen.

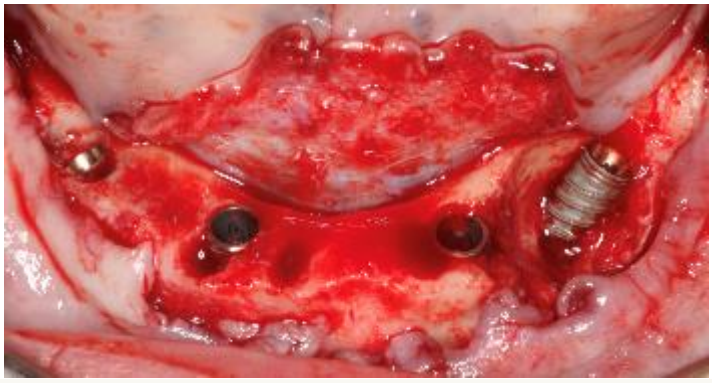


3rd quadrant

Dental nerve identification

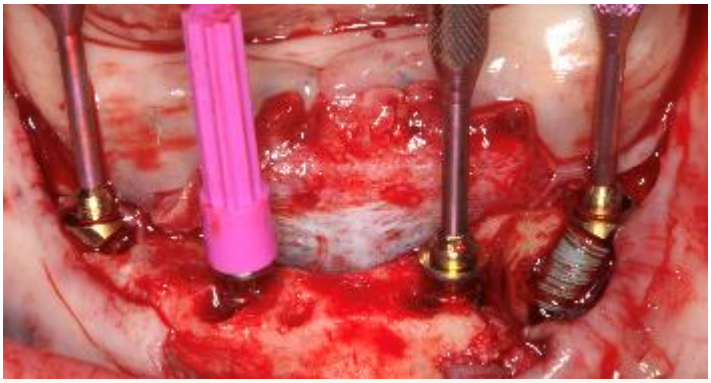


Aspect of the left distal implant

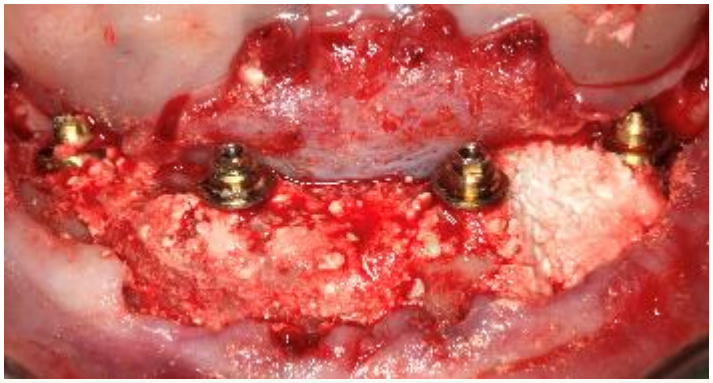


4 implants in place

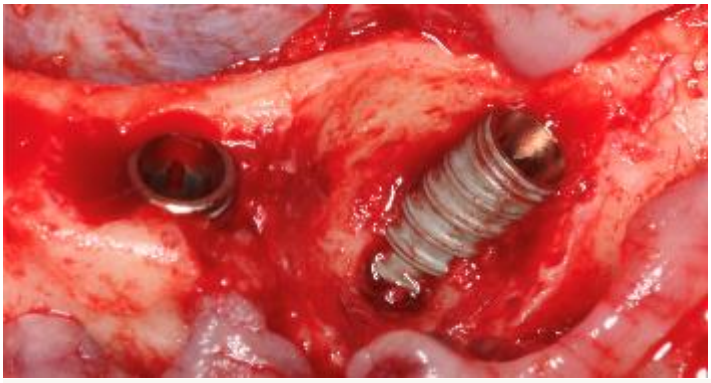
CLINICAL EVIDENCE



Multi-unit abutments



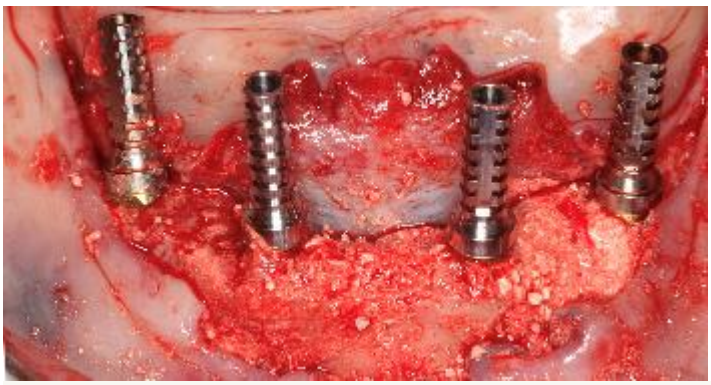
Augma Bond Apatite®



Implants in place

Augma Bond Apatite®

CLINICAL EVIDENCE



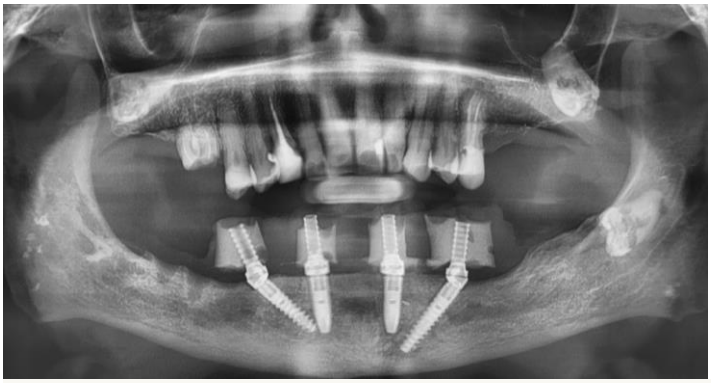
Temporary abutments

Sutures

Post-op aspect

Post-op aspect

CLINICAL EVIDENCE



Immediate post-op

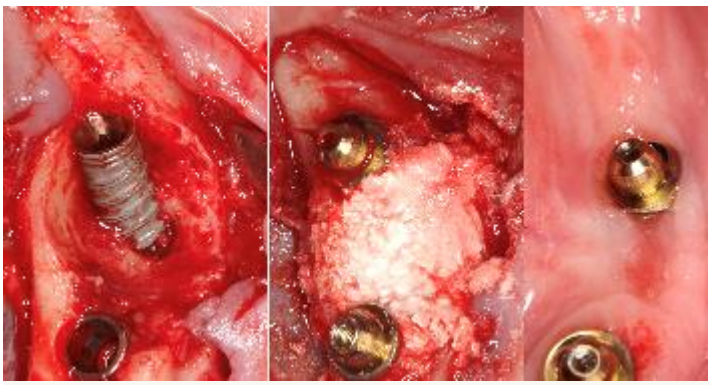
2-month post-op

Result of the patient's lack of hygiene.

2-month post-op

3-month post-op

CLINICAL EVIDENCE

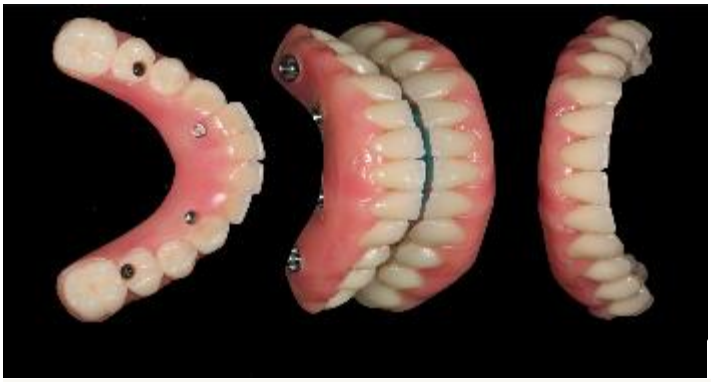


Bone defect, bone graft and

Intraoral appearance 3 months post-op.

Prosthodontics

Final impressions



Prosthodontics

Final appearance

CLINICAL EVIDENCE

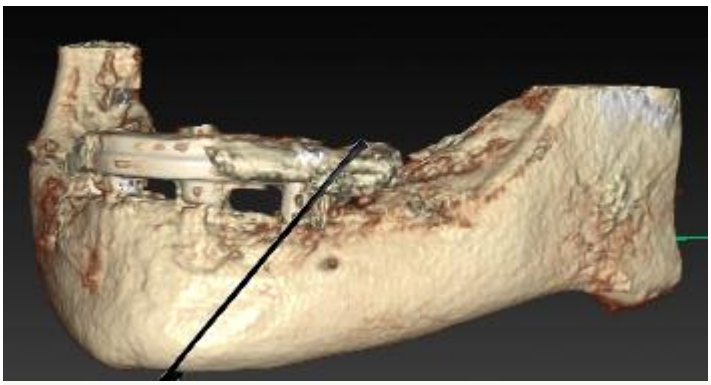
Final appearance

Final appearance

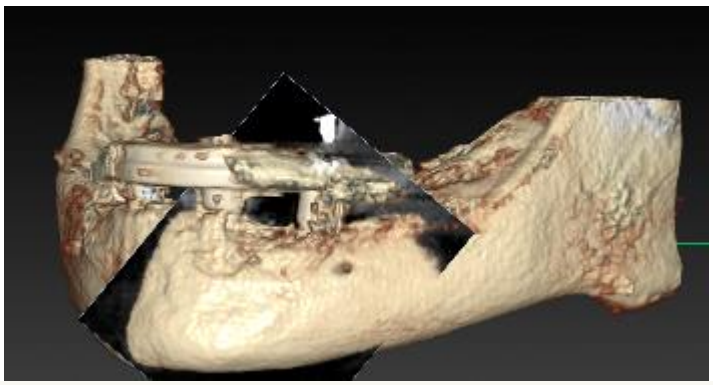
Final appearance

Final appearance

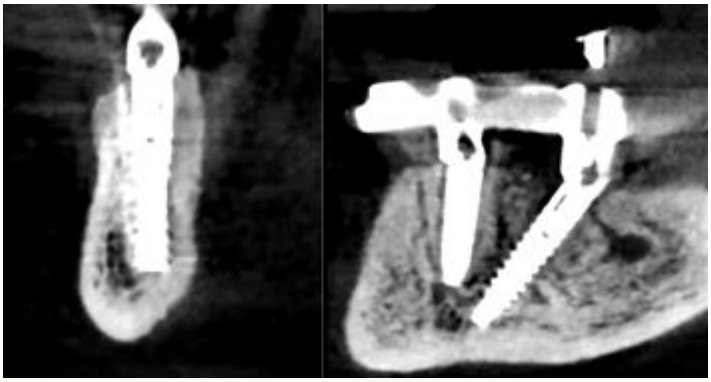
CLINICAL EVIDENCE



Final aspect



Final aspect

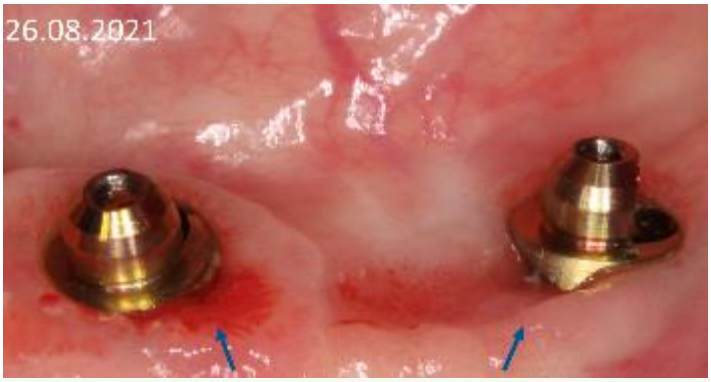


Final aspect

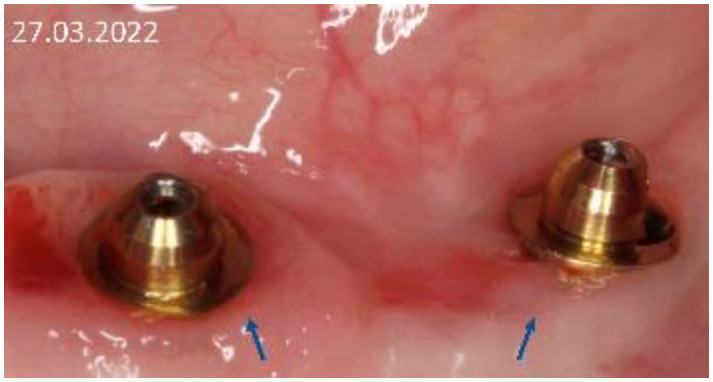
CLINICAL EVIDENCE

The first day of the prosthesis placement.

7 months later images show increased vertical volume.



The first day of the prosthesis placement.



7 months later images show increased vertical volume.

CLINICAL EVIDENCE

The first day of the prosthesis placement.

7 months later images show increased vertical volume.

Watch videos for this case

LEVEL III, CASE #3

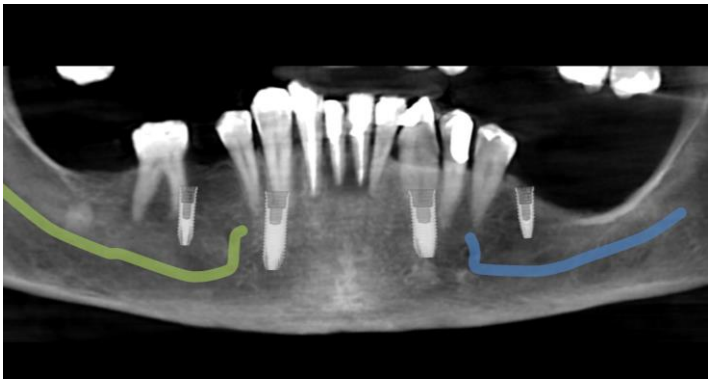
CASE DESCRIPTION

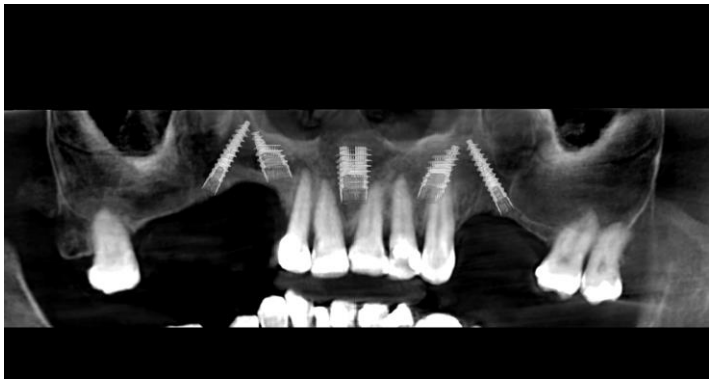
Maxilla and Mandible Total Rehabilitation

- The patient wants to be able to eat and laugh for the first time in many years, and to raise her self-esteem. She also wants to stop using the old, unsightly and uncomfortable removable prostheses.

Maxilla and Mandible Total Rehabilitation

- The surgery was planned in 2 parts:
- The first surgery included the extraction of all the maxillary teeth followed by an extensive osteotomy of the maxilla. 5 maxillary implants are made, followed by bi-lateral augmentation grafting in the posterior part of the top jaw. A socket graft is made with autogenous bone collected during the osteotomy. All the mandible teeth are extracted as well as the existing cysts.
- Due to the amount of bone defects in the mandible, only the 2 anterior implants are placed and used with 2 Locator abutments. The posterior 2 implants are made 5 months later in the ideal position and in a more predictable way. After the placement of the mandible implants, a Level II bone graft is made.
- All the top and bottom implants will have immediate load.
- The second surgery is done 5 months later. Two additional implants are made in the mandible, the removable locator prosthesis is turned into a temporary hybrid prosthesis, and an immediate load is made with the new implants.
- 6 months after the surgery, the final maxillary hybrid prosthesis is made and after another 4 months, the final mandible hybrid prosthesis is placed.





