Common femoral artery occlusive disease: Contemporary results following surgical endarterectomy

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Objective: **Proliferation of endovascular techniques with perceived reduction in treatment morbidity repetitively question the precept that surgical endarterectomy is the preferred treatment for occlusive disease of the common femoral artery (CFA). This study details a contemporary experience with common femoral endarterectomy (CFE) with and without concomitantly performed endovascular therapies.**

Methods: **Technical, hemodynamic, and clinical success of CFE performed between 2002 and 2005 were determined according to the Society of Vascular Surgery reporting standards. Primary and assisted patencies of the CFA segment, freedom from reintervention in the ipsilateral limb, and survival were assessed using Kaplan-Meier life-table analysis. Multivariate analysis was performed to evaluate factors associated with patency and survival.**

Results: **CFE was performed on 65 limbs in 58 patients (mean age 71 ± 10; male 77%; diabetes 28%; creatinine ≥ 1.5 mg/dL 19%). Forty-four cases (68%) were performed for claudication, and 21 cases (32%) for critical limb ischemia. Thirty-seven cases (57%) were performed as a hybrid procedure wherein concomitant endovascular interventions were performed. Twenty iliac (TASC II A-30%; B-35%; C-20%; D-15%) and 25 femoropopliteal (TASC II A-24%; B-60%; C-12%; D-4%) lesions were treated. Technical success was achieved in 100% of the cases. Hemodynamic success was achieved in 95% of the cases with mean postoperative increase in ankle-brachial index (ABI) of 0.24 ± 0.24. All but one patient (98.5%) had improvement in symptoms and/or ABI. Average hospital stay was 3.2 days (range 1-12 days). There were 3 (5%) major complications requiring reintervention (early failure secondary to untreated inflow lesion, hematoma, and wound infection), six (9%) minor complications which were treated conservatively (five wound infections, one lymph leak), and no perioperative mortality. With a mean follow-up period of 27 months (range 1-58 months), 1- and 5-year primary patencies were 93% and 91%, respectively. Assisted patency was 100% at both time points. There was no difference in patencies between CFE performed alone or as a hybrid procedure. Multivariate analysis showed congestive heart failure (CHF) as the only predictor of primary failure (odds ratio [OR] 18.5 [2.6-142.9]; *P* = .004). Freedom from reintervention in the ipsilateral limb was 82% at 1 year and 78% at 5 years, with CHF again as the only predictor of reintervention (OR 5.3 [1.4-19.6]; *P* =.012). Survival was 89% at 1 year and 70% at 5 years. There were no amputations.**

Conclusions: **These data suggest CFE should remain the standard of care for occlusive disease of the CFA. Its safety and efficacy establish a standard for comparison with emerging endovascular therapies. (J Vasc Surg 2008;48:872-7.)**

Surgical endarterectomy has been the standard treatment for occlusive disease of the common femoral artery (CFA) for over 50 years. However, recent advances in endovascular therapy have led to increasing number of patients undergoing percutaneous treatment for their CFA disease. The rationale for such change in treatment paradigm has been perceived lower morbidity and mortality, shorter hospital stay, and quicker recovery to normal functional status in exchange for lower, but acceptable, patency rates associated with endovascular treatment. While such a shift in treatment paradigm for disease in the superficial femoral artery (SFA) is both justified and appropriate in both our experience and that of others,[1-6] there are scant data to shift the focus of CFA disease treatment away from an open surgical approach. Early studies examining the efficacy of CFA percutaneous transluminal angioplasty (PTA) demonstrate variable results.[1,7,8] Indeed, some data suggest that CFA PTA may not be as effective as that for SFA.[1,8] More recently, there have been reports of successful stent placements for disease in the CFA.[9,10] Most surgeons believe, however, that the potential problems of placing a stent in the CFA, including risk of stent fracture and intimal hyperplasia,[11,12] possible need to sacrifice collaterals provided by the profunda, and potential compromise in future surgical options in patients who often present with multilevel disease, outweigh the presumed advantages of an endovascular approach. In addition to PTA and stent placement, other modalities such as cryoplasty and atherectomy are being considered for treatment of occlusive disease in the CFA.[13]

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The purpose of this study was to examine the safety and efficacy of common femoral endarterectomy (CFE) in a contemporary series and establish a standard for comparison with emerging endovascular therapies.

