

# FAR INFRARED THERAPY IMPROVES ARTERIOVENOUS FISTULA MATURATION

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## OBJECTIVES

Malfunction of arteriovenous fistula (AVF) is an important cause of morbidity and hospitalization in hemodialysis (HD) patients.

### Purpose:

To investigate the effect of FIR on the maturation of AVF in patients with CKD stage 4 and 5.

## METHODS

**Inclusion criteria:** age between 18 and 80, CKD stage 4 and 5 with eGFR<20ml/min/1.73m<sup>2</sup>, not going to receive dialysis or transplantation in the next 3 months, AVF in the upper extremity.

**Study Endpoint:** The primary outcome is the rate of AVF malfunction, which was defined as either (1) thrombosis without thrill for AVF not undergoing HD or (2) receiving any type of interventional procedure due to a lower KT/V (<1.2) for patients undergoing HD at one year. The secondary outcomes include (1) the cumulative primary unassisted AVF patency: the time from the creation of AVF to the first episode of AVF malfunction, (2) physiologic maturation of : Qa of AVF ≥500 ml/min and diameter of AVF ≥4mm at 3 months and (3) clinical maturation of AVF suitable for HD at 1 year.

**Intervention:** 40 minutes of FIR therapy three times weekly for 12 months postoperatively

### Measurement:

Access flow of AV fistula was measured by Doppler ultrasonography at 5 timings, including 2 days (Qa0), 1 month (Qa1), 2 (Qa2), 3 (Qa3) and 12 (Qa12) months after vascular surgery.