CLINICAL EVIDENCE

Side view of the bite

Side view of the bite

Frontal view of the bite

Frontal view of the bite

CLINICAL EVIDENCE

Intraoral view

Intraoral view

Intraoral view

Extractions in the maxilla

CLINICAL EVIDENCE

Extractions in the maxilla

Opening of the flap

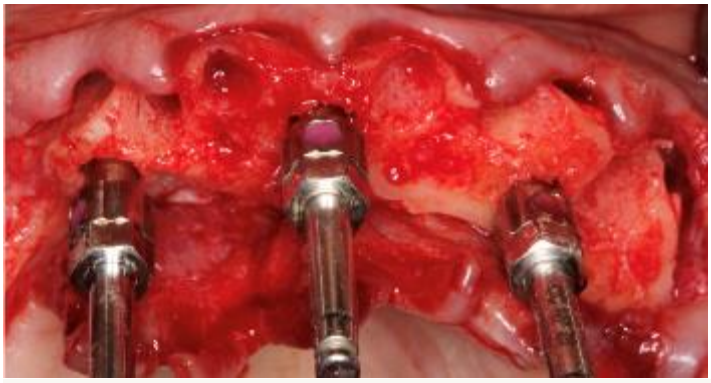
Opening of the flap

Maxillary osteotomy

CLINICAL EVIDENCE

Maxillary osteotomy

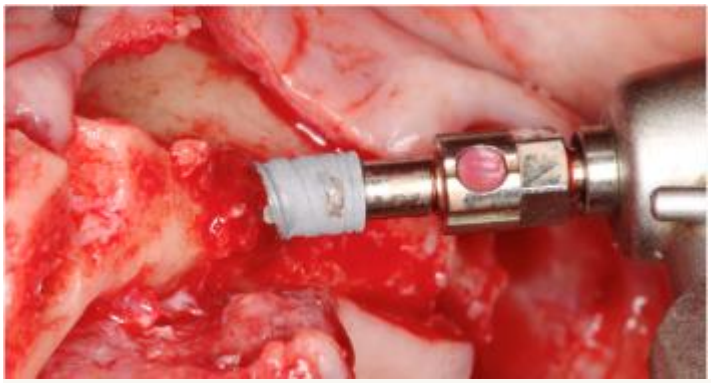
Implant driver



Insertion of the implants

Insertion of angled implants

CLINICAL EVIDENCE



Insertion of angled implants

Multi-unit abutments

Augma Bond Apatite®

Augma Bond Apatite®

CLINICAL EVIDENCE

Autogenous bone grafting

Autogenous bone grafting

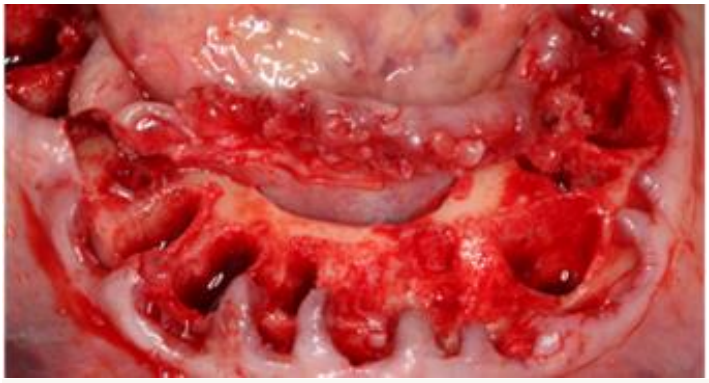
Autogenous bone grafting

Autogenous bone grafting

CLINICAL EVIDENCE

Copings for suturing

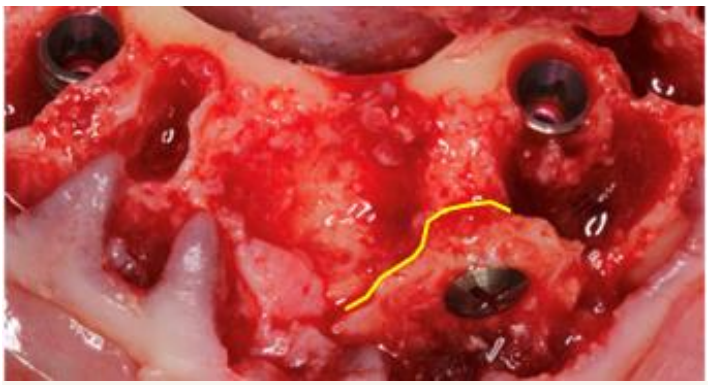
Temporary abutments



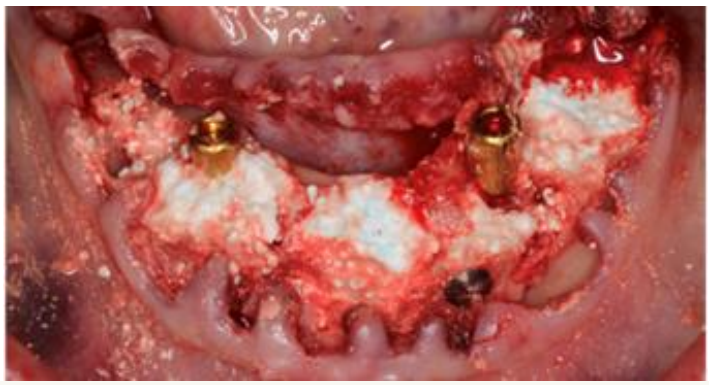
Extractions of the mandible

Implants

CLINICAL EVIDENCE



A bone plate was broken accidentally during the surgery and is screwed back into place.



Augma Bond Apatite®

Suture

Locator abutments

CLINICAL EVIDENCE

Preparation of provisional prostheses

Preparation of provisional prostheses

Post-op

CLINICAL EVIDENCE

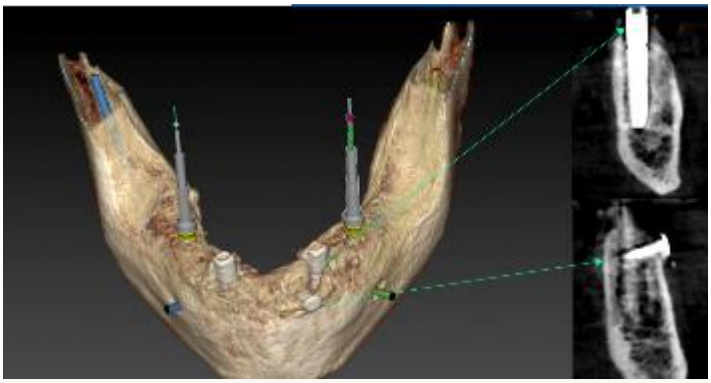
1-week post-op

1-week post-op

1.5-month post-op

1.5-month post-op

CLINICAL EVIDENCE



5-month post-op

5-month post-op

5-month post-op

5-month post-op

CLINICAL EVIDENCE

6 months after the 1st surgery

6 months after the 1st surgery

Upper prosthesis

Upper prosthesis

CLINICAL EVIDENCE

10 months after the 1st surgery

10 months after the 1st surgery

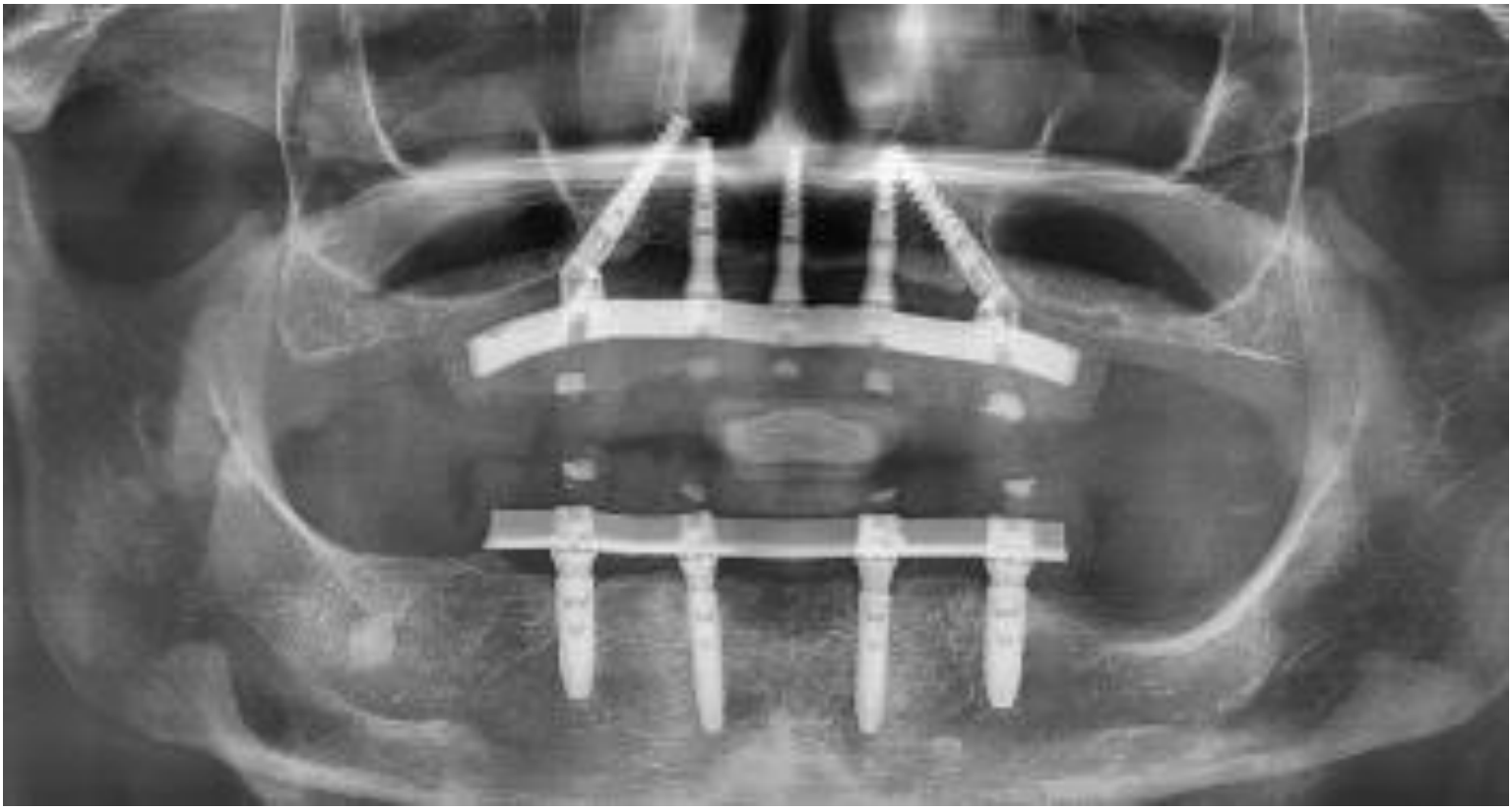
Lower prosthesis

Lower prosthesis

CLINICAL EVIDENCE

Before

After



Radiographic appearance - 2.5-year follow-up

Watch videos for this case

LEVEL IV | HIGH GRAFTING VOLUME

SOCKET GRAFTING
SOFT TISSUE ENHANCEMENT
LATERAL AUGMENTATION
SINUS LIFT / BILATERAL SINUS LIFT

LEVEL IV | High Grafting Volume

Characterization

Cases that are exclusive to the maxilla, as it contains sinus lift elevation and usually includes all of the bone defects characterized in level III cases. In addition, they have high pneumatization of the maxillary sinus with the need to proceed to their respective elevation. In level IV cases, it is normal to have horizontal bone loss throughout the full arch.

This level of bone augmentation is often done in 2 separate and distinct surgeries. First, a horizontal reconstruction surgery with sinus elevation. Six months later the second surgery for the placement of the planned implants.

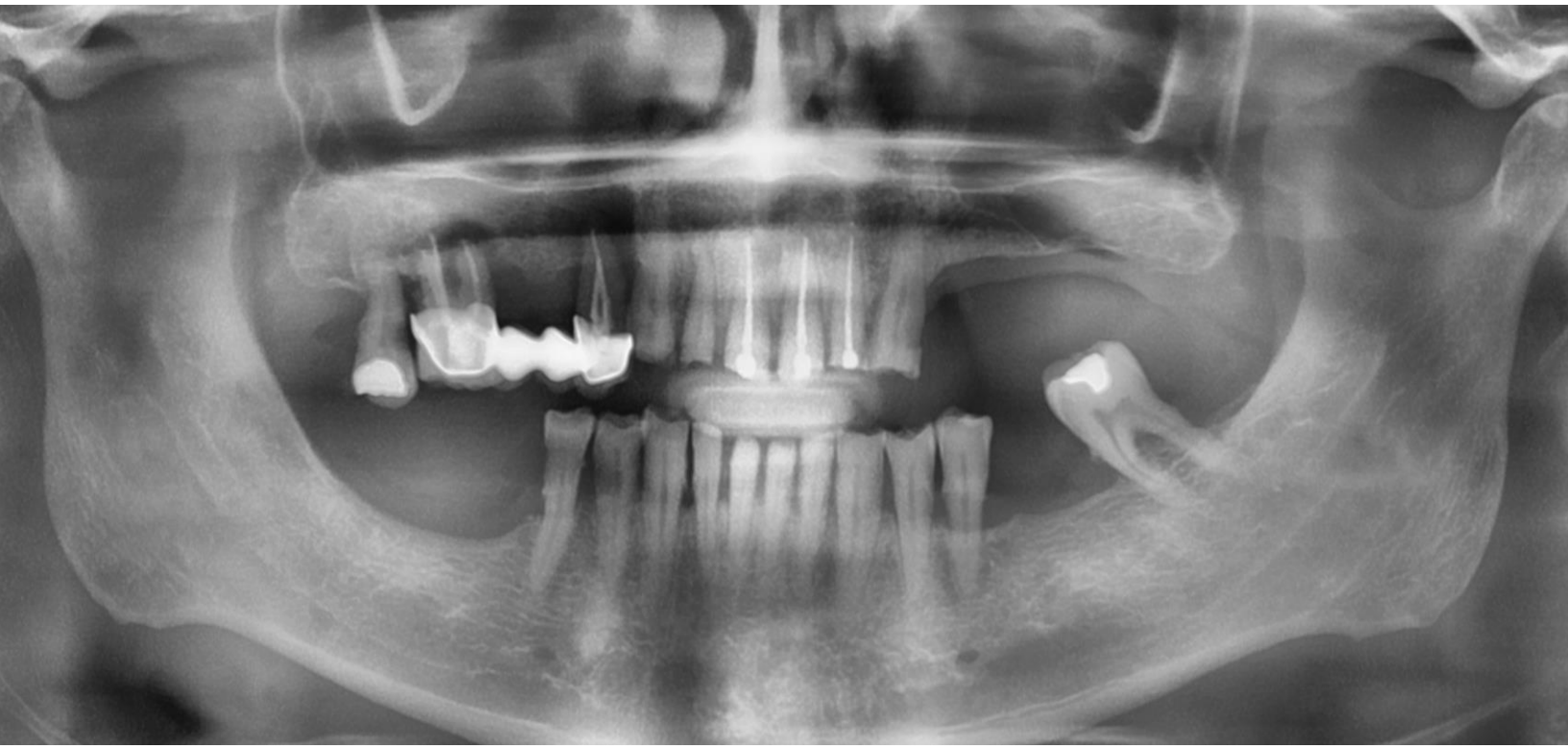
In some cases it is possible to place the implants during the first surgery, but immediate load is not advised. A temporary prosthesis should be avoided for at least 2 months. In cases where a removable prosthesis is unavoidable for the patient due to external concerns such as work, family, etc., the removable prosthesis should not exert any type of pressure or movement on the grafted areas and should be supported exclusively on the palatal zone. (For example a palatine prosthetic with suspended teeth.)

For most level IV cases, 9-12 Augma Bond Apatite® syringes are required.

LEVEL IV, CASE #1 | CASE DESCRIPTION

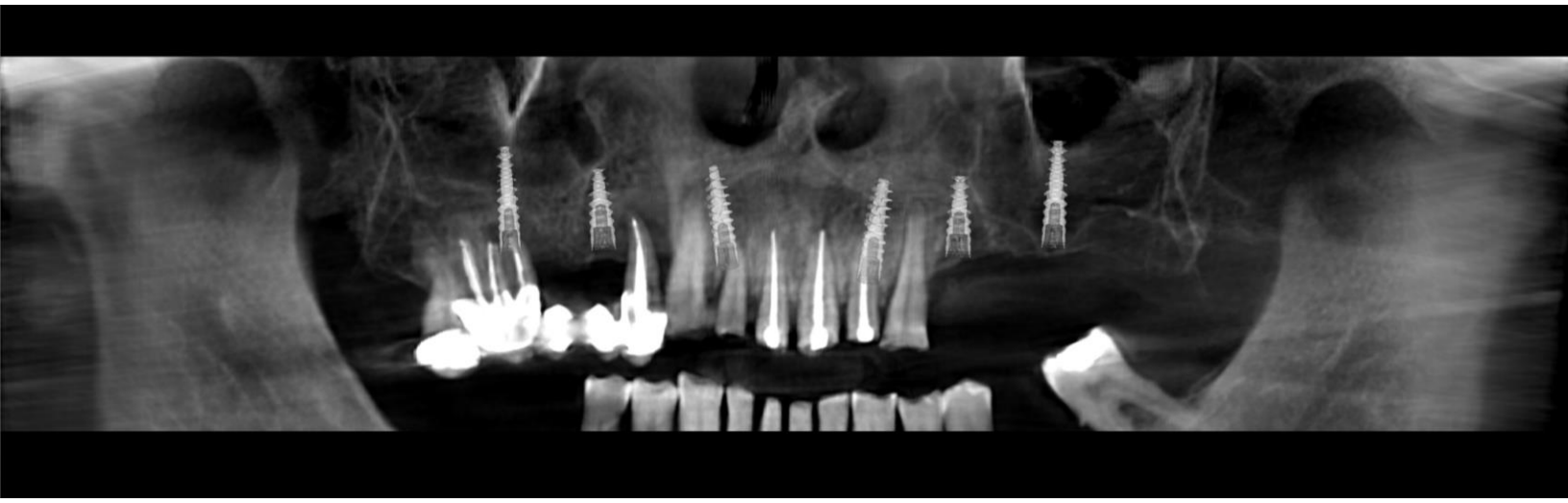
Complete Oral Rehabilitation (Maxilla)

- The patient came for the extraction of all upper and lower teeth and the placement of the 5 lower implants.
- Bone defects in the maxilla and mandible are corrected with Bond Apatite®.

