

Full-arch edentulous restoration with immediate loading, using X-Guide® and FastMap® navigated photogrammetry for 3D printed provisional

Dr. Alberto Pitino
Italy





Dr. Alberto Pitino

Patient description:

- 53 years old, male,
- no systemic disease,
- no oral pathology,
- presents with esthetic and functional complaints,

Clinical situation:

Loss of vertical dimension, abrasions and erosions of residual teeth, missing and mobile teeth, root remnants in the maxilla and mandible affecting functional and esthetic results. Evident periodontitis, destructive caries and periapical inflammatory lesions.

Surgical solution:

Extraction of the upper remaining teeth and the compromised lower teeth, immediate implant placement with N1™ Implant System, using X-Guide® navigated surgery and FastMap® navigated photogrammetry, then immediate loading with temporary restorations printed with SprintRay printer.

Timing:

Immediate loading with printed temporary restoration placed on Multi-unit Abutment straight.

Surgery date(s):

First lower arch surgery: 01 July 2024
Second maxillary arch surgery: 26 July 2024

Total treatment time:

Phase 1 immediate provisionnalization

Tooth position(s):

Full-arch rehabilitation in the maxillary region and partial mandibular rehabilitation

**"FastMap® navigated photogrammetry has enabled me to offer best of both worlds to my patients: accuracy in my surgical executions, and predictability for temporary productions post-surgery, significantly enhancing my treatments for full-arch rehabilitation cases."
Dr. Alberto Pitino**

**Initial
situation**

**Data
collection**

**Treatment
planning**

**Surgical
procedure**

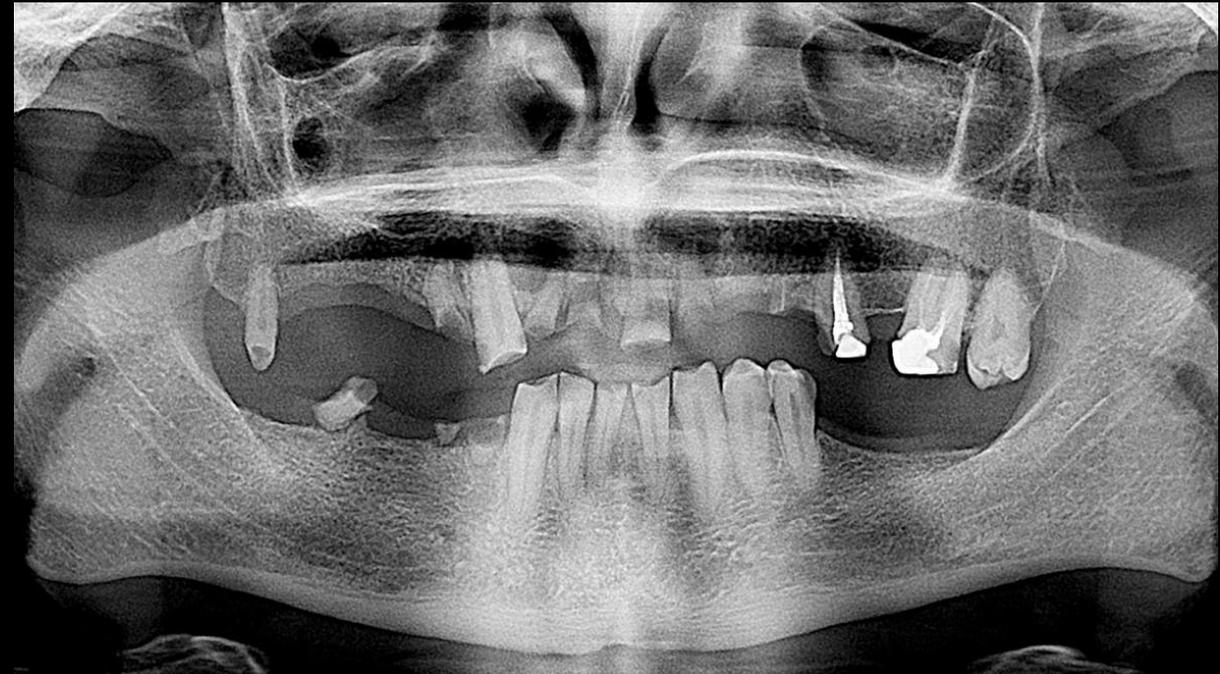
**Post-surgical
scan**

**Immediate
provisional**

**Phase 1
check-up**



Initial situation



X-Ray initial situation

**Initial
situation**

**Data
collection**

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scan**

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provisional**

**Phase 1
check-up**



Left view



Frontal view



Right view

**Initial
situation**

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Occlusion left view
Case courtesy of Dr. Alberto Pitino