METHODS

Patients and data collection. The Institutional Review Board of the Massachusetts General Hospital approved the clinical protocol. Between January 1, 2002 and December 31, 2005, 65 CFEs were performed on 58 symptomatic patients with occlusive disease of the CFA at the Massachusetts General Hospital. These were performed either as an isolated procedure or as a hybrid procedure where concurrent endovascular treatment for additional lesion(s) in the ipsilateral limb was carried out. All procedures were performed by a vascular surgeon in an endovascular operating room suite with fixed imaging. CFE was performed using standard technique. External control of SFA and profunda femoris artery (PFA) was routine with the distal extent of the dissection determined by individual anatomy. A longitudinal arteriotomy was made extending from well proximal to the disease onto (typically) the proximal SFA, or directly onto the PFA when SFA was occluded. PFA orifice lesions were often present and these were usually treated using eversion endarterectomy. Patch angioplasty was then performed using Dacron, polytetrafluoroethylene, or bovine pericardium patch in all but two cases. For the hybrid procedures, CFE was performed prior to the endovascular component of the case in all but two instances. Following CFE, access was obtained through the patch under direct vision in the ipsilateral limb; hydrophilic guidewires were used under fluoroscopic control to ensure true lumen entry. In cases where both iliac and femoropopliteal endovascular treatments were performed, iliac lesions were treated first, then the sheath was partially removed and redirected antegrade to treat the outflow lesions. Intraoperative angiography and/or pulse volume recording (PVR) was performed to confirm satisfactory revascularization at the conclusion of each case.

Patients who had previous CFE, previous or concurrent bypass grafts utilizing CFA for either the proximal or distal anastomosis, CFE as part of endovascular aortic aneurysm repair or remote endarterectomy of the SFA were excluded. Also excluded were patients who presented emergently with acute limb ischemia or dissection.

Retrospective review of prospectively gathered computer based data, office notes, operative notes, laboratory data, radiologic studies, and angiograms were performed to gather demographic, and perioperative data. Clinical category at the time of presentation was determined according to the Rutherford classification as specified by the Society for Vascular Surgery/American Association for Vascular Surgery reporting standards.[14] Patients were considered to have a history of coronary artery disease even if they were asymptomatic after undergoing coronary artery angioplasty or bypass grafting. Chronic renal failure was defined as serum creatinine level of ≥ 1.5 mg/dL. All patients underwent preoperative angiogram and/or magnetic resonance angiography (MRA).

Table I. American Heart Association guidelines for clinical improvement

Grade	*Clinical description*
3	Markedly improved; ABI > 0.9 and no ischemic symptoms
2	Moderately improved; ABI increase > 0.1 but not normal, and increase by one category
1	Minimally improved; ABI increase 0.1 but not normal, or increase by one category
0	No change
−1	Mildly worse; no category decrease or ABI increase < 0.1
−2	Moderately worse; one category worse or unexpected minor amputation
−3	Markedly worse; more than one category worse or unexpected major amputation

ABI, Ankle-brachial index.

Postprocedure follow-up. All outpatient clinic visits, hospital admissions, relevant radiologic studies, lower extremity noninvasive studies, and angiograms were reviewed. Patients were routinely evaluated at 4 to 6 weeks following the procedure by the individual surgeons along with lower extremity noninvasive studies by ankle-brachial index (ABI), PVR, or both. Patients were then followed every 6 to 12 months according to the discretion of the treating surgeon. Patients who were lost to follow-up were contacted by telephone by a physician and appropriate data gathered. Patients with worsening clinical symptoms, physical examinations, and/or noninvasive studies underwent diagnostic angiography. Further interventions were then carried out at the discretion of the vascular surgeon.

Definitions and endpoints. Technical success of CFE was determined by intraoperative PVR and/or angiography. For patients undergoing PTAs, an angiography demonstrating <20% residual stenosis was considered technically successful. Hemodynamic success was defined as an increase in ABI of ≥ 0.10 or improvement in plethysmographic tracing by ≥ 5 mm according to the Society for Vascular Surgery/American Association for Vascular Surgery reporting standards.[14] Clinical success was defined according to the American Heart Association (AHA) classification (Table I).[15]

In this study, patency refers to the status of the CFE and does not refer to the patency of distal revascularizations. Primary patency was defined as patency of the CFA without evidence of restenosis or need for reintervention. Primary-assisted patency was defined as a patent CFA that needed at least one reintervention for recurrent stenosis.[14] Freedom from reintervention was defined as freedom from reintervention anywhere in the ipsilateral limb. Iliac and femoropopliteal lesions were assigned a TransAtlantic InterSociety Consensus II (TASC II).[16] Major amputations included above-knee and below-knee amputations, while minor amputations included transmetatarsal amputations and toe amputations.

