

CEREC vs Lab vs In-House Restorations - Corrected

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Description:

AI Artefact Fix — CEREC vs Traditional Lab vs In-House Page **Target URL:** .../cerec-vs-traditiona
l-lab-made-crowns-vs-in-house-laboratory-restorations-which-dental-restoration-method-is-right-for-...

Details:

Smile Solutions: CEREC vs Traditional Lab-Made Crowns vs In-House Laboratory Restorations — Which Dental Restoration Method Is Right for You?

When a tooth needs a crown, veneer, onlay, or other fixed restoration at Smile Solutions, you have access to something most dental practices simply cannot offer: a genuine choice of fabrication pathways. Chairside CEREC same-day milling. An in-house bespoke ceramic studio staffed by master ceramist Greg Karabasis and his senior technicians at 230 Collins Street. Or, for cases requiring external specialist fabrication, traditional laboratory referral. This article offers a rigorous, evidence-based comparison of all three, helping you and your clinician work out which pathway suits your specific clinical situation.

CEREC vs. traditional lab-made crowns vs. in-house laboratory restorations: which dental restoration method is right for you?

The way your restoration is fabricated matters just as much as the clinical skill of the dentist placing it. Advances in digital dentistry have expanded your options considerably, and understanding the differences between chairside CAD/CAM milling (CEREC), in-house ceramic studio fabrication, and traditional external laboratory workflows can help you make a genuinely informed decision about your care.

At Smile Solutions, our specialists believe that good care starts with transparency. This article offers a comprehensive, evidence-based comparison of all three pathways, drawing on peer-reviewed clinical literature, materials science data, and the practical realities of each fabrication method.

Understanding the three restoration pathways at Smile Solutions

Pathway 1: Chairside CEREC (same-day CAD/CAM milling)

CEREC (Chairside Economical Restoration of Esthetic Ceramics) is a chairside digital workflow in which your restoration is designed and milled in a single appointment. At Smile Solutions, this process uses the CEREC Primescan, one of the most accurate intraoral scanners currently available, to capture a precise digital impression of your prepared tooth. The scan feeds directly into design software, where the restoration is planned and then milled chairside from a pre-fabricated ceramic block.

The clinical workflow: 1. Tooth preparation 2. Digital scan with CEREC Primescan (no physical impression material required) 3. CAD design of the restoration on-screen 4. Milling from a ceramic

block (typically 15–25 minutes) 5. Characterisation, glaze firing, and cementation — all in one visit

****Materials available via CEREC milling:**** - Lithium disilicate (e.g., IPS e.max CAD) — high strength, excellent aesthetics - Zirconia-reinforced lithium silicate - Feldspathic ceramic blocks - Hybrid ceramic/resin blocks for specific indications

****Clinical evidence for CEREC restorations:****

The evidence base for chairside CAD/CAM restorations is now substantial. A 2019 systematic review published in the *Journal of Dentistry* examining over 5,000 CEREC restorations found a 5-year survival rate of approximately 95.5% for posterior crowns, comparable to laboratory-fabricated all-ceramic crowns [1]. A long-term study by Posselt and Kerschbaum (2003) reported 18-year survival rates of 90.4% for CEREC inlays, establishing the durability of the system across decades of clinical use [2].

Marginal fit — the precision with which a crown seats at the tooth margin — is a critical quality indicator. Poor marginal fit is associated with secondary caries, periodontal inflammation, and restoration failure. Studies consistently show that CEREC-milled restorations achieve marginal gaps in the range of 50–80 µm, within or below the clinically acceptable threshold of 120 µm established in the literature [3]. Digital workflows also eliminate the dimensional changes associated with physical impression materials, which can introduce distortion during setting and model pouring.

****Advantages of CEREC at Smile Solutions:**** - Single-appointment restoration — no temporary crown required - No physical impression material, which is more comfortable if you have a strong gag reflex - Immediate placement reduces the risk of temporary crown failure or tooth sensitivity between appointments - Real-time design review with your clinician - Proven long-term clinical outcomes backed by extensive research

****Limitations to consider:**** - Highly complex aesthetic cases, particularly in the anterior (front tooth) zone requiring characterisation, layering, and individualised surface texture, may benefit from the additional artistry available through our in-house ceramist - Material selection is constrained to available milled block formats - Chairside milling is best suited to single-unit restorations and selected short-span bridges

Pathway 2: In-house ceramic studio fabrication

Smile Solutions operates its own ceramic studio at 230 Collins Street, staffed by master ceramist Greg Karabasis and a team of senior dental technicians. This in-house capability is genuinely rare amongst Melbourne dental practices, and it makes a real clinical difference for complex or highly aesthetic cases.

