



## Comparative Outcomes of Cutting-Balloon and Plain-Balloon Angioplasty in the Endovascular Salvage of Failing Hemodialysis Fistulas

Vignesh G V, Shanmugavelayutham C, Devarajan I, Murali M, Mohanraja P.  
Department of Vascular Surgery, Thanjavur Medical College, India.

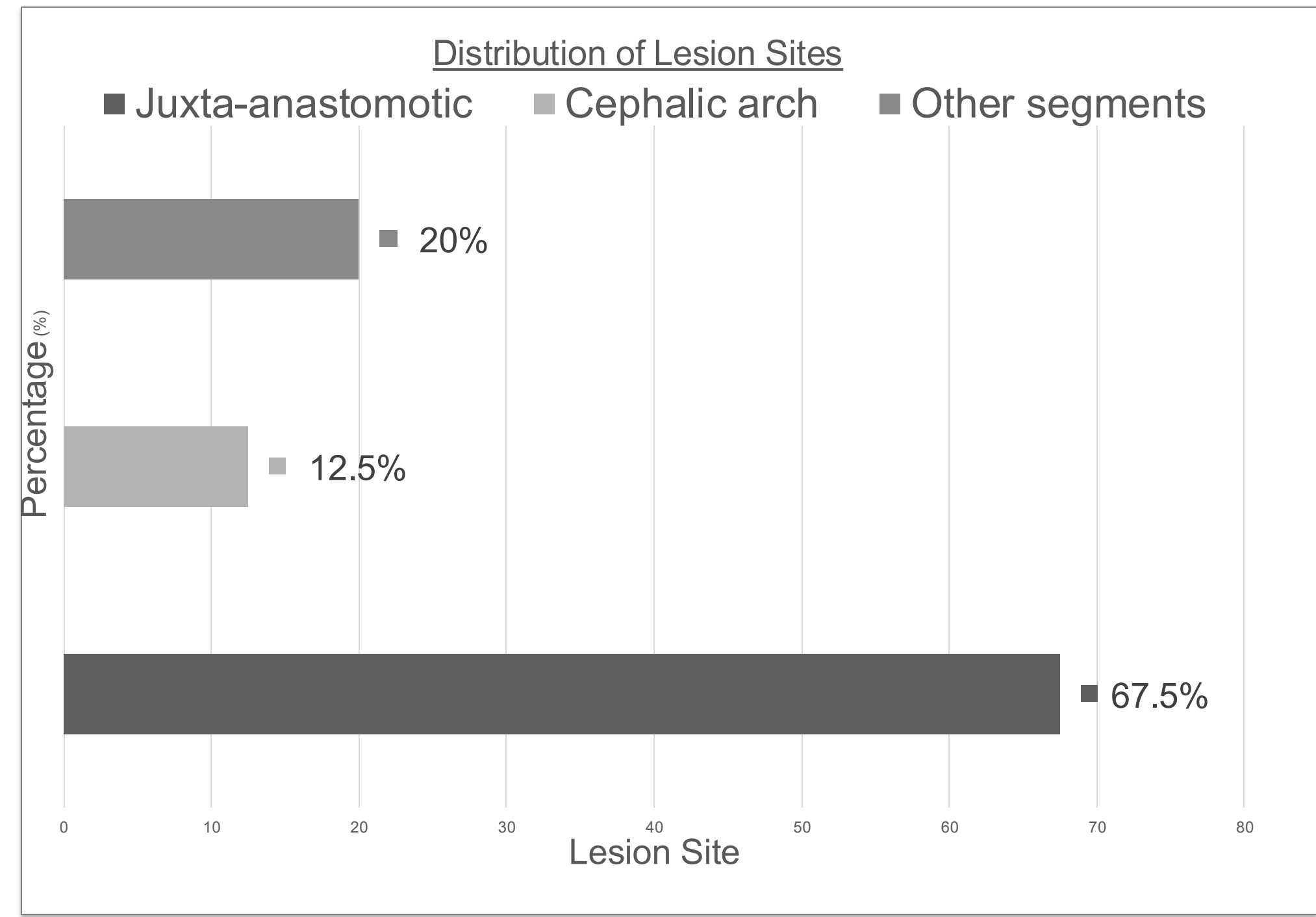
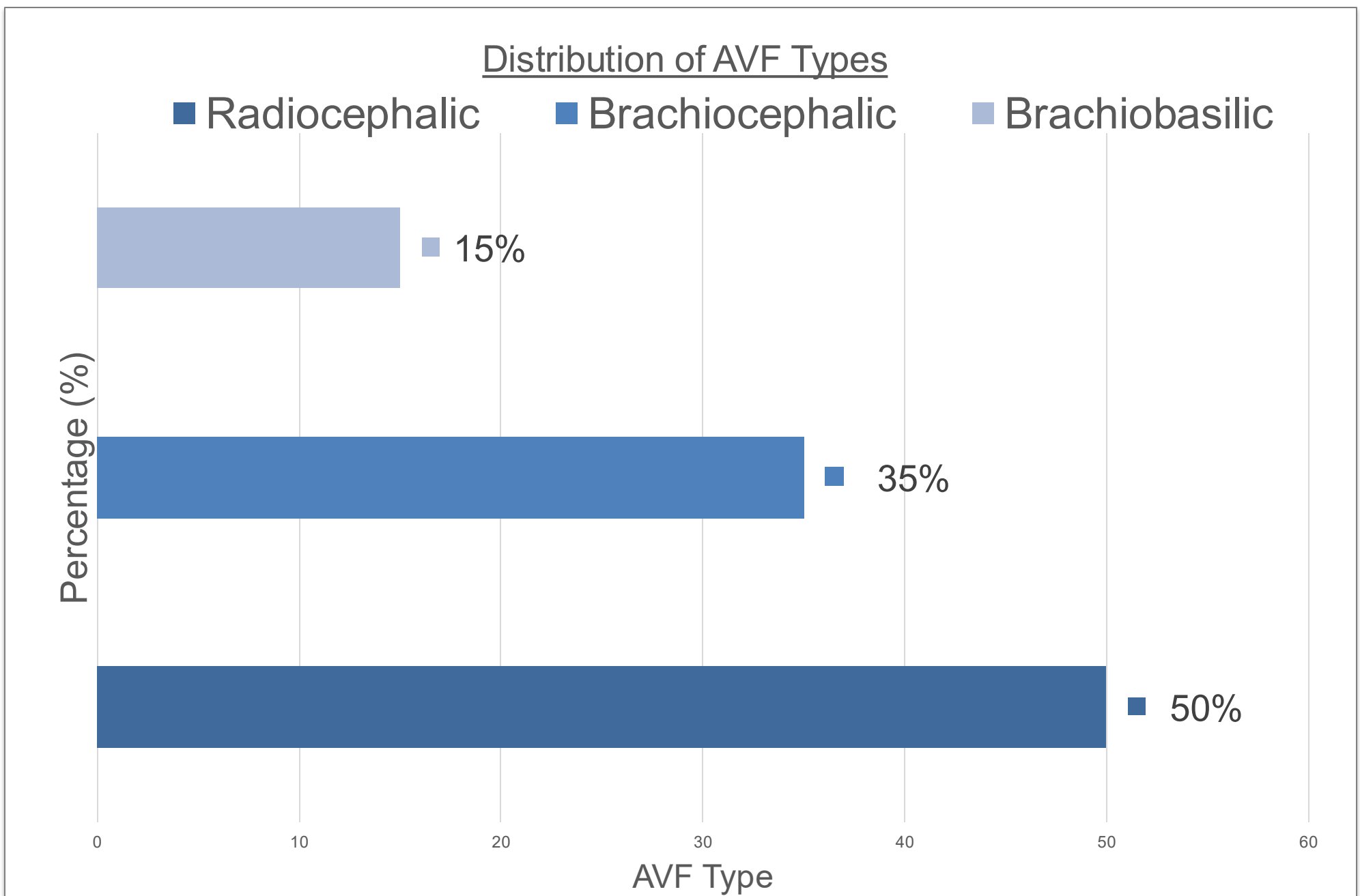
### INTRODUCTION