Occlusion frontal view



Occlusion right view

**Initial
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Mandible initial situation



Maxillary initial situation

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situation

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DICOM



PLY



Facial scan



Clinical
pictures



DTX Studio™ Suite

Initial
situation

Data
collection

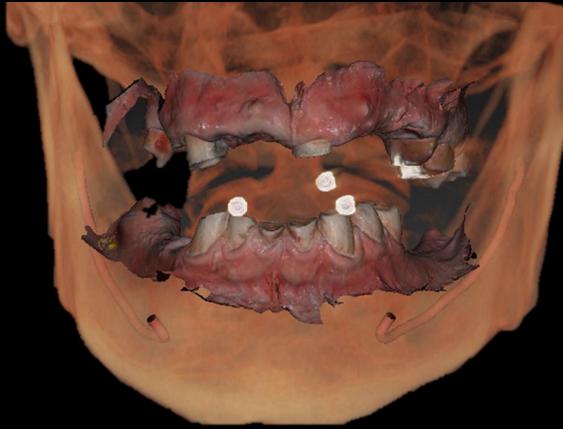
Treatment
planning

Surgical
procedure

Post-surgical
scan

Immediate
provisional

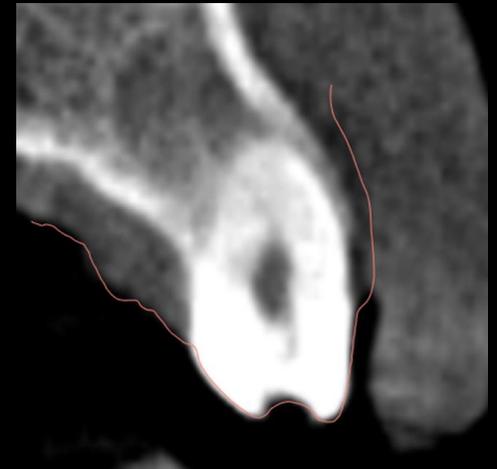
Phase 1
check-up



Merging DICOM & PLY



PLY Maxillary



Cross section alignment between DICOM & PLY



DTX Studio™ Suite

Initial
situation

Data
collection

**Treatment
planning**

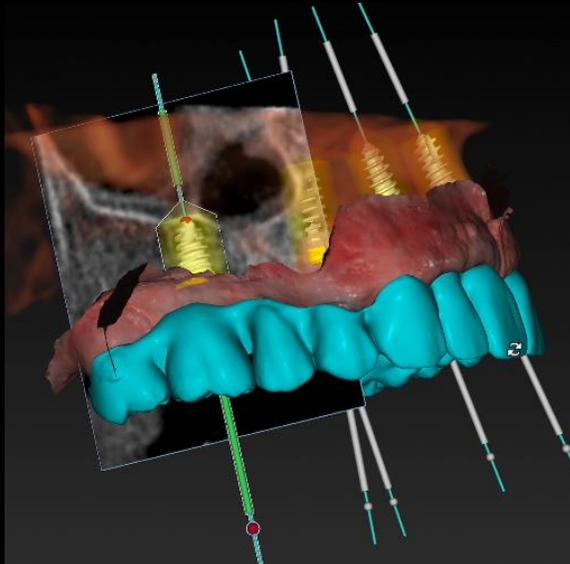
Surgical
procedure

Post-surgical
scan

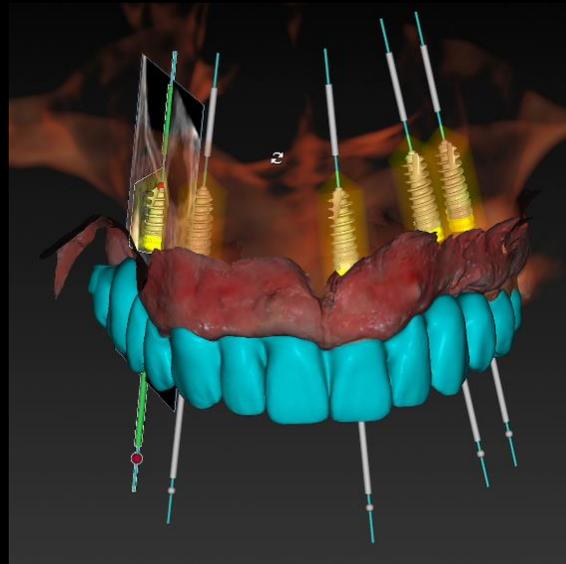
Immediate
provisional

Phase 1
check-up

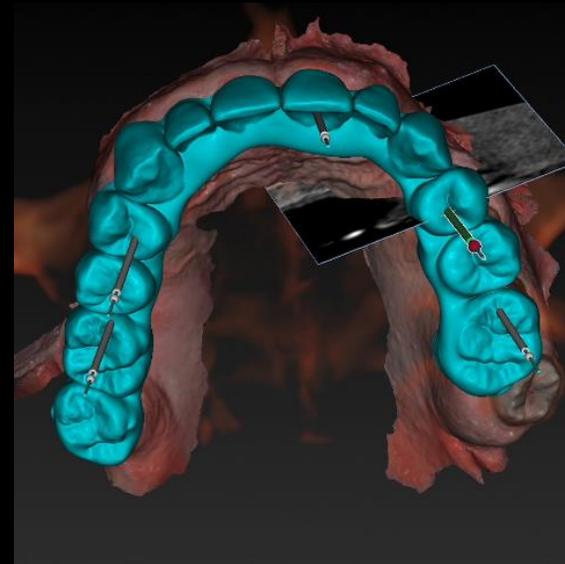
Prosthetically driven Implant planning in DTX Studio™ implant