Table II. Demographic and clinical features

Characteristic	*% (N)*	*Mean ± SD [range]*
Age		71.4 ± 9.6 [47-88]
Gender		
Male	76.9 (50/65)	
Female	23.1 (15/65)	
HTN	95.4 (62/65)	
CAD	73.8 (48/65)	
HLD	81.5 (53/65)	
COPD	29.2 (19/65)	
CHF	7.7 (5/65)	
Current smoker	20.0 (13/65)	
Past smoker	72.3 (47/65)	
Home O_2	1.5 (1/65)	
CRI	18.5 (12/65)	
DM	27.7 (18/65)	

HTN, Hypertension; *CAD,* coronary artery disease; *HLD,* hyperlipidemia; *COPD,* chronic obstructive pulmonary disease; *CHF,* congestive heart failure; O_2, oxygen; *CRI,* chronic renal insufficiency defined as serum creatinine ≥ 1.5 mg/dL; *DM,* diabetes mellitus.

Table III. Clinical presentation according to Rutherford classification

Rutherford category	*N (%)*
1. Mild claudication	0 (0)
2. Moderate claudication	10 (15.4)
3. Severe claudication	34 (52.3)
4. Ischemic rest pain	13 (20.0)
5. Minor tissue loss	8 (12.3)
6. Major tissue loss	0 (0)

Table IV. Anatomic features of lesions treated

	TASC II class	*Total (%)*
Iliac lesions	A	6 (30)
	B	7 (35)
	C	4 (20)
	D	3 (15)
Femoropopliteal lesions	A	6 (24)
	B	15 (60)
	C	3 (12)
	D	1 (4)

Perioperative complication and mortality were defined as any complications or mortality occurring within 30 days of the operation. Major complication was defined as one where reintervention or readmission was required, whereas minor complication was defined as one treated without an intervention in an outpatient setting. Survival data was obtained from hospital records, the Social Security Database, or direct communication with the patient or the patient's family member.

Statistical analysis. Statistical analysis was performed using SPSS version 15.0 (SPSS Inc, Chicago, Ill). Patency and survival analyses were performed using the Kaplan-Meier life-table analysis. Analyses of dichotomous and continuous variables were performed using Fisher exact *t* and χ^2. Multiple logistic regression was used to evaluate factors associated with procedural failure and death. *P* value of less than .05 was considered statistically significant.

RESULTS

Sixty-five CFEs were performed on 58 patients during the study period. Demographic and clinical features of the study group are shown in Table II. Twenty-eight percent (18/65) of the patients had diabetes (six patients with insulin-dependent diabetes) and 19% had chronic renal failure of which only one patient was dialysis-dependent. Forty-four CFEs (68%) were performed for claudication while the remaining 21 (32%) were performed for critical limb ischemia (CLI), as shown in Table III.

Thirty-seven procedures (57%) were performed as a hybrid procedure with concurrent endovascular intervention(s) on the ipsilateral limb (30% CLI). Eight of these hybrid procedures were performed for lesions in both iliac and femoral/popliteal arteries whereas 12 were performed for iliac lesions only and 17 for femoral/popliteal lesions only. Of 20 iliac lesions treated, 14 (70%) were treated with stents and nine of 25 (36%) femoropopliteal lesions were treated with stents. The remaining lesions were treated with balloon angioplasty alone. Lesion characteristics features are summarized in Table IV. In addition, there were 25 cases with known femoropopliteal lesions which were not treated at the time of CFE. Of these, 56% were in claudicants and 44% in patients with CLI. Nearly 50% of these untreated femoropopliteal lesions were TASC II C and D lesions.

Technical success was achieved in 100% with no intraoperative complications. The average operating time was 3.0 ± 0.8 hours (range 1.0 to 5.0 hours). Twenty-seven cases (42%) were performed under general anesthesia, 30 (47%) under epidural anesthesia, and seven (11%) under local anesthesia with intravenous sedation. The average hospital stay was 3.2 ± 1.7 days (range 1-12).

