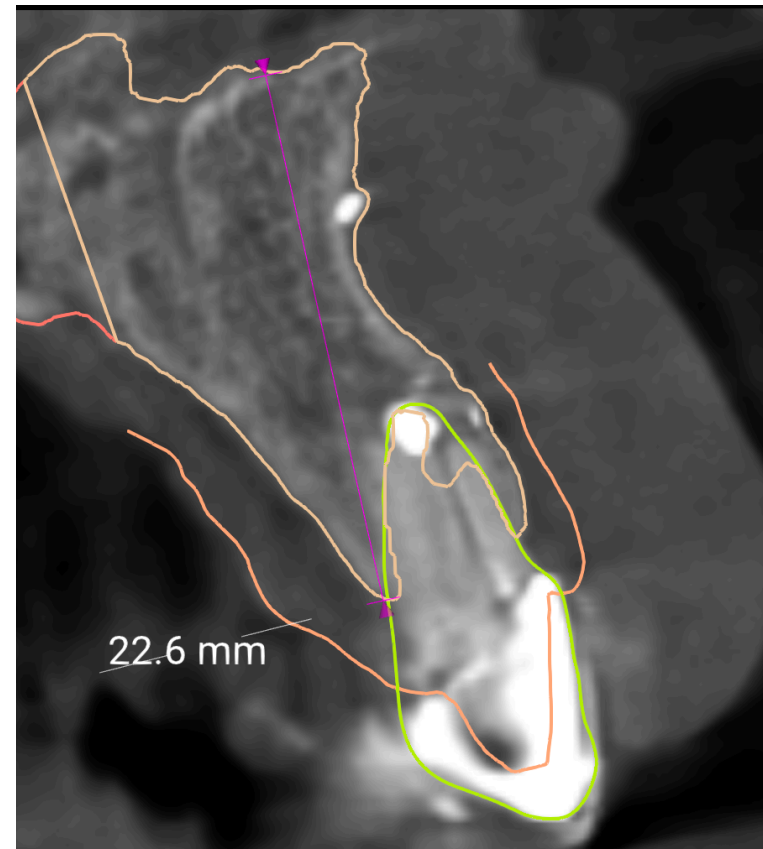


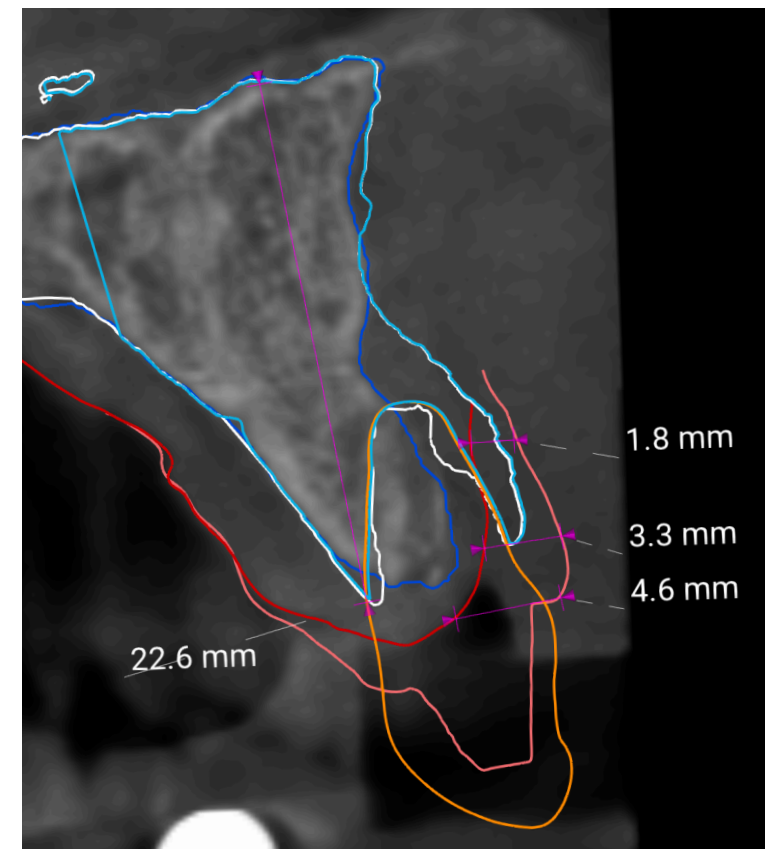
Radiographic Analysis of Immediate Implant Placement with Socket-Shield-Technique vs Prosthetic-Socket-Preservation

Menchini-Fabris Giovanni B. , Cosola Saverio, Natale Massimo, Vatteroni Ernesto, Toti Paolo, Romanos Georgios.

