convegno

Dispositivi medici & Stampa 3D

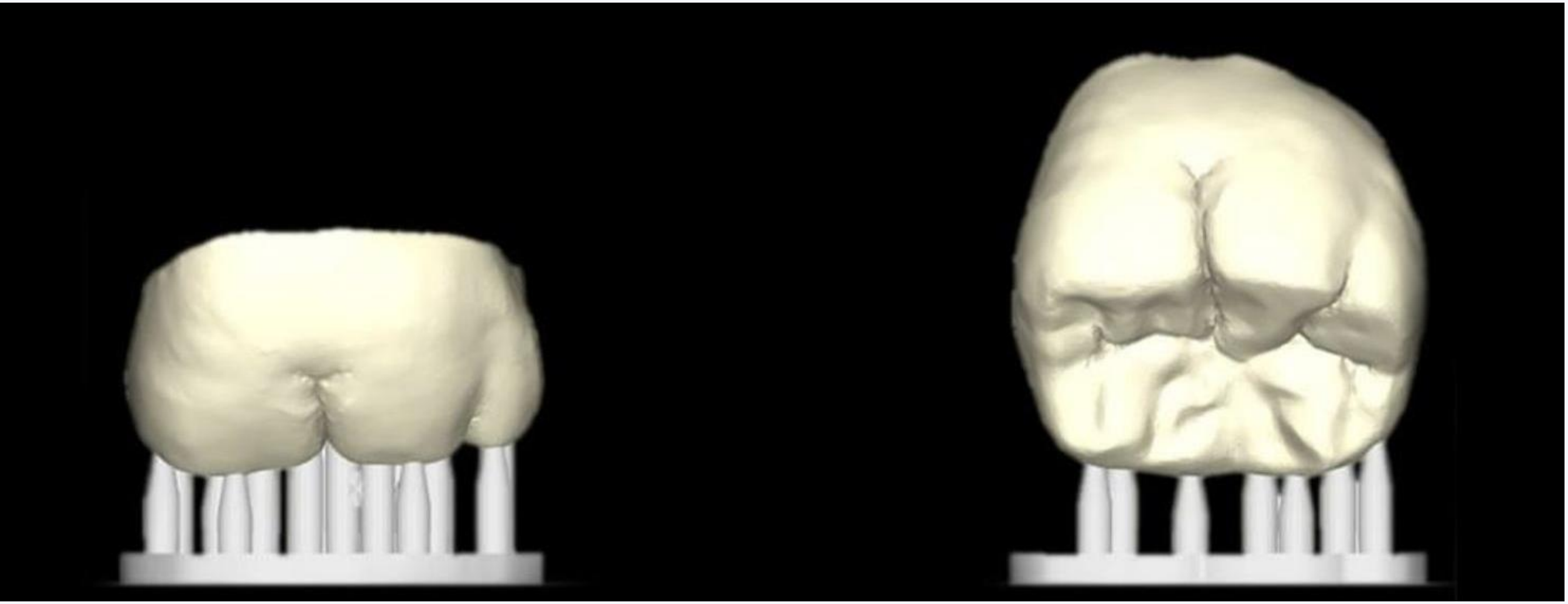
Additive Manufacturing e Dispositivi Medici: evoluzione normativa e affidabilità delle tecnologie

sabato
25 novembre 2023
ore **9.00**
Sala Rossetto
CNA Padova
via Croce Rossa, 56

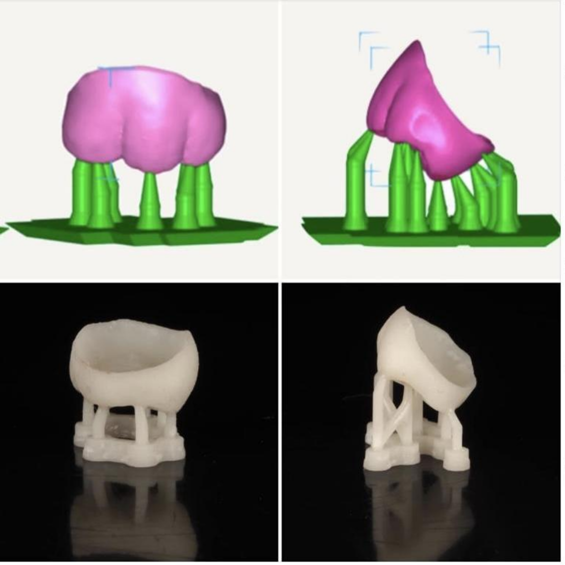
Patrizio Marcato

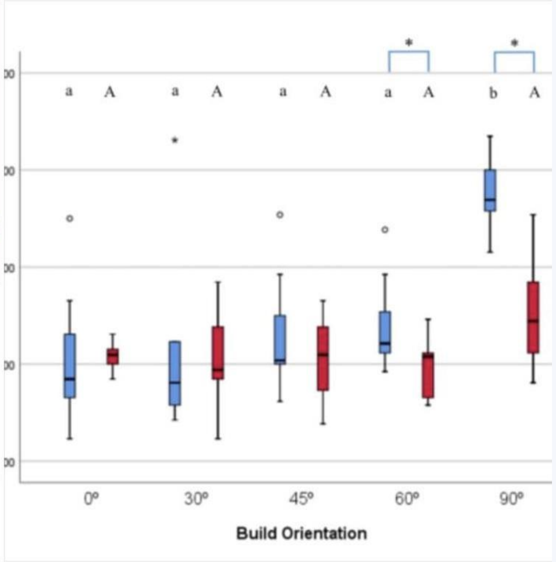
Stampa 3D dei Dispositivi medici: evoluzione normativa e buone prassi

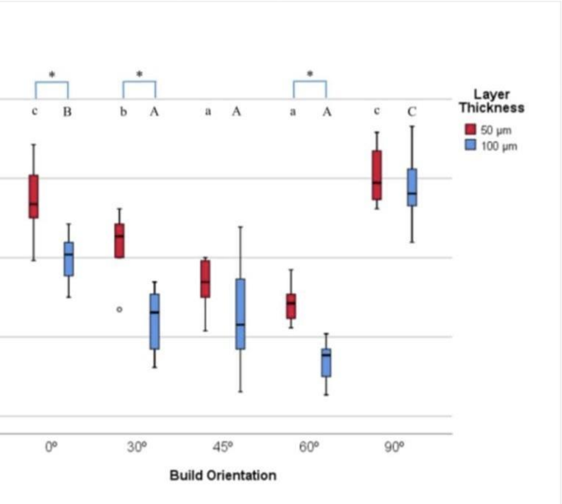
Sandro Storelli, Coordinatore Osservatorio Biomedicale Veneto

