THE PRESENT STATUS OF OF BUERGER'S DISEASE: DOES IT STILL EXIST: HOW TO DIAGNOSE AND TREAT IT

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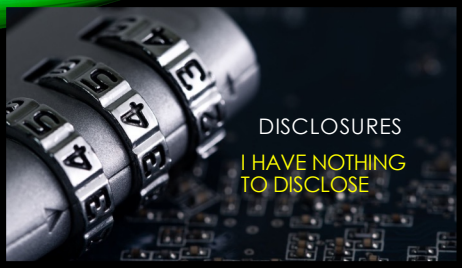


DISCLOSURES

I HAVE NOTHING TO DISCLOSE

BUERGER'S DISEASE

Non-atherosclerotic, inflammatory, segmental occlusive disease of unknown origin affecting the medium and small arteries and veins of young male

Tobacco use has a strong link to the pathogenesis and progression

Endarteritis introduced by T-cells and B-cells mediated immunity with the activation of macrophages in intima

DIAGNOSTIC CRITERIA OF SHIONOYA

- Smoking history
- Onset before the age of 50 years
- Infra-popliteal and infra-brachial arterial occlusions
- Either arm involvement or phlebitis migrans
- Absence of atherosclerotic risk factors other than smoking

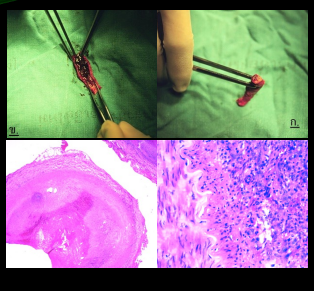
Shionoya S: Diagnostic Criteria of Buerger's disease. Int J Cardiol1998;1: 243-5.

DIAGNOSTIC CRITERIA OF SHIONOYA

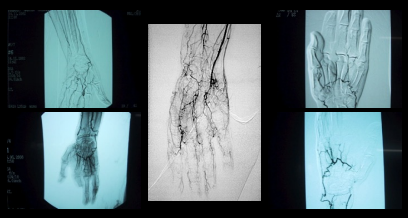
- Special arteriographic findings; abrupt or tapering occlusion, cockscrew collaterals, and absence of calcification or moth-eaten stenoses
- Exclusion criteria; patients with hypertension, diabetes mellitus, hyperlipidemia, ischemic heart disease, cerebrovascular disease, hypercoagulable state or collagen disease

Shionoya S: Diagnostic Criteria of Buerger's disease. Int J Cardiol1998;1: 243-5.

PAN-ARTERITIS OF TAO

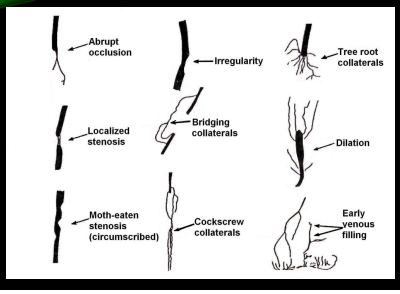


ARTERIOGRAPHIC FINDINGS



COCKSCREW COLLATERALS

PATTERNS OF ARTERIAL LESION IN TAO



Presenting symptoms of the 78 patients with Buerger's Disease on 108 admissions

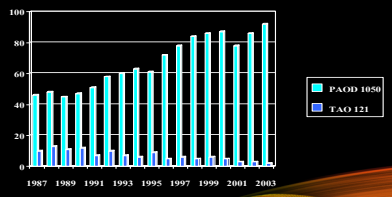
Table 3. Presenting symptoms of the 78 patients with Buerger's disease on 108 admissions

	Admission for recurrence ($n = 67$)	First admission ($n = 41$)	Total ($n = 108$)
Burning pain on feet and hands	46 (68.6%)	35 (85.3%)	81 (75%)
Digital gangrene	48 (71.6%)	32 (78%)	80 (74%)
Raynaud's phenomenon	21 (31.3%)	23 (56%)	44 (40.7%)
Digital ulcer	28 (41.8%)	21 (51.2%)	47 (43.5%)
Foot and calf claudication	25 (37.3%)	19 (46.3%)	44 (40.7%)
Migratory thrombophlebitis	9 (13.4%)	15 (36.5%)	24 (22.2%)
Forefoot gangrene	7 (10.4%)	2 (4.8%)	9 (8.3%)

Laohapensang K, Rerkasem K. Surg Today 2005 ;35: 418-20.