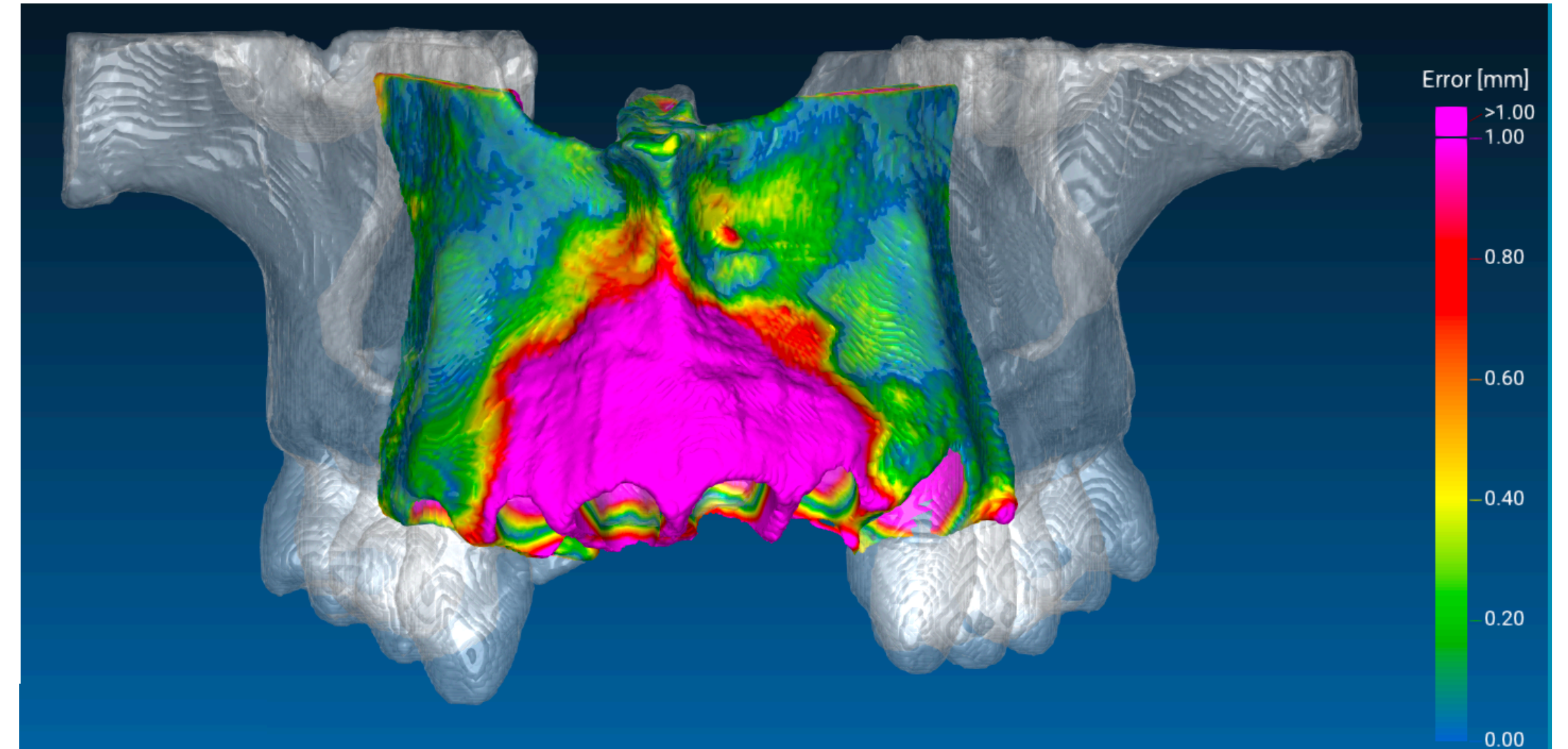
E
A



T⁰ - Extraction



T² - Implant
Planning 4 mos po



Introduction: Tooth extraction often leads to alveolar ridge resorption, compromising implant placement and esthetic outcomes. This study aimed to quantitatively compare post-extraction dimensional changes in bone and mucosa following three graft-less management strategies over one year: Extraction Alone (**EA**), Socket-Shield-Technique (**SST**), and Prosthetic-Socket-Preservation (**PSP**) with immediate implant placement and provisionalization.

Radiographic Analysis of Immediate Implant Placement with Socket-Shield-Technique vs Prosthetic-Socket-Preservation

Menchini-Fabris Giovanni B. , Cosola Saverio, Natale Massimo, Vatteroni Ernesto, Toti Paolo, Romanos Georgios.