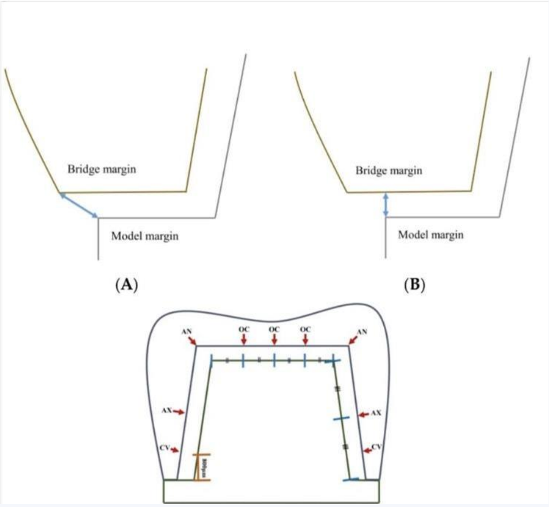


Orientamenti e supporti

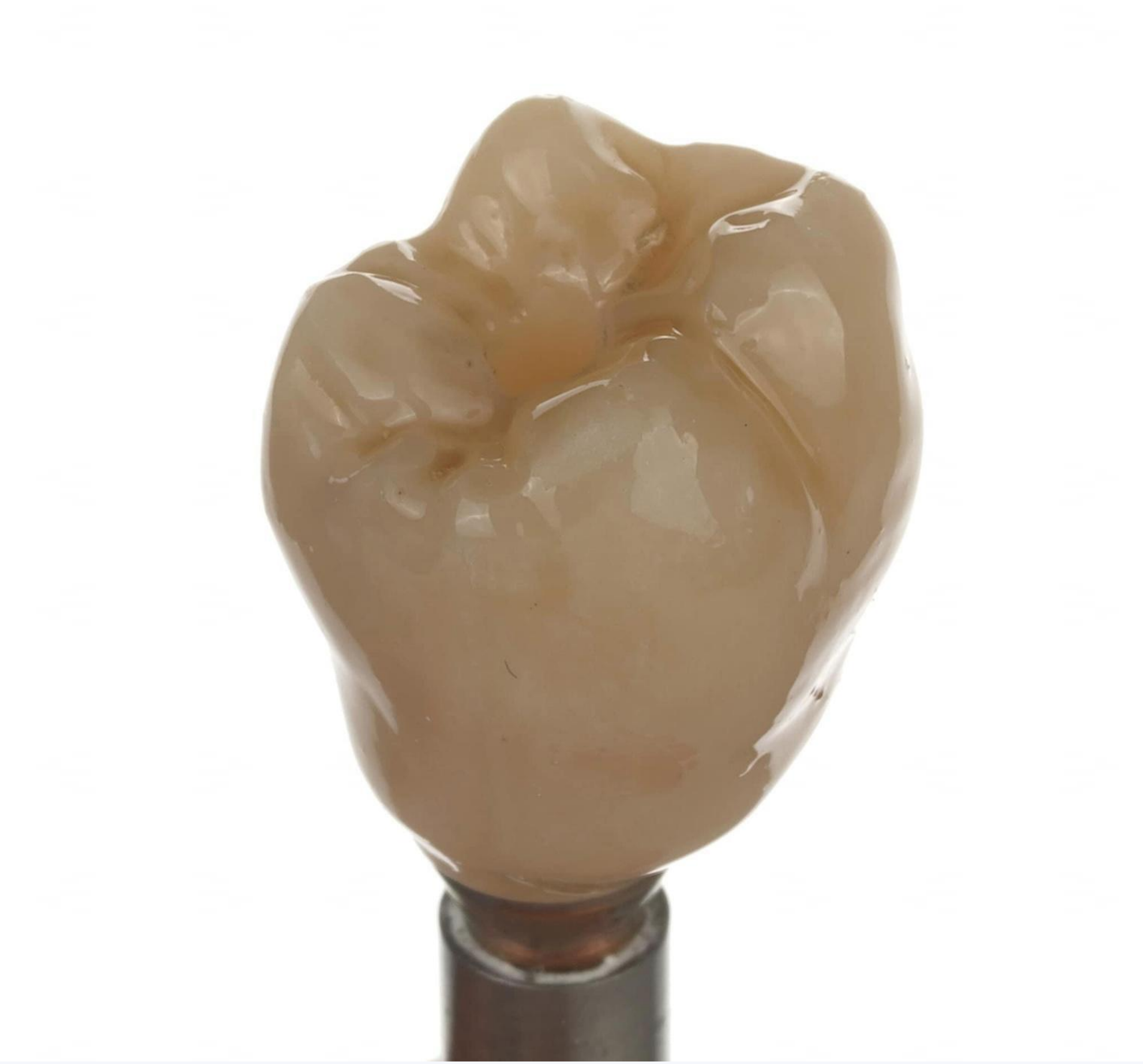


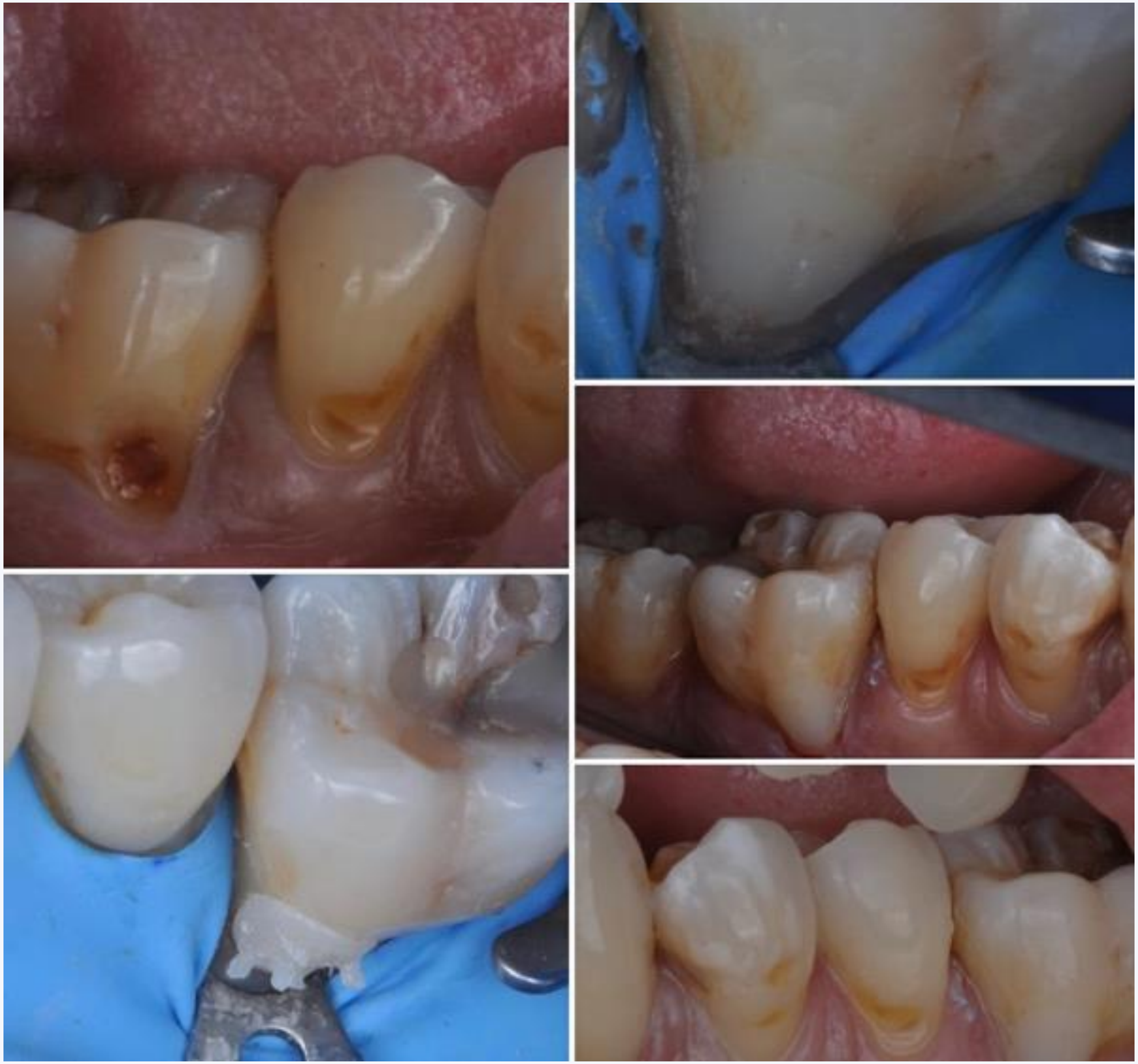