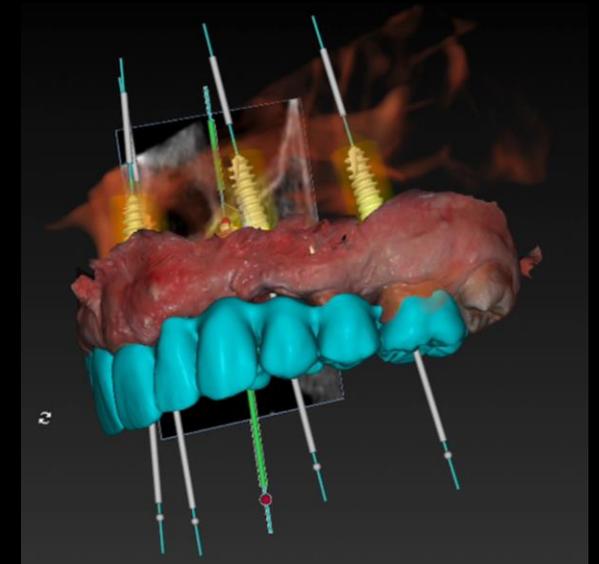
Right view



frontal view



Occlusal view



Left view

Initial
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Pre-operational maxillary intraoral scan



SmartSetup™ function*



Virtual wax-up designed by the dental lab
and made out of the SmartSetup™

Initial
situation

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planning

**Surgical
procedure**

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scan