Extraction, SST, Implant Surgery & Immediate Prosthesis

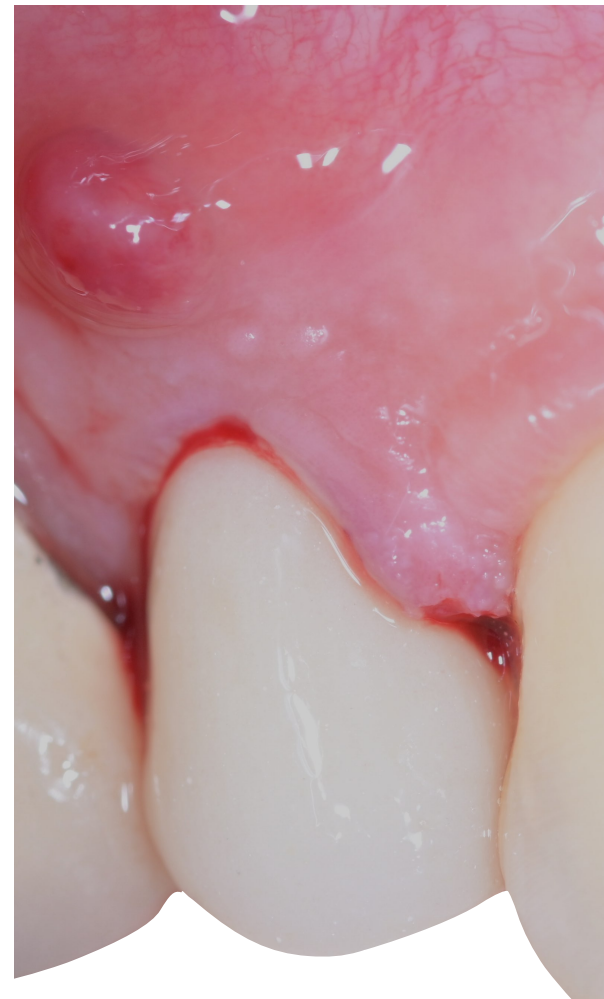