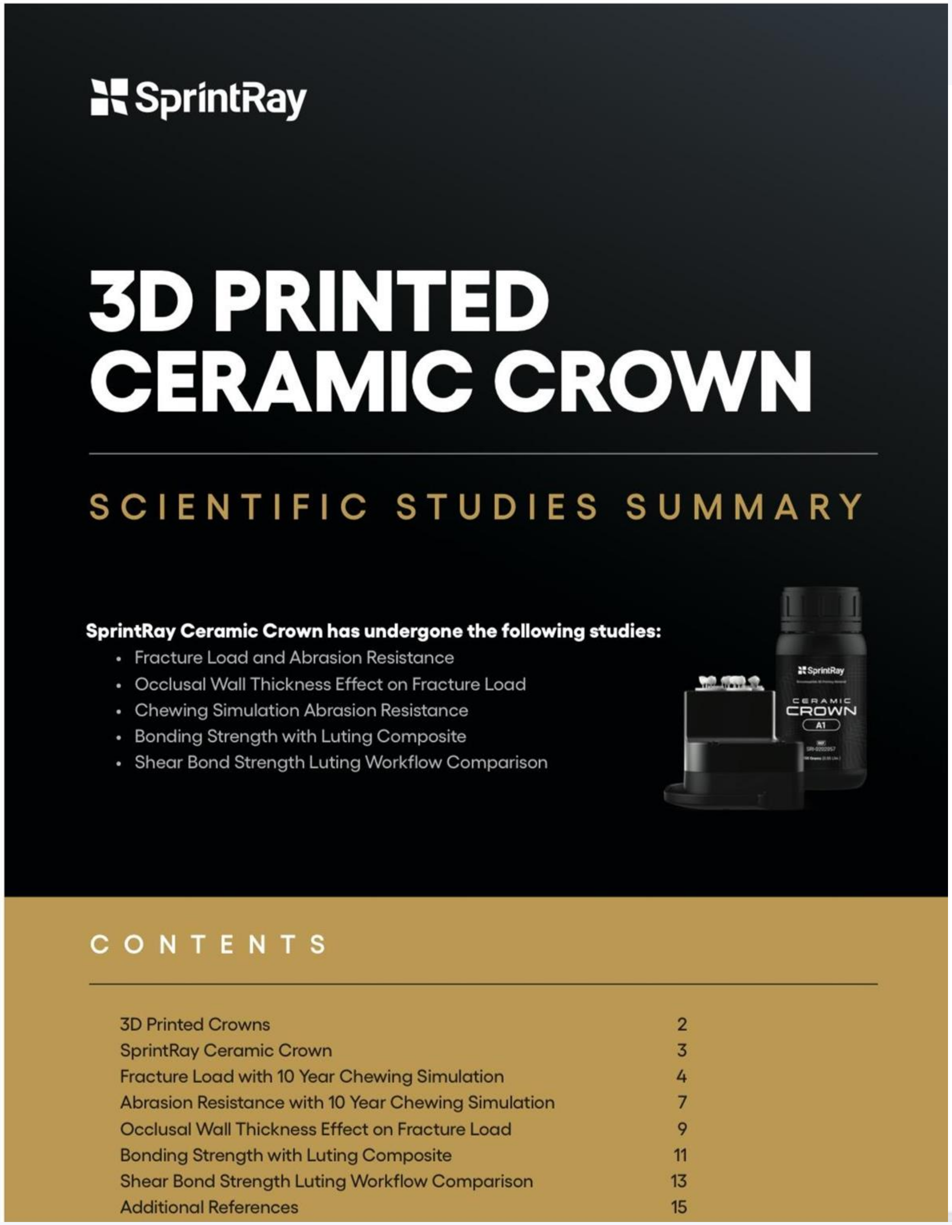



Bridge margin
Model margin
(A)
Bridge margin
Model margin
(B)
AN
OC
OC
OC
AN
AX
AX
CV
CV