There were nine (13.8%) complications overall, three (5%) of which were major complications requiring reintervention. The first major complication was in a patient with an untreated external iliac artery (EIA) stenosis who lost distal pulses following CFE and required PTA and stenting on post-operative day 4. Preoperative angiography performed one day prior to her CFE had shown a 3 cm EIA stenosis. However, this was not treated at the time of her CFE because the patient was thought to have adequate inflow at the conclusion of the case. The second major complication was an expanding hematoma requiring evacuation on post-operative day 0. The last major complication was an infected pseudoaneurysm requiring return to the operating room 1 month following the original procedure. This patient underwent removal of the infected Dacron patch and saphenous vein patch angioplasty with a rotational sartorius muscle flap with successful resolution and patent reconstruction at 14 months following the original procedure. The remaining six minor complications included five superficial wound infections and one lymph

leak, all self-limited and treated in an outpatient setting. No perioperative deaths occurred.

Hemodynamic success was achieved in 95% (62/65) with a mean postoperative increase in resting ABI of 0.24 ± 0.24 and a mean postoperative increase in exercise ABI of 0.34 ± 0.33. The mean preoperative resting ABI was 0.53 ± 0.28, and the mean postoperative resting ABI was 0.79 ± 0.22. The mean preoperative exercise ABI was 0.28 ± 0.27, and the mean postoperative exercise ABI was 0.72 ± 0.41.

Ninety-nine percent of the procedures resulted in an improvement in clinical status with 25% (16/65) having grade 3 improvement, 66% (43/65) grade 2, and 8% (5/65) grade 1, according to the AHA classification (Table I). Only one patient had no improvement (grade 0). This occurred in a patient with history of very aggressive peripheral vascular disease who had undergone multiple percutaneous interventions, including bilateral SFA balloon angioplasties within 6 months prior to his CFE. Angiography performed 3 months following the procedure showed a severe stenosis at the PFA origin as well as new lesions in the mid-external iliac artery and the SFA. This patient underwent PTA and stenting of his iliac and SFA lesions as well as PTA of his PFA origin with subsequent improvement in his symptoms. No patient's condition was made worse after the procedure. Six of eight foot lesions (75%) were completely healed. In one patient, the wound was improving but the patient died secondary to an unknown cause 5 months following CFE. One patient failed to heal his wound following CFE. Angiography showed patent CFA but a 16 cm SFA occlusion with a three-vessel runoff. The treating surgeon had elected not to treat the SFA occlusion at the time of his CFE. Further treatment was deferred secondary to patient's multiple medical problems including end-stage renal failure and the patient died 4 months following CFE.

With a mean follow-up period of 27 ± 14 months (range 1-58), 1- and 5-year primary patency rates were 93% and 91%, respectively (Fig and Appendix I, online only). Primary-assisted patencies were 100% at both time points (Appendix I, online only). The five primary failures occurred at 3, 5, 8, 12, and 17 months following CFE (Table V). Two patients were noted to have both iliac and SFA disease in addition to the CFA restenosis. In both cases, iliac and SFA disease were not present at the time of preoperative angiograms (both done within 3 months of CFE). Two patients had SFA disease in addition to the CFA restenosis and only one patient had CFA as the only lesion causing recurrent symptoms. All five failures were treated with percutaneous endovascular therapy. Multivariate analysis showed congestive heart failure (CHF) as the only predictor of primary failure (OR 18.5 [2.6-142.9]; P = .004). There were no differences in primary patency rates between patients presenting with claudication versus CLI, between diabetic vs nondiabetic patients, between patients undergoing isolated CFE versus hybrid procedures, or between patients with untreated SFA disease versus those without.

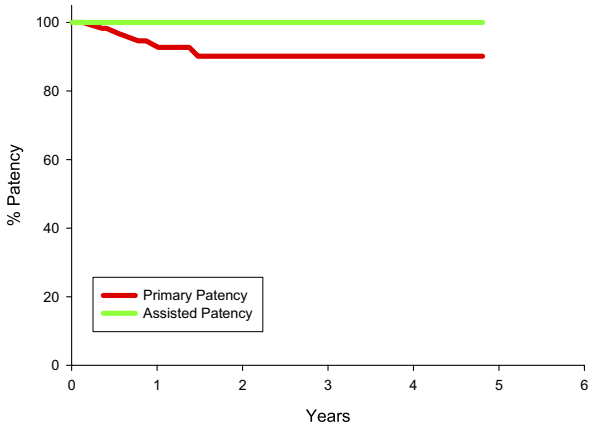

Fig 1. Primary and primary-assisted patency rates.

Freedom from reintervention at 1 and 5 years were 82% and 78%, respectively (Appendix II, online only). Again, CHF was the only predictor of reintervention in the ipsilateral limb (OR 5.3 [1.4-19.6]; P = .012] on multivariate analysis. There were no differences in reintervention rates between patients presenting with claudication vs CLI, between diabetic vs nondiabetic patients, between patients undergoing isolated CFE vs hybrid procedures, or between patients with untreated SFA disease vs those without.