SST



T 0



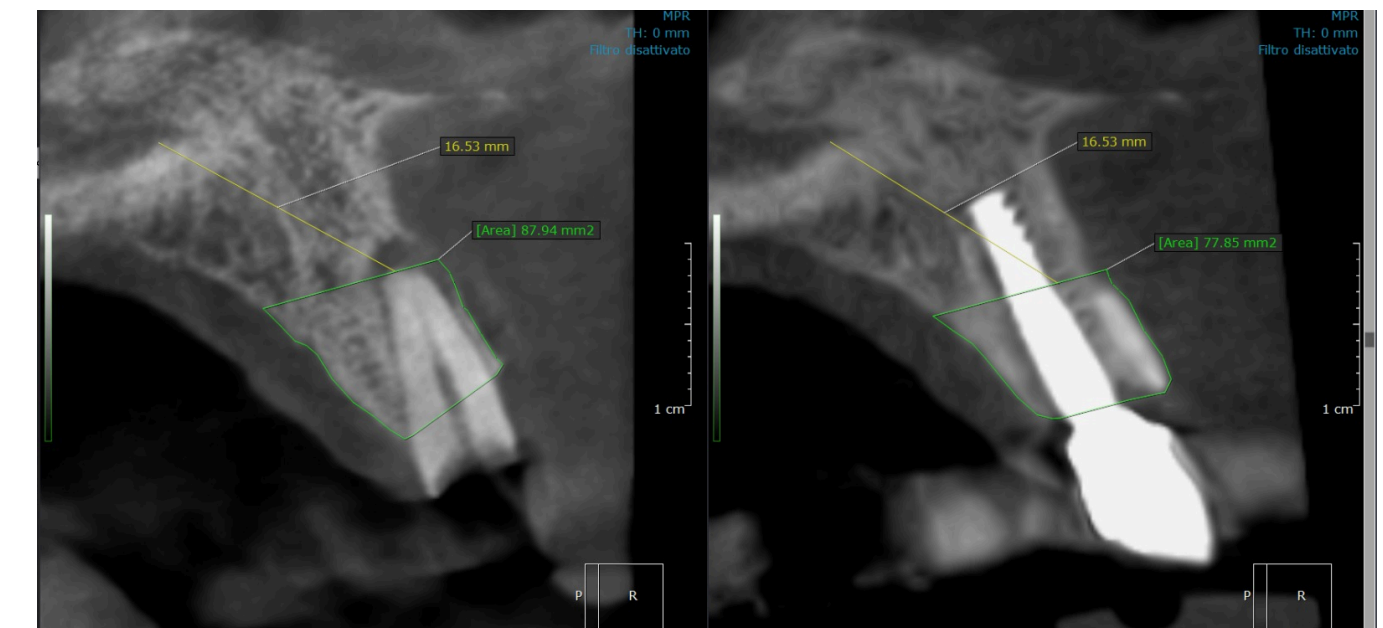
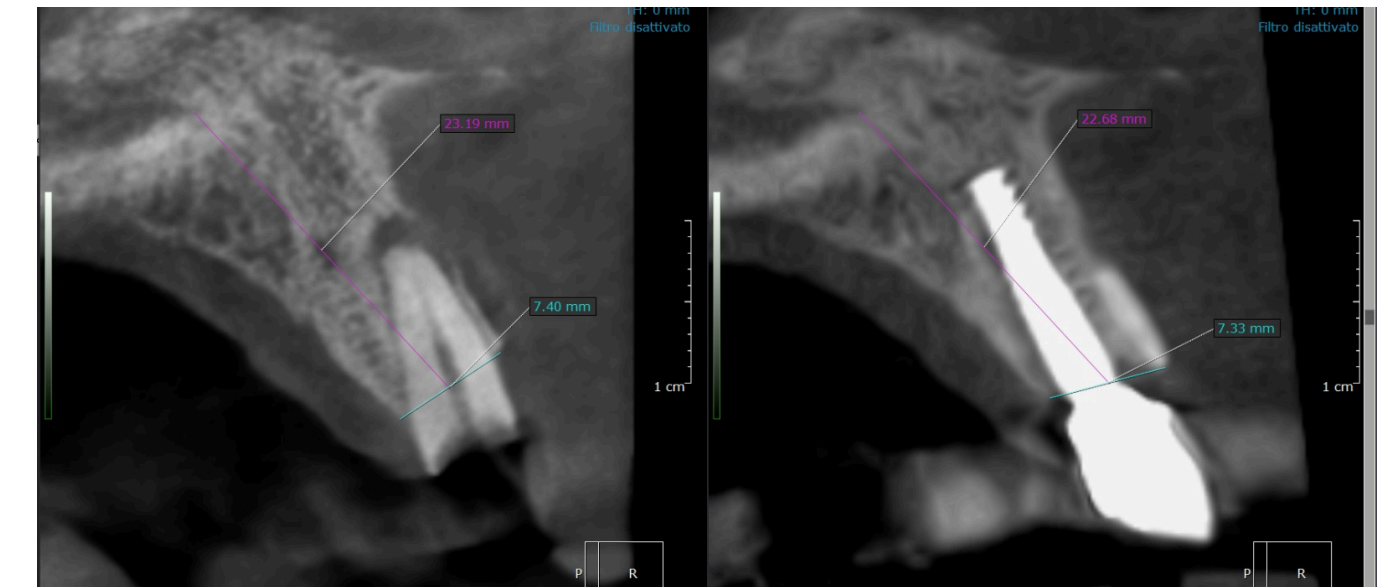
T 0



