

ABSTRACT

Preliminary one-year results from a prospective study indicate that internal connection implants with Ti-base-supported monolithic zirconia crowns perform reliably in clinical use. Among 34 patients and 41 implants, outcomes showed high implant survival, stable peri-implant soft tissues, and minimal bone level change (mean 0.30 mm), providing evidence for the system's applicability in long-term settings.

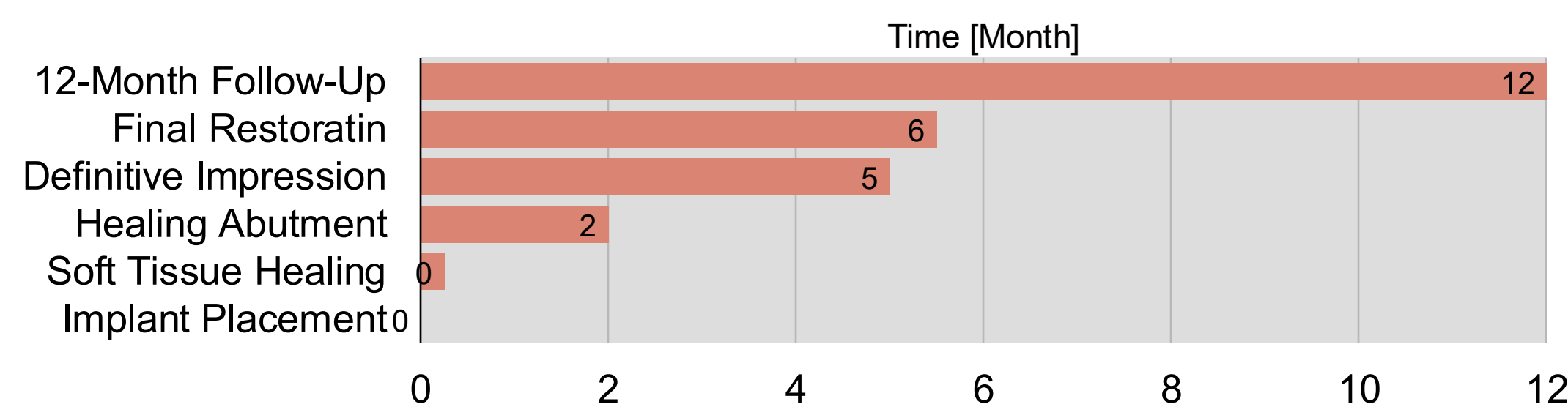
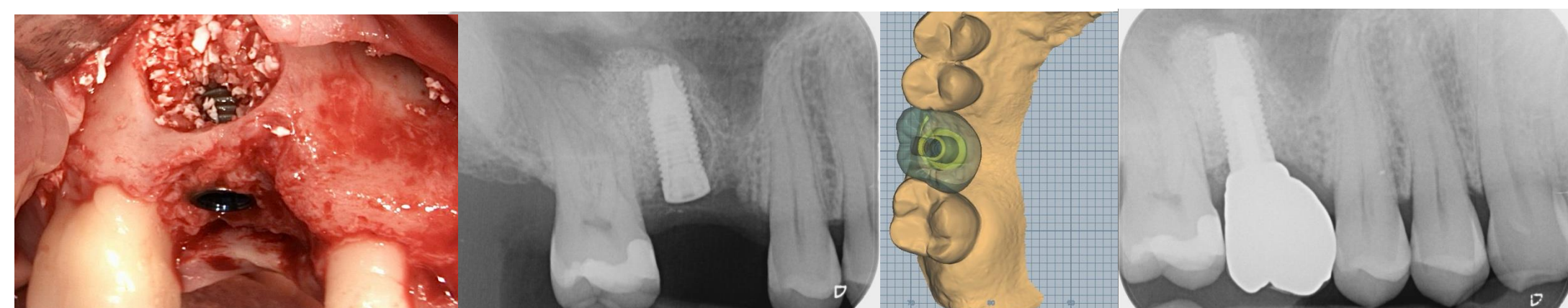


Fig. 1: Study Workflow Timeline

BACKGROUND AND AIM

The integration of digital technologies in implant dentistry has gained widespread acceptance. Titanium bases combined with customized crowns fabricated via CAD/CAM workflows offer high mechanical strength and long-term durability. These benefits may contribute to the preservation of peri-implant soft and hard tissues while allowing for individualized anatomical adaptation. Platform matching continues to be a clinically relevant concept, particularly suited when prosthetic simplicity and biomechanical stability are priorities.

