

POSTER PRESENTATION

Above-Knee Infrainguinal Bypass Surgery Affect the Patency of Femorofemoral Bypass Graft

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INTRODUCTION

- Peripheral arterial disease (PAD) affects more than 30 million people worldwide.
- Treatment modality of PAD is changing rapidly from open surgery to endovascular treatment.
- However, this endovascular treatment also has some limitations for PAD, especially for iliac arterial lesions.
- FEM-FEM bypass is still positioning itself as one of the treatment modalities for iliac artery occlusion.
- The outcomes of infrainguinal bypass surgery may depend upon diverse variables such as the graft material, graft length and diameter, and distal runoff, as well as the condition of the associated peripheral arteries.

AIM

- This study was aimed at analyzing the outcomes of FEM-FEM bypass with artificial grafts, paying more attention to concomitant above-knee FEM-POP bypass surgery with artificial graft.
- We retrospectively reviewed the medical records from March 2009 to April 2020 in our hospital.
 - A total of 27 patients who underwent FEM-FEM bypass surgery with 8 mm ringed-PTFE artificial grafts.
 - A total of 17 patients who underwent concomitant FEM-POP bypass surgery (Above-the-Knee) with 6 mm ringed-PTFE artificial grafts.
- The patient underwent non-vascular surgery affecting morbidity or mortality.

METHODS

- Follow-up duration was 38.20 ± 34.56 (2.90–127.47) months.
- Analyzed the patency rate of artificial graft and limb salvage rate.
- Patient follow-up
 - All patients were followed up with ultrasonography or computed tomographic angiography 6 and 12 months after surgery followed by and every 1 year thereafter.
 - In cases of detecting arterial insufficiency-related symptoms such as claudication, ulceration, etc., or abnormal findings on ultrasonography, we checked computed tomographic angiography.
 - All patients have prescribed two antiplatelet agents (aspirin 100 mg and clopidogrel 75 mg) and a lipid-lowering drug (statin).

CLASSIFICATIONS

- The patients were classified in the following ways;

Group 1: FEM-FEM bypass only without concomitant FEM-POP bypass (n = 10)

Group 2: FEM-FEM bypass + ipsilateral FEM-POP bypass (n = 5)
(concomitant FEM-POP bypass surgery on the inflow (donor) side of the FEM-FEM bypass.

Group 3: FEM-FEM bypass + crossover FEM-POP bypass (n = 6)
(concomitant FEM-POP bypass surgery on the outflow (recipient) side of the FEM-FEM bypass)

Group 4: FEM-FEM bypass + bilateral FEM-POP bypass (n = 6).

Group 5: group 2 + group 3 + group 4 (n = 17).

METHODS

- Statistical analysis
SPSS version 20 (IBM, Armonk, NY, United States). mean ± standard deviation (SD) for continuous variables.
Pearson's chi-squared and Fisher's exact tests were used to determine the odds ratio.
Kaplan–Meier analysis was performed to determine the primary and secondary patency and limb salvage rate,
The log-rank test was used to compare the intergroup patency rate and the limb salvage rate.
The results were considered statistically significant when the p-value was less than 0.05.

RESULTS

- Demographics, risk factors, and follow-up periods :

	Total	Group 1	Group 2	p-value [†]	Group 3	p-value [†]	Group 4	p-value [†]	Group 5	p-value [†]
Follow-up periods (months)	38.20 (±34.56)	39.40 (±32.26)	37.66 (±36.43)	1.000	28.71 (±29.73)	0.939	46.13 (±45.67)	0.984	37.49 (±36.29)	0.893
Age	66.77 (±13.00)	68.80 (±9.70)	56.6 (±19.70)	0.1313	66.16 (±12.33)	0.977	72.50 (±9.81)	0.940	65.58 (±14.7)	0.546
BMI	22.30 (±3.02)	20.56 (±3.35)	23.14 (±2.07)	0.359	24.13 (±2.86)	0.095	22.66 (±2.13)	0.488	23.32 (±2.34)	0.237
Rutherford category	3.33 (±1.38)	2.80 (±1.47)	3.40 (±1.34)	0.859	4.00 (±1.41)	0.359	3.50 (±1.22)	0.764	3.64 (±1.27)	0.128