I due migliori orientamenti, come mostrato nella letteratura, sono 0° occlusali in basso e 60° linguali in basso. Tuttavia, notate che la densità di sostegno ha ancora enormi quantità di supporti sull’occlusale. vedo gente provare i 60° e non appoggia la mossa occlusale-cattiva







SprintRay

3D PRINTED CERAMIC CROWN

SCIENTIFIC STUDIES SUMMARY

SprintRay Ceramic Crown has undergone the following studies:

- Fracture Load and Abrasion Resistance
- Occlusal Wall Thickness Effect on Fracture Load
- Chewing Simulation Abrasion Resistance
- Bonding Strength with Luting Composite
- Shear Bond Strength Luting Workflow Comparison

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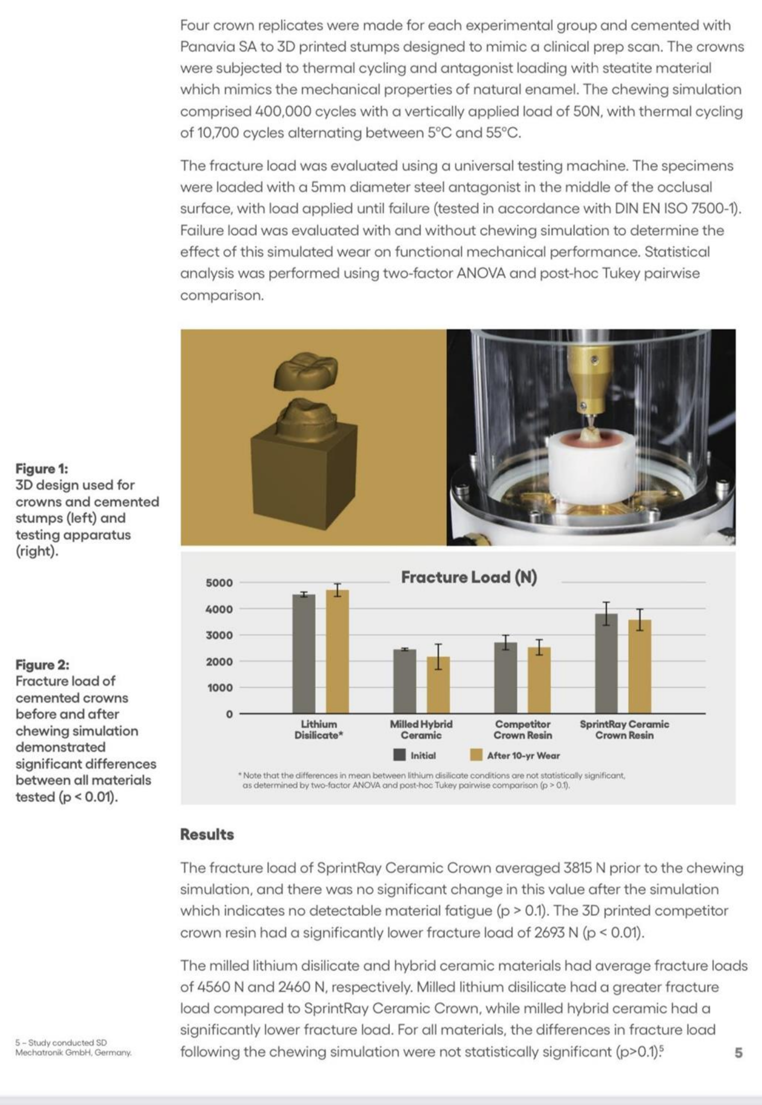
Fracture Load (N)
5000
4000
3000
2000
1000
0
Lithium Disilicate*
Milled Hybrid Ceramic
Competitor Crown Resin
SprintRay Ceramic Crown Resin
Initial
After 10-yr Wear

Four crown replicates were made for each experimental group and cemented with Panavia SA to 3D printed stumps designed to mimic a clinical prep scan. The crowns were subjected to thermal cycling and antagonist loading with steatite material which mimics the mechanical properties of natural enamel. The chewing simulation comprised 400,000 cycles with a vertically applied load of 50N, with thermal cycling of 10,700 cycles alternating between 5°C and 55°C.

The fracture load was evaluated using a universal testing machine. The specimens were loaded with a 5mm diameter steel antagonist in the middle of the occlusal surface, with load applied until failure (tested in accordance with DIN EN ISO 7500-1). Failure load was evaluated with and without chewing simulation to determine the effect of this simulated wear on functional mechanical performance. Statistical analysis was performed using two-factor ANOVA and post-hoc Tukey pairwise comparison.

Figure 1:
3D design used for crowns and cemented stumps (left) and testing apparatus (right).

Figure 2:
Fracture load of cemented crowns before and after chewing simulation demonstrated significant differences between all materials tested ($p < 0.01$).

* Note that the differences in mean between lithium disilicate conditions are not statistically significant, as determined by two-factor ANOVA and post-hoc Tukey pairwise comparison ($p > 0.1$).

Results

The fracture load of SprintRay Ceramic Crown averaged 3815 N prior to the chewing simulation, and there was no significant change in this value after the simulation which indicates no detectable material fatigue ($p > 0.1$). The 3D printed competitor crown resin had a significantly lower fracture load of 2693 N ($p < 0.01$).

The milled lithium disilicate and hybrid ceramic materials had average fracture loads of 4560 N and 2460 N, respectively. Milled lithium disilicate had a greater fracture load compared to SprintRay Ceramic Crown, while milled hybrid ceramic had a significantly lower fracture load. For all materials, the differences in fracture load following the chewing simulation were not statistically significant ($p>0.1$)[5]

5 – Study conducted SD Mechatronik GmbH, Germany.

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LAB MANAGEMENT TODAY
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Answering the Call of Duty: Readers Share Their Military Memories

Family-Owned Lab Doubles Space for Education & Efficiency

Technicians' Gallery:
Readers' Most Inspiring Cases of the Year

Technicians transform what's broken, worn and unesthetic into something beautiful and functional; in essence, you help make patients happy and whole again. Here, 10 LMT readers share their most inspiring cases of 2023.

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Aurident Offers Savings On Quality 3D Resins!