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Maxillary before extraction



Maxillary after extraction

Initial situation

Data collection

Treatment planning

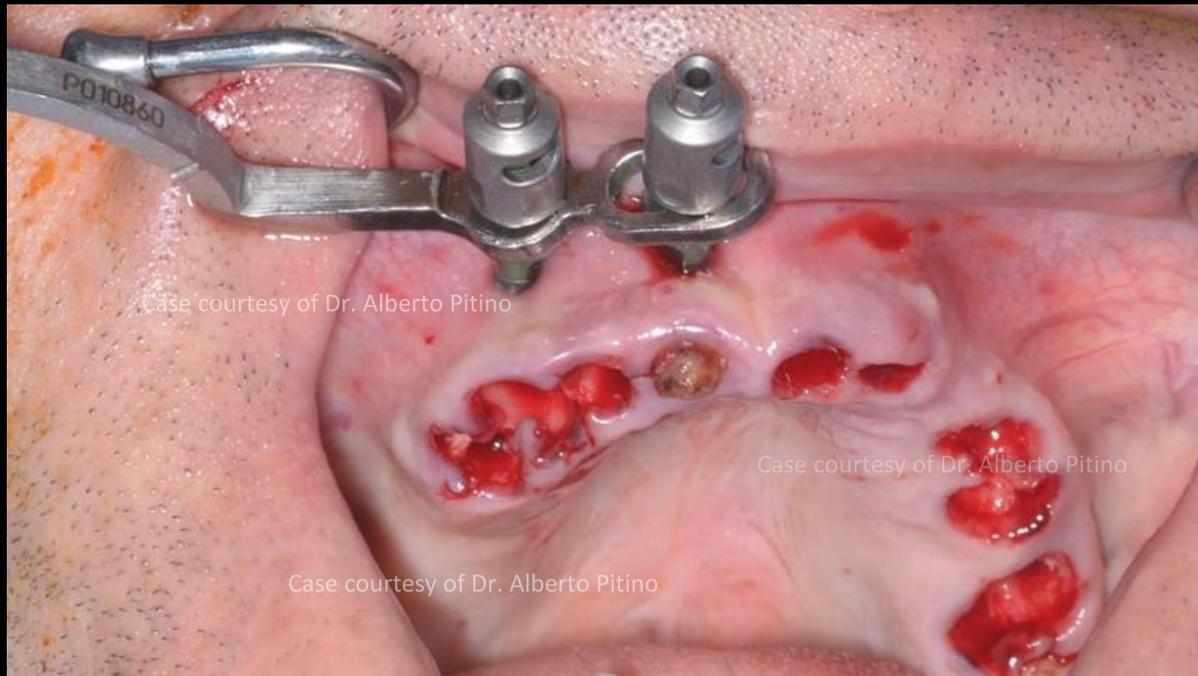
Surgical procedure

Post-surgical scan

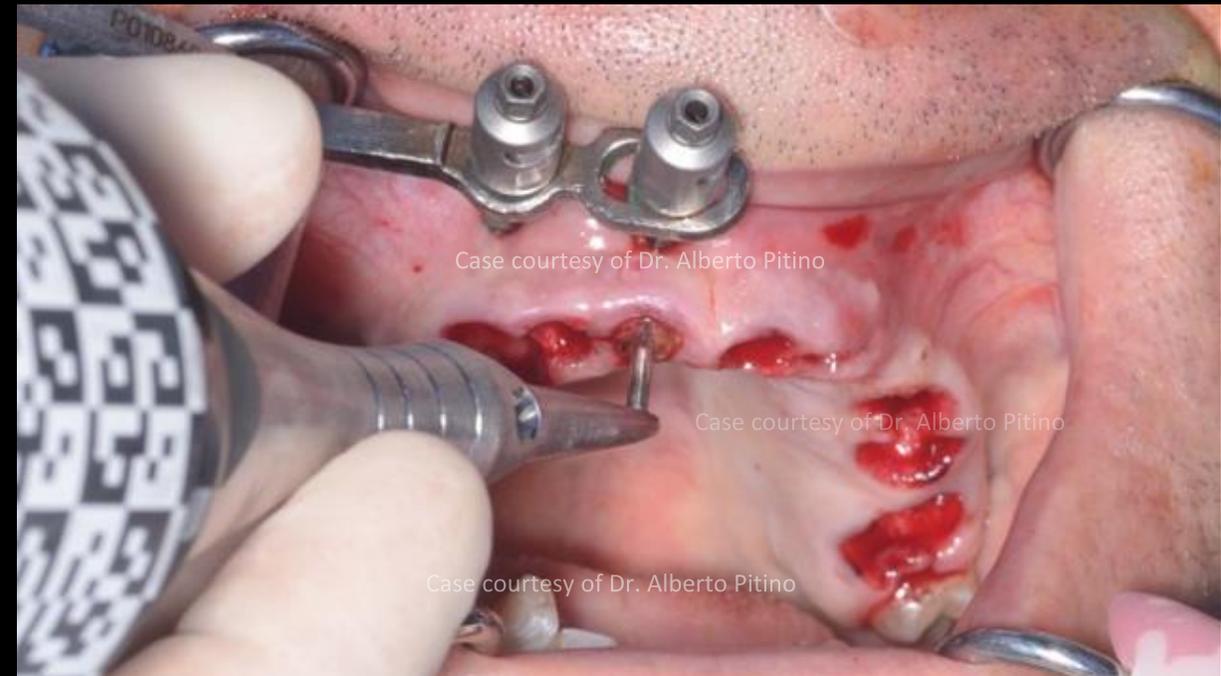
Immediate provisional

Phase 1 check-up

FastMap® navigated photogrammetry workflow



Fixing X-Guide® tracker with EDX screws in the patient's upper jaw to prepare for X-Mark® protocol



