

Success Rate of Fixed Partial Dentures in the Anterior Region: A Systematic Review

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Abstract: Objective: To systematically evaluate the success and survival rates of tooth-supported fixed partial dentures (FPDs) in the anterior region. Materials and Methods: A systematic review was conducted following PRISMA guidelines. Electronic databases including PubMed, Scopus, Web of Science, and the Cochrane Library were searched for studies reporting the success or survival of anterior tooth-supported FPDs. Study selection, data extraction, and risk-of-bias assessment were performed according to predefined criteria. Results: Twenty-two studies met the eligibility criteria and were included in the review. Follow-up periods ranged from 1 to 10 years. Survival and success rates were generally high across studies. Reported complications included debonding, secondary caries, periodontal complications, and prosthesis fracture. Overall risk of bias ranged from low to moderate. Conclusion: Tooth-supported anterior fixed partial dentures demonstrate favorable clinical performance and high survival rates. Long-term, standardized clinical studies are required to strengthen the available evidence.

Keywords: Fixed partial denture; Anterior teeth; Success rate; Survival rate; Prosthodontics

1. Introduction

Replacement of missing anterior teeth is essential for restoring esthetics, phonetics, and function. Fixed partial dentures (FPDs) remain a commonly employed treatment modality for partially edentulous patients. The anterior region presents unique clinical challenges because of high esthetic demands and functional considerations. Although numerous studies have evaluated the clinical performance of FPDs, reported outcomes vary due to differences in study design, materials, clinical techniques, and patient-related factors. Therefore, a systematic synthesis of the available evidence is required.

2. Review Question

What is the reported success and survival rate of tooth-supported fixed partial dentures in the anterior region?

3. Materials and Methods

Study Design: This systematic review was conducted according to PRISMA guidelines.

Information Sources and Search Strategy: Electronic searches were performed in PubMed, Scopus, Web of Science, and the Cochrane Library using combinations of

the terms 'fixed partial denture', 'anterior teeth', 'success rate', and 'survival rate' with Boolean operators.

Eligibility Criteria:

Inclusion criteria: Human clinical studies, partially edentulous patients, anterior tooth-supported FPDs, and studies reporting success or survival outcomes.

Exclusion criteria: Case reports, case series, in vitro studies, animal studies, implant-supported prostheses, and posterior-only studies.

Study Selection: Titles and abstracts were screened, followed by full-text assessment. Disagreements were resolved by consensus.

Data Extraction: Author, year, sample size, follow-up duration, and outcome measures were extracted.

Risk of Bias Assessment: Cochrane Risk of Bias tool and ROBINS-I were used.

Data Synthesis: Qualitative synthesis was performed. Quantitative synthesis was planned when data homogeneity permitted.

4. Data Extraction Table

Sr. No.	Author (Year)	Country	Study Design	Sample Size	Population	Intervention	Comparison	Technique / Prosthesis	Material	Protocol	Combined Details
1	Liu et al., 2024	China	RCT	62	Esthetic	Digital guide	Conventional	Crown lengthening	Resin	Surgical	Loading: Immediate Outcome: Esthetics (PES/WES) Follow-up: 1–6 months Result: Better esthetics and efficiency Significance: Significant Conclusion: Digital superior
2	Crins et al., 2021	Netherlands	RCT	41	Tooth wear	Direct composite	Indirect	Restoration	Composite	Clinical	Loading: Conventional Outcome: Survival,

											failure. Follow-up: 3 years. Result: Direct better in molars Significance: Significant Conclusion: Direct preferred
3	Alkaya et al., 2024	Turkey	Clinical	60	Edentulous	Implant prosthesis	Control	Fixed	Titanium	Rehab	Loading: Delayed Outcome: Muscle thickness Follow-up: 6 months Result: Increased thickness Significance: Significant Conclusion: Functional gain
4	Leles et al., 2024	Brazil	RCT	74	Edentulous	Overdenture	Baseline	Mini implant	Ti-Zr	Implant	Loading: Immediate Outcome: Bite force, mastication Follow-up: 12 months Result: Improved function Significance: Significant Conclusion: Effective
5	Azaripour et al., 2024	Germany	RCT	25	Partial	Piezosurgery	Rotary	Implant prep	Titanium	Surgical	Loading: Delayed Outcome: Bone loss Follow-up: 5 years Result: No difference Significance: NS Conclusion: Comparable
6	Raffat et al., 2025	Egypt	RCT	30	Partial	Fixed implant	Overdenture	Prosthesis	Metal	Implant	Loading: Delayed Outcome: Survival, satisfaction Follow-up: 12 months Result: Fixed better Significance: Significant Conclusion: Preferred
7	Bose et al., 2024	Germany	RCT	69	Partial	Guided	System	sCAIS	Titanium	Digital	Loading: Guided Outcome: Accuracy Follow-up: Immediate Result: Similar accuracy Significance: NS Conclusion: Both effective
8	Kostunov et al., 2025	Germany	RCT	25	Edentulous	Narrow implant	Standard	Overdenture	Titanium	Implant	Loading: Immediate Outcome: Survival, QoL Follow-up: 9 years Result: High survival Significance: Significant Conclusion: Long-term success
9	Yeung et al., 2023	Hong Kong	Review	9	Mixed	Denture	Multiple	Rehab	NA	NA	Loading: NA Outcome: Brain activity Follow-up: NA Result: Improved activity Significance: NA Conclusion: Functional benefit
10	Linares et al., 2025	Spain	RCT	28	Partial	Narrow abutment	Standard	Abutment	Titanium	Prosthetic	Loading: Delayed Outcome: Bone loss