T 0



T 3 - 12 mos Post Op



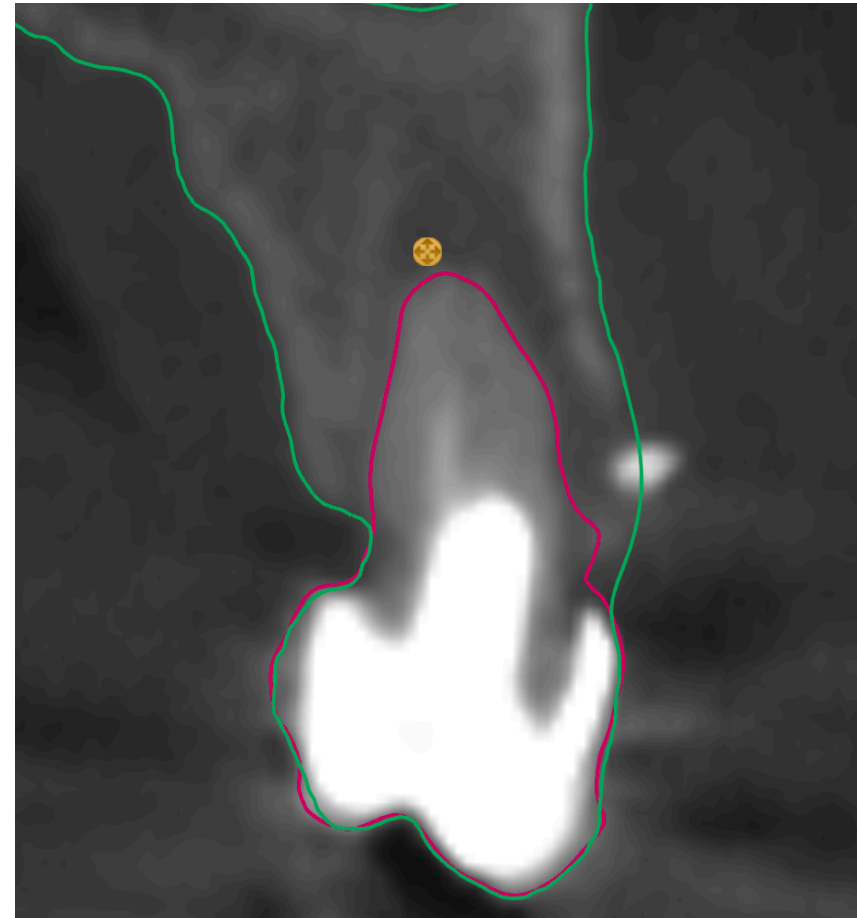
T 8 - 22 mos

Methods: A total of 64 implants, treated between 2020 and 2024, were analyzed across three groups: EA (n=17), SST (n=21), and PSP (n=26). Cone Beam Computed Tomography (CBCT) and IntraOral Scanning (IOS) were obtained at baseline and one year. Three-dimensional volumetric superimposition was performed to measure changes in bone, mucosa, and total alveolar volume (Fig.1). Results were expressed as medians and interquartile ranges (IQR), and nonparametric tests were applied for intergroup comparisons.

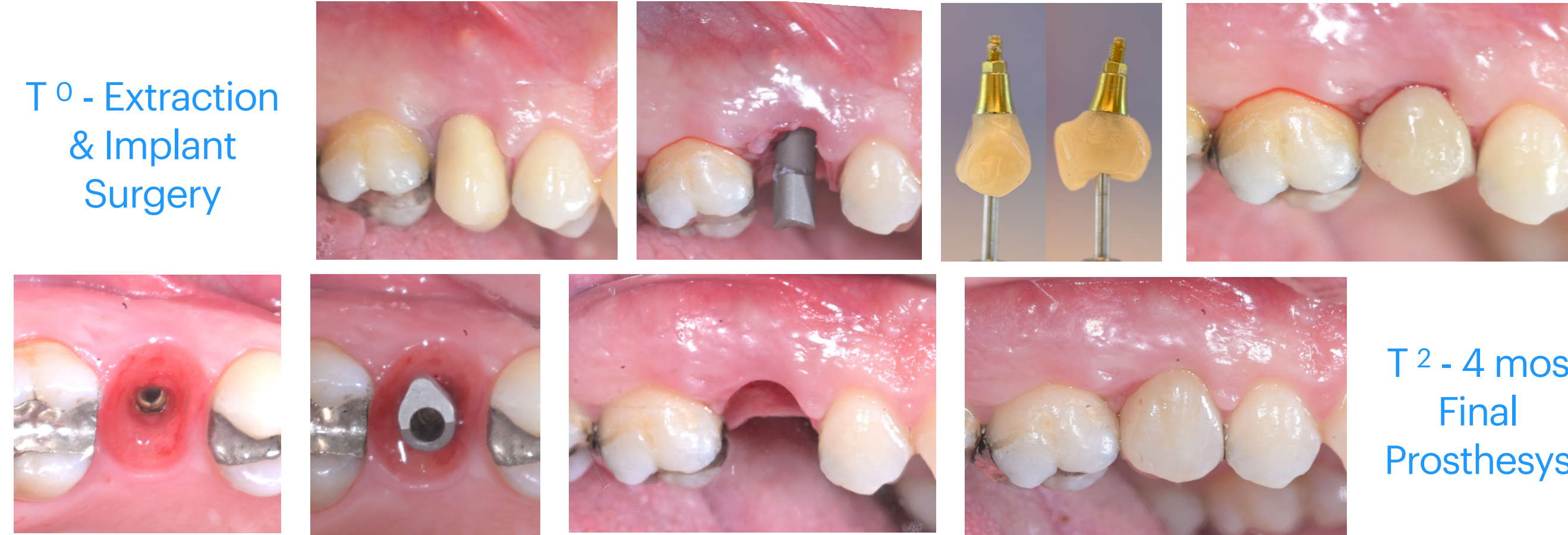
Radiographic Analysis of Immediate Implant Placement with Socket-Shield-Technique vs Prosthetic-Socket-Preservation

Menchini-Fabris Giovanni B. , Cosola Saverio, Natale Massimo, Vatteroni Ernesto, Toti Paolo, Romanos Georgios.

