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Indian Experience with Bifurcation PCI: Provisional or Two-Stent — Does Strategy Matter?

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Introduction

Percutaneous Coronary Intervention (PCI) revolutionized coronary artery disease management, but bifurcation lesions (~20% of PCI cases) remain challenging due to complex anatomy and flow dynamics. Drug-eluting stents (DES), especially second-generation, reduce restenosis and stent thrombosis (<1% at 1 year). Provisional stenting is recommended as first-line for most bifurcations; two-stent strategies reserved for complex lesions with large/diseased side branches. Indian data are limited on bifurcation PCI outcomes.

Method

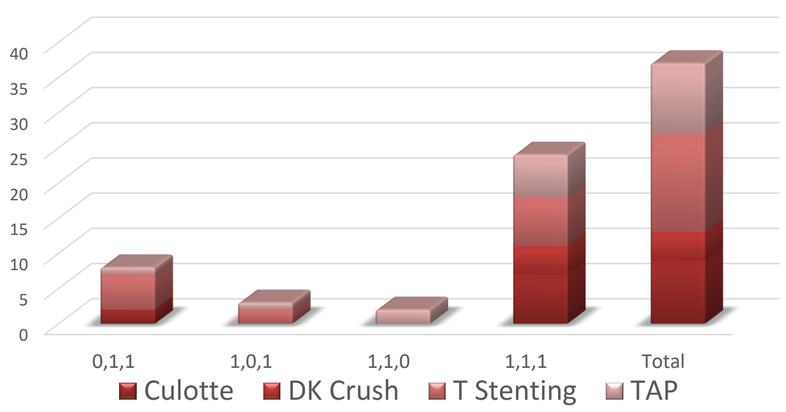
- Design: Prospective observational study, Bankers Heart Institute, Gujarat (Apr 2022–Apr 2023)
- Patients: 100 adults undergoing PCI for coronary bifurcation lesions with 2nd-gen DES
- Follow-up: 8–12 months
- Inclusion: MV >2.5 mm, SB >2.3 mm
- Exclusion: Cardiogenic shock, recent STEMI, LVEF <30%, prior CABG, severe comorbidities
- Assessment: ECG, echo, labs; QCA to measure restenosis (>50% luminal narrowing)
- Analysis: SPSS v25.

Results and discussion

PCI Access and Technique

- Radial: 73% | Femoral: 27%
- Provisional Stenting: 73% | Non-Provisional: 27%
- Non-Provisional Subtypes: T-Stenting 38%, TAP 27%, Culotte 24%, DK Crush 11% → Provisional preferred for simplicity; complex LM bifurcations use Culotte/DK Crush.
- Angiographic Outcomes

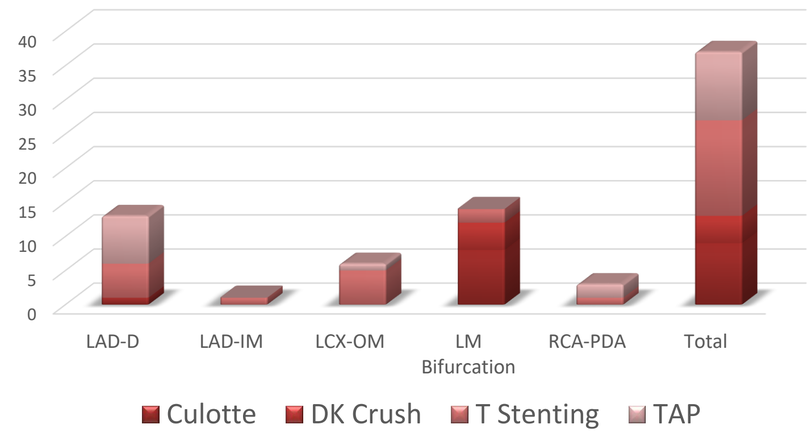
Non-Provisional Technique and Medina classification



Angiographic findings and stenting groups

- Multivessel Disease: 81% (Double 48%, Triple 33%)
- Common Bifurcation Sites: LAD–Diagonal 43%, LCX–OM 26%, LM 16%, RCA–PDA 12%
- True Bifurcations (Medina 1,1,1): 58%

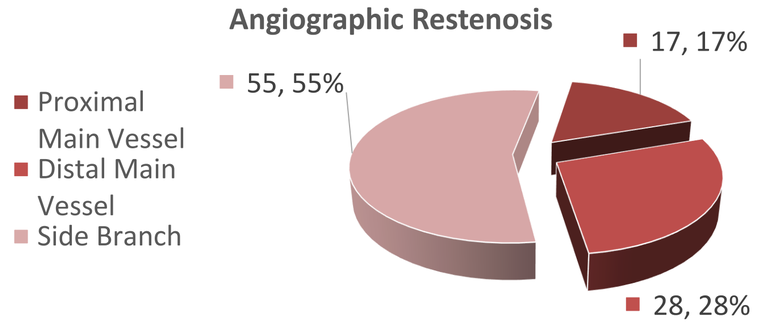
Non-Provisional Technique with Bifurcation Lesion sites