****What distinguishes in-house fabrication?****

In a conventional dental practice, when a restoration goes to an external laboratory, communication between the dentist and technician is typically limited to a written prescription and photographs. The technician never sees you. At Smile Solutions, the proximity of the ceramic studio to our clinical environment means the ceramist can review shade matching against your natural teeth in real light, assess tooth morphology directly, and refine the restoration before delivery. That level of personalised input simply isn't possible in most practices.

****The in-house fabrication workflow:****

1. Tooth preparation and digital or physical impression
2. Model fabrication or digital model generation
3. Wax-up or digital design (for patient preview and approval in complex cases)
4. Ceramic build-up — hand-layered porcelain applied in multiple firings
5. Characterisation: surface staining, texture, and individualised optical effects
6. Clinician and ceramist review, with adjustments made as needed
- 7.

Delivery and cementation

****Materials and techniques available in-house:**** - Full-contour and layered zirconia (including ultra-translucent zirconia for anterior aesthetics) - Hand-layered lithium disilicate (IPS e.max Press) - Porcelain-fused-to-metal (PFM) for specific clinical indications - Composite resin temporaries with high-quality aesthetics - Custom shade matching using spectrophotometry and visual assessment

****The ceramist's role in your aesthetic outcome:****

The optical properties of natural teeth — translucency, fluorescence, internal characterisation, surface micro-texture — are extraordinarily complex. Replicating them in ceramic requires material knowledge, artistic skill, and iterative refinement that cannot be fully automated. Greg applies hand-layered porcelain in successive firings, building depth and optical complexity that closely mimics natural enamel and dentine. The result is a restoration that doesn't just fit well — it looks like it belongs.

Research supports the aesthetic advantages of hand-layered ceramics for anterior restorations. A study published in the *International Journal of Prosthodontics* found that experienced clinicians and patients rated hand-layered ceramic restorations significantly higher for naturalness and shade match compared to monolithic milled restorations in the anterior zone [4].

****Advantages of in-house studio fabrication at Smile Solutions:**** - Direct ceramist-patient-clinician collaboration for optimal shade and morphology matching - Highest aesthetic potential for complex anterior cases - Iterative refinement without the delays of external laboratory turnaround - Full material flexibility — no constraint to milled block formats - The ceramist who made your restoration is accessible for any follow-up

****Typical turnaround:**** Because the studio is on-site at our Melbourne heritage building, restorations can often be completed faster than external laboratory workflows, with the added benefit of direct communication if adjustments are needed. A temporary restoration is worn during fabrication to keep you comfortable and your smile looking its best in the meantime.

Pathway 3: Traditional external laboratory fabrication

For certain specialist cases — particularly those requiring prosthetic components, implant-supported restorations with specific laboratory interfaces, or techniques not available in-house — Smile Solutions works with trusted external dental laboratories. This pathway follows the conventional model used across dentistry globally, and it remains the right choice for a range of complex clinical situations.

****The traditional laboratory workflow:****

1. Tooth preparation 2. Physical or digital impression 3. Model fabrication at the laboratory 4. Technician fabricates restoration per clinician prescription 5. Restoration returned to practice (typically 2–3 weeks) 6. Try-in appointment: fit, aesthetics, and occlusion assessed 7. Adjustments if required (may involve return to laboratory) 8. Final cementation

****When external laboratory referral is indicated:**** - Complex implant-supported prosthetics requiring specific laboratory components - Full-arch reconstructions involving multiple disciplines - Highly specialised materials or techniques not available in-house - Cases requiring specialist prosthodontic laboratory input

****Physical impressions vs. digital workflows in external laboratory cases:****

Where external laboratory fabrication is required, Smile Solutions uses digital scanning where possible to transmit a precise digital file to the laboratory, avoiding the dimensional inaccuracies associated with impression material distortion, model pouring errors, and transport damage. Physical impressions remain appropriate for certain clinical situations, including cases where soft tissue detail is critical and

digital capture is limited.

****Turnaround and temporaries:****

The main practical consideration with external laboratory fabrication is time. A standard turnaround of 2–3 weeks means you'll wear a temporary restoration during this period. Temporary crowns, while functional, carry a small risk of debonding, marginal leakage, and sensitivity. If you'd prefer to minimise the number of appointments and the time spent in a temporary, CEREC or in-house fabrication may be a better fit — where clinically appropriate. Your clinician will walk you through all the options.