register patient for X-Guide® surgery

Initial situation

Data collection

Treatment planning

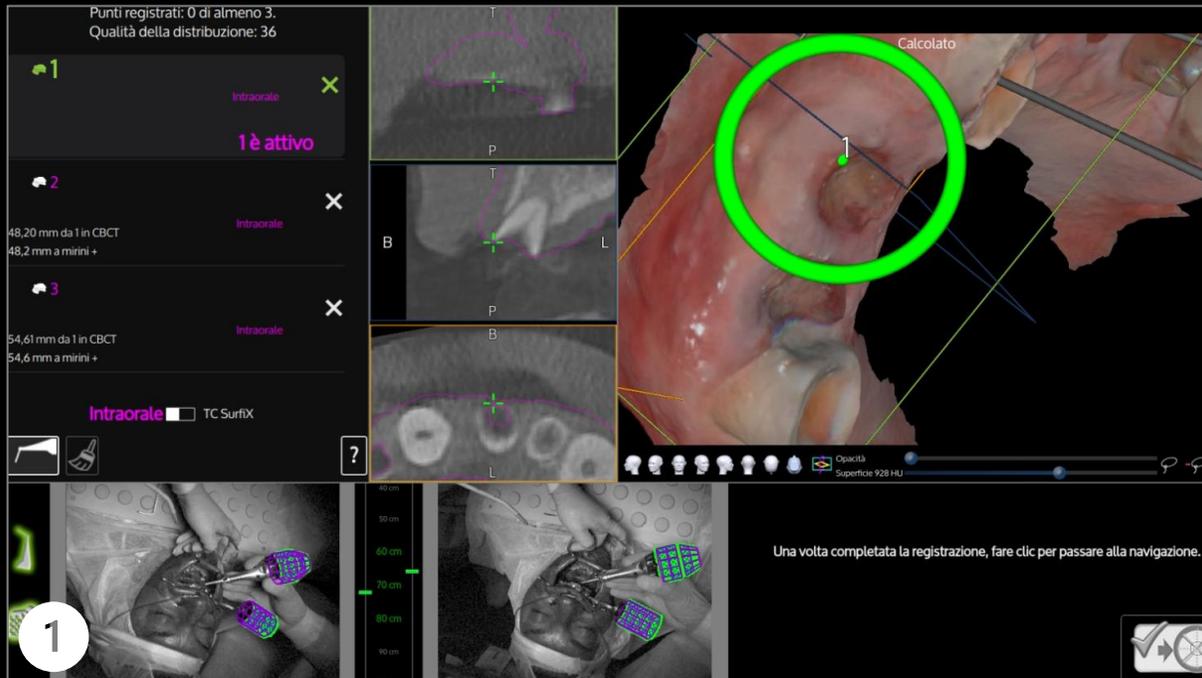
Surgical procedure

Post-surgical scan

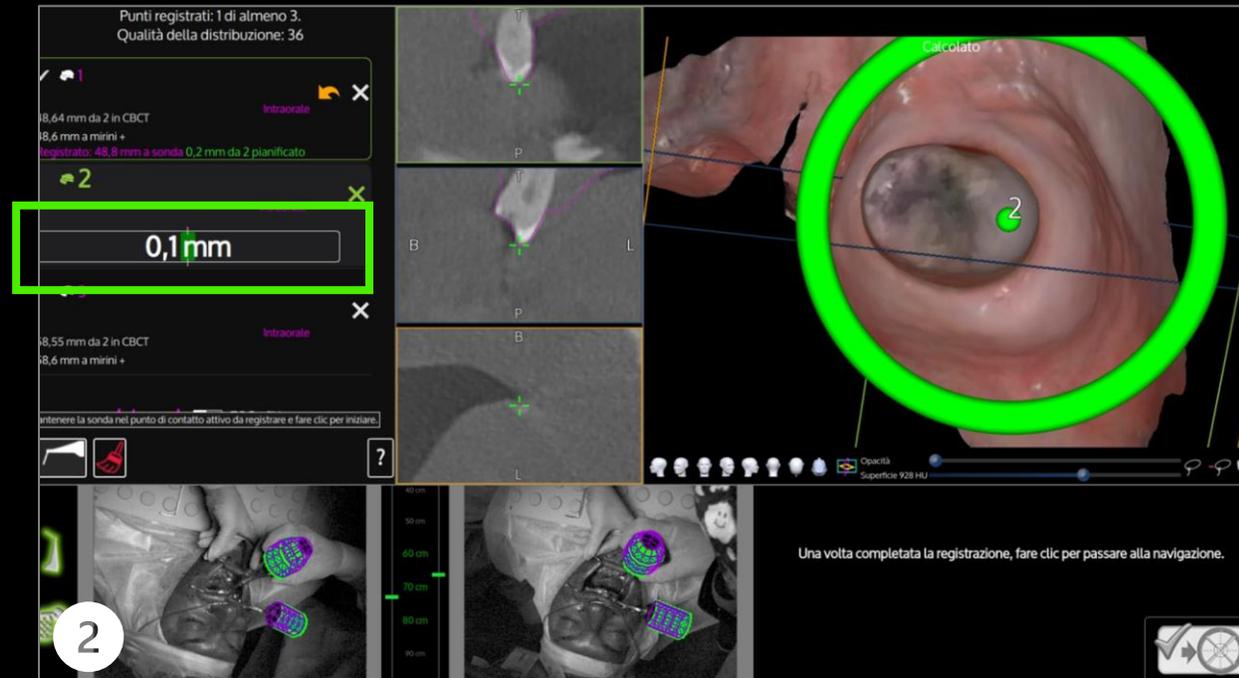
Immediate provisional

Phase 1 check-up

FastMap® navigated photogrammetry workflow



First reference point defined with X-Mark® protocol



Second reference point defined with the help of SmartMark. The user is shown how close to the point they are before registering

Initial situation

Data collection

Treatment planning

Surgical procedure

Post-surgical scan

Immediate provisional

Phase 1 check-up

FastMap® navigated photogrammetry workflow



Third reference point defined with the help of SmartMark. The user is shown how close to the point they are before registering