- AVF stenosis is the leading cause of dialysis access failure.
- PBA is standard therapy, but restenosis remains common
- CBA may reduce recoil via controlled plaque incision
- Comparative data from resource-limited public hospitals are limited.

### AIM

To compare technical success, patency and complications of CBA versus PBA for endovascular AVF salvage.

#### Anatomical Characteristics of failing AVF



Distributions of AVF types and stenosis location in the cohort study

#### Representative Angiographic Images

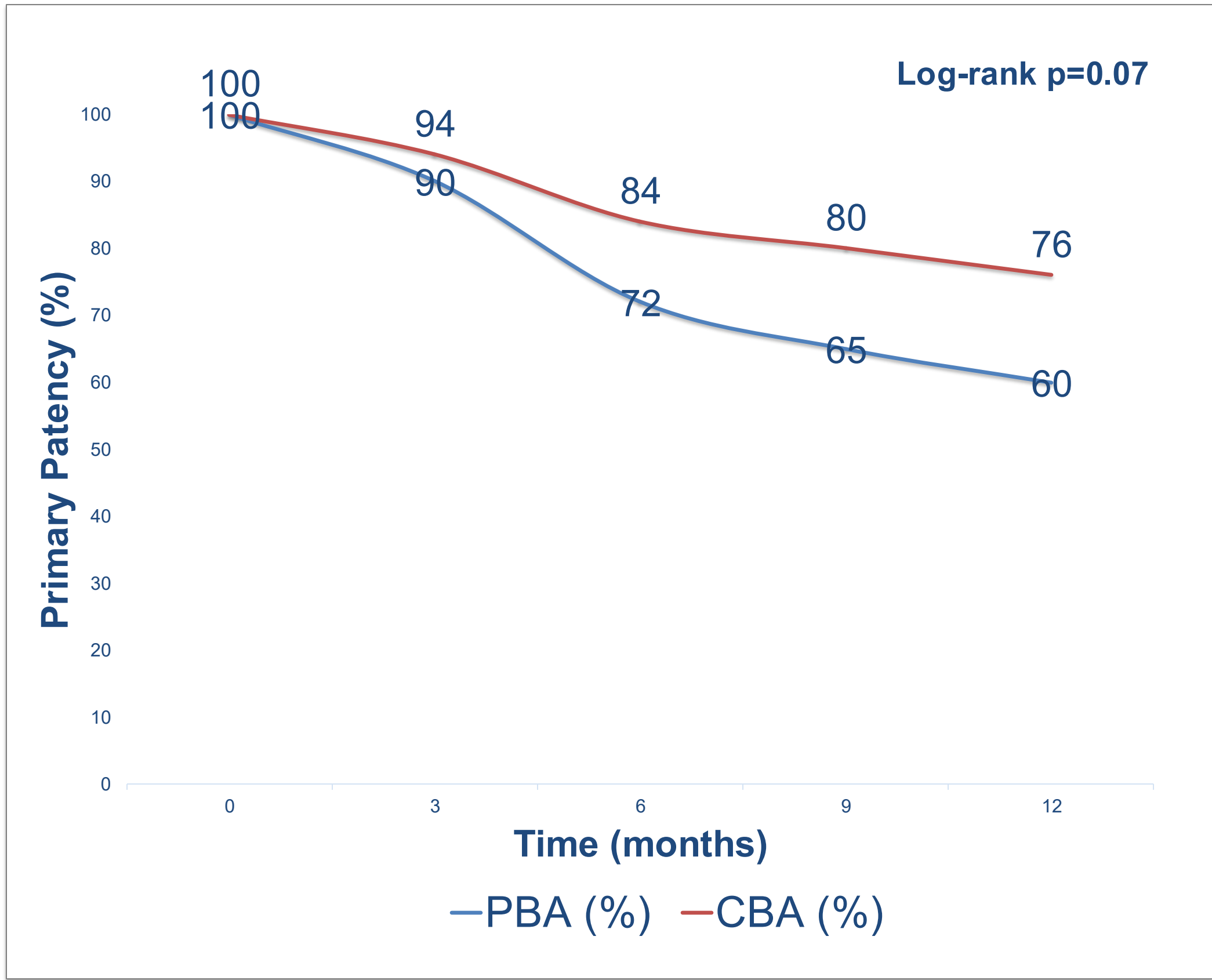


Pre- and Post-Angioplasty images demonstrating luminal restoration in failing AVF

### METHODS

- **Designs & Setting:** Prospective randomized study (Jan 2024-Jul 2025) Tertiary Public Hospital.
- **Patient Selection:**
  - Duplex/ DSA confirmed AVF Stenosis
  - Randomized 1:1 to CBA vs PBA
  - Central vein stenosis, Aneurysmal fistulas excluded
- **Intervention Protocol:** Balloon sizing 1:1 (balloon: vein), Inflation pressure <12atm
- **Follow-up & Outcomes:**
  - Clinical review and Duplex at 1,3,6,12 months
  - Primary: Technical success, Primary patency
  - Secondary: Complication, Re-intervention

#### Primary patency following endovascular AVF salvage



Kaplan-Meier analysis comparing Cutting-Balloon and Plain-Balloon Angioplasty (n=54)