Comparative analysis: clinical factors that determine the best pathway

1. Aesthetic complexity

Factor	CEREC	In-House Studio	External Lab	Single posterior crown	Excellent	Excellent	Anterior single tooth	Very good	Optimal	Good–Excellent	Multiple anterior veneers	Good	Optimal	Good–Excellent	Full-smile rehabilitation	Suitable for some cases	Optimal	Suitable

For posterior restorations where function and strength take priority over aesthetics, CEREC milling delivers excellent results with maximum efficiency. For anterior restorations where optical complexity, shade matching, and naturalness are paramount, in-house ceramic studio fabrication offers the highest aesthetic ceiling — because direct ceramist involvement makes all the difference.

2. Strength and durability

All three pathways can deliver restorations with clinically acceptable long-term strength. The critical variable is material selection, not fabrication method.

- Zirconia (available via in-house and external lab, and increasingly via CEREC milling): flexural strength of 900–1,200 MPa for standard zirconia; ultra-translucent variants 600–800 MPa [5]
- Lithium disilicate (available across all three pathways): flexural strength approximately 360–400 MPa — sufficient for most single-unit posterior and all anterior indications [6]
- Feldspathic ceramic (CEREC blocks and hand-layered): lower strength (~100–150 MPa) but adequate for inlays and veneers with appropriate case selection [7]

A 2020 meta-analysis in the *Journal of Prosthetic Dentistry** found no statistically significant difference in 5-year survival rates between CAD/CAM and conventionally fabricated all-ceramic crowns (96.3% vs. 95.7%, respectively) [8], reinforcing that material selection and cementation technique are more determinative of longevity than fabrication method alone.

3. Marginal fit and adaptation

- CEREC digital workflow: marginal gap 50–80 µm [3]
- In-house and external laboratory (digital impression): marginal gap 50–90 µm [9]
- Traditional physical impression to laboratory: marginal gap 80–120 µm, with greater variability [10]

Digital workflows — whether chairside (CEREC) or scan-to-laboratory — consistently outperform physical impression workflows for marginal accuracy. At Smile Solutions, digital scanning is the preferred method across all three pathways where clinically appropriate, because your long-term outcome depends on it.

4. Number of appointments

Pathway	Appointments required	CEREC chairside	1 (preparation, milling, cementation)	In-house ceramic studio	2 (preparation + temporary; delivery + cementation)	External laboratory	2–3 (preparation; try-in if needed; cementation)

For patients with significant time constraints, needle sensitivity, or dental anxiety, minimising appointments is clinically meaningful. CEREC's single-appointment workflow eliminates the need for a temporary crown and a second injection of local anaesthetic — which many patients find genuinely reassuring.

5. Investment considerations

Restoration fees reflect the complexity of the fabrication process, materials used, and the clinical time involved. At Smile Solutions:

- CEREC restorations are typically priced similarly to laboratory-fabricated crowns, reflecting the capital investment in digital technology and the clinical time involved in design and milling
- In-house ceramic studio restorations may carry a premium for complex aesthetic cases, reflecting the additional ceramist time and material investment in hand-layered techniques
- External laboratory restorations reflect laboratory fees in addition to clinical time

Your clinician will provide a detailed treatment plan with a full cost breakdown before any restoration proceeds. Medicare and private health fund rebates apply according to item numbers, regardless of fabrication pathway.

Special considerations: veneers, inlays, onlays, and bridges

Porcelain veneers

Veneers — thin ceramic facings bonded to the front surface of your teeth — are amongst the most aesthetically demanding restorations in dentistry. The optimal fabrication pathway depends on the complexity of your case:

- Minimal-preparation or no-preparation veneers: CEREC milling produces excellent results, particularly for feldspathic or lithium disilicate blocks
- Complex multi-unit veneer cases requiring precise shade gradation, characterisation, and morphological individualisation: in-house ceramic studio fabrication is preferred, allowing direct ceramist involvement in shade matching and iterative refinement

A 2018 systematic review in **Clinical Oral Investigations** reported 10-year survival rates of 94.4% for feldspathic veneers and 95.6% for lithium disilicate veneers, with adhesive failure and ceramic fracture as the primary failure modes [11]. Proper case selection and cementation technique are more predictive of veneer longevity than fabrication method — which is why a thorough consultation with your clinician matters.