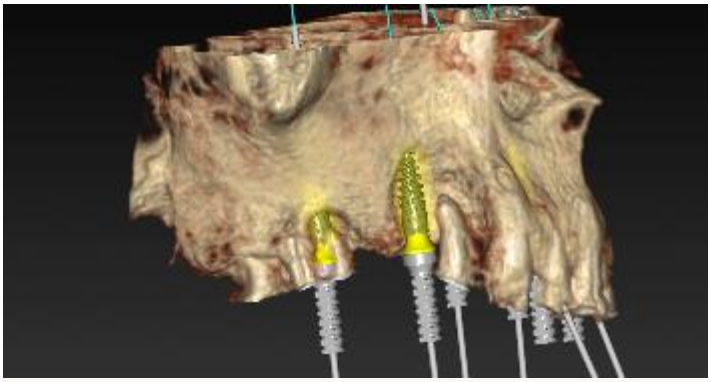


Complete Oral Rehabilitation (Maxilla)

- The surgical plan includes a bilateral superior sinus elevation and a superior All-on-6 with immediate loading 6 months after bone reconstruction.



CLINICAL EVIDENCE



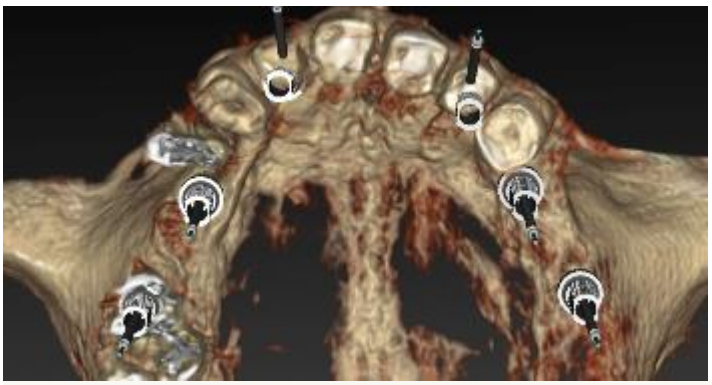
Surgical plan

Initial aspect

Initial aspect

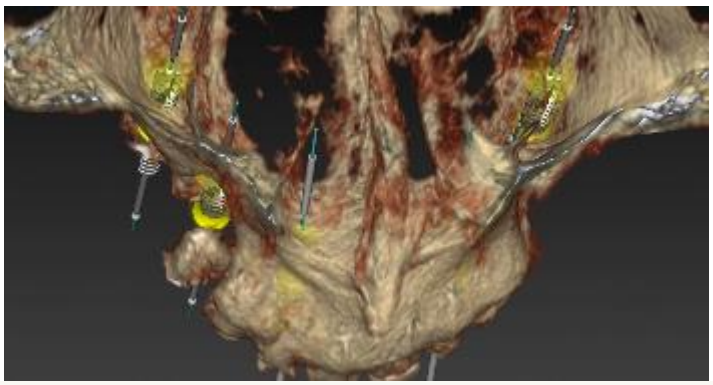
Initial aspect

CLINICAL EVIDENCE



Planning

6 immediate implants



Planning

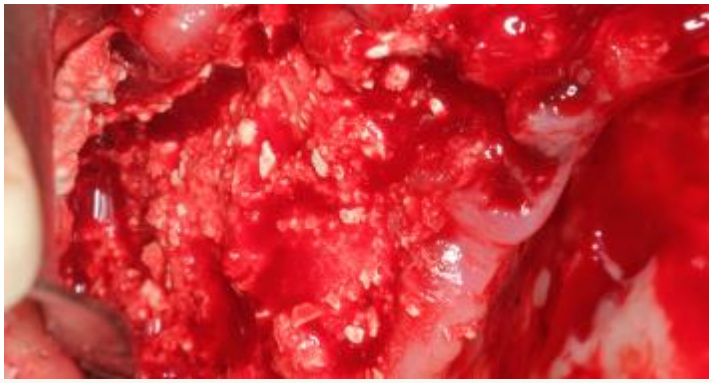
Bilateral sinus lift

Extractions

Vertical recession due to bone absence

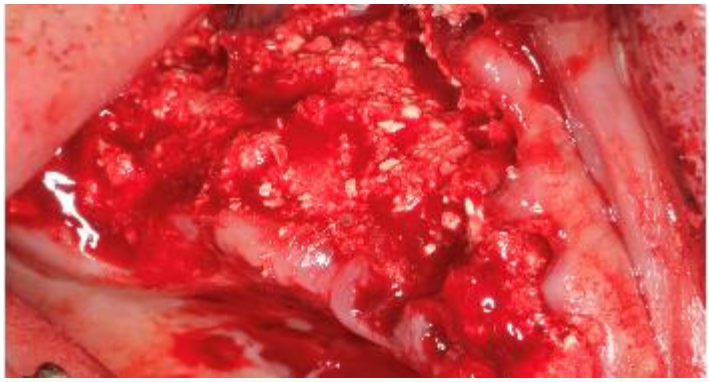
CLINICAL EVIDENCE

Augma Bond Apatite®



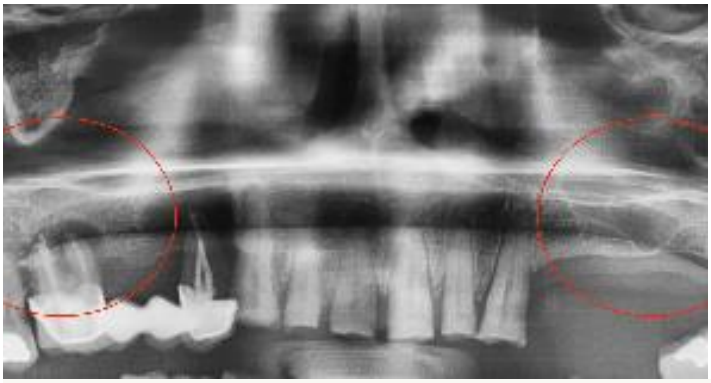
Augma Bond Apatite®

Bone deficiency of the right maxilla.

