From Day One:
Why Emergence Profile Design Cannot Wait Until the Restorative Stage

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Whether a tooth was just extracted or has been missing for months, the geometry that determines tissue health, esthetics, and periimplantitis risk is set at surgery. Not at delivery.

The Tissue Heals to Whatever It First Touches

Peri-implant soft tissue does not wait for the final restoration to decide what shape it takes. From the moment an implant is placed, the surrounding mucosa begins organizing around whatever is sitting at the transmucosal interface. Within the first few weeks, the biological architecture that forms, the mucosal tunnel contour, the subgingival emergence angle, the soft tissue seal against the implant surface, becomes increasingly difficult to change without intervention.

This is not a complication. It is normal healing biology. The problem arises when what the tissue first contacts has no relationship to the restoration that will eventually replace it.

A standard prefabricated healing abutment is cylindrical. It is designed for convenience, not anatomy. The tissue heals around a circle. The final restoration requires a tooth-shaped emergence. Somewhere between those two geometries lies a conditioning process that takes multiple appointments, multiple provisional adjustments, and multiple disconnections to bridge, if it is addressed at all.

The same principle applies whether a tooth was extracted that day or months ago. In one scenario the tissue is intact and at risk of collapse. In the other it has already changed and requires active guidance back toward a functional, esthetic form. In both cases the tissue will heal to whatever it first contacts. The only question is whether that first contact was designed to produce the right outcome [1].

Preserving or Rebuilding - the Instrument Is the Same

When a tooth is extracted and an implant placed immediately, the tissue architecture from the natural tooth is still present at surgery. That is the only moment the existing contours can be captured, and improved upon. A planned provisional with the correct emergence geometry not only prevents the existing papilla and mucosal levels from collapsing, it creates the opportunity to refine the cervical emergence, adjust tissue symmetry, and establish the esthetic outcome the patient wanted from the start, with firm biological support underneath it from day one. Immediate provisionalization at this stage produces measurably less midfacial mucosal recession and significantly less papillary recession compared to leaving the site without anatomical support during healing [1]. Sites restored

with an immediate provisional also demonstrate greater facial soft tissue thickness compared to non-provisionalized sites, with the combination of bone grafting and provisional restoration producing the greatest tissue height and thickness overall [2]. The provisional does not simply hold what was there. It shapes what comes next.

When the implant is placed into a site that has been edentulous for months, the tissue must be actively conditioned back toward a functional and esthetic form. A restoration or abutment with a planned concave emergence profile placed at implant surgery, whether a screw-retained provisional crown or a custom healing abutment, initiates that conditioning from day one, eliminating the uncovery appointment and reducing the number of adjustment sessions needed to reach a predictable tissue result [3].

> *Two different clinical presentations. The same planning requirement. In both cases the instrument that first contacts the healing tissue must be designed from the intended restoration before it is placed.*

Conditioning Is Not a Restorative Step. It Is a Surgical One.

The choice between a screw-retained provisional crown and a custom healing abutment is a clinical decision driven by primary stability, occlusal clearance, and patient factors. Both are valid. Both serve the same biological function when designed correctly. What determines the outcome in either case is not which instrument is chosen, but whether the emergence geometry encoded into it was planned before fabrication.

When the subgingival profile is concave, it creates space for connective tissue attachment, reduces pressure on the mucosal margin, and allows the soft tissue seal to form against a surface it can organize around. When it is convex or steep, it displaces tissue, restricts the space available for soft tissue maturation, and prevents the coronal migration that healthy healing depends on. At three years, implants restored with convex profiles showed mucosal recession in 46.7% of cases compared to 13.3% in the concave group, with convex profiles carrying a 7.3 times greater risk of recession than concave contours [4]. That geometry is encoded at the planning stage, not corrected at delivery.

Implant position and angulation have the greatest effect on what subgingival contour is even achievable. A concave subcritical profile is recommended when the implant is in a facial or buccal position, but limited running room between the implant platform and the mucosal margin may make that profile geometrically impossible unless the position was planned with it in mind [7]. This is why conditioning cannot begin at the restorative appointment. By the time the final crown is delivered, the tissue has already organized. What it organized around is the result.

Making this workflow predictable requires that the emergence profile is designed before surgery, not improvised at the chair. When the lab receives a CBCT scan, an intraoral scan, and the planned implant position prior to surgery, the screw-retained provisional or

custom healing abutment can be fabricated to the exact concave subgingival geometry the case requires and delivered ready to place on the day of surgery.

> *The clinician seats the implant, seats the planned instrument, and patient leaves the operatory with the conditioning already underway. No improvisation. No secondary appointments to initiate what should have started at placement.*

The Same Site, Six Months Apart

Two patients. Same tooth position. Same implant system. Different workflows.

The first arrives the day of extraction. The site is intact, the papilla full, the tissue healthy. The implant is placed with a surgical guide to the planned prosthetic position, with depth and axis determined by the intended emergence corridor. A screw-retained provisional with a concave subgingival profile, fabricated before surgery from the digital plan, is seated the same day. The tissue begins organizing around the right geometry from the first hour.

The second arrives six months after extraction. The ridge has lost volume. A standard healing abutment was placed at surgery, positioned where the available bone allowed rather than where the emergence required. The tissue healed around a cylinder with no anatomical reference. At the restorative appointment, the position forces a convex profile to reach the mucosal margin. The crown flares where it should transition. At the two-year recall there is early crestal bone loss and the tissue margin has migrated apically. What seemed acceptable at delivery no longer is.

> *The difference between these two outcomes was not the implant system. It was not the material. It was whether the emergence geometry was planned before surgery and encoded into both the guide and the provisional, or left to whatever the bone offered on the day [7].*

The Plan Comes Before the Instrument

Most peri-implant complications that present at two and three year recalls were not caused by poor hygiene or bad luck. They were caused by a geometry problem created at surgery: an implant positioned by bone availability rather than prosthetic requirements, and a round healing abutment that left the tissue to organize without direction.

The connection between surgical accuracy and tissue outcomes is direct. A tooth-supported guide transfers the planned implant position with a mean angular deviation of approximately 2.5 degrees. Freehand placement produces deviations approaching 7.5 degrees, nearly three times greater, regardless of operator experience [6]. That deviation does not simply mean the implant is in a different position. It means the emergence corridor designed before surgery no longer exists at the angle it was calculated for. The planned concave profile cannot be achieved without compensating with convex geometry, and the biological consequences follow predictably from there [4, 5].

The workflow that prevents this is not complex. A CBCT, an intraoral scan, and the planned implant position sent to the lab before surgery. A screw-retained provisional or custom healing abutment designed to the correct concave emergence geometry, ready to place on the day of surgery. A tooth-supported guide that transfers the prosthetically driven position with the precision the emergence profile depends on.

> *Every implant case has an emergence profile. It will be shaped by something. The clinician who leaves the operatory with a planned provisional or custom healing abutment already seated has already made the most important restorative decision of that case. Everything after that is execution.*

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