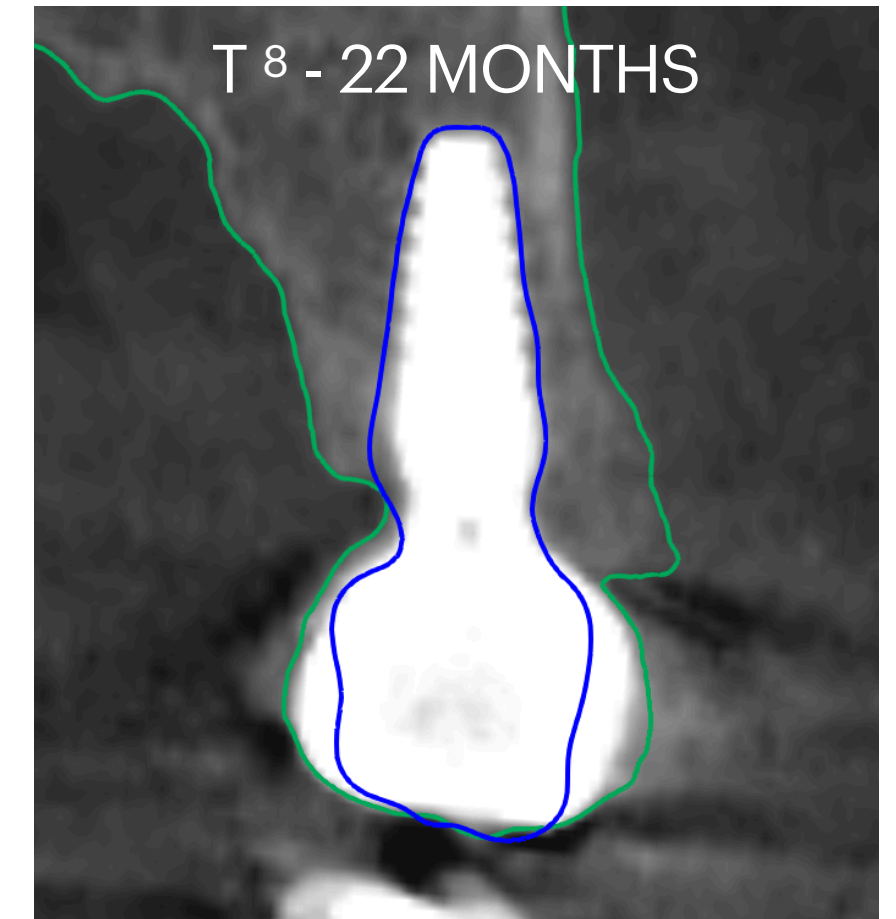
P
S
P



T⁰ - Extraction
& Implant
Surgery



T² - 4 mos
Final
Prosthesys

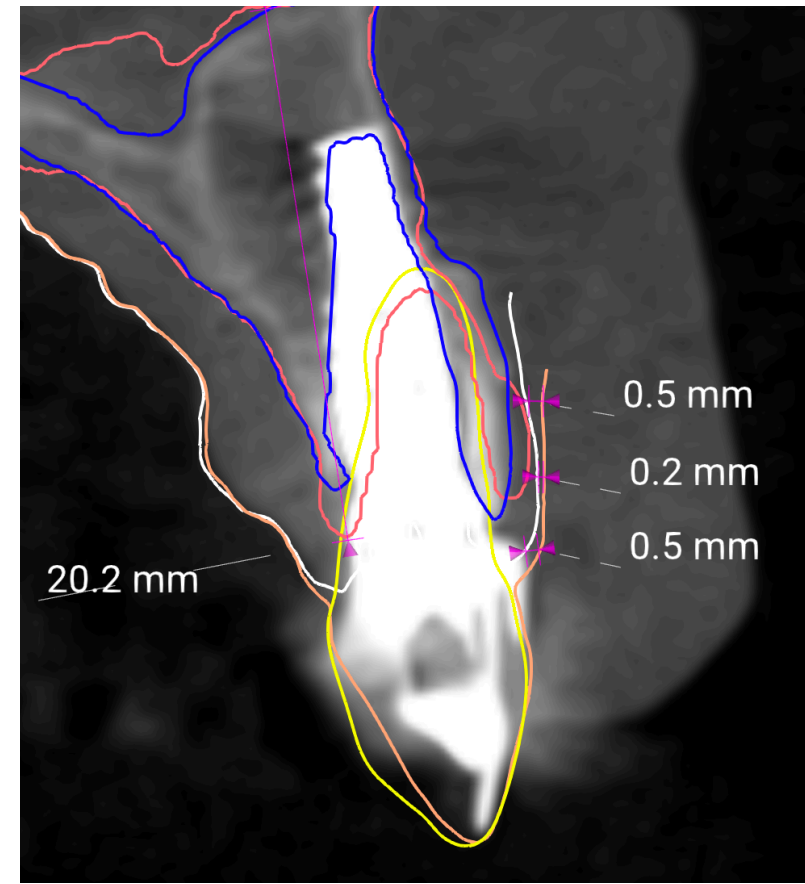
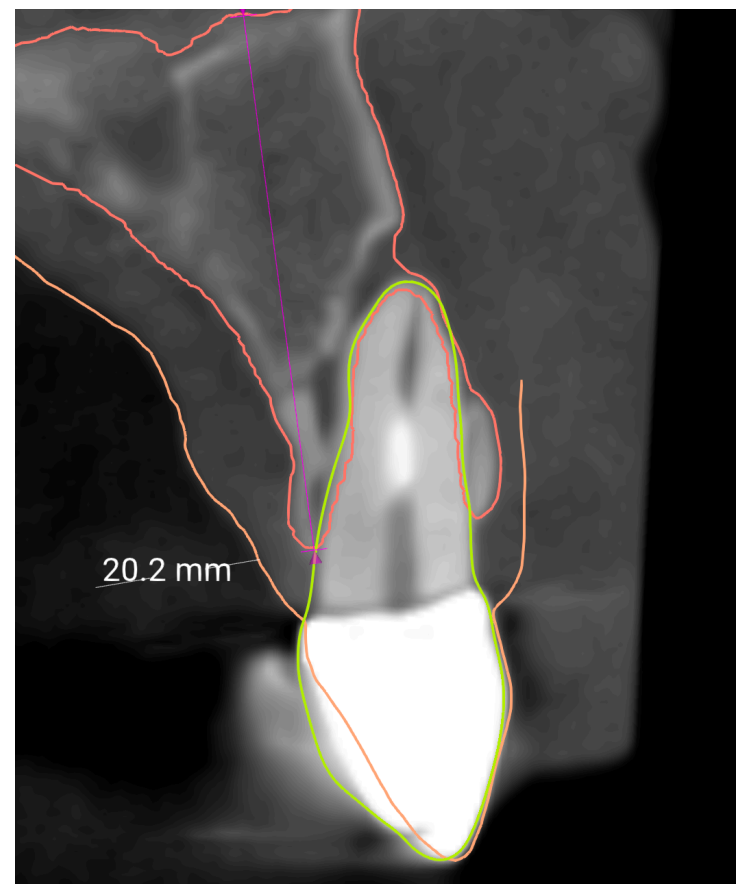


Results: At baseline, alveolar volumes were similar across groups (586–647 mm³). After one year, **EA** exhibited significantly greater total volume loss (−240 mm³; IQR 265) than both **SST** (−53 mm³; IQR 56) and **PSP** (−62 mm³; IQR 68) ($p \leq 0.006$). Bone loss represented the major component of total resorption, particularly in **EA** (−128 mm³; −63.9%), which was significantly higher than **SST** (−33 mm³; −18.0%) and **PSP** (−37 mm³; −20.0%) ($p < 0.01$). Mucosal volume reduction was also more pronounced in **EA** (−104 mm³; −31.5%) than in **SST** (−18 mm³; −3.5%) and **PSP** (−28 mm³; −6.8%) ($p \leq 0.0008$). No significant differences were found between **SST** and **PSP** for any parameter, though **SST** showed distinct buccal mucosal stippling due to retained periodontal fiber insertion.