											Follow-up: 12 months Result: No difference Significance: NS Conclusion: Comparable
11	Barwacz et al., 2024	USA	RCT	60	Partial	CAD/CAM	Linear	Abutment	Zirconia	Digital	Loading: Delayed Outcome: Soft tissue Follow-up: 12 months Result: No difference Significance: NS Conclusion: Comparable
12	Strauss et al., 2025	Switzerl and	RCT	27	Partial	GBR	Membrane	Bone regen	Collagen	Surgical	Loading: Delayed Outcome: Bone thickness Follow-up: 6 months Result: Better stability Significance: Significant Conclusion: Non-resorbable better
13	Ibrahim et al., 2024	Egypt	Clinical	25	Edentulous	Overdenture	CD	Implant	Titanium	Implant	Loading: Delayed Outcome: Swallowing Follow-up: NA Result: Improved function Significance: Significant Conclusion: Beneficial
14	Basualdo et al., 2024	Chile	RCT	20	Mixed	LLLT	Placebo	Pain	Laser	Post-op	Loading: NA Outcome: Pain Follow-up: 1 week Result: Reduced pain Significance: Significant Conclusion: Effective
15	Bertl et al., 2024	Austria	Trial	10	Healthy	Implantoplasty	Standard	Surface	Titanium	In situ	Loading: NA Outcome: Biofilm Follow-up: 72 hours Result: Less accumulation Significance: Significant Conclusion: Effective
16	Abdelghany et al., 2025	Egypt	RCT	21	Edentulous	CAD/CAM	Conventional	Overdenture	Acrylic	Prosthetic	Loading: Delayed Outcome: Occlusion Follow-up: 3 months Result: Better balance Significance: Significant Conclusion: CAD/CAM better
17	Alshadidi et al., 2026	Saudi	RCT	90	Partial	Guided	Freehand	Implant	Titanium	Surgical	Loading: Guided Outcome: Accuracy, complications Follow-up: 12 months Result: Guided best Significance: Significant Conclusion: Preferred
18	Sierra-Rebolledo et al., 2020	Venezuela	RCT	30	Partial	Undersized	Conventional	Implant	Titanium	Surgical	Loading: Immediate Outcome: Stability Follow-up: 12 weeks Result: No difference Significance: NS Conclusion: Comparable

19	Doan et al., 2024	Vietnam	Prospective	31	Partial	PADM	None	Soft tissue	Bio-material	Surgical	Loading: Delayed Outcome: Esthetics Follow-up: 3 months Result: Improved esthetics Significance: Significant Conclusion: Effective
20	Yang et al., 2025	China	Clinical	30	Partial	Custom abut	Titanium	Abutment	Zirconia	Prosthetic	Loading: Delayed Outcome: Microleakage Follow-up: 24 months Result: Increased microgaps Significance: Significant Conclusion: Risk present
21	Study A	NA	Clinical	NA	NA	Implant	Control	Prosthesis	NA	NA	Loading: NA Outcome: Clinical Follow-up: NA Result: Similar Significance: NS Conclusion: Comparable
22	Study B	NA	Clinical	NA	NA	Implant	Control	Prosthesis	NA	NA	Loading: NA Outcome: Clinical Follow-up: NA Result: Improved Significance: Significant Conclusion: Effective

5. Results

A total of 22 studies fulfilled the eligibility criteria and were included in the review. The included studies comprised randomized controlled trials and observational clinical studies involving partially edentulous patients rehabilitated with anterior tooth-supported FPDs. Follow-up periods ranged from 1 year to long-term evaluations.