Survival was 89% at 1 year and 70% at 5 years (Appendix III, online only). No patient underwent a major or minor amputation during the study period.

DISCUSSION

Previous studies on CFE have also shown favorable results similar to those seen in our study.[7,17-22] Mukherjee et al reported 5-year patency rate of 94% on 29 patients (41% CLI)[18] and Springhorn et al reported 2- and 5-year primary patency rates of 82% and 74%, respectively on 22 patients (69% CLI).[19] In the latter study, failure was defined as need for any further inflow procedures. However, of the four patients considered to have primary failure, only one patient was noted to have restenosis at the CFE site, with the adjusted primary patency rate of 90% at both 2 and 5 years. Nelson et al examined 34 patients undergoing combined EIA stenting and CFE (59% CLI).[20] One-year primary patency rate and primary-assisted patency rates were 84% and 97%, respectively. More recently, Kechagias et al examined 111 cases of isolated CFEs (31% CLI) and reported 68% freedom from any ipsilateral revascularization at 5 years.[22] Unfortunately, this study did not look specifically at the patency rates of the CFA segment. Taken together, these studies demonstrate that CFE is a durable procedure in the treatment of CFA occlusive disease.

In addition to the excellent long-term results of CFE, this study also demonstrates its safety. In this study, we have shown that procedural morbidity of CFE (5% major complication) is comparable to those reported in recent studies of infrainguinal PTAs (range 3.0% to 3.8%).[3,5,6] Furthermore, most CFEs were performed under epidural or local

Table V. Primary failures

Initial procedure	*Failure*	*Reintervention*
CFE	3 mo	• mid-EIA severe stenosis → PTA/stent • PFA origin severe restenosis → PTA • SFA multiple focal stenosis → PTA/stent
CFE	5 mo	• Proximal CIA mod stenosis → PTA • CFA severe restenosis → PTA • Distal SFA severe stenosis → PTA/stent
CIA/EIA PTA, CFE, SFA PTA	8 mo	• CFA severe restenosis → PTA
EIA stent, CFE, SFA stent	12 mo	• CFA moderate restenosis → PTA • SFA severe restenosis (proximal end of prior stent) → PTA/stent
CFE, popliteal PTA	17 mo	• PFA origin severe restenosis → PTA • SFA severe stenosis x 2, multiple popliteal & TPT disease → PTA

CFE, Common femoral endarterectomy; *PTA,* percutaneous angioplasty; *CIA,* common iliac artery; *EIA,* external iliac artery; *CFA,* common femoral artery; *PFA,* profunda femoral artery; *SFA,* superficial femoral artery; *TPT,* tibioperoneal trunk.

anesthesia rather than general anesthesia, whether it was performed as an isolated procedure or in combination with endovascular procedure. The low morbidity associated with CFE likely negates any presumed advantage of endovascular therapy over surgical endarterectomy. CFE seems an attractive option even for those unfit for extensive bypass grafts, especially those with extensive multilevel disease where hybrid procedures can be performed by combining CFE with endovascular treatment of iliac and/or infrainguinal lesions.

Over half of the cases in this study were performed as a hybrid procedure. Compared with previous practice wherein staged angiographic/surgical procedures were employed,[23] hybrid procedures offer not only efficiency but also avoid operation in the region of a previously manipulated femoral artery. We are increasingly utilizing MRA rather than diagnostic angiography for preprocedure planning, followed by a hybrid procedure in the main operating room equipped with fixed imaging. A surgically exposed femoral artery offers better control and flexibility (eg, performing inflow and outflow manipulations at the same setting) during the endovascular part of the procedure.

The results of our study demonstrate that CFE with or without inflow endovascular intervention is a reasonable first step in treating patients with extensive femoropopliteal lesion(s). Of the 25 cases with known femoropopliteal lesions that were not treated at the time of CFE, 44% were in those presenting with CLI. Furthermore, 48% of these untreated lesions were TASC II C or D lesions. Treatment of inflow lesions alone resulted in both symptomatic and hemodynamic improvement, and freedom from reintervention in the ipsilateral limb was the same for those with or without residual femoropopliteal lesion(s). Clearly, the clinical circumstances will dictate the necessity (or lack there of) for comprehensive distal revascularization. In the presence of patent profunda and adequate collateralization, treating any existing inflow lesions, including those in the CFA, may be a reasonable first step in treating patients with multilevel occlusive disease. Exception to this may be those with major tissue loss, as our study did not have any patients presenting with Rutherford class 6 CLI.