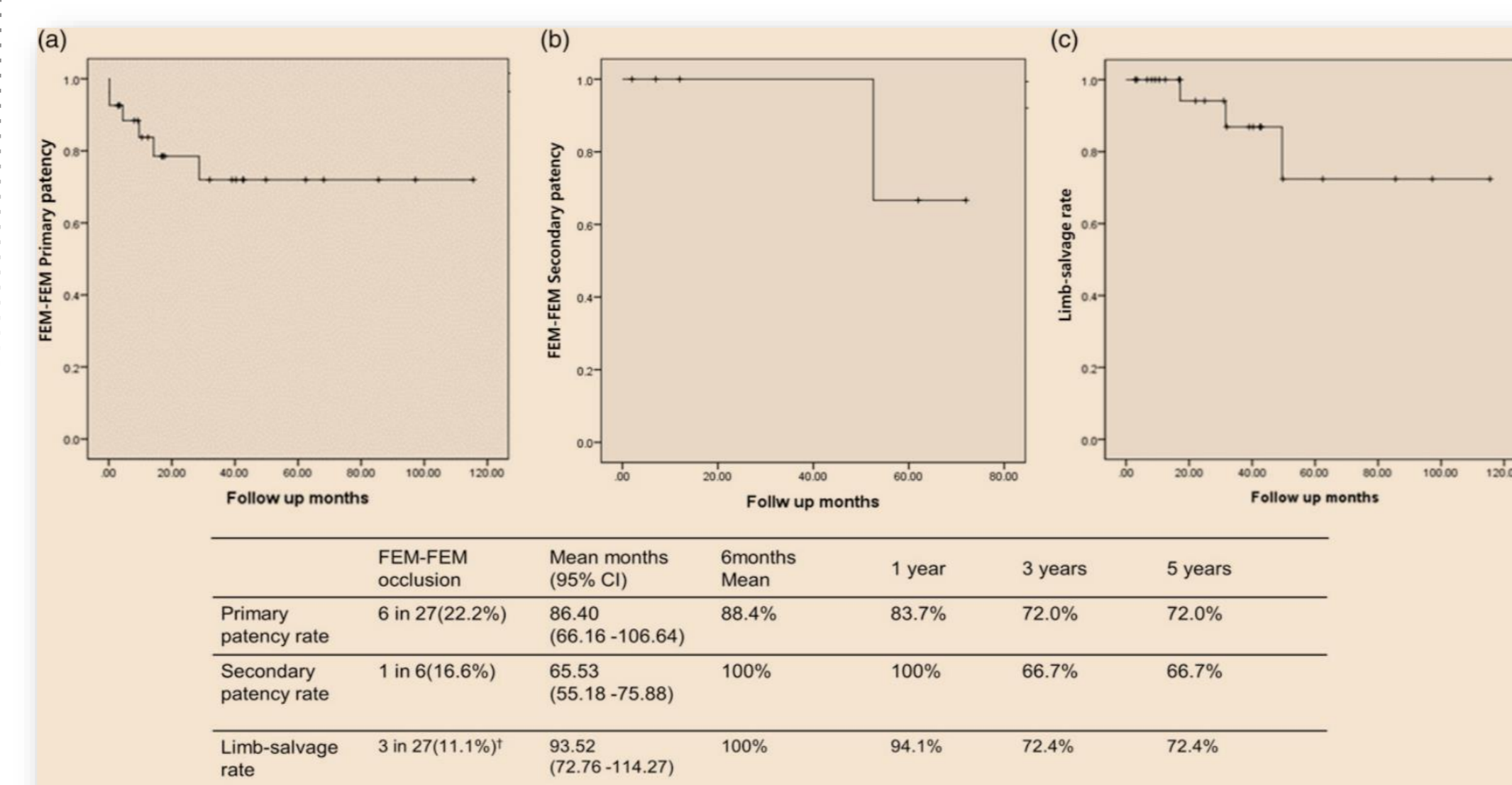
	Total	Group 1	Group 2	Group 3	Group 4	p-value [†]	Group 5	p-value [†]
	N=27	N=10	N=5	N=6	N=6		N=17	
Female	2 (7.4%)	2 (20%)	0	0	0	0.299	0 (0%)	0.128
Hypertension	17 (63.0%)	5 (50.0%)	3 (60.0%)	4 (66.7%)	5 (83.3%)	0.606	12 (70.5%)	0.415
DM	11 (40.7%)	4 (40.0%)	1 (20.0%)	3 (50.0%)	3 (50.0%)	0.725	7 (41.1%)	1.000
Hyperlipidemia	7 (25.9%)	2 (20.0%)	2 (40.0%)	1 (16.7%)	2 (33.3%)	0.768	5 (29.4%)	0.475
COPD	5 (18.5%)	3 (30.0%)	0 (0.0%)	0 (0.0%)	2 (33.3%)	0.236	2 (11.7%)	0.249
Arrhythmia	2 (7.4%)	1 (10.0%)	0 (0.0%)	0 (0.0%)	1 (16.7%)	0.631	1 (5.8%)	1.000
CAOD	6 (22.2%)	1 (10.0%)	1 (20.0%)	1 (16.7%)	3 (50.0%)	0.300	5 (29.4%)	0.368
Smoking	22 (81.5%)	7 (70.0%)	4 (80.0%)	5 (83.3%)	6 (100%)	0.521	15 (88.2%)	0.326
CVA	4 (14.8%)	1 (10.0%)	2 (40.0%)	1 (16.7%)	0 (0.0%)	0.289	3 (17.6%)	1.000