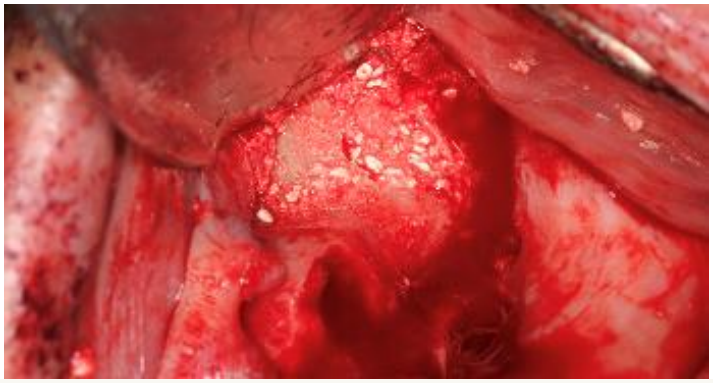


Grafting with Bond Apatite®

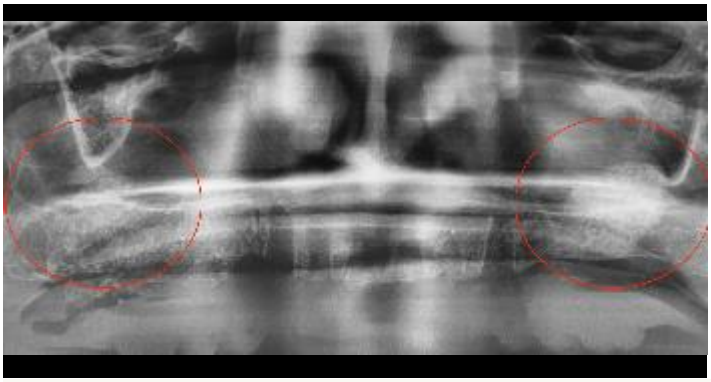
CLINICAL EVIDENCE



Before the sinus lift



Sinus lift of the left maxilla



After the sinus lift

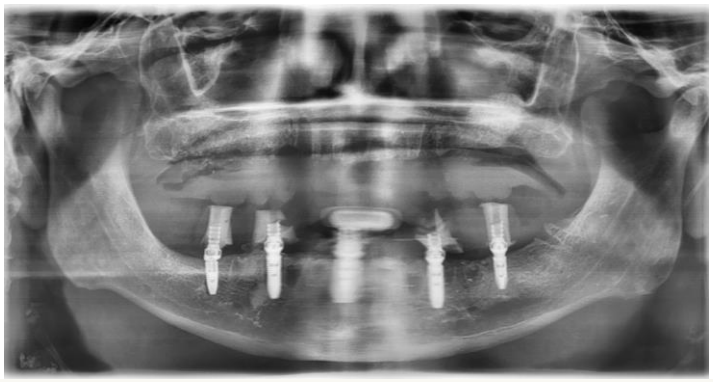
Final appearance of the sutures

CLINICAL EVIDENCE

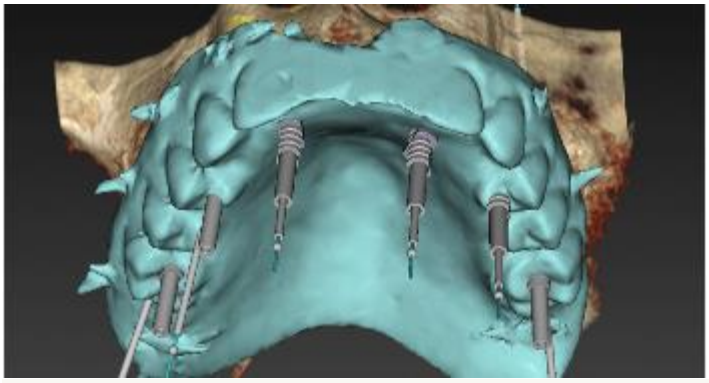
Final appearance of the prosthesis

Removable on the maxilla

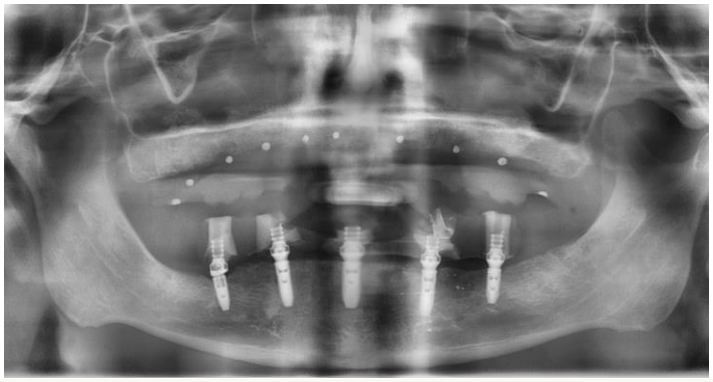
Fixed on the mandible



Immediate post-op

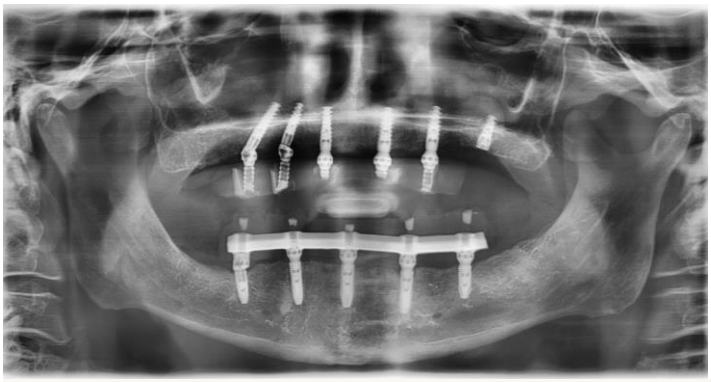


Orthopantomography planning



6-month post-op

CLINICAL EVIDENCE



1-year post-op

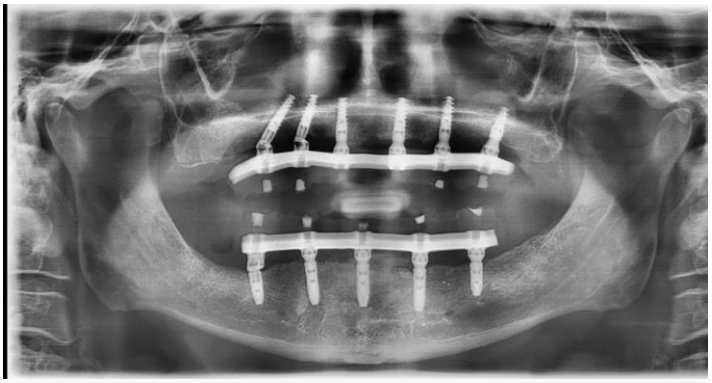
1-year post-op

1-year post-op

Starting the final prosthesis

CLINICAL EVIDENCE

Final rehabilitation



Final orthopantomography

3-year follow up

Watch videos for this case

CLINICAL EVIDENCE

Before

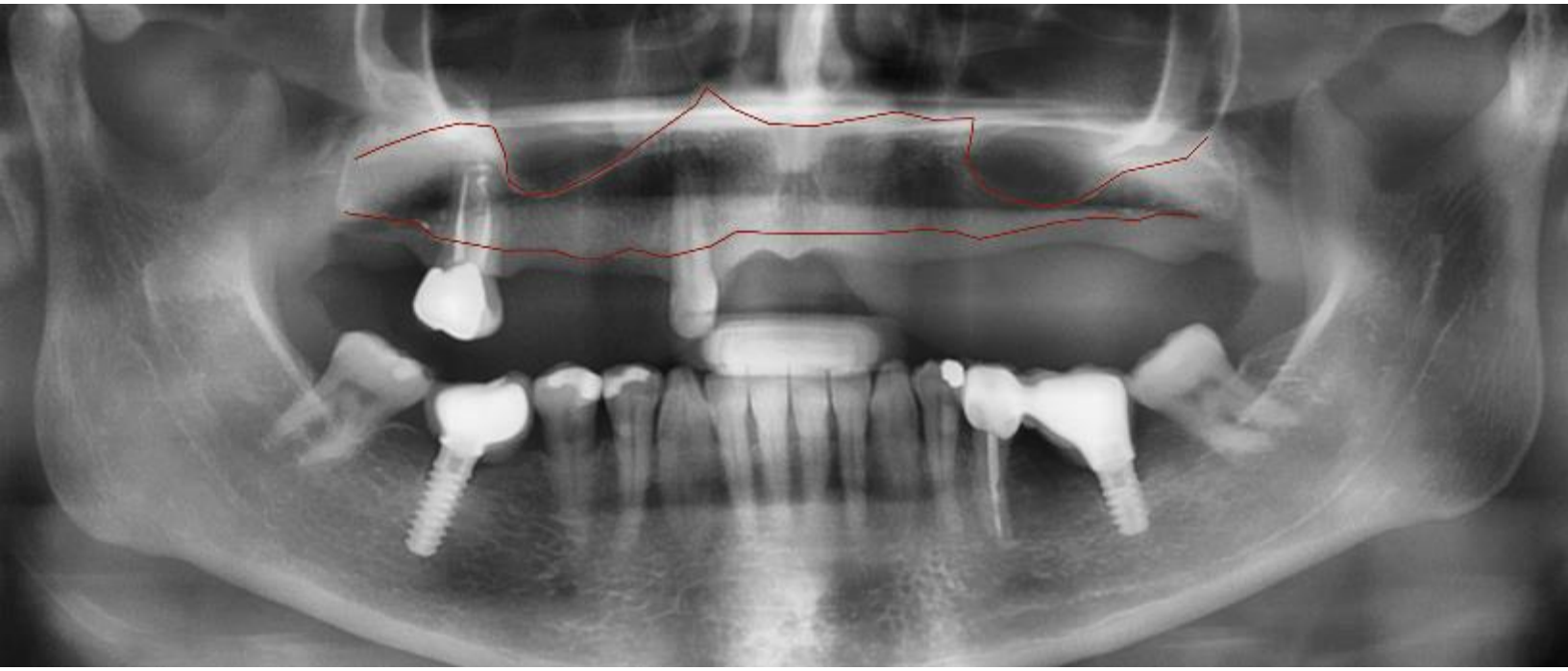
After

LEVEL IV, CASE #2

CASE DESCRIPTION

2-Phase Total Maxillary Rehabilitation with Bone Reconstruction and an All-on-6

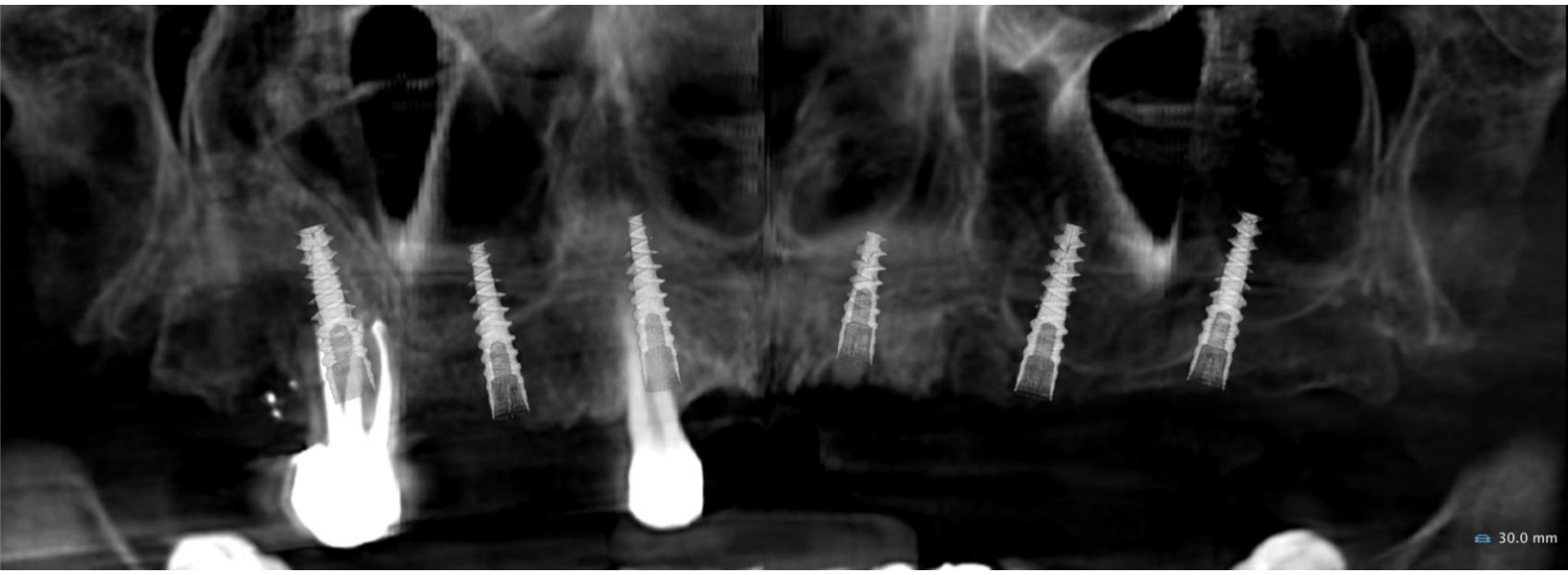
- The patient presented with the absence of almost all maxillary teeth, the absence of horizontal and vertical bone.
- The patient wears a removable prosthesis and wants a fixed solution.



LEVEL IV, CASE #2 | TREATMENT PLAN

2-Phase Total Maxillary Rehabilitation with Bone Reconstruction and an All-on-6

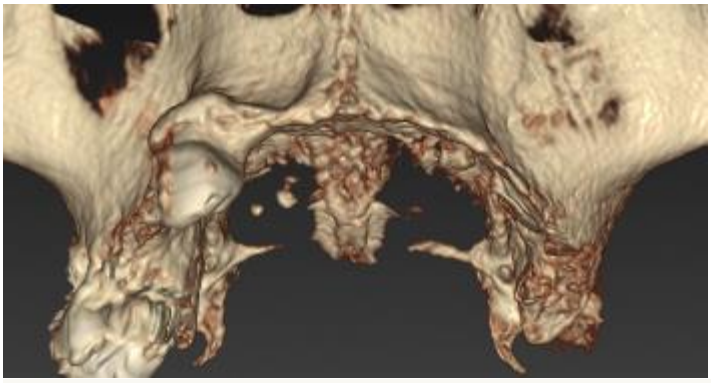
- The treatment plan includes a first surgery with complete horizontal maxillary bone augmentation, a double nasal sinus elevation and right molar extraction.
- The patient does not wear any prosthesis for 2 months (during Covid-19).
- 2 months post-op a palatal supported removable prosthesis is placed.
- 6 months later a planning and surgery for guided placement of 6 implants with immediate load.
- 6 months later, the definitive hybrid prosthesis is made and placed.



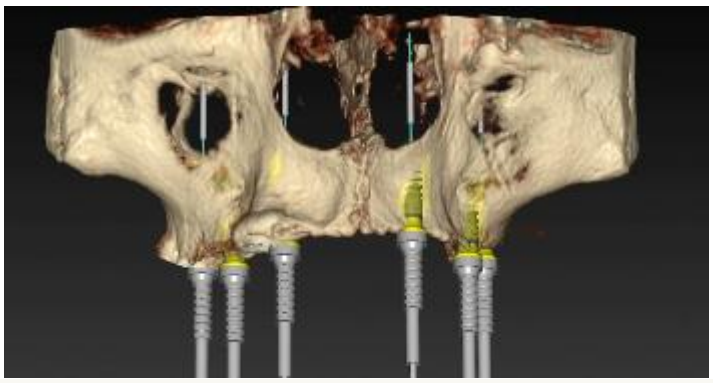
CLINICAL EVIDENCE

Intraoral aspect

Intraoral aspect

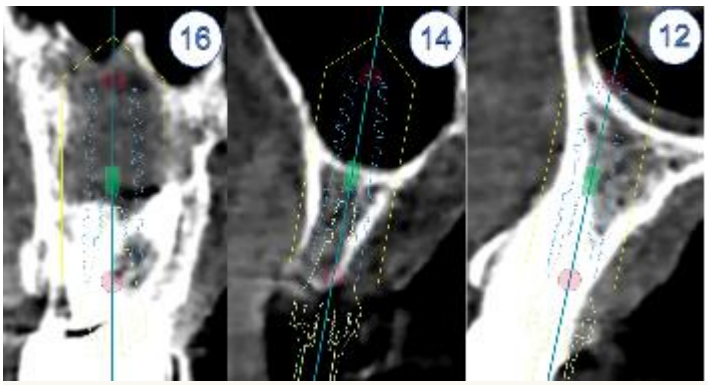


Bone 3D appearance

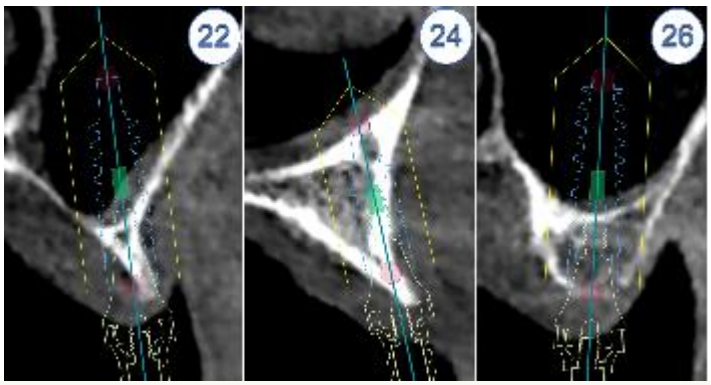


Complementary exams

CLINICAL EVIDENCE

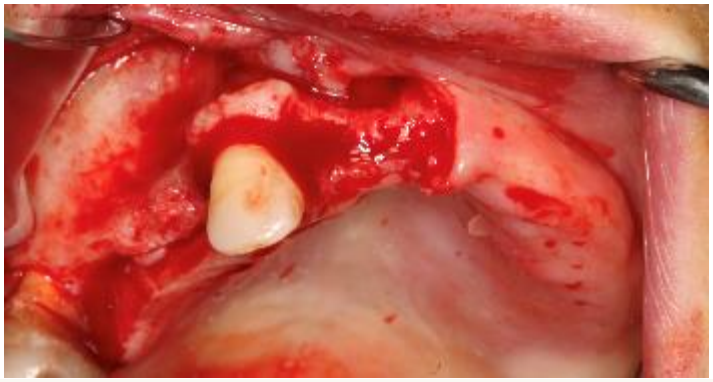


Complementary exams



Complementary exams

1st surgery bone reconstruction



1st surgery – 1st quadrant

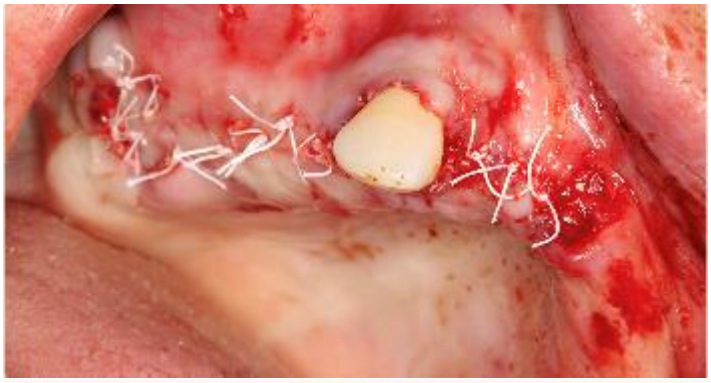
Opening the flap

CLINICAL EVIDENCE

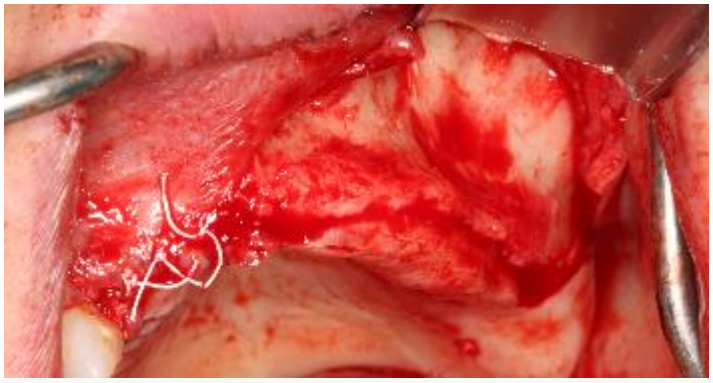
1st surgery – 1st quadrant

Opening the sinus window

Augma Bond Apatite®



Sutures

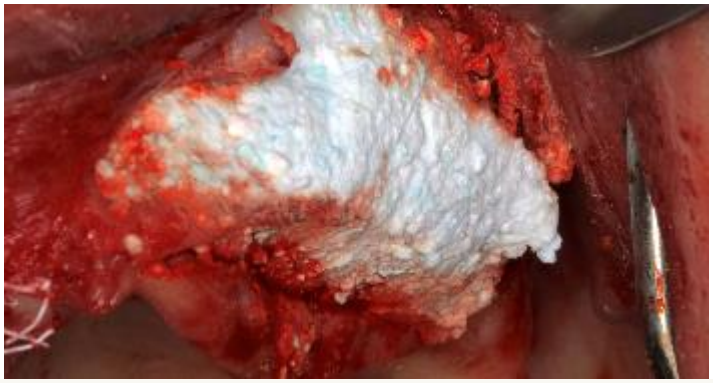


1st surgery – 2nd quadrant

Opening the flap

CLINICAL EVIDENCE

1st surgery – 2nd quadrant
Left sinus elevation
Augma Bond Apatite®



Horizontal augmentation using
Augma Bond Apatite®

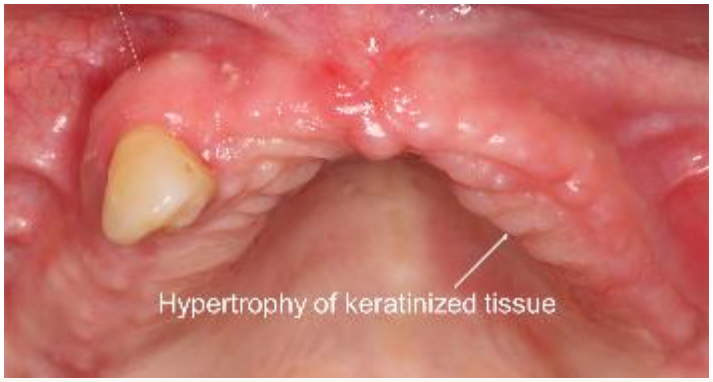
Sutures

CLINICAL EVIDENCE

Pre-op

1-month post-op

Pre-op

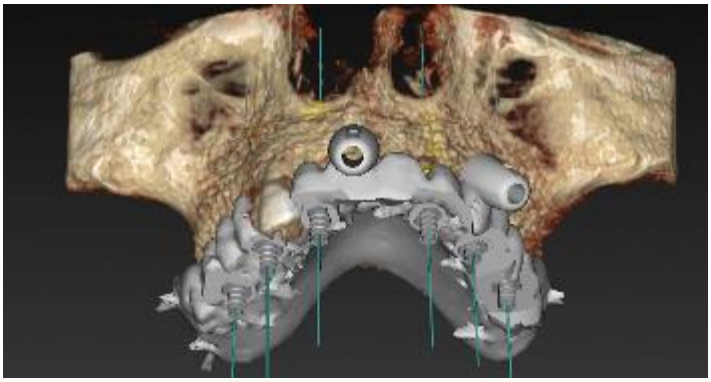


1-month post-op

CLINICAL EVIDENCE

Pre-op

A new temporary prosthesis is placed 2 months post-op without buccal support due to the bone volume gained. The patient did not place any prosthesis during the healing stage.



Guided planning

Guided surgery

CLINICAL EVIDENCE

Guided surgery

Guide for the 2.0 drill

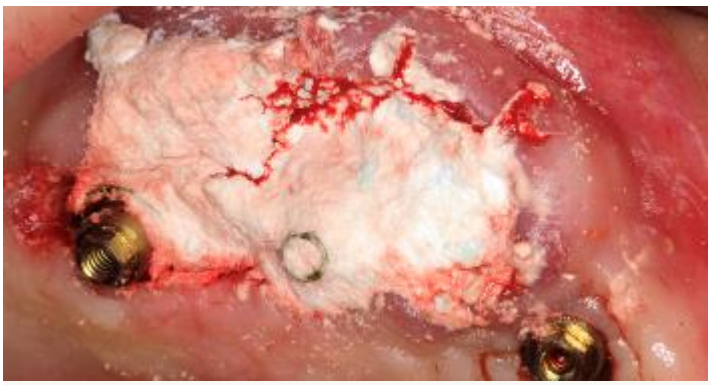
Occlusal appearance

Surgical guide removal

Right side flap opening

Bone/soft tissue augmentation

CLINICAL EVIDENCE



Augma Bond Apatite®

Sutures

Temporary hybrid prosthesis (in load)