Reference validation

Initial situation

Data collection

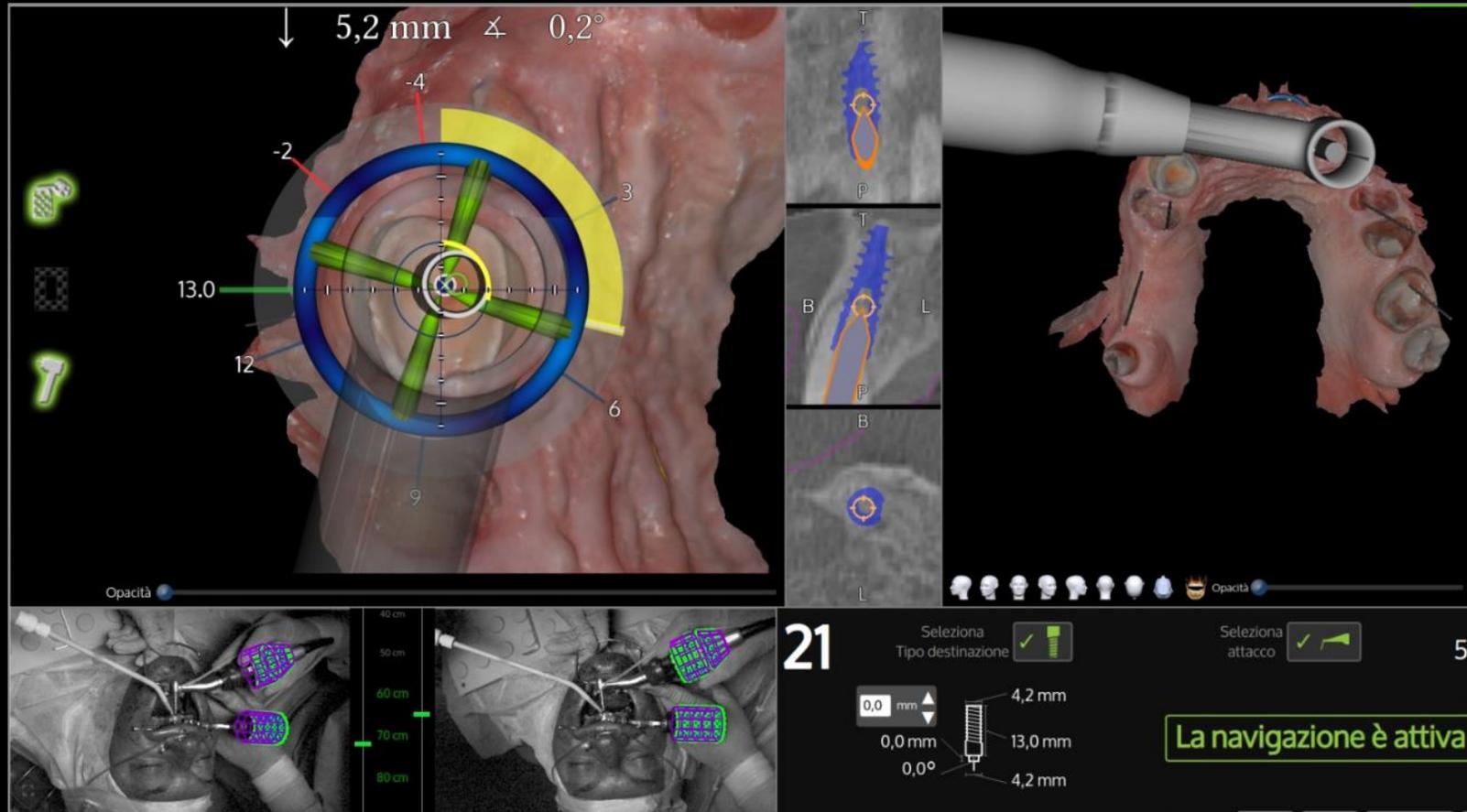
Treatment planning

Surgical procedure

Post-surgical scan

Immediate provisional

Phase 1 check-up



Third reference point defined with X-Mark protocol
X-Guide® calibrated for surgery

Initial
situation

Data
collection

Treatment
planning

**Surgical
procedure**

Post-surgical
scan

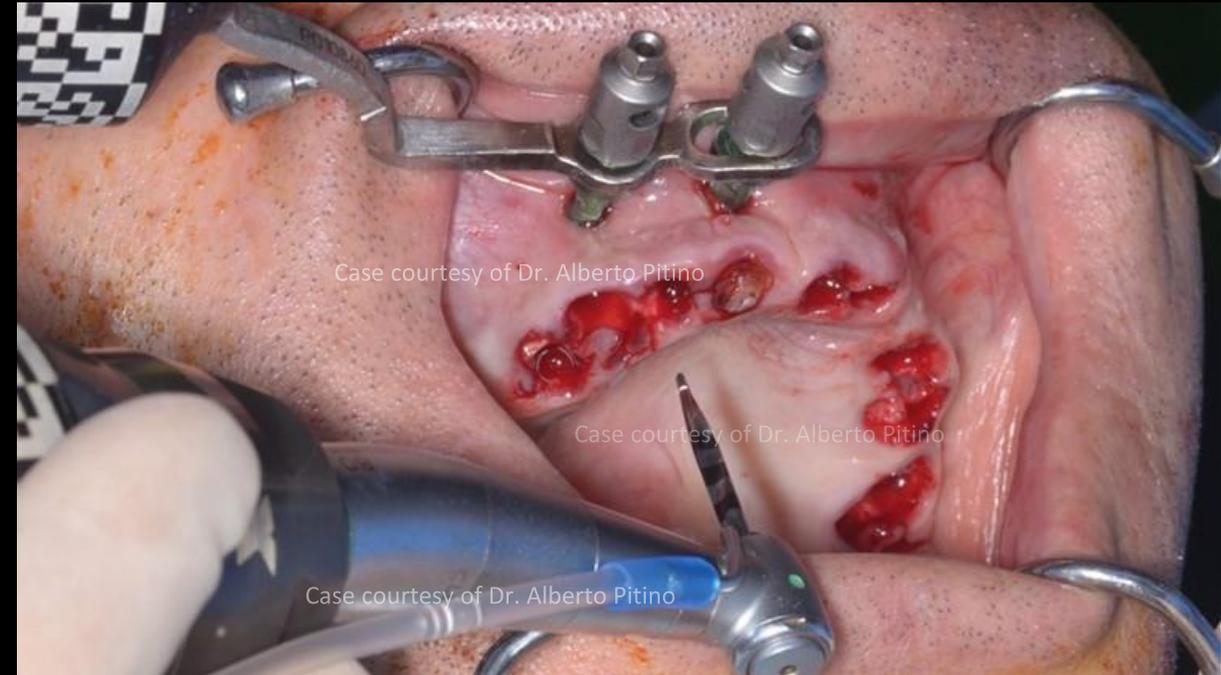
Immediate
provisional

Phase 1
check-up

FastMap® navigated photogrammetry workflow



N1™ implant system protocol starting with
OsseoDirector drill calibration with X-Guide®