- Overall Complications :

Table 4. Complications.

Complications	Number of cases (%)
Total complications	6 (22.2)
Pseudoaneurysm	2 (7.47)
Operative wound infection	5 (18.51)
Renal failure	1 (3.70)
Cerebral infarction	1 (3.70)
Pneumonia	1 (3.70)
Mortality	0

- Overall Patency & Limb Salvage Rate :



- 1° Patency acc. to Surgical technique & Iliac A. Condition

	Case	FEM-FEM occlusion	Mean primary patency of FEM-FEM (95% CI)	p-value
Distal anastomosis site	CFA	18	69.7 (53.5–86.0)	—
	SFA	2	85.5 (50.7–120.273)	0.800
	DFA	2	4.4 (4.4)	0.142 [†]
Donor iliac	No donor iliac stent	17	80.454 (8–106.1)	0.371 [†]
	Donor iliac stent	10	57.3 (38.4–76.2)	
Recipient iliac	Recipient iliac stenosis	5	34.1 (19.3–49.0)	0.579 [†]
	Recipient iliac CTO	22	84.3 (60.8–107.7)	

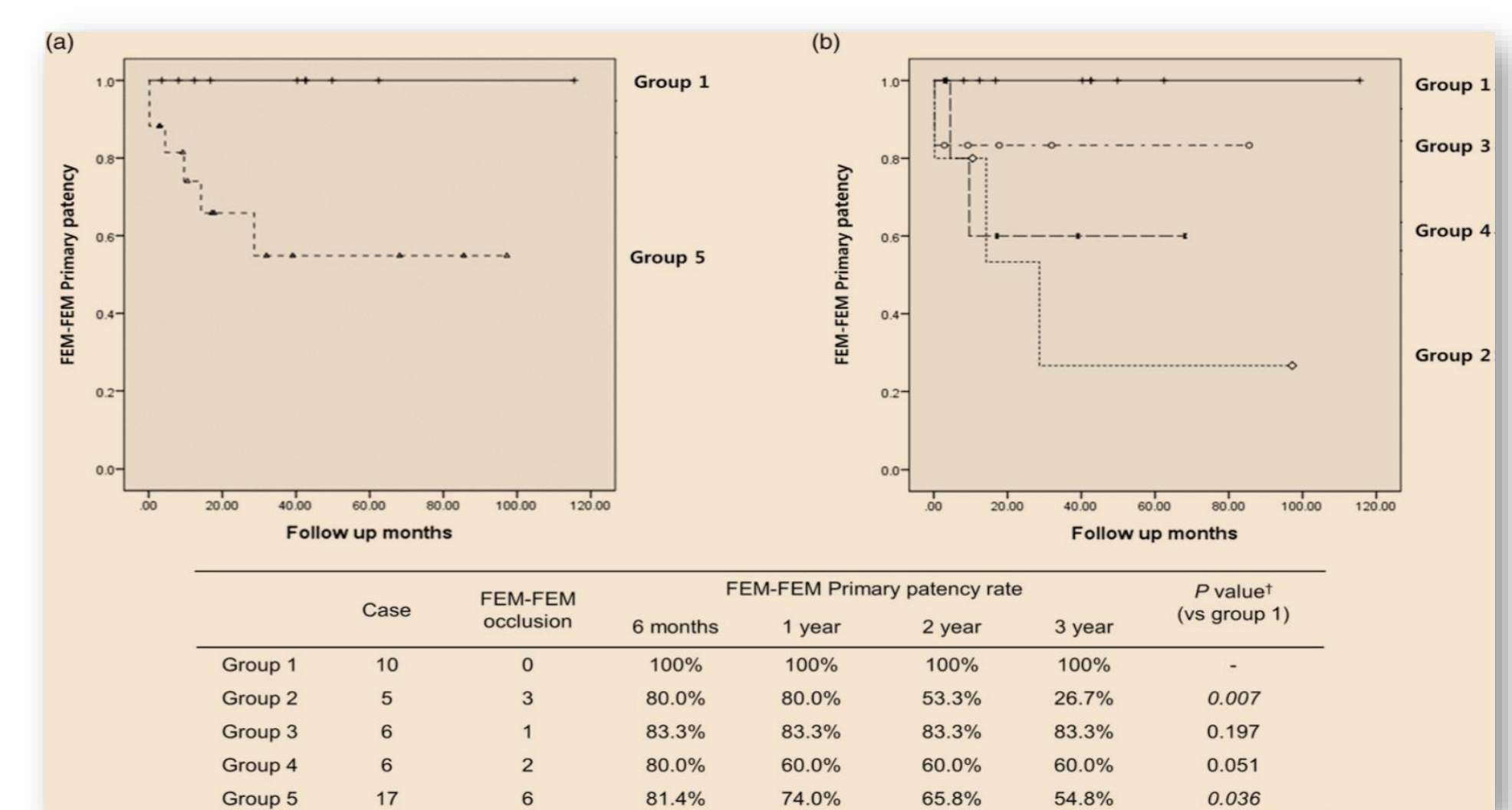
[†]p-value is the result of comparison with the CFA group.
[†]p-value is the result of comparison between the groups.

- Ethical Approval :