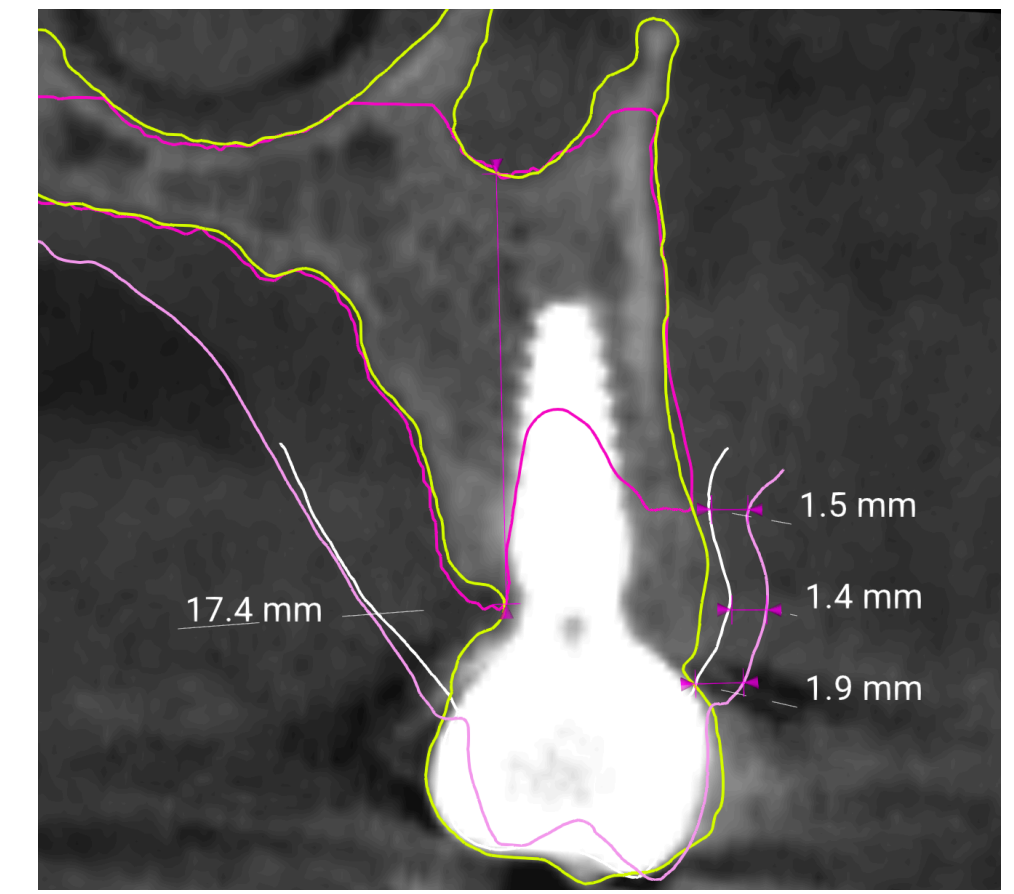
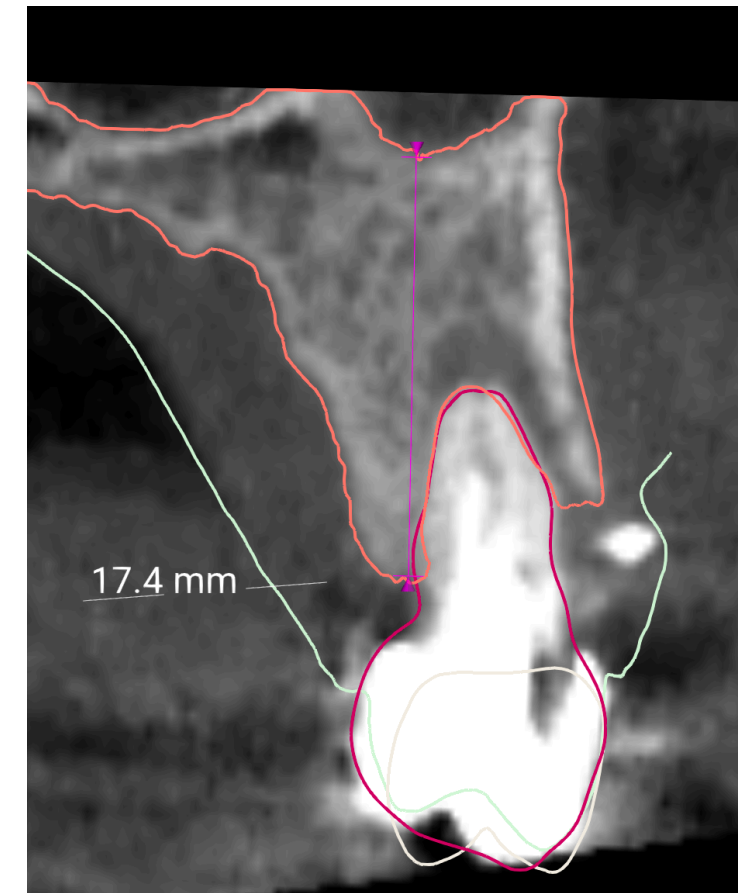
Radiographic Analysis of Immediate Implant Placement with Socket-Shield-Technique vs Prosthetic-Socket-Preservation

Menchini-Fabris Giovanni B. , Cosola Saverio, Natale Massimo, Vatteroni Ernesto, Toti Paolo, Romanos Georgios.

S
S
T



P
S
P



Conclusion: Both SST and PSP effectively limited alveolar bone and mucosal loss compared with EA, confirming their value as graft-less ridge preservation approaches. While their volumetric performances were comparable, SST provided the best preservation of alveolar bone dimensions, though it remains technically demanding and less frequently applied. The PSP approach achieved favorable, clinically acceptable outcomes and may be suitable for a broader range of clinical indications. Further prospective randomized trials are needed to confirm these findings and optimize clinical protocols for alveolar volume preservation.