First drill performed with OsseoDirector™

Initial
situation

Data
collection

Treatment
planning

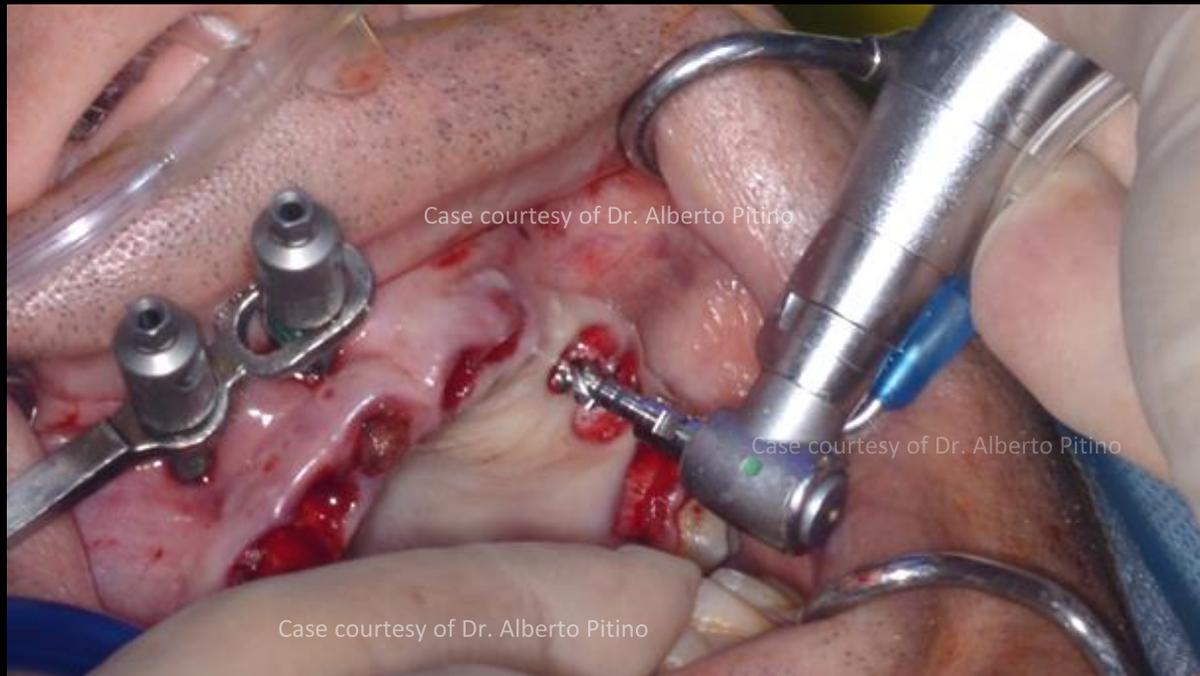
**Surgical
procedure**

Post-surgical
scan

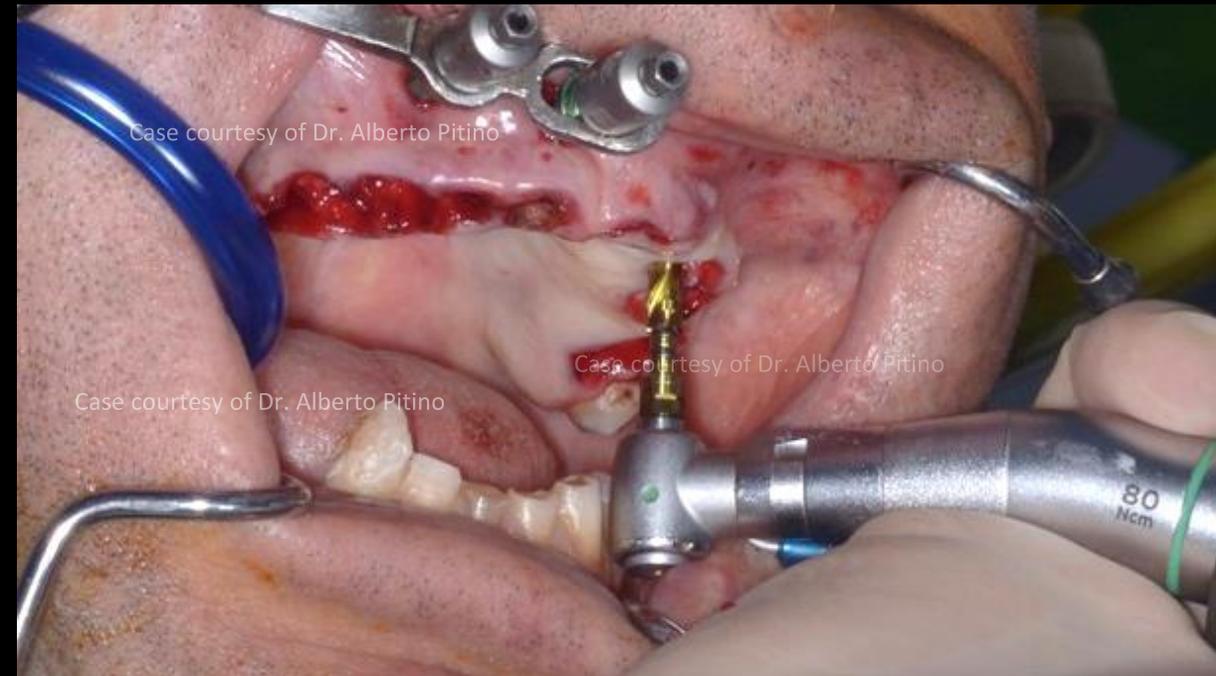
Immediate
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Phase 1
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FastMap® navigated photogrammetry workflow