CLINICAL MANIFESTATIONS

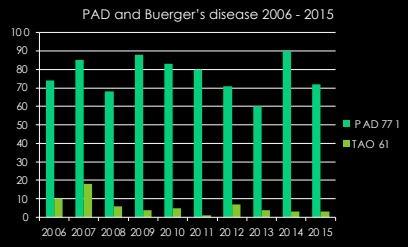
Decreased in recurrence of Buerger's disease



PERIPHERAL ARTERIAL DISEASE (PAOD) and THROMBOANGIITIS OBLITERANS (TAO) in CHIANGMAI UNIVERSITY HOSPIAL 1987-2003

Laohapensang K. Surg Today 2005 35(12): 418-28.

Admissions of PAD and Buerger's disease 2006-2015

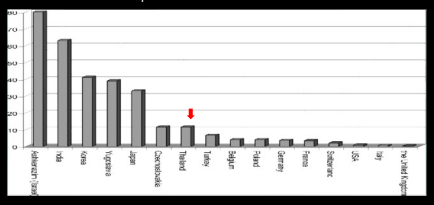


THE OVERALL INCIDENCE OF TAO APPEARS TO BE DECREASING DUE TO

- Adoption of precise diagnostic criteria
  [Shionoya, Olin, Adar, Papa etc.]
- Reduction of smoking population
  [Younger generation]
- Change in the occupations
  [Agriculture to Industrialization]

1. Laohapensang K, Rerkasem K, Kattipattanapong V: Buerger's disease in northern Thailand. *Surg Today* 2005; 35:1060-1065.
2. Matsushita M, Nishikimi N, Sakurai T, et al: Decrease in prevalence of Buerger's disease in Japan. *Surgery* 1998; 124:498-502.

The prevalence of TAO as a percentage of PAD in particular countries



The prevalence of TAO as a percentage of PAD in particular countries based on: Olin (1), Wysokin' ski et al. (2), Kobayashi et al. (3), Laohapensang et al. (4), Ates et al. (5) R Matecki et al. Atherosclerosis 2009; 206: 328-334.

DOES BERGER'S DISEASE REALLY EXIST:

YES, but DECREASING

THE CURRENT BEST TREATMENT:

Cessation of smoking

ORIGINAL RESEARCH

Long-Term Outcome and Prognostic Factors of Complications in Thromboangiitis Obliterans (Buerger's Disease): A Multicenter Study of 224 Patients

Alexandre Le Joncour, MD, MSc; Simon Soulat, MD; Axelle Dupont, MD; Olivier Espitia, MD; Fabien Koskas, MD; Philippe Cluzel, MD; Pierre Yves Hatron, MD; Joseph Emmerich, MD; Patrice Cacoub, MD; Matthieu Resche-Rigon, MD; Marc Lambert, MD, PhD; David Saadoun, MD, PhD; for the French Buerger's Network

Background—Data regarding long-term outcome of patients with thromboangiitis obliterans are lacking and most series come from India and Japan. In this study, we assess long-term outcome and prognostic factors in a large cohort of thromboangiitis obliterans.

Methods and Results—Retrospective multicenter study of characteristics and outcomes of 224 thromboangiitis obliterans patients fulfilling Papa's criteria were analyzed. Factors associated with vascular events and amputations were identified. The median age at diagnosis was 38.5 [32–46] years, 51 (23.8%) patients were female, and 81.7% were whites. After a mean follow-up of 5.7 years, vascular events were observed in 58.9%, amputations in 21.4%, and death in 1.4%. The 5-, 10-, and 15-year vascular event-free survival and amputation-free survival were 41% and 85%, 23% and 74%, and 19% and 66%, respectively. Ethnic group (nonwhite) (hazard ratio 2.35 [1.30–4.27] *P*=0.005) and limb infection at diagnosis (hazard ratio 3.29 [1.02–10.6] *P*=0.045) were independent factors of vascular event-free survival. Factor associated with amputation was limb infection (hazard ratio 12.1 [3.5–42.1], *P*<0.001). Patients who stopped their tobacco consumption had lower risk of amputation (*P*<0.001) than those who continued.

Conclusions—This nationwide study shows that 34% of thromboangiitis obliterans patients will experience an amputation within 15 years from diagnosis. We identified high-risk patients for vascular complications and amputations. (***J Am Heart Assoc.* 2018;7:e010677. DOI: 10.1161/JAHA.118.010677)**

Key Words: Buerger's disease • outcome • prognosis • thromboangiitis obliterans • vasculitis

FACTS ABOUT BUERGER'S DISEASE

Only 11.5% (9 / 78) of the patients stopped smoking

The risk of amputation is eliminated by 8 years after smoking cessation

Arterial reconstructions were feasible in 10.2% (11/ 78) of TAO cases

The necrotic lesions subsides after the age of 60

Laohapensang K. et al. Surg Today 2005; 35:1060-1065.