Aurident

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2023 Fee Survey Report:
Despite Challenges, Optimism Prevails

MARKEDLY UP
16%
11%
SLIGHTLY UP
37%
33%
MOSTLY LEVEL
22%
32%
SLIGHTLY DOWN
18%
17%
MARKEDLY DOWN
7%
7%
LMT

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BUSINESS STRATEGIES FOR DENTAL LABORATORY DECISION MAKERS

Managing Growth: Three Lab Owners Share Strategies for Success

While it's hard to turn away business, uncontrolled growth can jeopardize your long-term success. This month, three laboratory owners—Reed Nunnally, Ashley Byrne and Rob Waters—share their strategies for achieving measured and sustainable growth.

LMT labday
EAST 2023
The Largest Dental Laboratory Event in the Northeast!
Saturday, September 23
Westchester Marriott
Tarrytown, NY

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Memorable Moments

The last 40 years have been the most progressive and transformative years in the history of dental technology. As LMT celebrates its 40th year in business, it's the ideal time to reflect on the technologies, events and ideas that have shaped our community. Take a walk with us through our shared history, as we remember its most memorable moments.

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Lucitone Digital Print Denture System™: Increasing Capacity, Throughput & Simplicity

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AeroFlex™ Quickly Eliminates Scratches

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Create Exceptional Full-Arch Bridges

Coming Soon from Keystone Industries: KeyGuard™

IPS e.max® ZirCAD® Prime Esthetic: Redefining Zirconia Esthetics

LMT labday
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LAB MANAGEMENT TODAY
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LMT
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A Modern-Day Renaissance Man

How to Use Minimally Invasive Techniques and Smile Design Principles

A functional, esthetic full-mouth rehabilitation gave this 24-year-old woman a new smile and enhanced facial harmony while preserving as much of her tooth structure as possible.

DYNAMIC DESIGNS
Five Labs Share their Renovation Stories

From a two-person lab on a 10-acre farm to a 60-technician facility with two operatories, these five laboratory renovations illustrate how thorough planning and intentional design can streamline workflow, enhance communication and productivity, and create beautiful and comfortable work environments.

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Aurident: Your Trusted Source for Asiga 3D Printers & Resin Materials!

Aurident
ASIGA

June/July 2023

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Printing and Partnerships Dominate IDS 2023
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Goodbye Grillz, Hello Diamond

DATA DIVE

MARKETING
'MY #1 STRATEGY'
Savvy laboratory marketers share their top strategies for making contact with dentists and turning them into clients.

Coverage starts on page 10

Our Printers Will Make You Say, 'Wow!'

Whip Mix

May 2023

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dental devices

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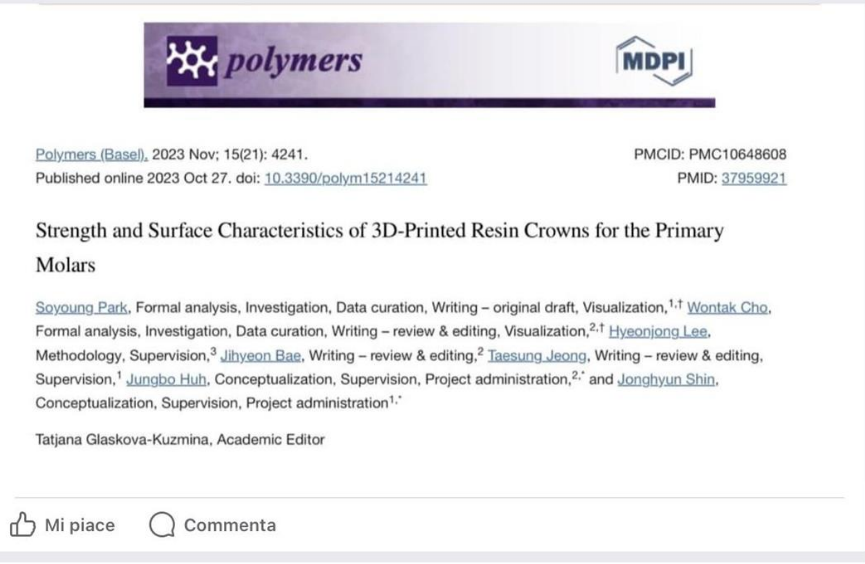


polymers
MDPI

Polymers (Basel). 2023 Nov; 15(21): 4241.
Published online 2023 Oct 27. doi: 10.3390/polym15214241

PMCID: PMC10648608
PMID: 37959921

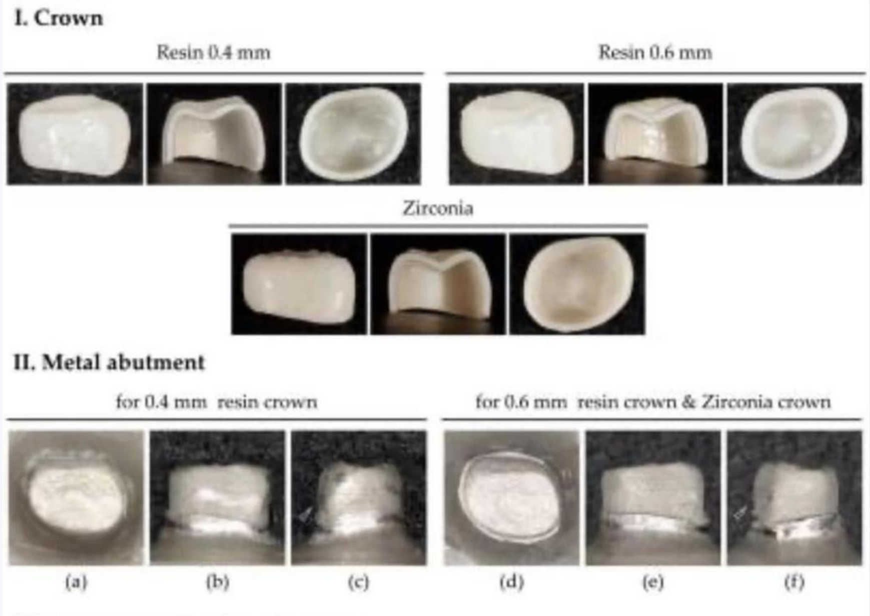
Strength and Surface Characteristics of 3D-Printed Resin Crowns for the Primary Molars