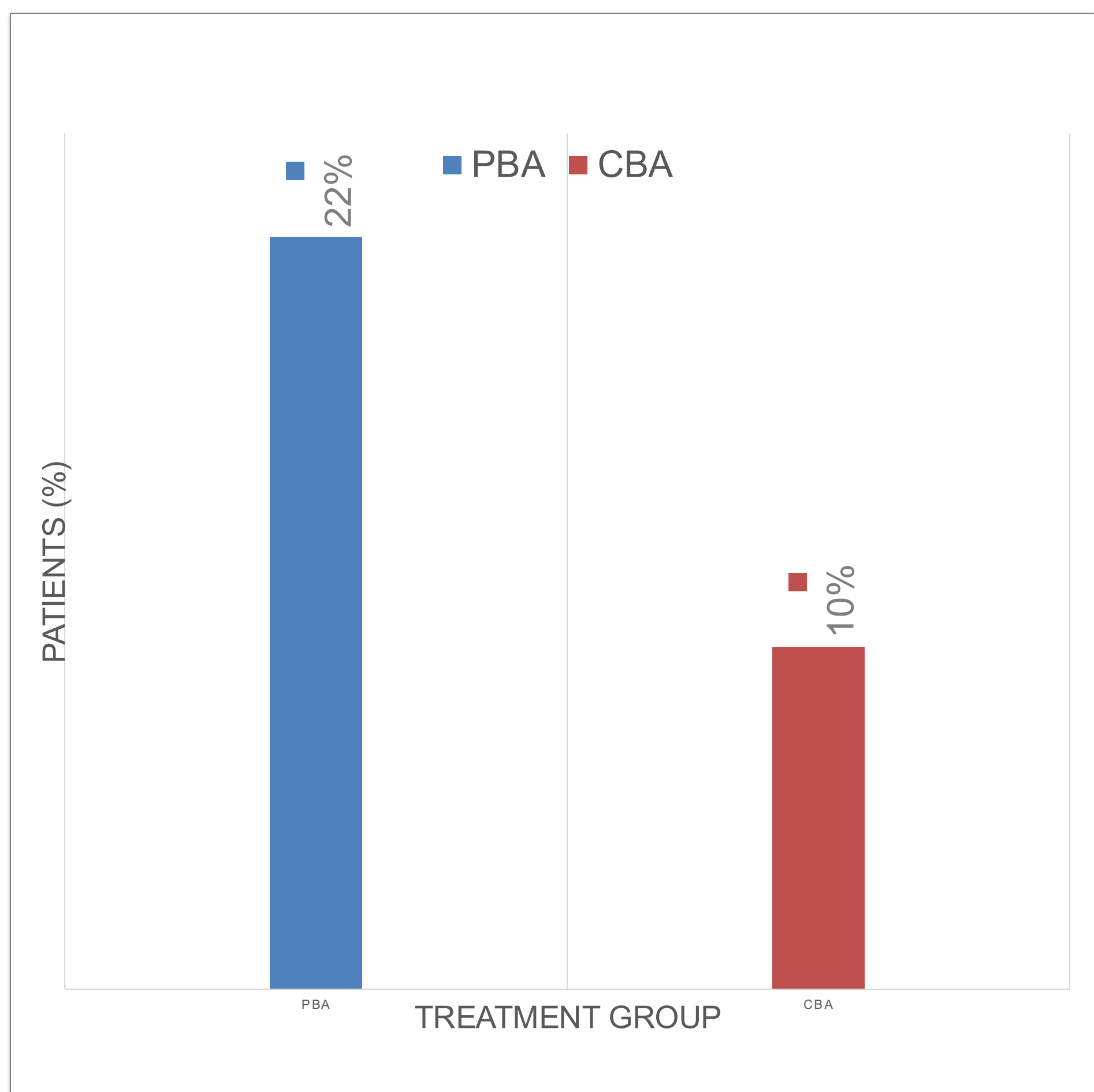
### RESULTS

- **Cohort:**
  - n=54 (planned 80)
  - 90% 12 month follow-up
- **Technical success:** 95%
- **Patency at 12 months:** Primary 76% CBA vs 60% PBA, log-rank p=0.07
- **Reintervention rate:** 10% CBA va 22% PBA
- **Safety Profile:**
  - Complication 11%
  - No access loss or perforation

### Clinical Interpretation

- Cutting Balloon angioplasty showed a consistent trend towards improved primary patency without increased complications
- Re-intervention rates at 12 months favored Cutting Balloon angioplasty
- Findings support lesion specific balloon selection during AVF salvage.

#### Re-intervention rate at 12 months



Comparison of re-intervention rates following Plain-Balloon and Cutting-Balloon angioplasty (n=54)

### CONCLUSIONS

- Both technique are safe and effective for AVF salvage.
- Lesion specific CBA may reduce re-intervention without added risk.

### TAKE HOME MESSAGE:

CBA offers a durability advantage over PBA without increasing complications in selected AVF lesions.

### Definitions used in the study

- **Technical success:** <30% residual stenosis with restoration of good thrill clinically.
- **Primary Patency:** Time from the index angioplasty to first re-intervention
- **Re-intervention:** Any repeat procedure endovascular or surgical on the access

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