REVASCULARIZATION

- Revascularization is the ideal treatment to reduce ischemic injuries
- Surgical revascularization is often not feasible because of diseased distal runoff and diffuse segmental involvement and thrombotic nature of the disease
- Lack of distal targets for bypass and absence of adequate vein conduit
- Bypass surgery was carried out for less than 10% of surgically treated patients

1. Ye K, et al. Endovascular recanalization versus autogenous venous bypass for TAO patients. J Vasc Surg 2017; 66: 1133 -1142.
2. Kim DH, , et al. Immediate and late outcomes of endovascular treatment of Buerger's disease. J Vasc Surg. 2018; 67: 1769-1777.

Surgical Treatment of Buerger's disease 1988-2002

Table 4. Surgical treatment of the 78 patients with Buerger's disease on 108 admissions

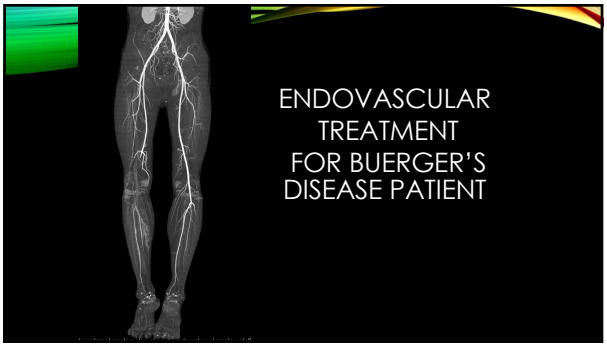
	Recurrent admission patients (n = 37)	New admission patients (n = 41)	Total admissions (n = 108)
Arterial reconstruction	4 (10.8%)	7 (17%)	11 (10.2%)
Sympathectomy	13 (35.1%)	23 (56%)	36 (33.3%)
Amputation			
Above knee	1 (2.7%)	—	1 (0.9%)
Below knee	3 (8.1%)	1 (2.4%)	4 (3.6%)
Syme's	2 (5.4%)	1 (2.4%)	3 (2.7%)
Transmetatarsal	2 (5.4%)	1 (2.4%)	3 (2.7)
Digital	33 (89.2%)	34 (82.9%)	67 (62%)

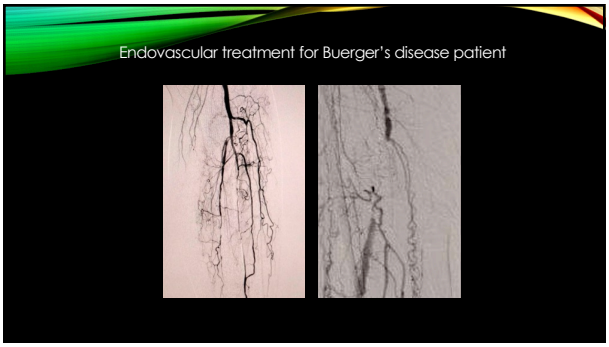
Some patients underwent more than one operation

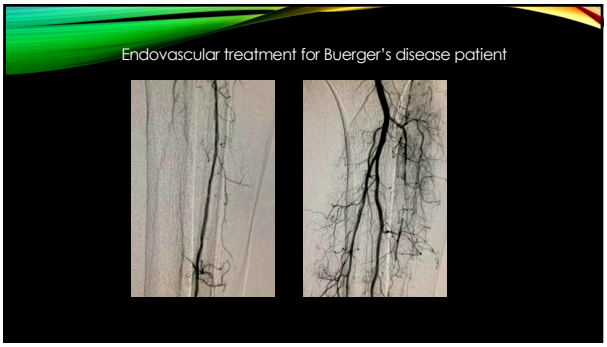
Laohapensang K. Surg Today 2005; 35(12): 418-20.