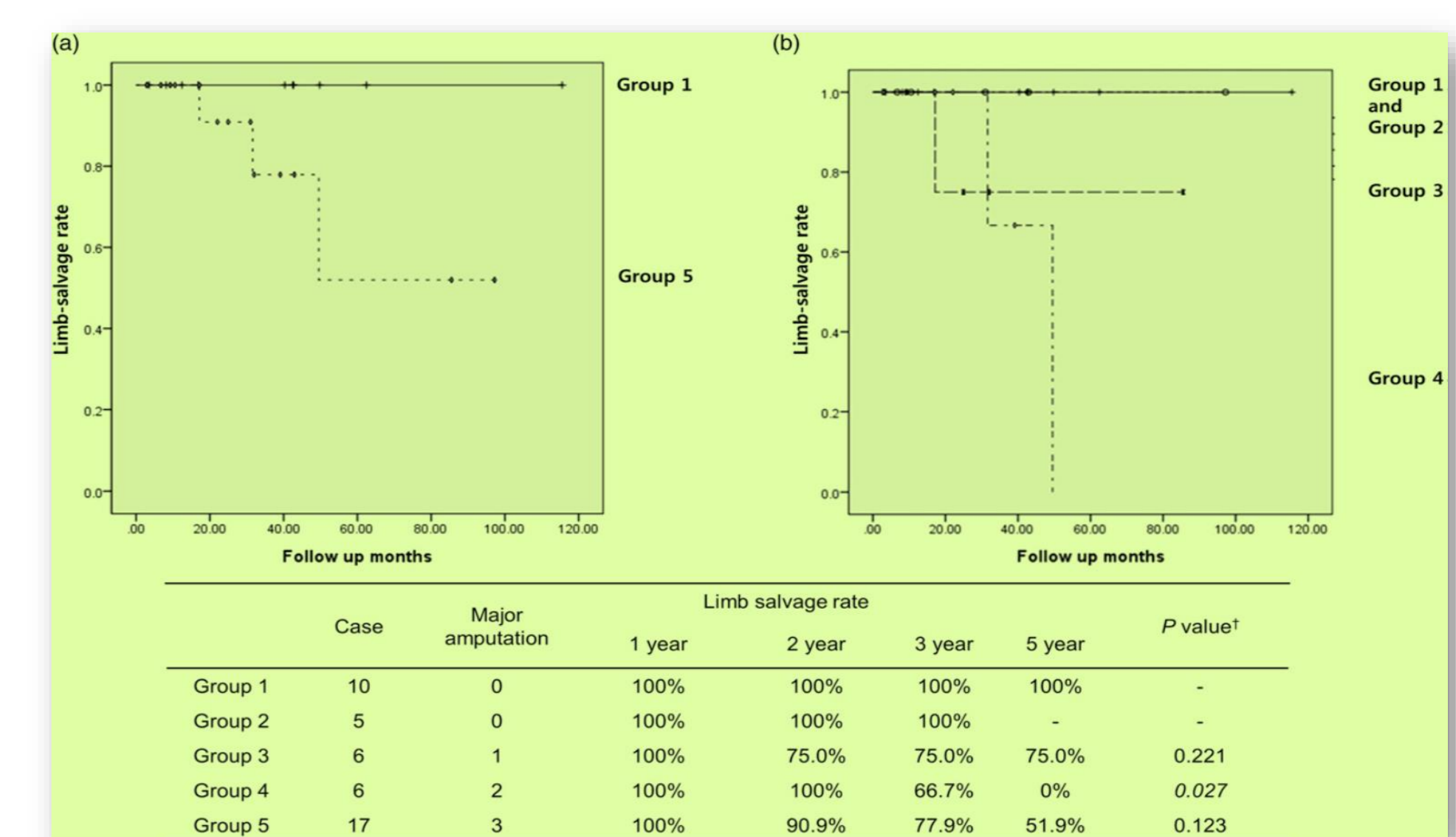
Approved by the Institutional Review Board of Korea University Ansan Hospital (IRB No. 2021AS0097).