## RESULTS

Fig. 1 Flow chart of study patients

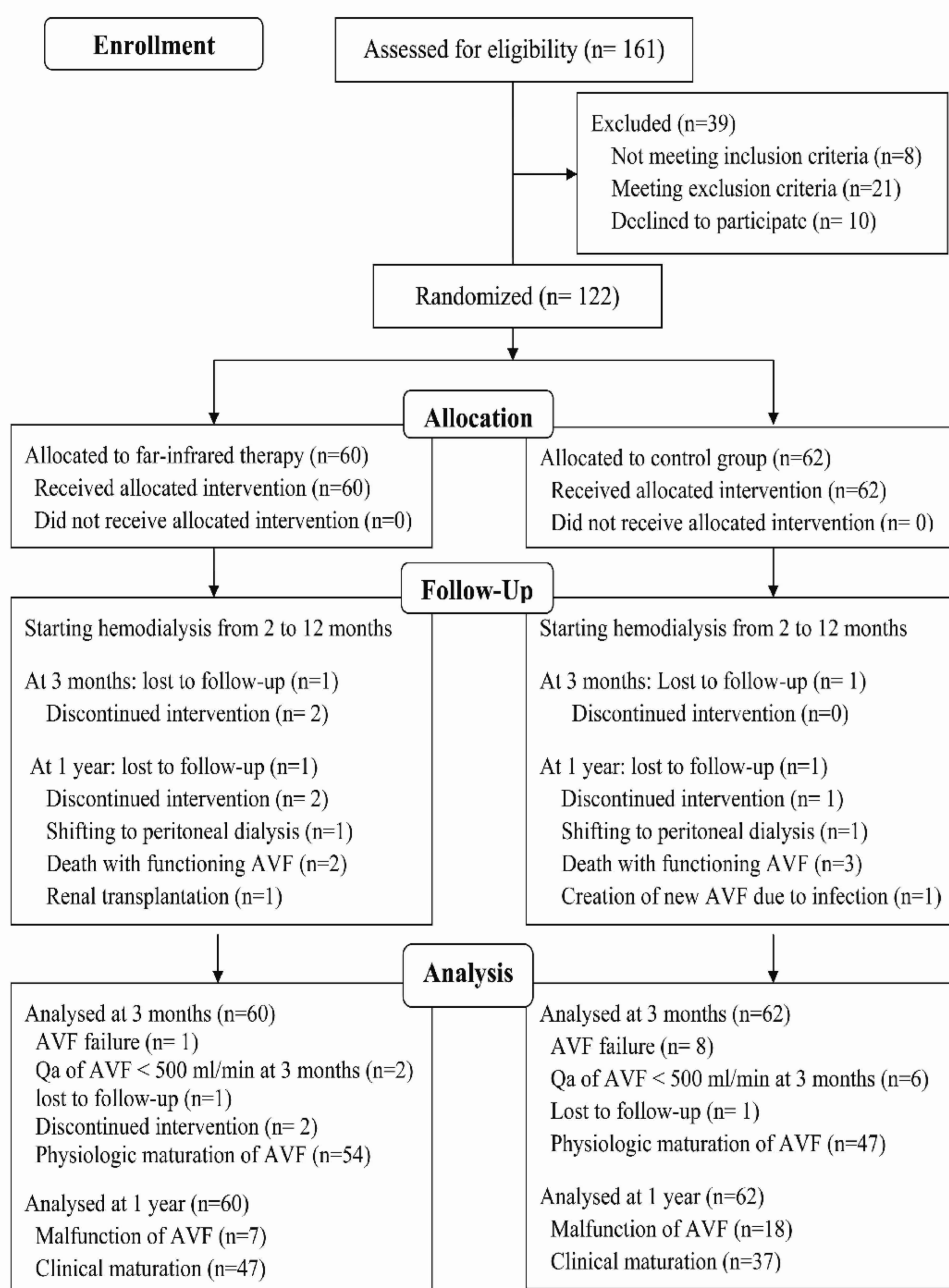
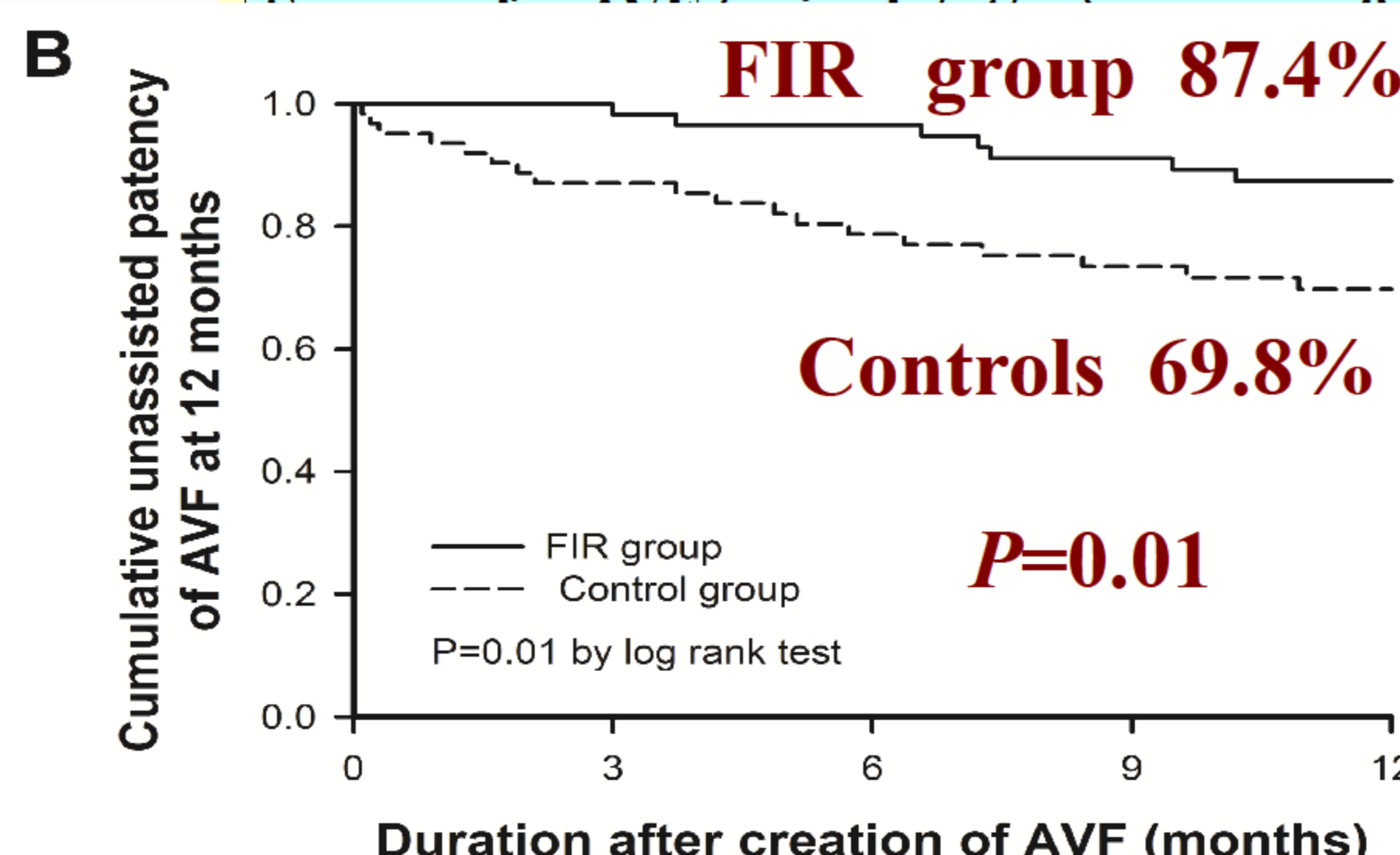
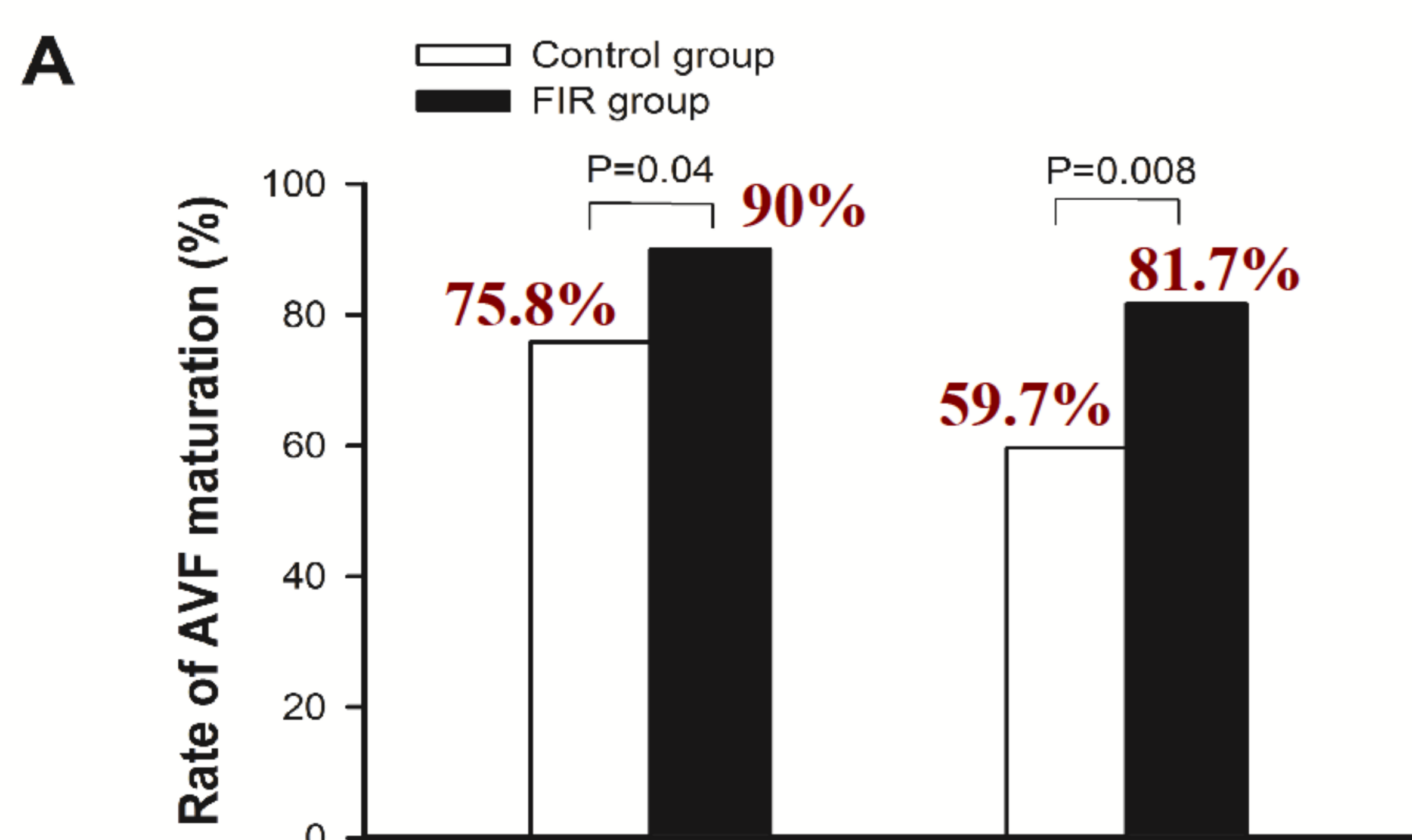