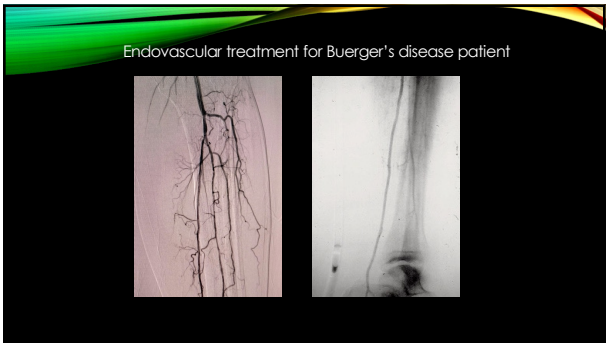
FEMORO-PERONEAL BYPASS

AUTOGENOUS VEIN HARVESTING









Immediate and late outcomes of endovascular therapy for lower extremity arteries in Buerger disease

Dae-Hoon Kim, MD,[a] Young-Guk Ko, MD,[a] Chul-Min Ahn, MD, PhD,[a] Dong-Ho Shin, MD, MPH,[a] Jung-Sun Kim, MD, PhD,[a] Byeong-Keuk Kim, MD, PhD,[a] Donghoon Choi, MD, PhD,[b] Myeong-Ki Hong, MD, PhD,[a,b] *and* Yangsoo Jang, MD, PhD,[a,b] *Seoul, Korea*

ABSTRACT

Objective: Buerger disease is a rare inflammatory vasculopathy presenting with severe claudication or critical limb ischemia. In this study, we sought to evaluate the feasibility and clinical outcomes of endovascular therapy for Buerger disease involving arteries in the lower extremities.

Methods: Between January 2006 and May 2016, there were 44 Buerger disease patients (43 men; mean age, 40.4 ± 9.6 years) with 50 target limbs treated by endovascular therapy at the Severance Cardiovascular Hospital. Baseline characteristics as well as both immediate and late clinical outcomes were retrospectively analyzed.

Results: The majority (86.4%) of patients presented with critical limb ischemia. A total of 88 target lesions in 50 limbs were treated with endovascular procedures. All limbs showed infrapopliteal artery occlusions, and multilevel diseases involving the iliac or femoropopliteal artery were found in 31 patients (62%). Technical success was achieved in 80% of subjects. We found that a lower serum level of C-reactive protein, specifically the log C-reactive protein value (odds ratio, 0.03; 95% confidence interval [CI], 0.00-0.71; $P = .030$), was an independent predictor of technical failure. The median follow-up duration was 29 months. Major adverse limb event-free survival and reintervention- and amputation-free survival were 83.5% and 67.9% at 3 years, respectively. In a multivariate Cox proportional hazards analysis, previous endovascular treatment (hazard ratio, 3.70; 95% CI, 1.20-11.51; $P = .022$) and previous amputation (hazard ratio, 4.68; 95% CI, 1.57-15.06; $P = .014$) were identified as independent risk factors for reintervention- and amputation-free survival.

Conclusions: In patients with Buerger disease, endovascular treatment achieved technical success in the majority of the cases and was associated with favorable immediate and late clinical outcomes. These findings indicate that endovascular therapy may be considered a first-line treatment option for severe symptomatic patients with Buerger disease. (J Vasc Surg 2017;■:1-9.)

DO BYPASSES OR ENDO TREATMENTS WORK

- Surgical revascularization is not feasible 90%, due to the lack of venous conduit and distal arterial targets for bypass
- Endovascular treatment should be considered

1. Galyfos G. et al. A SYSTEMATIC REVIEW AND META-ANALYSIS OF EARLY AND LATE OUTCOMES AFTER ENDOVASCULAR ANGIOPLASTY AMONG PATIENTS WITH THROMBOANGIITIS OBLITERANS AND CHRONIC LIMB ISCHEMIA. JVS. September 25, 2022.
2. Ye K. et al. Endovascular recanalization versus autogenous venous bypass for TAO patients. J Vasc Surg 2017; 66: 1133 -1142.

ENDOVASCULAR TREATMENT FOR BUERGER'S DISEASE PATIENT

Majority of patients with CLI are poor candidates for surgical bypass, endovascular approaches should be considered

Percutaneous transluminal angioplasty (PTA) of infrapopliteal arteries and can be an effective option

Prolonged balloon inflation has been recommended for PTA

Selective stent placement can be considered for residual stenosis, vessel recoil, or dissection

Re-intervention is possible

VEITHsymposium NEWS 2022


'Buerger's disease is not a variant of atherosclerosis'

"Buerger's disease is a unique, non-atherosclerotic, non-inflammatory, segmental occlusive disease of unknown origin."

"Percutaneous transluminal angioplasty can be considered a technically feasible and potentially effective option for managing patients with Buerger's disease and CLTI."

THANK YOU FOR ATTENTION