In treating restenosis of the CFA following CFE, we routinely use PTA and this was indeed the case for all five primary failures in this study. We believe that the nature of the lesion at the time of restenosis (secondary to intimal hyperplasia or clamp injury) is quite different from that of the initial lesion. The native lesions in the CFA tend to be heavily calcified and bulky, and angioplasty alone is often inadequate whereas recurrent disease in the CFA is quite well treated with balloon angioplasty.

Previous studies examining the efficacy of CFA PTA demonstrate variable results and, clearly, additional data are needed prior to assessing its long-term outcome. Of the 984 PTAs examined by Johnston et al, only 18 were performed for lesions in the CFA. Primary patency rates at 1, 2, and 3 years in this subgroup were 59%, 49%, and 37%, respectively.[1] Silva et al examined 20 patients (43% CLI) and reported event-free survival of 90% at follow-up (mean follow-up 11.4 months), where event-free survival was defined as freedom from death, amputation and target vessel revascularization.[8] The latter study is limited not only by small sample size and limited follow-up, but also by lack of objective measure, such as ABI or PVR, in assessing efficacy of treatment. Neither of the above mentioned studies report procedural morbidity associated with CFA PTA. Among the 20 patients examined by Silva et al, one patient died within the same hospitalization secondary to sepsis (no further information given in the article).

Emerging endovascular techniques such as subintimal angioplasty, laser angioplasty, and atherectomy, as well as stent placement, may prove to be more effective than balloon angioplasty in treating CFA lesions. There have been reports of successful stent placement in the CFA.[9,10] Following 33 cases of stent placement in the CFA bifurcation, Stricker et al reported 1- and 3-year primary patencies of 87% and 83%, respectively.[9] However, majority of these cases (82%) were for claudication and they report that only a single, short (up to 4 cm) stent was used in each case. Although not explicitly stated in the article, it appears that the patients included in this study were those with very limited, focal disease involving the CFA or the origin of SFA or PFA. Until further data become available on these

emerging endovascular techniques, CFE remains the preferred treatment for lesions in the CFA in our practice.

This study is limited by its retrospective nature and potential for referral bias given single institution catchment. In addition, the lack of a "control" group treated with endovascular methods (while reflecting our practice and opinion about the preferred treatment) limits the scope of conclusions referable to PTA and other endovascular technologies. However, we believe that our study is among the largest series clearly demonstrating favorable efficacy and safety of CFE. In addition, it highlights the utilities and advantages of hybrid procedures in patients with multilevel occlusive disease. As newer endovascular technologies emerge, comparative studies will be required.

AUTHOR CONTRIBUTIONS

Conception and design: JK, MC, GL, RC
Analysis and interpretation: JK, TC, RC
Data collection: JK, VP
Writing the article: JK, RC
Critical revision of the article: JK, VP, MC, GL, TC, RC
Final approval of the article: JK, VP, MC, GL, TC, RC
Statistical analysis: TC
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Overall responsibility: JK

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Additional material for this article may be found online at www.jvascsurg.org.

Appendix I, online only. Primary and assisted patency

	Interval	*"At risk"*	*# of events*	*Cumulative patency*	*Standard error*
Primary patency	0-1 y	65	4	.93	.03
	1-2 y	52	1	.91	.04
	2-3 y	33	0	.91	.04
	3-4 y	17	0	.91	.04
	4-5 y	3	0	.91	.04
Assisted patency	0-1 y	65	0	1.00	.00
	1-2 y	56	0	1.00	.00
	2-3 y	36	0	1.00	.00
	3-4 y	19	0	1.00	.00
	4-5 y	3	0	1.00	.00

Appendix II, online only. Freedom from reintervention in the ipsilateral limb

	Interval	*"At risk"*	*# of events*	*Cumulative freedom*	*Standard error*
Freedom from reintervention	0-1 y	65	11	.82	.05
	1-2 y	47	2	.78	.05
	2-3 y	29	0	.78	.05
	3-4 y	17	0	.78	.05
	4-5 y	3	0	.78	.05

Appendix III, online only. Survival

	Interval	*"At risk"*	*# of events*	*Cumulative freedom*	*Standard error*
Survival	0-1 y	65	7	.89	.04
	1-2 y	56	3	.83	.05
	2-3 y	36	0	.83	.05
	3-4 y	19	2	.70	.10
	4-5 y	34	0	.70	.10