This study evaluates clinical performance of parallel walled implants with internal connection, contemporary hybrid surface restored with Ti-bases of matched platform and CAD/CAM monolithic zirconia crowns. Hard and soft tissue changes, implant survival and functional outcomes are assessed.

CONCLUSION

METHODS AND MATERIALS

This analysis presents single-center data from a prospective, multicenter, two-year study evaluating over 100 implants at four clinical sites. In this cohort, **41 platform-matched** internal connection implants (T3@,Zim Vie, Palm Beach Gardens, FL, USA) were placed in healed extraction sites and restored with monolithic zirconia screw-retained crowns supported by Ti-base abutments in 34 patients. Soft tissue healing was evaluated 7–10 days post-surgery. A **two-stage surgical approach** was used in 90% of cases (n=37), with healing abutments placed two months later. Definitive impressions were taken, **final restorations** delivered 5–6 months post-op. **Clinical parameters** (implant mobility, peri-implant inflammation, plaque/gingival indices, insertion torque, ISQ values) were recorded at implant placement, prosthesis delivery and 12 months. **Radiographic evaluation** included crestal bone levels at the mesial and distal aspects of the first bone-implant contact. Marginal bone level (MBL) changes were calculated from standardized periapical radiographs.

	Avg ISQ	SD	Primary Stability	Avg Insertion torque (Ncm)	SD	Single Stage	2-stage	Avg time from impl sx to Stage II sx (mo.)	SD
Maxilla	68	17	Yes	27	10	2	13	2	0,5
Mandible	58	25	yes	38	15	2	24	1,7	0,9

Fig. 2: Implant Placement Surgery

Length	Count of Implants Maxilla			Count of Implants Mandible			Final restorations (screw-retained)	
	Diameter	Diameter	Diameter	Diameter	Diameter	Diameter		
8.5 mm	3.4 mm	4.1mm	5.0 mm	3.4 mm	4.1mm	5.0 mm	Certain FlexLink TiBase	19
10 mm	1	1	0	0	2	0	ZFX GenTek® (Zim Vie, FL, USA) Certain TiBase	12
11.5 mm	0	3	2	5	8	1	Not Recorded	2
13 mm	1	6	0	5	5	0	Non-ZimVie	2
	0	1	0	0	0	0	LTP/Failure	6

Fig. 3: Implants and Restorations

RESULTS

This prospective clinical study evaluated the one-year outcomes of **41 dental implants** placed in 34 partially edentulous patients (19 males, 15 females; mean age: 59 years). A total of 15 implants were placed in the maxilla and 26 in the mandible.

At placement, the **mean insertion torque** was 27 Ncm (±10) for maxillary and 38 Ncm (±15) for mandibular implants. Corresponding mean **Implant Stability Quotient (ISQ)** values were 68 (±17) in the maxilla and 58 (±25) in the mandible, indicating satisfactory primary stability across both arches.

Throughout the observation period, peri-implant soft tissues remained clinically stable, with minimal signs of plaque accumulation or inflammation. Most implants were inserted at crestal level. At the 12-month follow-up, **radiographic analysis** revealed a mean marginal bone level change of 0.30 mm (±0.30 mm), indicating favorable bone maintenance.

Of the initial 34 patients, 24 (27 implants) completed the **one-year follow-up**. One implant was lost in a heavy smoker, while three patients missed the follow-up visit and four were lost to follow-up. No prosthetic complications were observed, and all patients completing the recall reported full satisfaction with their implant-supported restorations.