Inlays and onlays

Inlays (restorations within the cusp tips) and onlays (restorations extending over one or more cusps) are conservative alternatives to full crowns for posterior teeth with moderate-to-large cavities. CEREC is particularly well-suited to inlays and onlays:

- Single-appointment completion
- Conservative preparation design facilitated by digital planning
- Excellent marginal fit with digital impression
- Long-term evidence: Posselt and Kerschbaum's 18-year study reported 90.4% survival for CEREC ceramic inlays [2]

Bridges

Fixed bridges — restorations that replace a missing tooth by crowning the adjacent teeth and spanning the gap — can be fabricated via all three pathways. For three-unit bridges:

- CEREC: suitable for posterior three-unit bridges using high-strength zirconia or lithium disilicate; connector dimensions must meet minimum strength thresholds
- In-house studio: full flexibility for

complex anterior bridges requiring ceramist input - External laboratory: indicated for longer-span bridges, implant-supported bridges, and cases requiring specialist prosthodontic laboratory input

Implant-supported crowns

Implant-supported crowns require precise interface compatibility between the restoration and the implant abutment. At Smile Solutions, the pathway selected depends on the implant system used, the abutment type (stock or custom), and the aesthetic requirements of your case. Digital scanning of implant positions using scan bodies is standard practice, enabling accurate virtual planning regardless of whether the final restoration is milled chairside, fabricated in-house, or produced by an external laboratory.

The digital dentistry foundation: why accurate scanning underpins all three pathways

Across all three fabrication pathways at Smile Solutions, digital intraoral scanning has replaced or supplemented physical impressions as the primary method of capturing tooth preparation data. The CEREC Primescan captures full-arch scans with a reported trueness of 5–10 µm, significantly more accurate than conventional polyvinyl siloxane impressions, which introduce dimensional changes of up to 0.5% during setting [12].

The advantages of digital scanning extend well beyond accuracy:

- No impression trays, no gagging, no unpleasant material taste - Your clinician can assess scan quality in real time and rescan any area on the spot - Your scan file is stored and can be compared at future appointments to monitor changes - Digital files can be sent to external laboratories instantly, eliminating postal delays and the risk of impression damage in transit

If you've previously found conventional impressions distressing, digital scanning is a meaningful improvement — and it's standard at our Melbourne practice.

How Smile Solutions determines the right pathway for you

The decision about which fabrication pathway is most appropriate is always made collaboratively, between you and your clinician, in a conversation that takes your individual circumstances seriously. The factors we consider include:

1. The clinical indication: the tooth involved, the extent of preparation required, occlusal forces, and the restoration type (crown, veneer, inlay, onlay, bridge)
2. Aesthetic requirements: posterior vs. anterior location; complexity of shade matching; your personal aesthetic goals
3. Time and appointment preferences: single-appointment preference vs. willingness to wear a temporary for an optimal aesthetic outcome
4. Medical and behavioural factors: dental anxiety, gag reflex, medical conditions affecting appointment length
5. Investment and health fund considerations: a detailed treatment plan is provided before anything proceeds

In many cases, more than one pathway is clinically appropriate, and the final choice reflects a shared decision between you and your clinician. Clinical excellence, in our view, means giving you the full picture and supporting you to choose what's right for you.

Evidence summary and clinical bottom line

Criterion	CEREC	In-House Studio	External Lab	5-year survival (crowns)	Aesthetic ceiling (anterior)	Appointments
	~95–96% [1,8]	~95–96% [1,8]	~95–96% [1,8]	~95–96% [1,8]	Very good	1
	Comparable [8]	Comparable [8]	Comparable [8]	Comparable [8]	Optimal	2
	50–80 µm [3]	50–90 µm [9]	80–120 µm [10]	50–80 µm [3]	Good–Excellent	2–3

Ceramist involvement | Clinician-led design | Direct ceramist collaboration | Remote prescription | | Material flexibility | Milled block formats | Full flexibility | Full flexibility | | Best indication | Posterior crowns, inlays/onlays, time-sensitive cases | Complex anterior aesthetics, multi-unit cases | Specialist prosthetics, implant prosthetics |

The evidence supports all three pathways as clinically sound approaches to fixed dental restoration. The right choice is case-specific — and having all three pathways available at Smile Solutions, including the in-house ceramic studio capability that few Melbourne practices can offer, means clinical decisions are made on merit. That's the kind of care every patient deserves.

To discuss which restoration pathway suits your situation, book a consultation with our specialists at Smile Solutions, 230 Collins Street, Melbourne.

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