OsseoShaper™ drill with slow speed drilling
50 rpm, and 40 Ncm torque limitation



Osseoshaper™ 2 application if torque superior at 40
Ncm with Osseoshaper 1™

Initial
situation

Data
collection

Treatment
planning

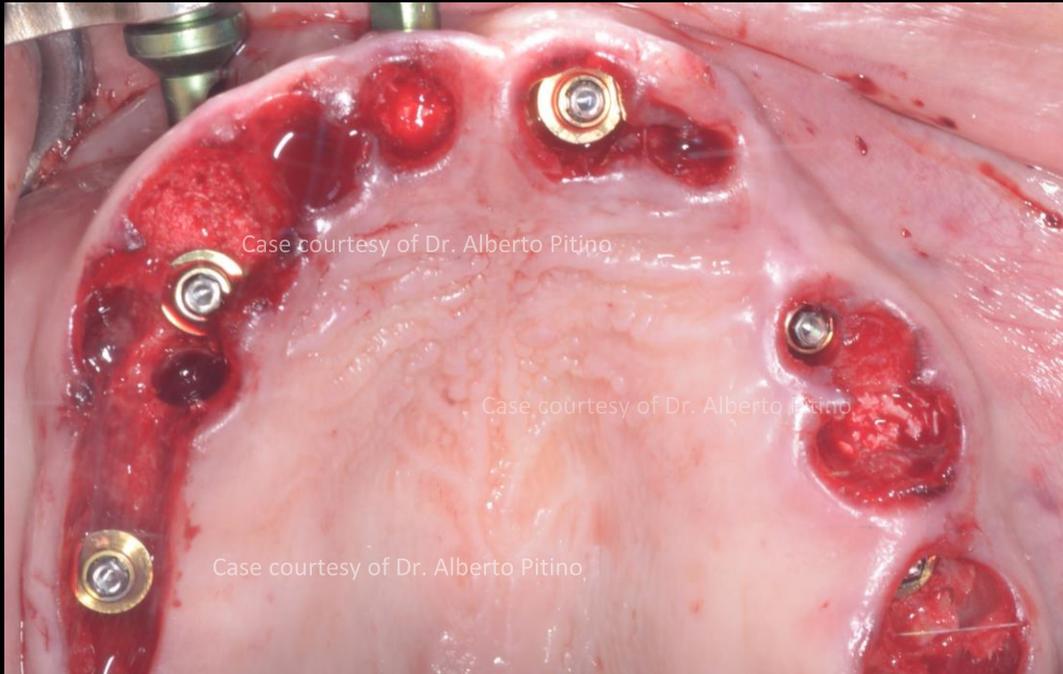
Surgical
procedure

Post-surgical
scan

Immediate
provisional

Phase 1
check-up

FastMap® navigated photogrammetry workflow



Immediate implant placement with N1™ implant system
with Nobel Biocare Multi-unit Abutment placement



X-Nav FastMap® Scan Body placed on top of Multi-
unit Abutments*

*Scan bodies can be placed using the ELOS screwdriver

Initial
situation

Data
collection

Treatment
planning

Surgical
procedure

Post-surgical
scan

Immediate
provisional

Phase 1
check-up

FastMap® navigated photogrammetry workflow



X-Nav FastMap® Scan Body placed on top of Multi-unit Abutments with tracker being kept in situ



Reposition the X-Guide® cameras to look into the patient's mouth (between 50-60 cm distance from the patient tracker)

Initial
Situation

Data
collection

Treatment
planning

Surgical
procedure

Post-surgical
scan

**Immediate
provisional**

Phase 1
Check-up

Provisional designed in exocad software and exported to Sprintray RayWare software for nesting



Provisional design imported for nesting



Support pins automatically placed on the occlusal



Support pins adjustment to strengthen incisal edge on each tooth cusp

Initial
Situation

Data
collection

Treatment
planning

Surgical
procedure

Post-surgical
scan

**Immediate
provisional**

Phase 1
Check-up



Provisional printed on SprintRay printer
using OnX Tough 2 resin
(Shade A2)



Provisional printed on SprintRay printer
using OnX Tough 2 resin
(Shade A2)

Initial
situation

Data
collection

Treatment
planning

Surgical
procedure

Post-surgical
scan

**Immediate
provisional**

Phase 1
Check-up



Provisional finalized – stained & glazed

Initial
situation

Data
collection

Treatment
planning

Surgical
procedure

Post-surgical
scan

**Immediate
provisional**

Phase 1
Check-up



Provisional placed in situ in maxilla



Seating verified

Initial
situation

Data
collection

Treatment
planning

Surgical
procedure

Post-surgical
scan

**Immediate
provisional**

Phase 1
Check-up



Bite verified



Occlusal view of provisional in situ

Initial
situation

Data
collection

Treatment
planning

Surgical
procedure

Post-surgical
scan

Immediate
provisional

Phase 1
Check-up



Initial
situation

Data
collection

Treatment
planning

Surgical
procedure

Post-surgical
scan

Immediate
provisional

Phase 1
check-up



Provisional in situ



Verify seating of provisional
(X-Ray taken at day of surgery)

Case courtesy of Dr. Alberto Pitino



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