RESULTS

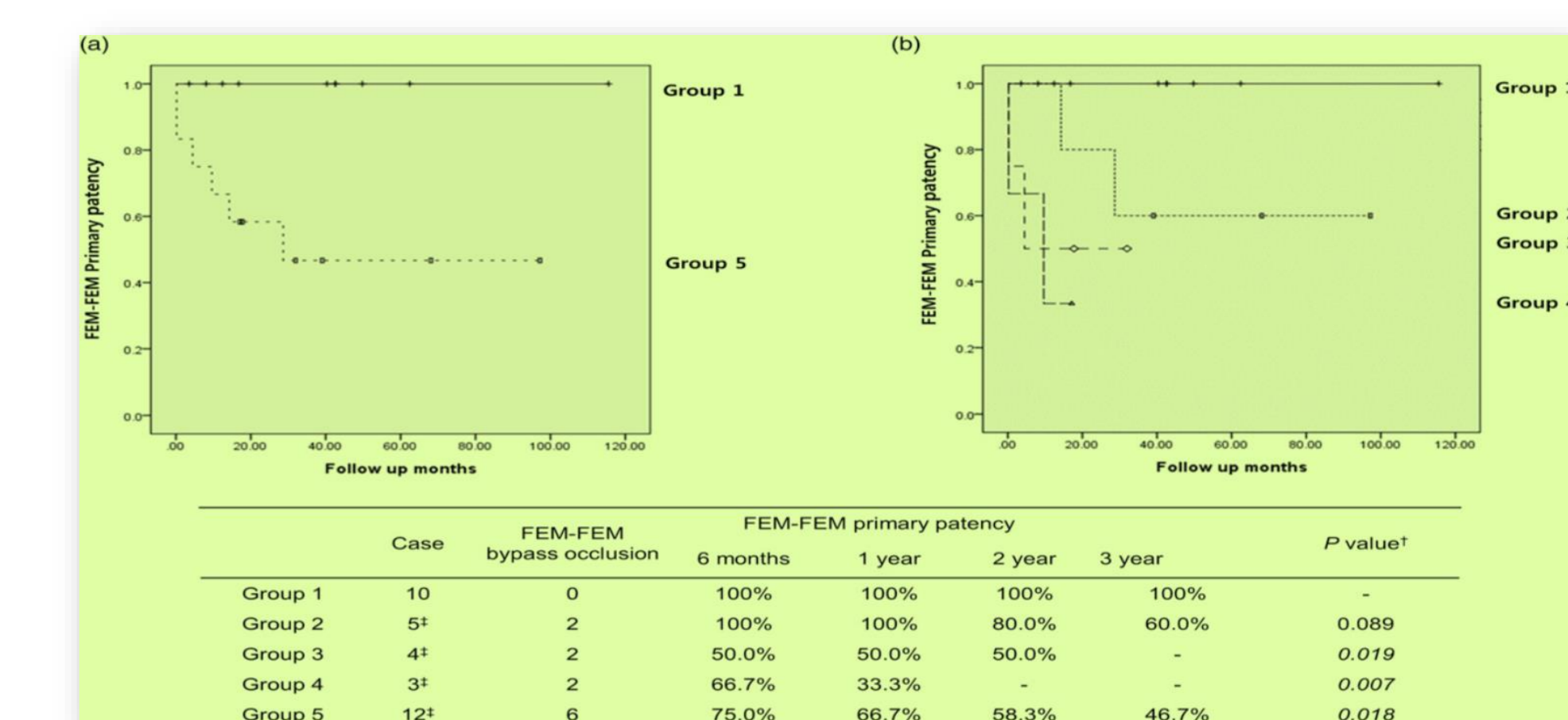
- Comparison of primary patency between FEM-FEM bypass only and concomitant FEM-POP bypass :



- Comparison of limb salvage rate between femorofemoral bypass alone and concomitant femoropopliteal bypass :



- Primary patency of femorofemoral bypass according to graft occlusion of the concomitant femoropopliteal bypass



CONCLUSIONS

- FEM-POP bypass surgery was one of the important risk factors for FEM-FEM bypass graft patency.
- Ipsilateral FEM-POP bypass (group 2) was revealed the lower primary patency compared to Group 1 graft patency significantly.
- Bilateral FEM-POP bypass (group 4), the limb salvage rate was lower compared to group 1, with statistical significance.
- Graft occlusion of the crossover and bilateral FEM-POP bypass (group 3, 4) also increased the risk of FEM-FEM bypass occlusion.
- Compromised infra-inguinal runoff at either extremity requiring concomitant FEM-POP bypass significantly worsens long-term FEM-FEM bypass patency.

STUDY LIMITATIONS

- This study was investigated retrospectively.
- The total number of cases was small.

DISCLOSURE

- NONE
- Declaration of conflicting interests : no potential conflicts of interest.
- Funding ; no financial support.