Augma Shield™ in place

CLINICAL EVIDENCE

Post-surgical orthopantomography

10-day post-op

3-month post-op

6-month post-op

CLINICAL EVIDENCE

Final prosthesis

Final prosthesis

6-month post-op

6-month post-op

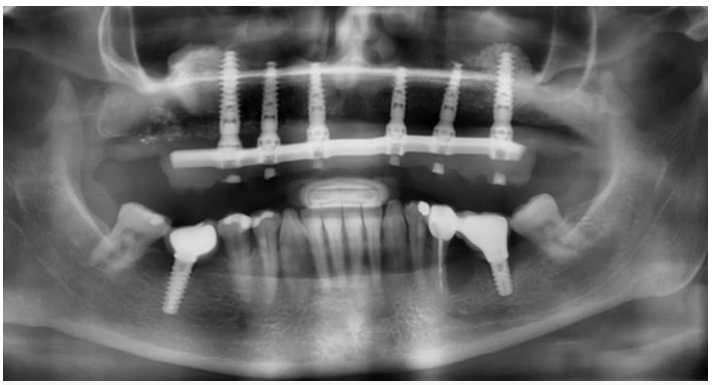
CLINICAL EVIDENCE

Beginning

1st surgery

2nd surgery

CLINICAL EVIDENCE



Final appearance

Final appearance

Final appearance

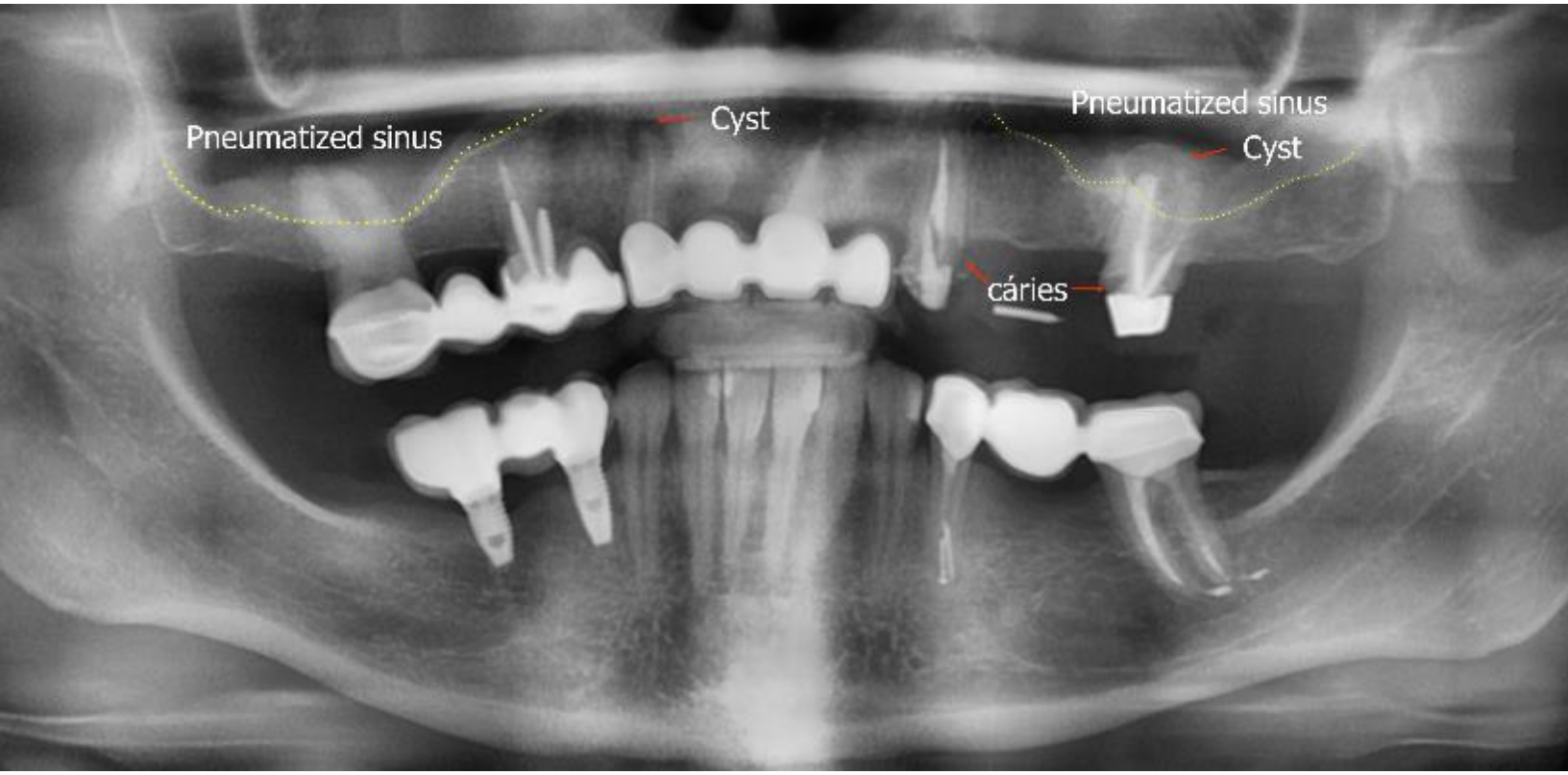
Watch videos for this case

LEVEL IV, CASE #3

CASE DESCRIPTION

Total Maxillary Rehabilitation in Two Phases with Bone Reconstruction and All-on-6 (II)

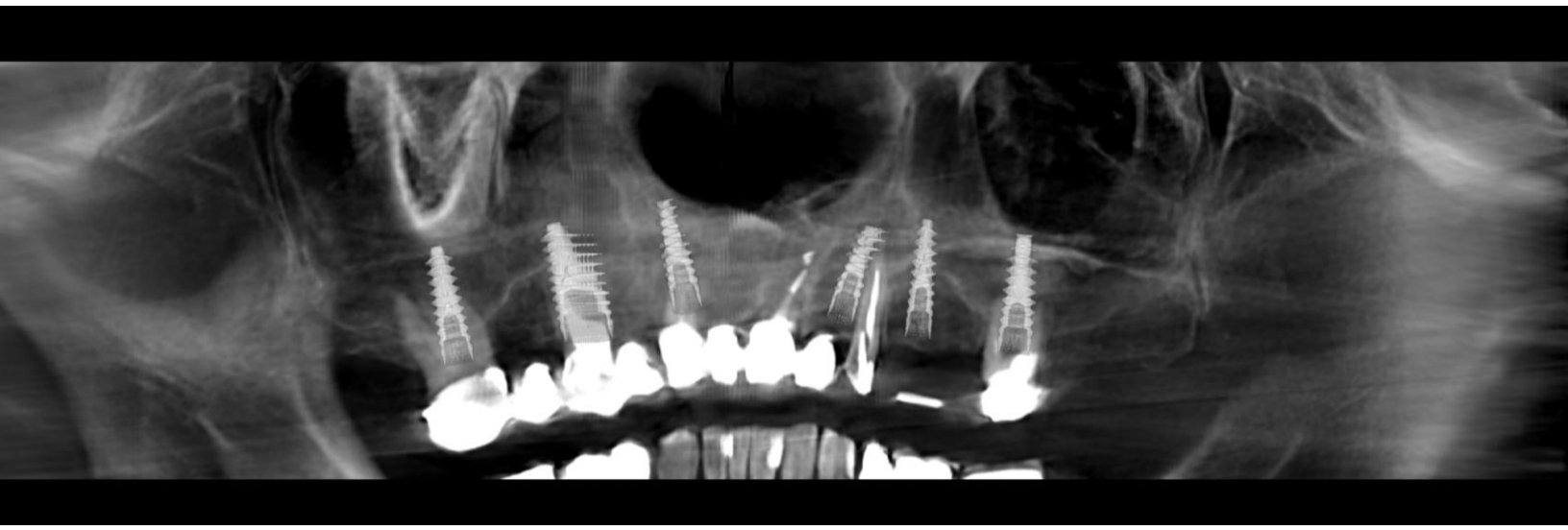
- A healthy, 36-year-old woman attends the consultation with complaints of dental mobility and pain when chewing. The patient also complains of bad breath.
- During the initial intra-oral evaluation, the first idea was to redo the 3 maxillary fixed bridges because the patient was still very young and the teeth seemed to be acceptable, but the complementary exam showed an anatomical impossibility for immediate loading.
- Exams showed only 6 maxillary teeth, which were all in poor condition. Three failing fixed bridges with mobility.
- The patient wants fixed teeth without artificial gums.



LEVEL IV, CASE #3 | TREATMENT PLAN

Total Maxillary Rehabilitation in Two Phases with Bone Reconstruction and All-on-6 (II)

- Rehabilitation is done in two separate surgeries.
- The first surgery is a full maxillary horizontal bone augmentation, double maxillary sinus elevation and extraction of the 6 remaining teeth. The patient uses a fully fixed removable prosthesis supported only on the palate.
- 6 months later, a guided surgery is planned and executed with the placement of 6 implants in immediate load.
- After another 6 months, the definitive hybrid prosthesis is made



CLINICAL EVIDENCE

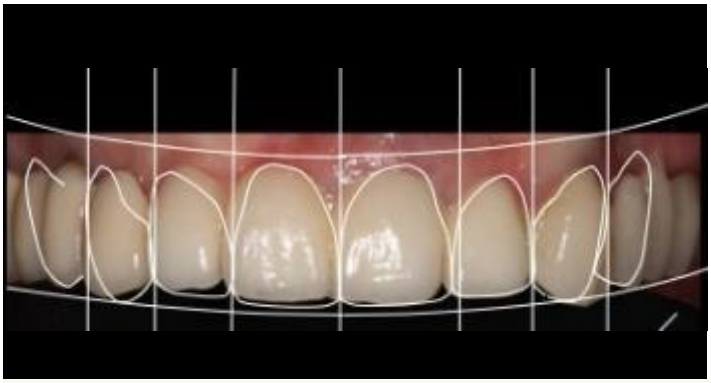
Initial aspect

Initial aspect

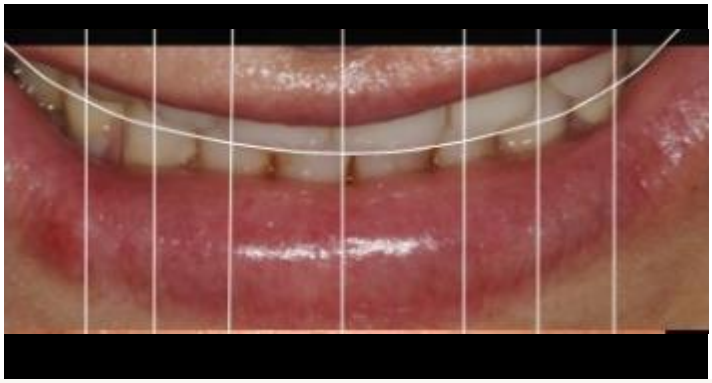
Intraoral aspect

Initial aspect

CLINICAL EVIDENCE

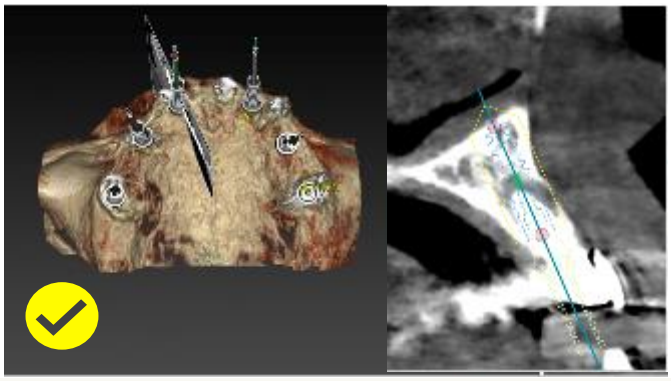


Planning (DSD)



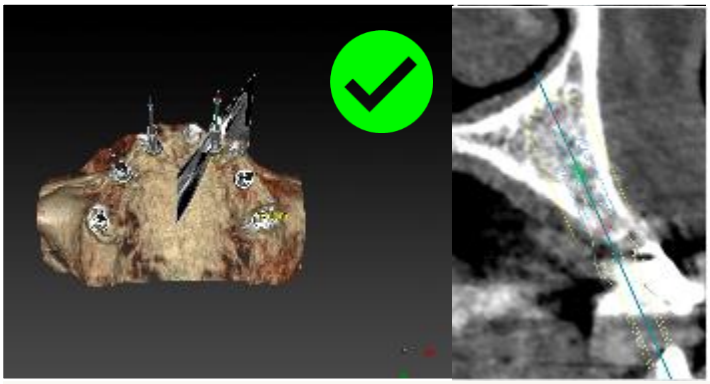
Planning (DSD)

Planning (DSD)



Attempting to plan immediate implants, which was not possible.

CLINICAL EVIDENCE



Attempting to plan immediate implants, which was not possible.

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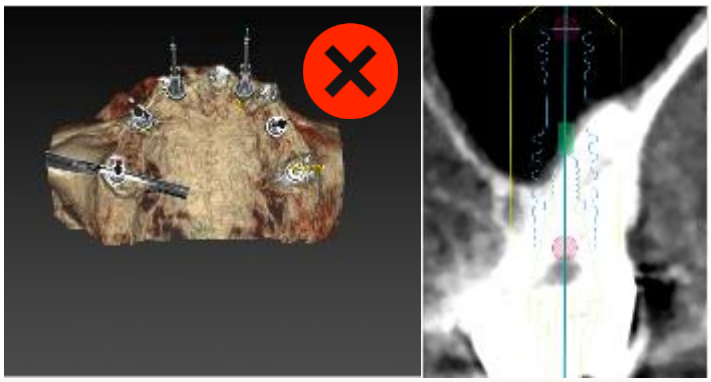


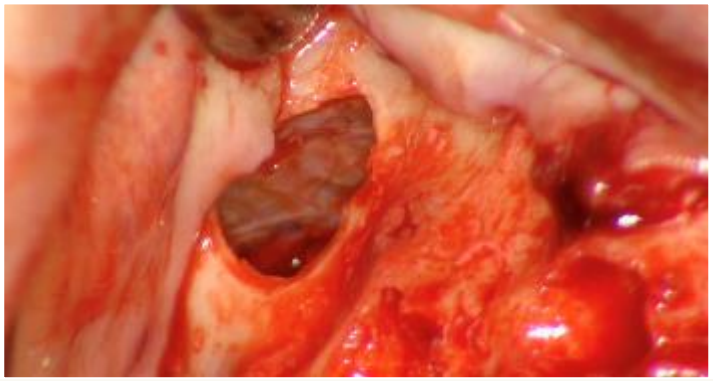
Attempting to plan immediate implants, which was not possible.

CLINICAL EVIDENCE

1st surgery: intraoral aspect before extraction and bone augmentation.

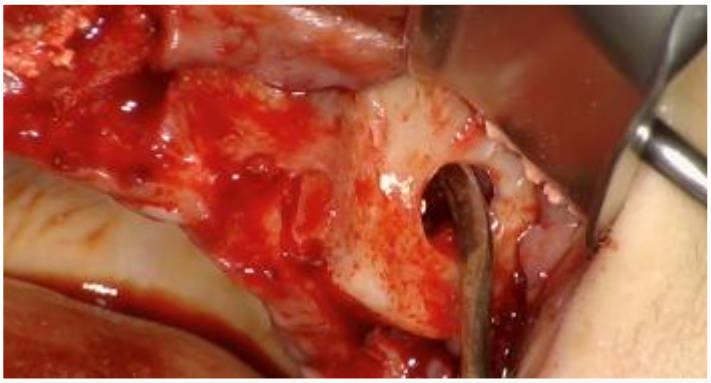
Extractions

Right sinus

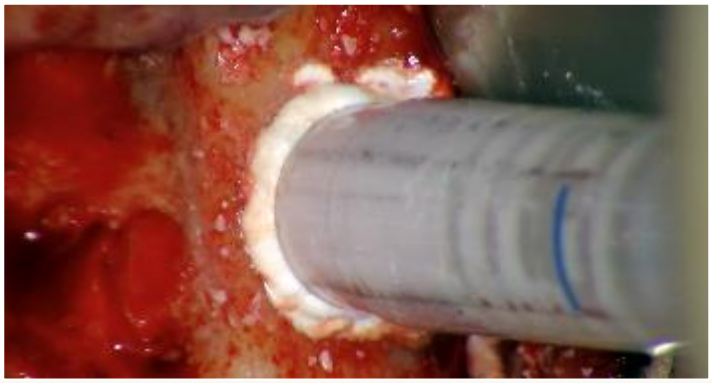


Right sinus

CLINICAL EVIDENCE



Left sinus



Left sinus

Augma Bond Apatite® in place.

Double sinus lifting, socket preservation and lateral augmentation.

Suture

CLINICAL EVIDENCE

The patient uses a fully fixed removable prosthesis supported only on the palate.