Soyoung Park, Formal analysis, Investigation, Data curation, Writing – original draft, Visualization,[1,†] Wontak Cho, Formal analysis, Investigation, Data curation, Writing – review & editing, Visualization,[2,†] Hyeonjong Lee, Methodology, Supervision,[3] Jihyeon Bae, Writing – review & editing,[2] Taesung Jeong, Writing – review & editing, Supervision,[1] Jungbo Huh, Conceptualization, Supervision, Project administration,[2,*] and Jonghyun Shin, Conceptualization, Supervision, Project administration[1,*]

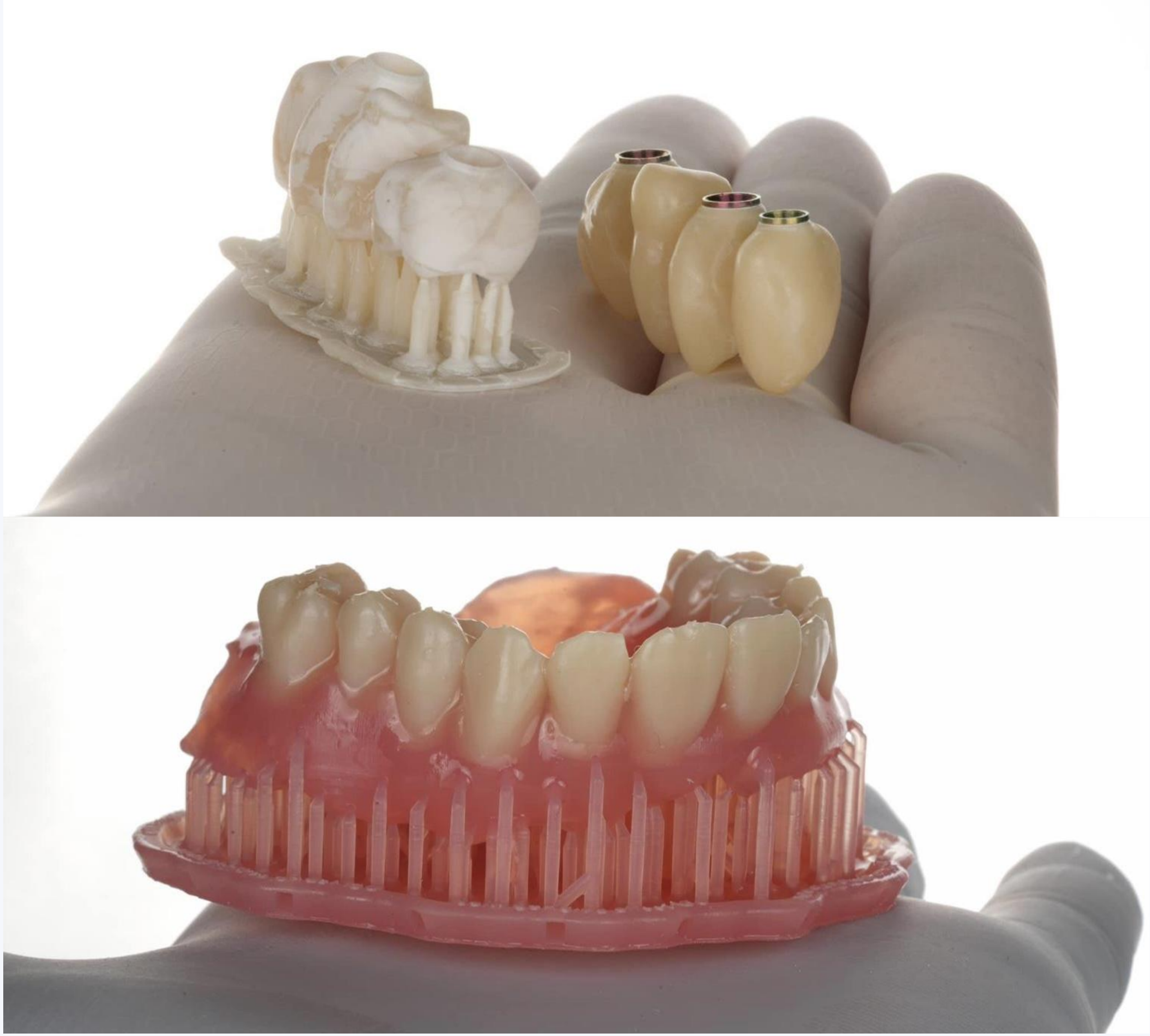
Tatjana Glaskova-Kuzmina, Academic Editor