Angiographic outcome

- Restenosis overall: 16.9%
- Side Branch: Higher in Provisional (13.5%) vs. Non-Provisional (9.7%)
- Proximal & Distal Main Vessel: Similar between groups → Complex stenting reduces SB restenosis, especially in LM lesions (DK CRUSH-V)

Angiographic Restenosis



Patient profile

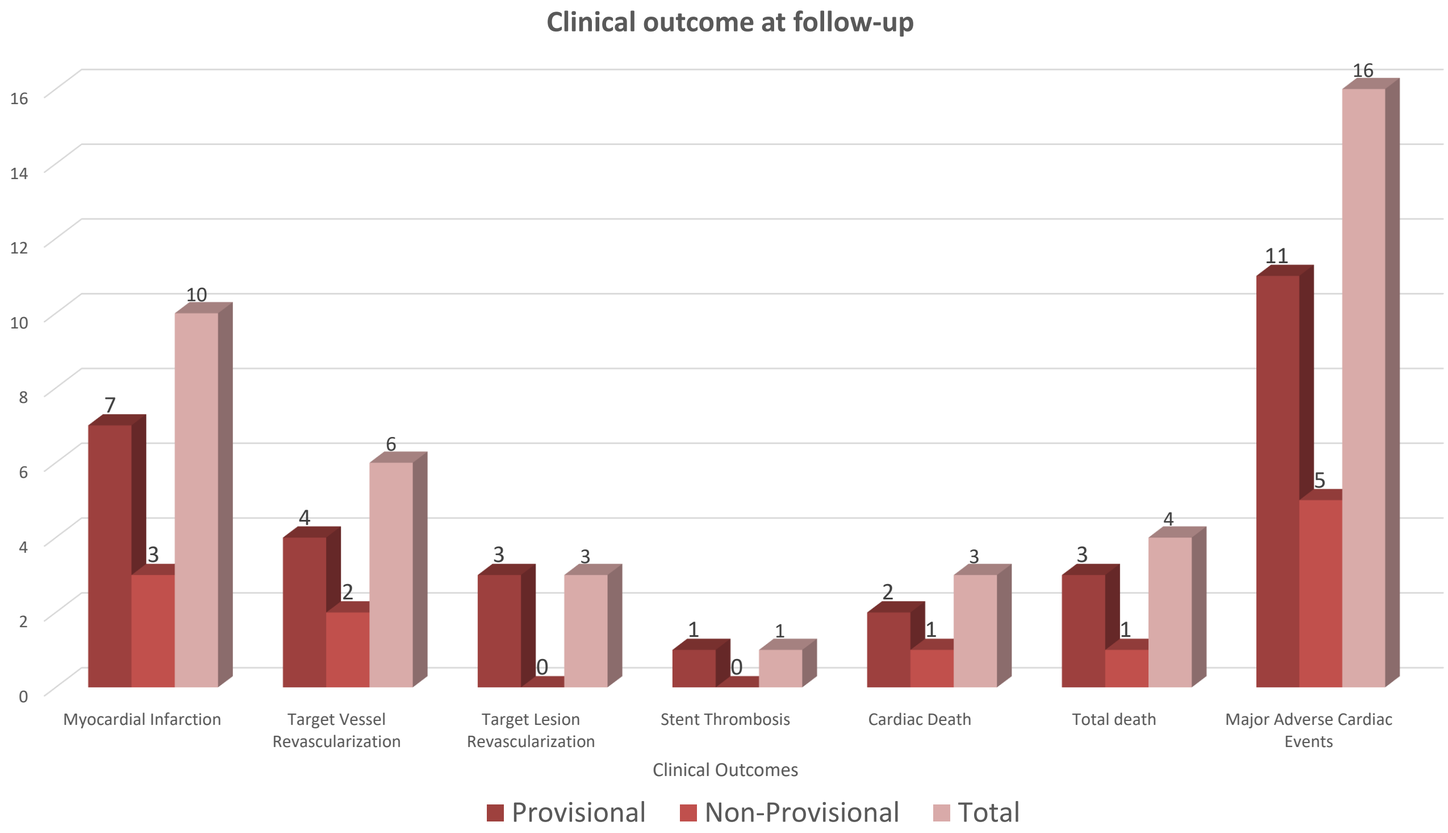
- Mean Age: 60.5 ± 12.1 yrs | Male: 76% (M:F = 3.17:1)
- Matches global CAD patterns; older males predominate

Major Risk Factor	Occurrence (%)
HTN	66
Family history	57
Dyslipidemia	42
DM	32
Smoking	27

Key Takeaways

- "Less is more": Provisional stenting effective for most bifurcations
- Complex LM lesions benefit from non-provisional (Culotte/DK Crush).
- Clinical & angiographic outcomes comparable between techniques
- Strategy should be lesion-tailored rather than outcome-driven

Clinical outcome at follow-up



Conclusion

In Indian patients, both provisional and two-stent strategies are safe, with outcomes driven more by lesion complexity than stent strategy.

Future Work

- Small sample size limits the ability to draw statistically significant conclusions regarding differences between individual stenting techniques (e.g. specific Crush variation
- The study had an open design, which could introduce bias