Post-op

Removable prosthesis 5-month post-op

Gingival appearance 5-month post-op

CLINICAL EVIDENCE

Guided surgery – pre-op

Watch CBCT and guided surgery videos

Guided surgery – post-op

Multi-unit abutments

Provisional abutments

CLINICAL EVIDENCE

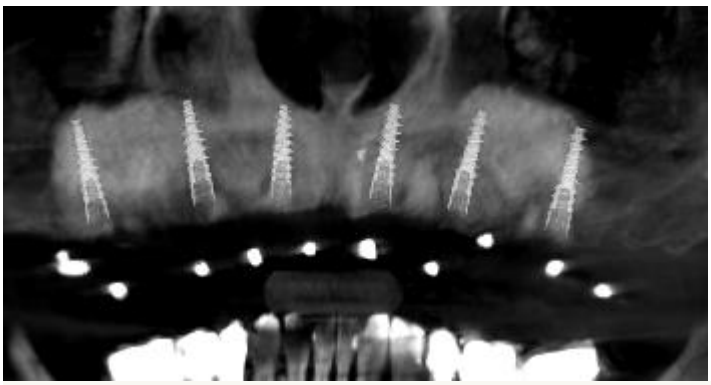
Prosthesis preparation

Temporary prosthesis

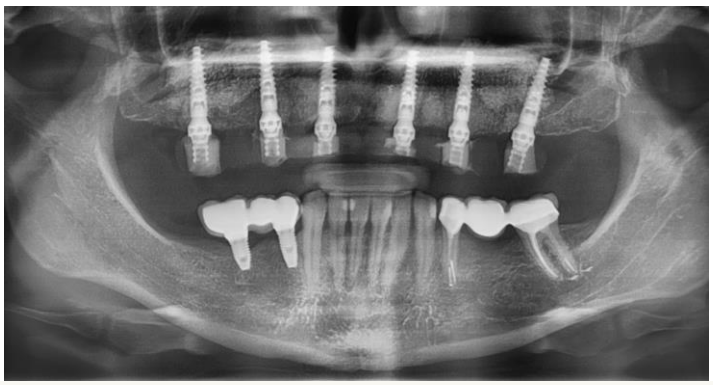
Temporary prosthesis

Temporary prosthesis

CLINICAL EVIDENCE



Planning



Post surgery

Gingival appearance 2-month post-op

Temporary prosthesis 2-month post-op

CLINICAL EVIDENCE

11-month post-op

11-month post-op

11-month post-op

Zirconia testing

CLINICAL EVIDENCE

Zirconia testing

Final result

Final result

Final result

CLINICAL EVIDENCE

Radiographic appearance – Final result

Watch videos for this case

LEVEL IV, CASE #4

CASE DESCRIPTION

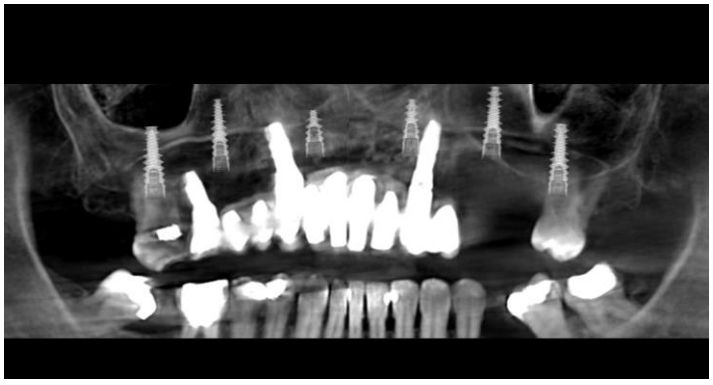
Total Maxillary Rehabilitation in 2 Phases with Bone Reconstruction and an All-on-6 (III)

- A healthy 62-year-old woman, attends the consultation with complaints of pain and edema in the right posterior maxillary area.
- The patient complains of pain while chewing, a lack of teeth in the 2nd quadrant and a lack of aesthetics with the old hybrid prosthesis.
- She has the constant feeling of having a bad taste in her mouth.

LEVEL IV, CASE #4 | TREATMENT PLAN

Total Maxillary Rehabilitation in 2 Phases with Bone Reconstruction and an All-on-6 (III)

- Superior hybrid prosthesis with only 3 implants.
- Total bone absorption on the last right implant with sinus communication.
- The other 2 implants are poorly positioned to be included in a more aesthetic future rehabilitation.
- The extraction of the infected right posterior implant is done with the disassembly of the prosthesis at the 1st consultation.
- 1.5 months later, the complete horizontal bone augmentation of the maxillary and bilateral sinus elevation. The patient will use the old prosthesis for 6 months, fixed on the 2 old implants.
- 6 months later, a new surgery is performed with the extraction of the 2 old implants, a new horizontal bone graft, and placement of 6 implants with immediate load with a new prosthesis.
- After another 6 months, the final hybrid prosthesis is made.



CLINICAL EVIDENCE

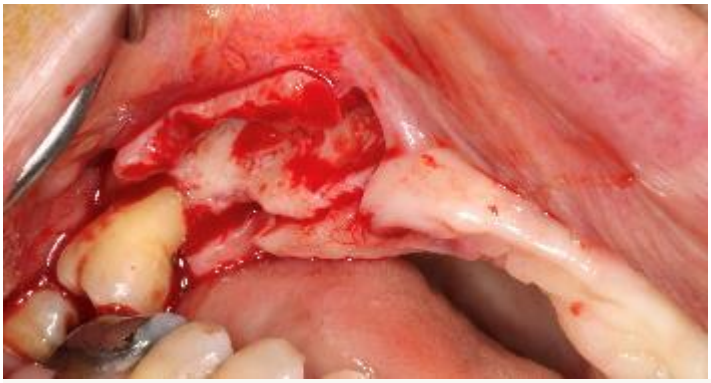
1st surgery – initial appearance

1st surgery – initial appearance

1st surgery – initial appearance

1st surgery – initial appearance

CLINICAL EVIDENCE



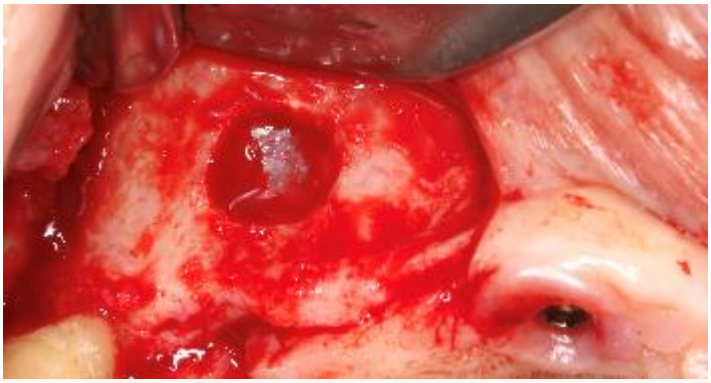
Flap release

1st surgery – sinus opening

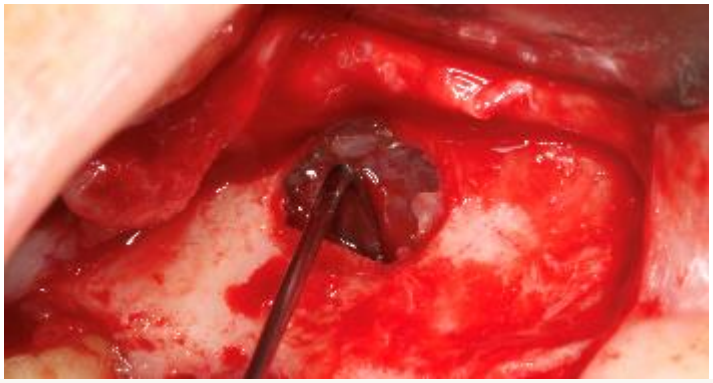
1st surgery – sinus opening

1st surgery – sinus opening

CLINICAL EVIDENCE

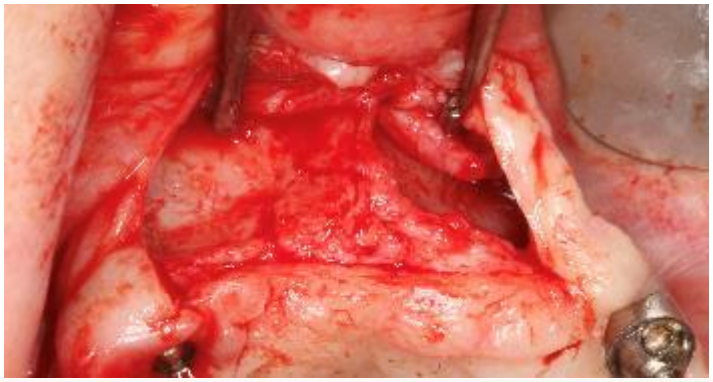


1st surgery – sinus opening



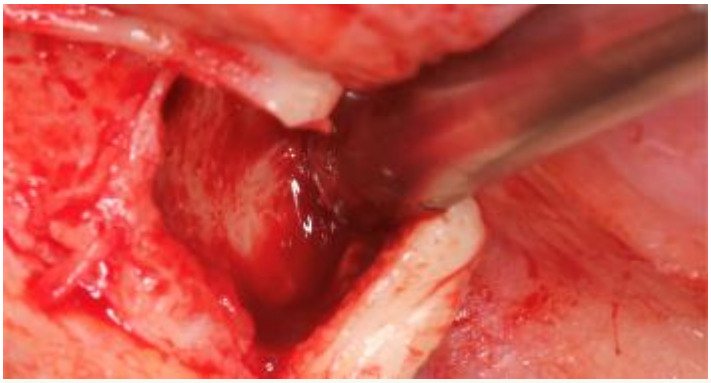
Elevation of the membrane

Opening the anterior flap

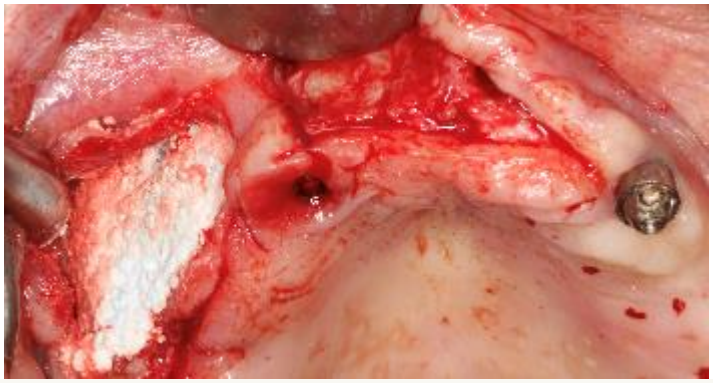


2nd surgical flap showing the horizontal defect.

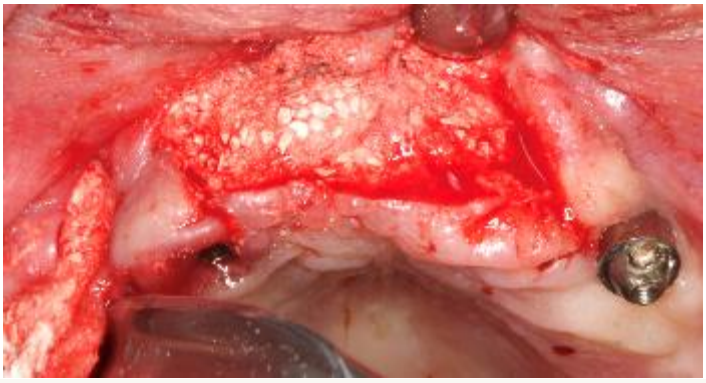
CLINICAL EVIDENCE



Tunneling to keep the flap with tension.



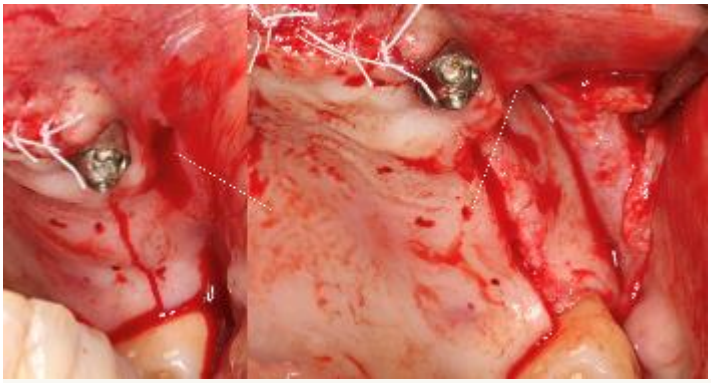
Two zone bone grafting with Augma Bond Apatite®



Two zone bone grafting with Augma Bond Apatite®

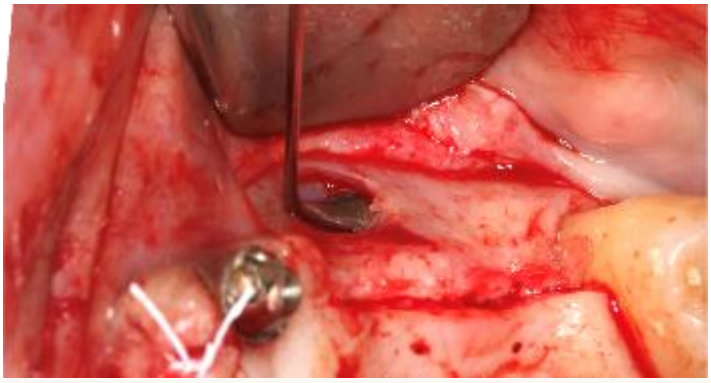
Suturing the flaps with 3mm releases in the mucogingival zone.

CLINICAL EVIDENCE



1st surgery, opening of the 3rd flap with 3mm releases in the mucogingival zone.

1st surgery sinus lift

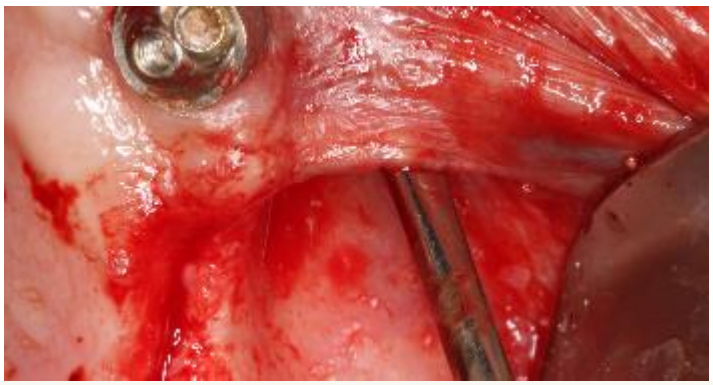


1st surgery sinus lift

1st surgery sinus lift

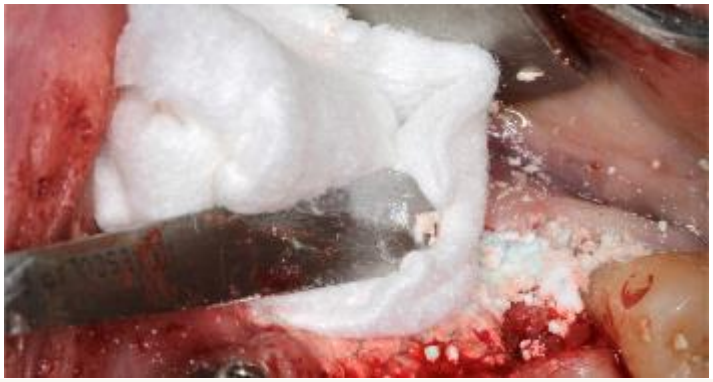
CLINICAL EVIDENCE

1st surgery



Tunneling

Augma Bond Apatite®



Augma Bond Apatite® - pressing the cement.

CLINICAL EVIDENCE

Post surgery

The old prosthesis on 2 implants.

Post surgery

2-week post-op

CLINICAL EVIDENCE

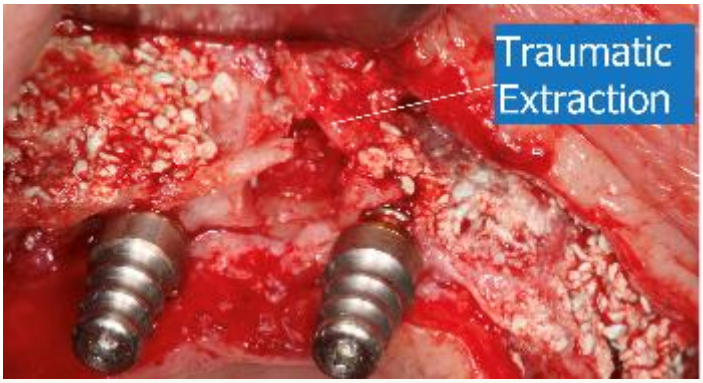
5-month post-op

The initial plan was to wait at least 6 months for the full integration of the bone graft cement. However, one of the old implants broke the platform during chewing, which required performing the 2nd surgery earlier.

Bone Aspect – the bone graft cement is still in the process of full regeneration due to the large volume of graft and surgical time anticipation. However, the bone volume is already significant at this stage.

Extraction of the 2 old implants and placement of 6 new implants.

CLINICAL EVIDENCE



2nd surgery with traumatic extraction.

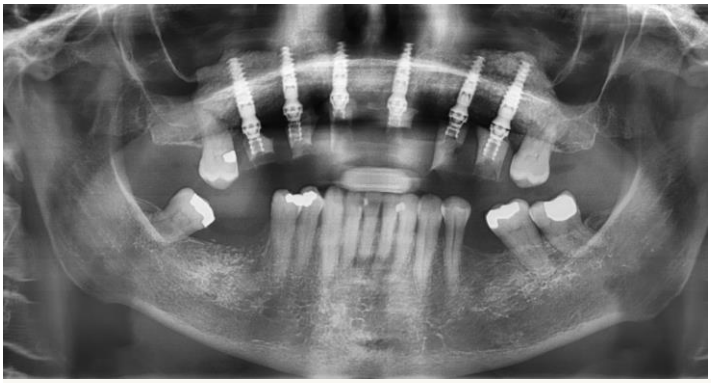
Implants in place.