These findings suggest a high short-term clinical success rate with stable peri-implant conditions. The study remains ongoing to assess long-term outcomes.

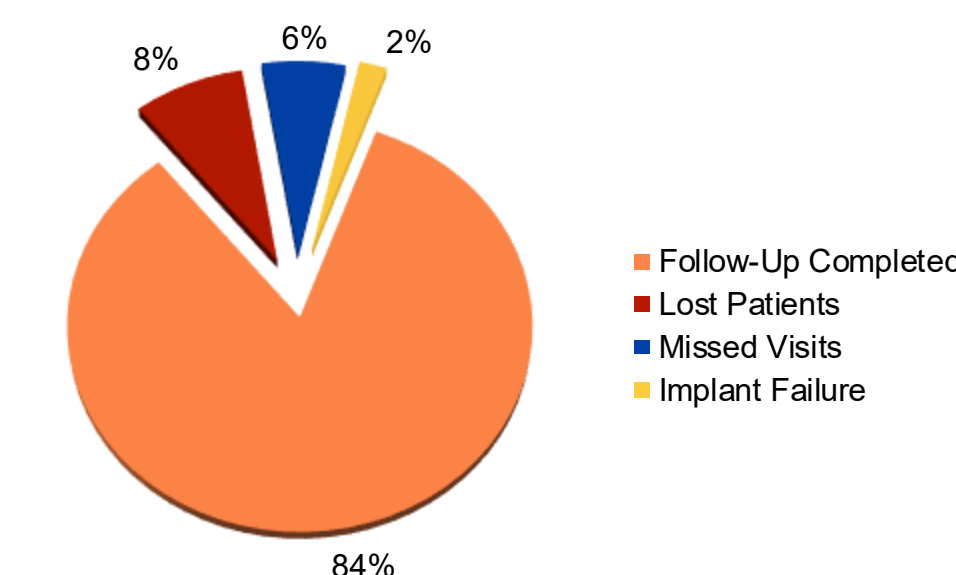


Fig. 4: Overview Patient Distribution



Fig. 5: Final Restauration with ZFX GenTek® (Zim Vie, USA) Certain TiBase

DISCUSSION

This observational study provides prospective evidence for the clinical performance of the ZimVie T3 implant system with its proprietary a dual-etched, grit-blasted titanium surface engineered to support early osseointegration and high bone-to-implant contact. Restorations with monolithic zirconia crowns on **Ti-base abutments** demonstrated minimal marginal bone loss (mean 0.30 mm), low inflammatory parameters, and high patient satisfaction after 1 year. Only one implant failure in a heavy smoker was recorded at this study site, with no further complications. These results align with existing data on similar implant-abutment configurations but carry greater scientific weight due to the prospective, multicenter design.

Preliminary analysis of 2-year follow-up data in this cohort suggests continued peri-implant stability and high implant survival. Comparable outcome patterns are emerging from the other study centers, supporting the consistency of the findings across different clinical environments. In this center, restorations were often placed deeply subgingival to optimize interproximal contact and aesthetics. This technique, involving a concave emergence profile and soft tissue contouring, may have contributed to favorable tissue responses but warrants further investigation.

The present findings suggest that platform-matched restorations using T3 implants and CAD/CAM-fabricated zirconia prostheses on Ti-base abutments represent a **clinically effective option**. Given the reproducibility of outcomes across centers and the tendency of early 2-year data, this protocol may be reliably applied in similar clinical scenarios. An upcoming analysis **comparing platform-matched and platform-switched components** within the multicenter cohort may offer further insight into optimal restorative strategies for soft and hard tissue preservation.

Preliminary 1-year results demonstrate favorable clinical and radiographic performance of this implant system used with platform-matched Ti-base zirconia restorations. The subgingival, **concave** emergence design may support soft tissue stability. These findings are consistent with observations from the other participating centers and indicate that this treatment workflow may be feasible for long-term use, although the absence of a control group limits the strength of the conclusions, as the study was not designed for such comparisons.