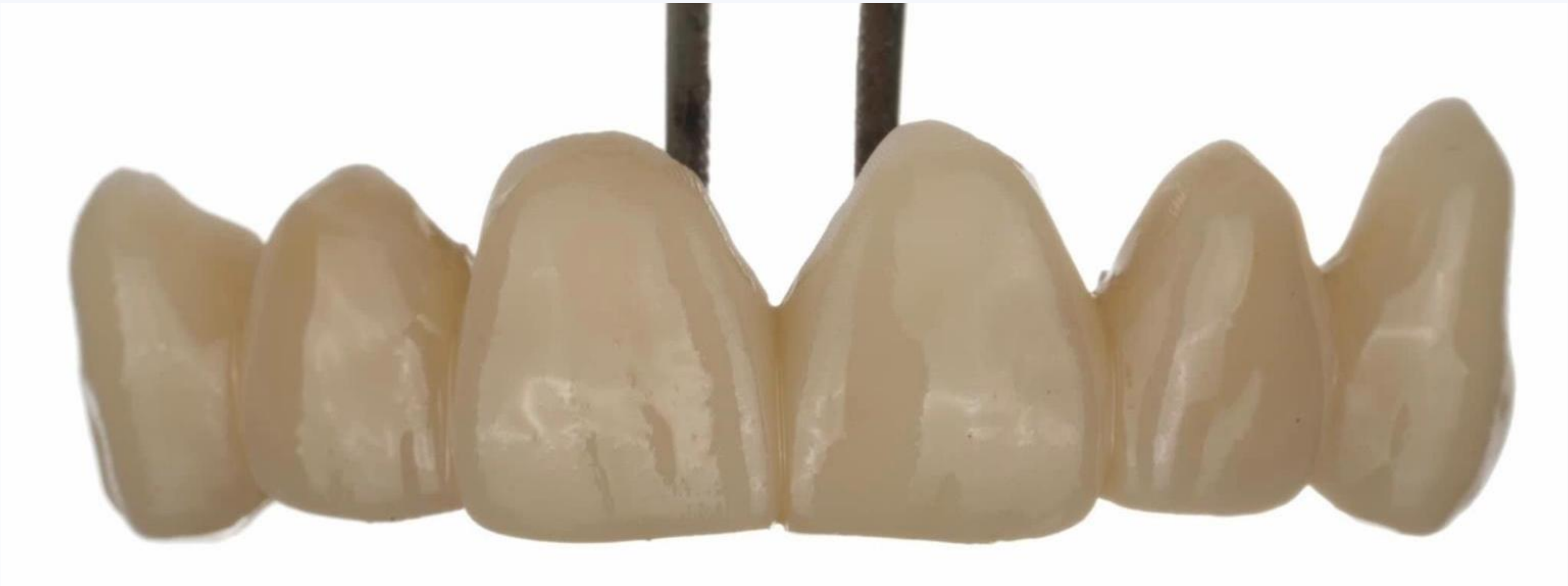
Mi piace
Commenta

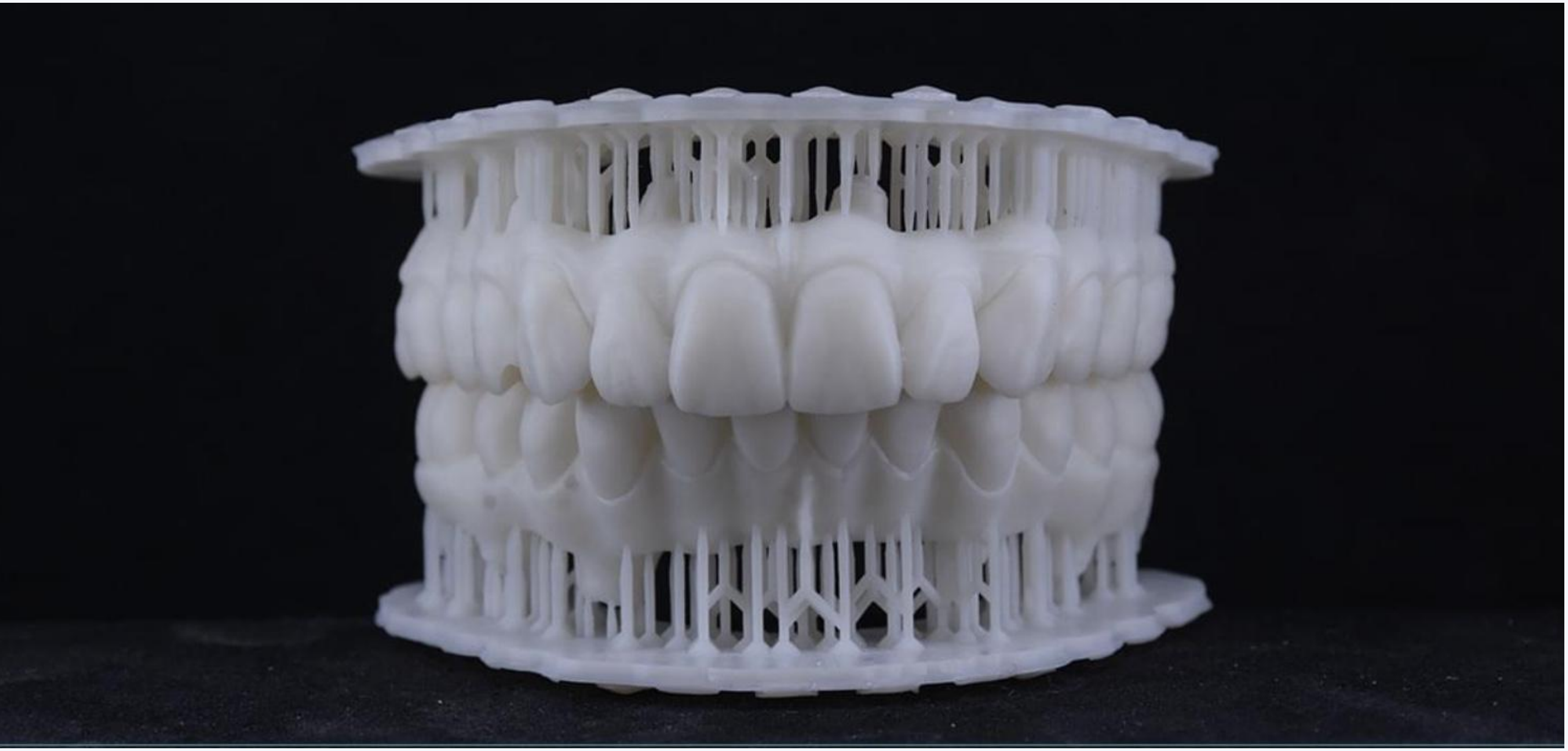
Click on image to magnify.