Decortication

Augma Bond Apatite®

Flap closure under tension and sutures.

CLINICAL EVIDENCE



Post 2nd surgery

New temporary hybrid prosthesis

New temporary hybrid prosthesis

3-month follow up

CLINICAL EVIDENCE

3-month follow up

6 month follow up

Prosthodontics, final impression

Prosthodontics, final impression

CLINICAL EVIDENCE

Case evaluation

Beginning

Case evaluation

After the 1st surgery

Case evaluation

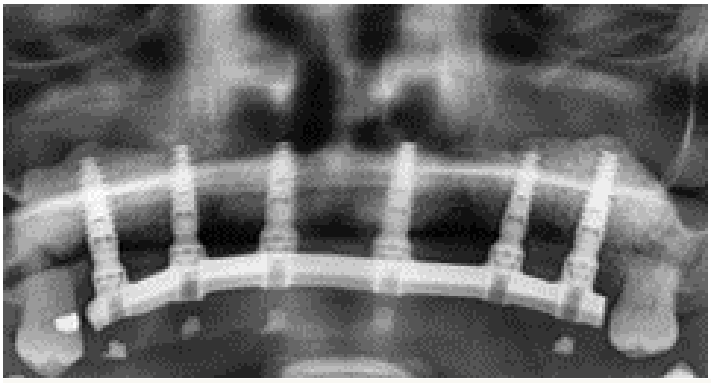
After the 2nd surgery

Final result

CLINICAL EVIDENCE

Final result

Final result



Final result

Final result

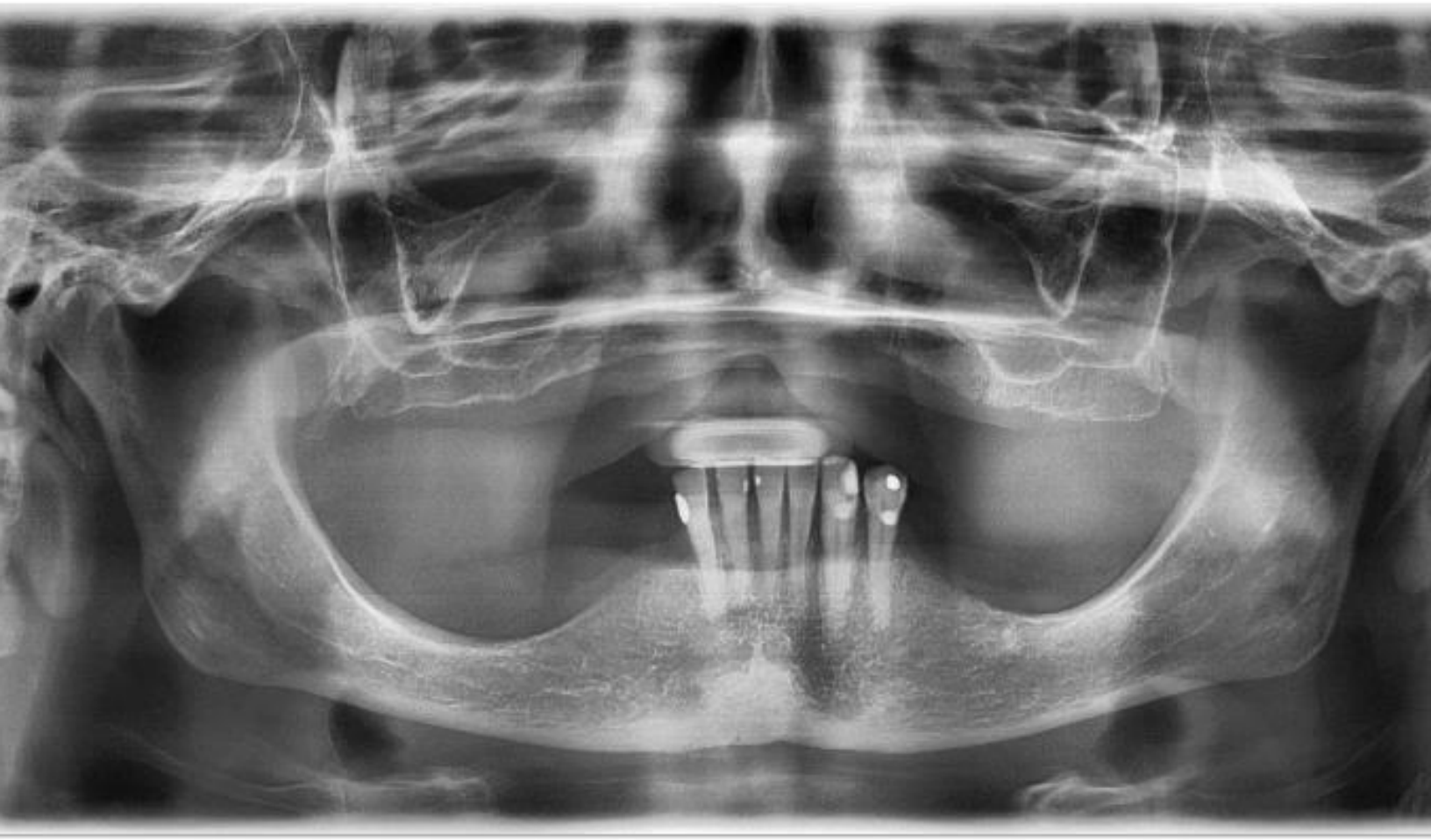
Watch videos for this case

LEVEL IV, CASE #5

CASE DESCRIPTION

Zygomatic Surgery with Bone Augmentation and Immediate Load

- The patient is a healthy 63-year-old female with reduced dimension of the vertical bone after wearing a removable prosthesis for 20 years,
- She presented with difficulties chewing and wanted to improve her self esteem.

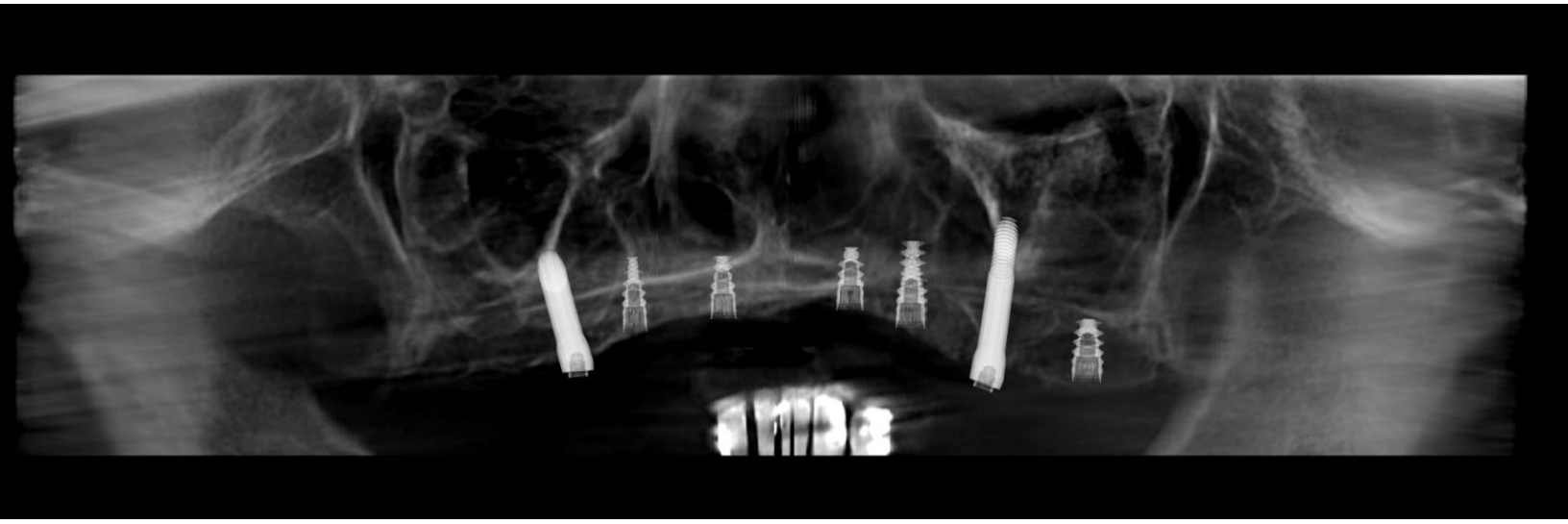


LEVEL IV, CASE #5

TREATMENT PLAN

Zygomatic Surgery with Bone Augmentation and Immediate Load

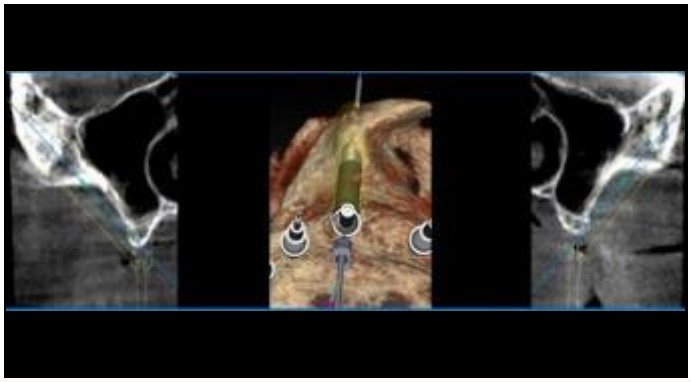
- The treatment plan included 2 retro molar implants, 2 zygomatic implants and 4 conventional implants.



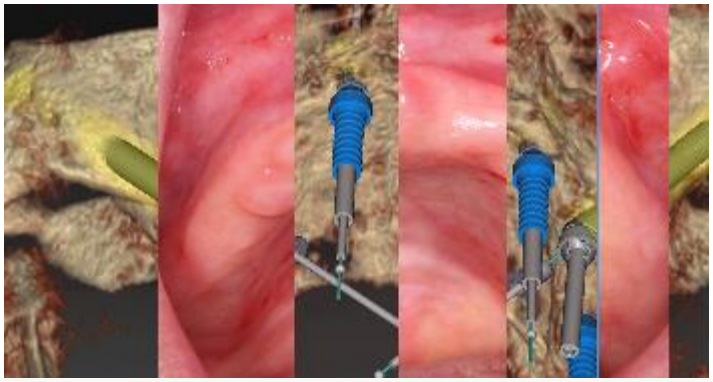
CLINICAL EVIDENCE

Initial aspect

Initial aspect



Treatment planning



Planning

CLINICAL EVIDENCE

Intraoral aspect

Click below for the full surgical film:

Immediate temporary rehabilitation

Temporary rehabilitation

2-month post-op

CLINICAL EVIDENCE

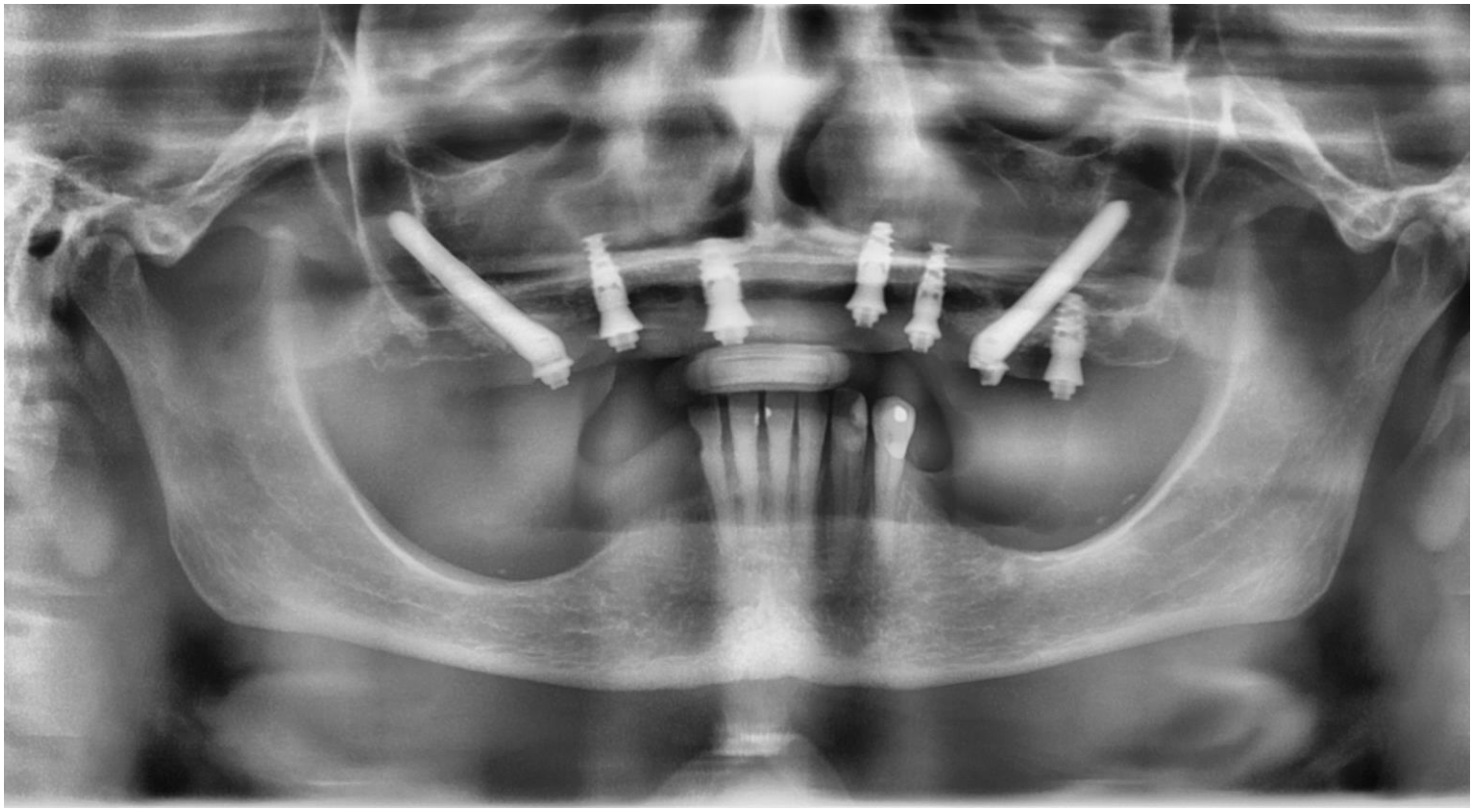
6-month post-op

6-month post-op

Final zirconia / ceramic rehabilitation

Final zirconia / ceramic rehabilitation

CLINICAL EVIDENCE

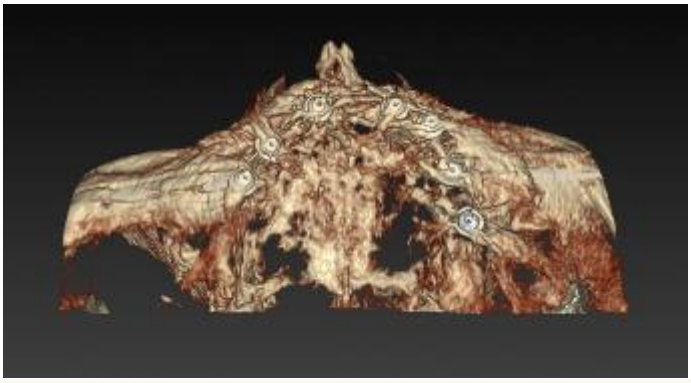


X-ray 6-month post-op

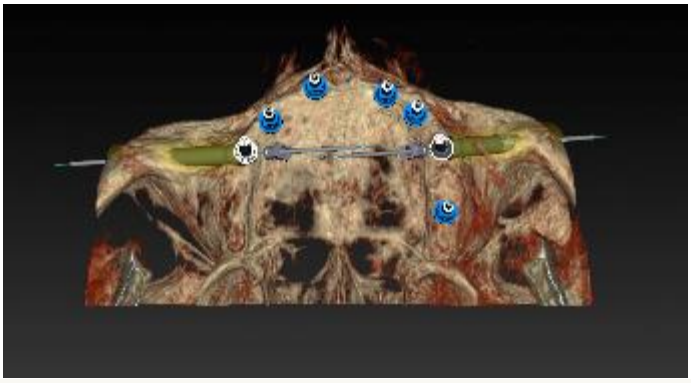
CLINICAL EVIDENCE

Final zirconia/ceramic rehabilitation

Final zirconia/ceramic rehabilitation

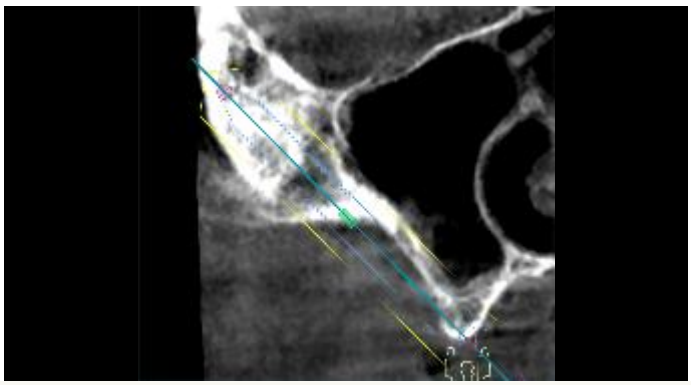


Bone augmentation evaluation 6-month post-op.