Table 1. Access flow and clinical outcomes of AVF between HD patients with and without FIR therapy for 12 months

	Control group	FIR group	P value
Case number (at enrollment)	62	60	-
Location of AVF at forearm (%)	82.3%	85%	0.8
Preoperative diameter of vein (mm)	3.63±0.56	3.51±0.55	0.8
Qa <sub>0</sub> (ml/min)	259.4±73.0	256.5±81.0	
Qa <sub>1</sub> (ml/min)	582.2±217.5	700.7±287.3	
Qa <sub>2</sub> (ml/min)	678.8±259.8	847.8±307.6	
Qa <sub>3</sub> (ml/min)	802.0±322.4	1001.1±380.9	
Qa <sub>12</sub> (ml/min)	915.6±291.4	1130.8±344.3	0.001*
Physiologic maturation at 3 months	47/62 (75.8%)	54/60 (90%)	0.04
Clinical maturation of AVF at 1 yr	37/62 (59.7%)	49/60 (81.7%)	0.008
AVF malfunction at 1 year (%)	18/62 (29.0%)	7/60 (11.7%)	0.02
Unassisted patency of AVF at 1 yr	69.8%	87.4%	0.01
Assisted patency of AVF at 1 yr	82.7%	98.5%	0.007
Angioplasty for AVF (episode/pt/yr)	0.29	0.11	0.1
Reoperation for AVF (episode/pt/yr)	0.25	0.08	0.1
Reoperation for AVF (episode/pt/yr)	0.19	0.03	0.005



improves the access flow, patency and maturation of newly created AVF in patients with CKD