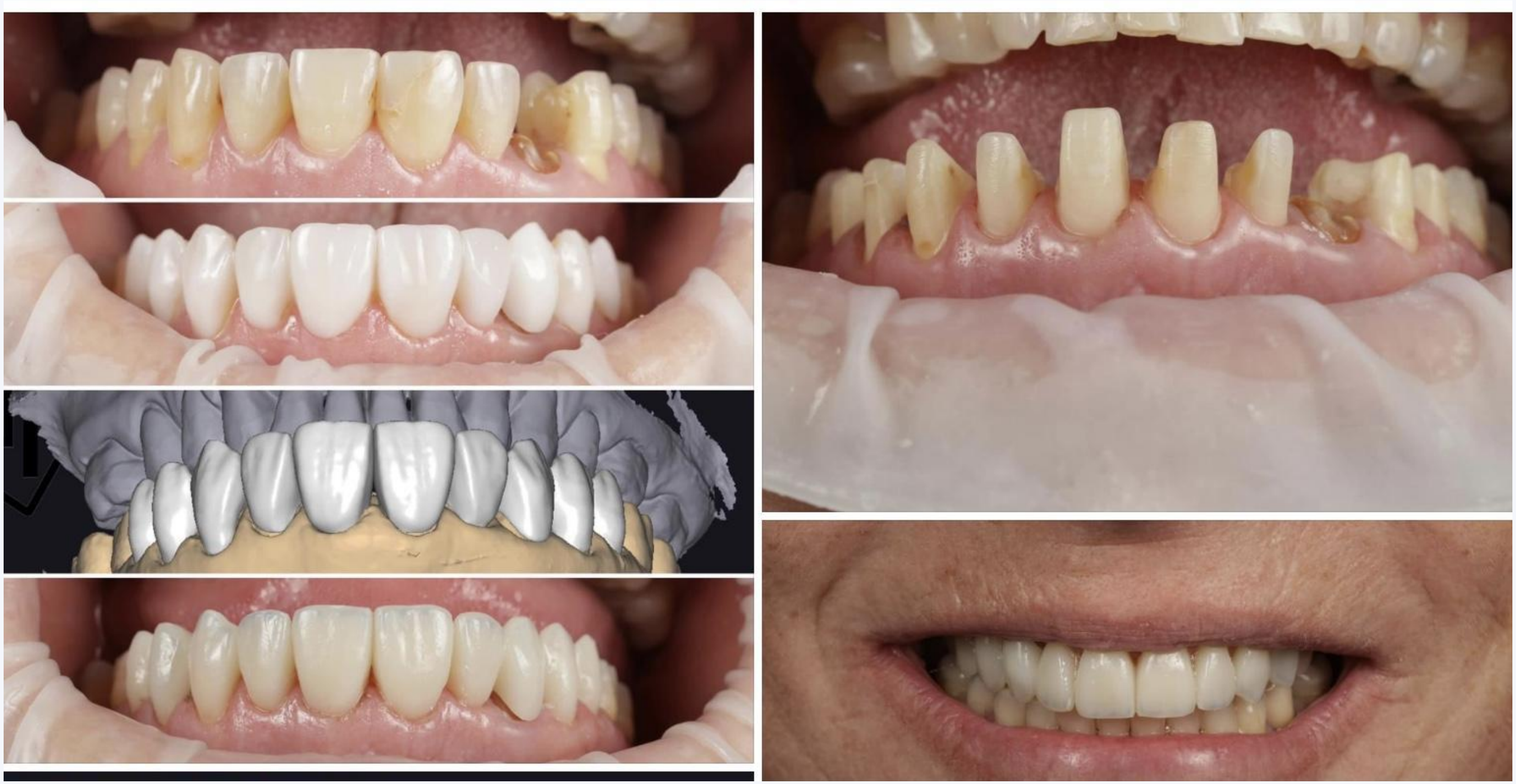


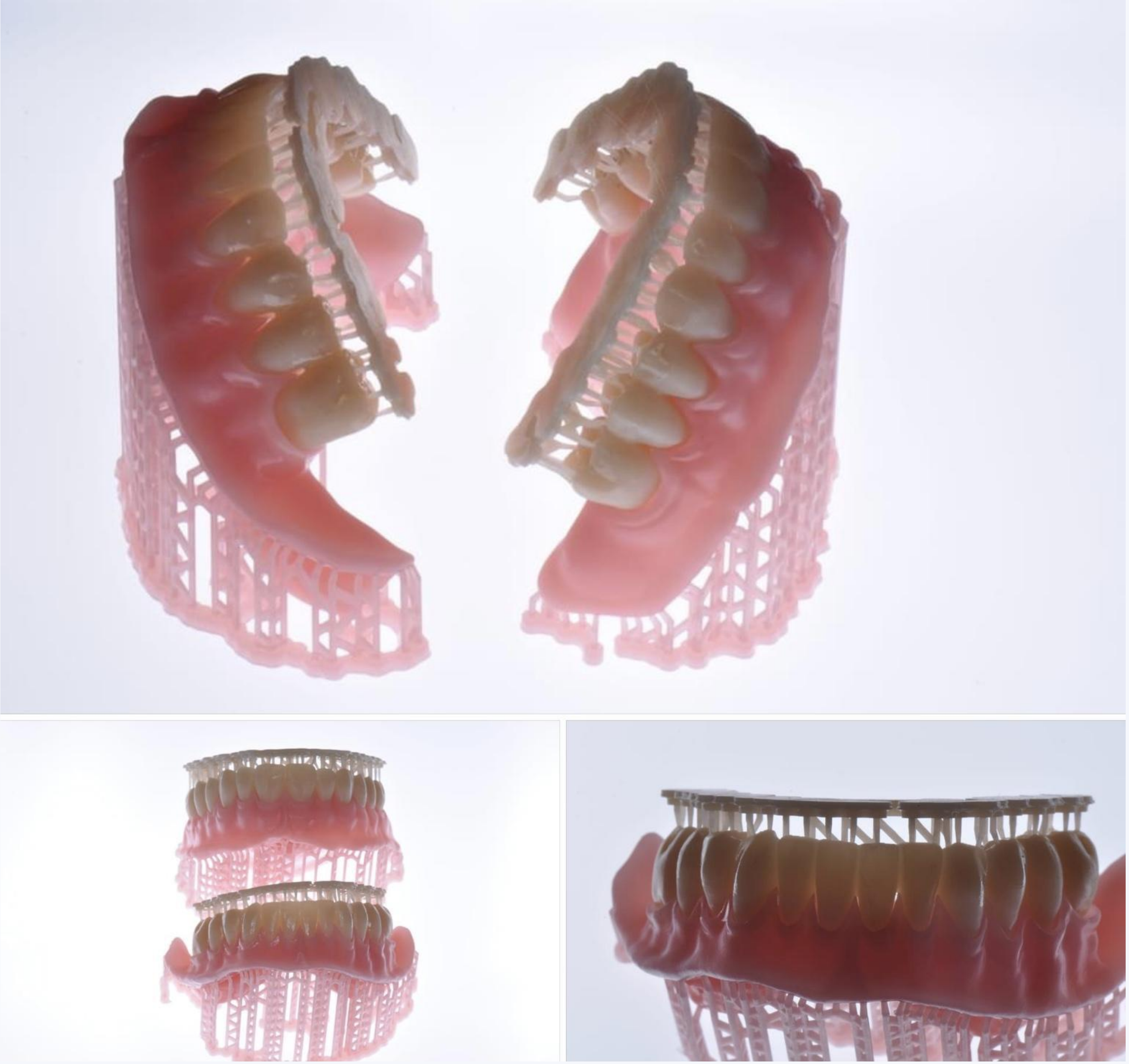
I. Crown
Resin 0.4 mm
Resin 0.6 mm
Zirconia
II. Metal abutment
for 0.4 mm resin crown
for 0.6 mm resin crown & Zirconia crown
(a)
(b)
(c)
(d)
(e)
(f)











Grazie per l’attenzione

Patrizio Marcato

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