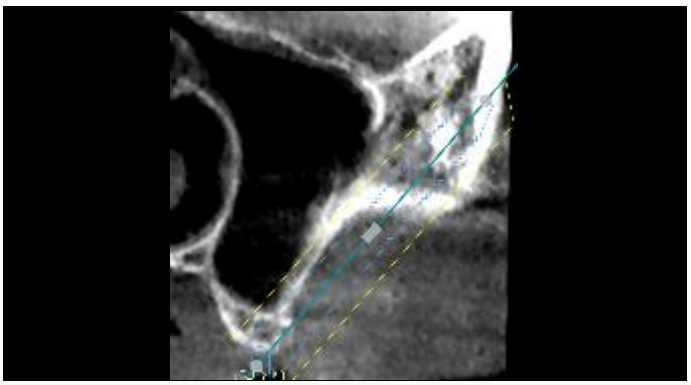
Bone augmentation evaluation 6-month post-op.

CLINICAL EVIDENCE



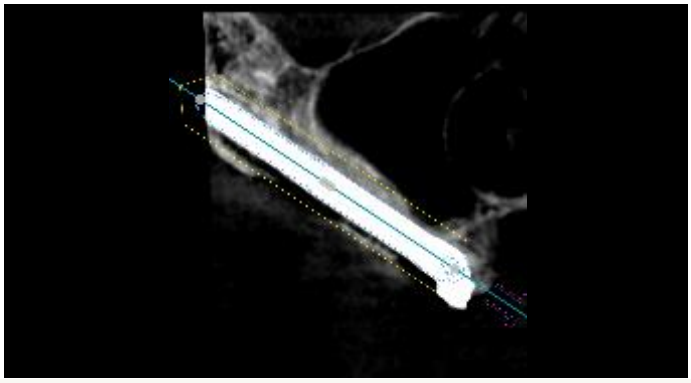
Planning

Bone volume evaluation



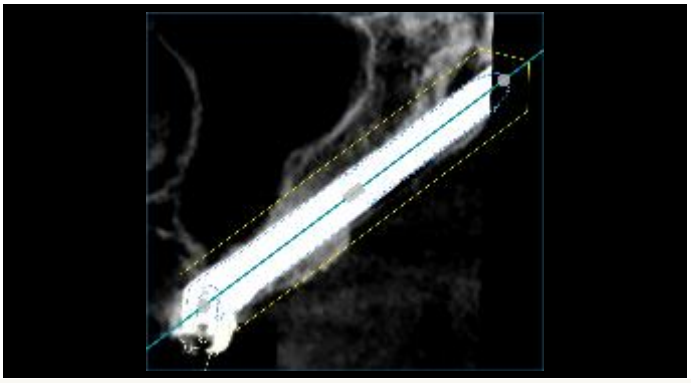
Planning

Bone volume evaluation



Bone grafting result

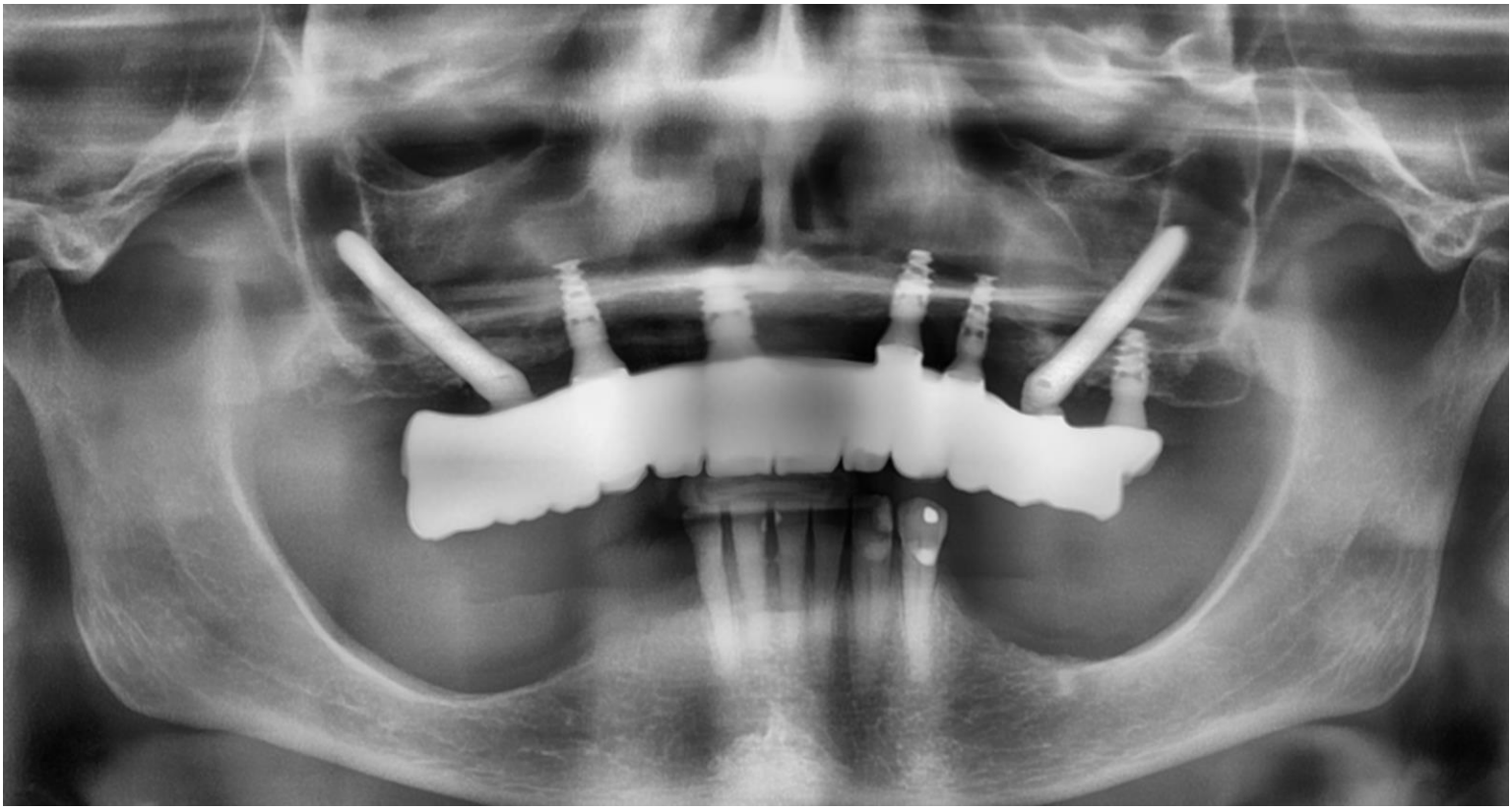
2-year post-op



Bone grafting result

2-year post-op

CLINICAL EVIDENCE



X-ray 5-year follow up

Watch videos for this case

EXPERT TIPS

FOR ALL LEVELS

EXPERT TIPS

The following expert tips are relating to all clinical levels, unless a specific level is indicated.

- Complete the extraction of all the necessary teeth for rehabilitation. A full thickness flap can be elevated before or after extractions. The reflection of the post-extraction surgical flap is advantageous in terms of unnecessary bleeding, and it prolongs the duration of anaesthesia.
- Reflect a minimal flap – no periosteal releasing incisions, no brushing or any soft tissue manipulation to gain tension free flap. The flap should be under tension and therefore can be stretched for maximal or primary closure.
- Elevating a complete surgical flap, preferably as an envelope without vertical releasing incision. A complete flap of the entire arch usually has sufficient elasticity to allow all surgery without the need for additional release. However, if a vertical releasing incision is required, only one should be done that should not extend past the mucogingival junction (MGJ) by more than 3mm.
- No periosteal releasing incisions and no other soft tissue manipulation to gain tension free flap helps to maintain the tension of the tissues over the graft in suturing and avoids movement of the flap due to muscles' traction.
- With Augma, flap closure should be under tension, not a tension free flap as is required with traditional GBR.
- Levelling of the bony crest (if necessary).
- Careful debridement of the dental sockets. The interior of the alveolus must be free of any type of soft tissues (ligaments, apical lesions, granulation tissue or gingiva).
- Placement of all planned implants. There may be a change in the number and/or positioning as surgical conditions dictate.
- Choice and placement of multi-unit abutments according to the prosthetic needs and position of the implants (size and angulation).
- Protect the screw holes of the abutments. Prevent the graft from getting into these spaces as it is difficult and time consuming to clean.
- Temporary abutments for securing the temporary hybrid prosthesis or open tray copings for Multi-units can be placed for protection and for marking the suture space.

EXPERT TIPS

- Carefully remove any material that is in excess over the soft tissues. The grafted site should be slightly overfilled to compensate for shrinkage during the healing stage.
- During the application of the Augma bone graft, care should be taken to move the flap away to avoid getting it stuck under the material.
- Placement of the provisional abutments. It is advisable to place the abutments before grafting.
- Suturing and closure of the flap under tension. Suture between the abutments of the implants. Maintain keratinized tissue in the peri-implant area. In cases of lateral augmentation, bone cements can be exposed up to 3mm without external protection or up to 6mm with external protection of Augma Shield™ secured in place.
- In case of abundant bleeding or if the material breaks during suturing, use a dry sterile gauze and press firmly on top of the material for 1-2 seconds to absorb any excess blood off the bone cement for stabilizing the cement in place. The adhesion, stability and compaction of the graft over the grafted bone is cardinal to the success of the augmentation procedure.
- Adaptation and loading of the temporary hybrid prosthesis. The prosthesis will help protect the sutures and graft. In Level I cases when there is sufficient bone support and if there is not an option for fixed temporary, a removable prosthesis properly relieved in the alveolar zone can be considered.
- Suture removal can be done after 2 weeks. In cases where there may be problems with the torque of any of the implants, it is best to leave the sutures for 1.5-2 months. At this time, there is more osseointegration of the implants. The temporary hybrid prosthesis can be unscrewed safely, and the suture is removed.
- Use non-resorbable or long-term resorbable sutures. Monofilament thread is preferable.
- Before the application of the bone cement, be careful to move the flap away to avoid getting it stuck under the material when we stretch the flap or position it back in place for placement of the provisional abutments, if they were not placed before the graft was performed.
- Suture and closure of the flap under tension, between the abutments of the implants. Maintain keratinized tissue in the peri-implant area.
- No periosteal releasing incisions nor brushing or any other soft tissue manipulation should be done to gain tension free flap. The flap with bone cement should be under tension during soft tissue closure.

EXPERT TIPS

- Adaptation and loading of the temporary hybrid prosthesis. The prosthesis will help to protect the sutures and graft. It is not recommended to use a removable prosthesis for at least 2.5 months in order to gain primary consolidation of the bone. In maxillary cases, the upper prosthesis can be used only if it is palatally supported and does not have a vestibular extension. However, it is always better to avoid this if possible.
- In all level IV cases, and some level III cases, it is beneficial to start by anaesthetising only half of the arch where treatment is about to commence.
- In these cases, anaesthesia is not done simultaneously on both sides as it will absorb and lose effectiveness before the first side is completed. In cases where anaesthesia is performed simultaneously on both side there is a need to augment the anaesthesia when moving to the other side.
- In level IV cases, it may also be important to maintain some teeth or previously present implants that are not infected. This helps to support a removable or fixed temporary rehabilitation. The maintenance of some teeth can also help to protect the grafted areas because the periodontal bone is maintained during the graft incorporation and does not suffer any kind of resorption. The vestibular zones of some teeth, such as canines, have a large vestibular volume but usually very thin bone. The bone can be lost during extraction, making horizontal augmentation more difficult and unpredictable in that area.
- The opening of the surgical flap can be divided into 1, 2 or 3 different surgical flaps. This means that it can be made as a complete arch flap or interrupted small segment flaps, leaving little adhered segments of gum attached. This depends on the situation of the existing teeth and bone defect in each zone. For example, we can divide the flap into 3 interrupted segments in the canine zones, as they are usually the last to undergo horizontal absorption and usually do not require a buccal graft. To join these 3 segments, tunnelling will maintain greater tension of the flaps and over the graft when suturing.
- Although the maxillary bone almost always presents with cortical bone that is less dense and bleeds more than the cortical bone plates of the mandible, an exhaustive decortication of the entire vestibular wall of the defect area is advised before performing horizontal augmentation. This will create more bone bleeding and a greater and faster integration of bone cement. Decortication can be performed before raising the sinus, but care is needed not to pierce the sinus membrane during the decortication of the posterior area of the maxilla. Thus, it is advantageous to perform decortication of the bone only after the complete elevation of the Schneiderian membrane. In these cases, the membrane should be raised after which it is possible to proceed with decortication. However, the cement should only be placed inside the augmented sinus after the decortication is done to prevent the cement graft from being washed away during drilling.

EXPERT TIPS

- No membrane, PRF or any other material should be placed between the soft tissue and the bone cement.

- After the necessary sinus membrane elevation, it is time to apply the bone cement. There are different ways to do this. If we want to apply the bone cement in a more solid, dried form, the syringe should be activated and the material should be injected into a sterile dish, left for about 1 minute and then fractured into small fragments and left for additional setting and solidification for 2 additional minutes. Then the fragmented material is reloaded into a surgical bone carrier syringe, or the Bond Apatite® syringe itself and applied inside the sinus window. Normally 3 to 4 syringes of Augma Bond Apatite® will be needed for each sinus, and the last syringe (the one that covers the sinus window) can be applied conventionally and pressed with a dry gauze for 3 seconds.
- This last syringe will work as a membrane, and it will be also a starting point for the lateral augmentation. If the implants are placed in the sinus area in this first surgical phase (4 or + mm of occlusal bone), the implant osteotomies should be made before placing the graft. The graft can be placed in the sinus before the placement of the implants because later it can be more difficult to make it reach the entire elevated zone. Do not forget that the implants will also occupy space inside the sinus, reducing the volume of material needed. There is another way to apply Augma Bond Apatite® into the sinus: a first syringe is applied inside the sinus in a conventional way, inserting the tip of the syringe inside the sinus opening window immediately after activation. It is important to always compact the material through the crest direction after its placement using a dry gauze and adding pressure above the gauze with periosteal elevator for few seconds after each layer of graft placement.
- Another option it to use a fully opened and unfolded gauze that can be used to cover the tip of the surgical vacuum suction as it goes inside the sinus to suck the moisture from the cement, and the tip of the suction is used as well to compact the material trough the crestal direction.
- The thin gauze prevents the cement from being sucked away. This procedure should be repeated after each application of a syringe, except for the final application. The last layer covering the outside of the sinus window can be applied conventionally and compressed for 3 seconds with a dry, folded gauze. In cases where there is a small perforation of the Schneiderian membrane (4-6 mm), a collagen sponge or a resorbable membrane should be placed above the perforated area and then the graft can be placed. However, if the perforation is too large, it is advisable to cancel the procedure and try again after a few months.
- After the sinus lift is finished and the access window is covered with bone cement, it is time for horizontal augmentation. The graft is placed on the entire hemi-arch and sutured. Then it is time to move to the other half of the arch. If the flap is continuous throughout the arch, which is less recommended, the sinus lift of the 2nd side can be made before the bone cement is placed throughout the lateral area of the entire maxilla, followed by the total suturing of the flap.

Meet the Expert

José Camelo Ferreira

Oral Surgeon

- Member of the Portuguese Dentistry Order, the OMD, and a national and international speaker for Nobel Biocare since 2011
- Graduated with a BDS/DDS FROM ISCS Sul in Portugal in 1998, and afterwards studied prosthodontics in Madrid. In 2014 he became an Associate Fellow of the Foundation for Oral Rehabilitation.
- Went on to study advanced Implantology and hard and soft tissue management at Implant Brazil, São Paulo, in 2015, where he continued to study zygomatic implant surgery and rehabilitation until 2020.
- In 2017 he received an Oral Surgery Specialist Degree from the OMD.
- Dr. Ferreira received the title of Surgical Master in Regenerative Implant Dentistry from the University of Szeged, Hungary, under Prof. Istvan Urban, and he is currently an Assistant Professor in various courses on Advanced Oral Surgery in Portugal and Brazil.

Dr. Ferreira's Bone Cement Expert Page

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