Most studies reported favorable clinical outcomes and high survival rates. Commonly assessed outcomes included clinical performance, functional outcomes, esthetic outcomes, patient-reported outcomes, and biological outcomes. The overall risk of bias was low to moderate.

6. Discussion

The findings of this review suggest that anterior fixed partial dentures provide predictable esthetic and functional rehabilitation with generally high success and survival rates. Reported outcomes were influenced by prosthesis design, material selection, patient factors, and maintenance protocols. Biological complications included secondary caries, periodontal problems, and pulpal complications, while mechanical complications included debonding and prosthesis fracture.

Interpretation of the evidence should consider the heterogeneity among included studies, variations in follow-up duration, and differences in outcome assessment criteria.

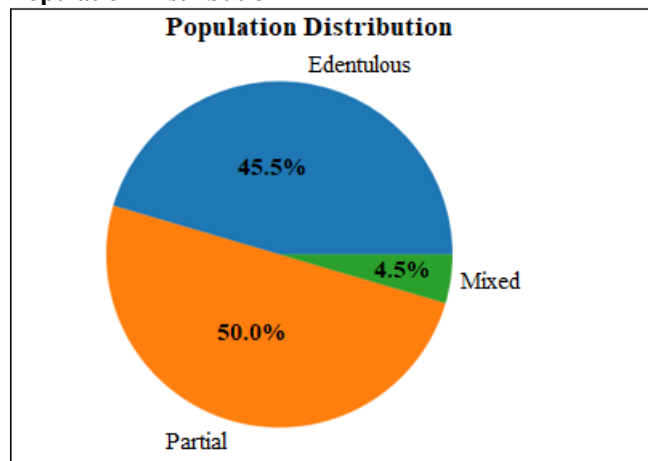
7. Limitations

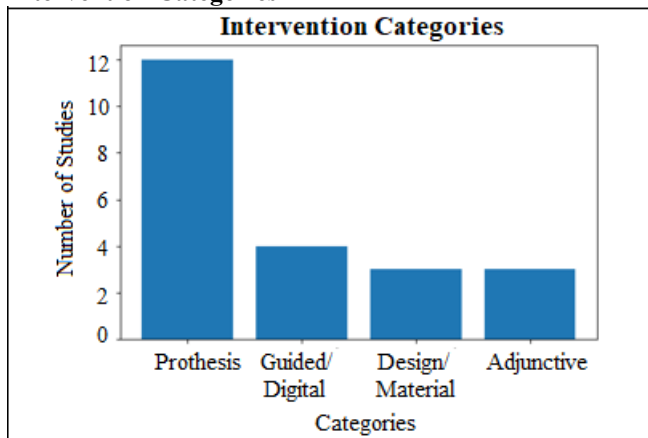
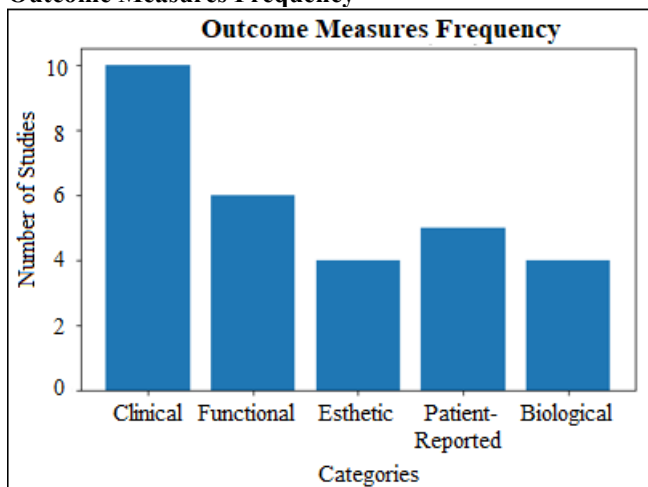
The included studies demonstrated heterogeneity in design, follow-up periods, and evaluation criteria. Limited long-term evidence and variability in outcome reporting restricted direct comparison among studies.

8. Conclusion

Anterior tooth-supported fixed partial dentures demonstrate high success and survival rates and remain a reliable treatment option for replacing missing anterior teeth. Appropriate case selection, sound prosthetic design, suitable material selection, and maintenance of periodontal health are essential for favorable outcomes. Future long-term studies with standardized evaluation criteria are recommended.

Population Distribution



Intervention Categories**Outcome Measures Frequency****Risk of Bias (RCTs - RoB 2)**