

Open Lumbar Sympathectomy on Buerger's Disease: A Case Report

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ABSTRACT

Thromboangiitis obliterans known as Buerger's disease is a nonatherosclerotic, progressive inflammatory disease that affects small and medium arteries in the upper and lower extremities. Strong relationship was found between the development of this disease and the patient's history of smoking. We reported a case of 50-year-old male with progressive pain in fingers of right leg with darkened ulcer. Open lumbar sympathectomy is a procedure that is rarely performed nowadays, but progressive pain in buerger's disease patients can be managed with this procedure. The aim of sympathectomy is to reduce sympathetic response causing vasodilation effect which will reduce rest pain.

KEYWORDS: open lumbar sympathectomy, buerger's disease, tromboangiitis obliterans

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INTRODUCTION

Buerger's disease or thromboangiitis obliterans (TAO) is a progressive non-atherosclerotic inflammatory disease that is segmental and most commonly affects small and medium-sized arteries in the upper and lower extremities. The exact cause of TAO is still unclear. However, the use or exposure to tobacco is highly significant in the development and progression of the disease, showing a strong correlation with a history of smoking in patients.^{1,2}

The best treatment for patients with TAO is to quit smoking, which will prevent the progression of the disease to the point of requiring amputation. Therapeutic approaches for TAO include both pharmacological therapy and surgical procedures. The use of antiplatelet and vasodilator drugs can reduce the pain experienced by patients. Several surgical procedures can be performed for patients with buerger's disease, including sympathectomy, revascularization surgery with bypass operation, and amputation of the affected limbs. Sympathectomy is a surgical method to reduce rest pain caused by vasodilation and reduce arterial spasm due to decreased sympathetic response in the affected limbs.^{3,4}

Currently, thoracoscopic and laparoscopic techniques are preferred over open surgery for thoracic and lumbar sympathectomy, in hospitals that have the facilities for this procedures. In Indonesia, open sympathectomy is starting to be replaced with sympathectomy using thoracoscopic and laparoscopic techniques. In this case, we report on open

sympathectomy surgery in a patient with Buerger's disease experiencing rest pain.⁵

CASE ILLUSTRATION

A 50-year-old male patient came to the Cardiothoracic and Vascular Surgery (CTVS) Clinic at Margono Soekarjo General Hospital complaining of pain in his right leg. One month prior, the patient underwent amputation surgery on the middle toe of his right foot. Initially, the toes on his right foot were numb, and the middle toe turned darkened accompanied by pain for 2 weeks before the amputation. One week after the amputation, the patient came for a follow-up at the CTVS Clinic of Margono Soekarjo General Hospital and it was found that the toe next to his right foot also turned black accompanied by pain. This patient is an active smoker who has been smoking for the past 30 years and consumes more than 1 pack of cigarettes per day. The patient has no history of diabetes mellitus, hypertension, hypercholesterolemia, blood disorders, heart disease, or autoimmune diseases before.

Patient presented to the CTVS Clinic with complaints of blackened toes accompanied by pain in the leg, rated at 8/10 on the Visual Analog Scale (VAS). The patient also experiences pain at rest (rest pain). Examination revealed a blood pressure of 130/90, heart rate of 103 beats per minute, respiratory rate of 20 breaths per minute, SpO₂ of 99%, and temperature 36.8°C. The right lower extremity felt colder than the other side. The pulse of the dorsalis pedis artery

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was weaker in the right foot compared to the left foot. There was a ulcer from amputation up to the proximal phalanges on the third digit of the right foot, which appeared black. On the second digit of the right foot, there was a blackened ulcer up to the proximal phalanges, with pus and hyperemic tissue present at the proximal end of the wound.



Figure 1. The clinical picture shows an ulcer on the second and third digits of the right foot is blackened

The Ankle-Brachial Index (ABI) in the right leg is 0.77, and in the left leg is 0.83. Blood laboratory tests did not reveal any abnormalities except for an elevated white blood cell count of 14,700 μ L. Chest X-ray was normal. CT angiography of the lower extremities with contrast revealed thin contrast filling in the proximal right anterior tibial artery, and no contrast filling in the dorsalis pedis artery, suggesting occlusion of the distal right anterior tibial artery. There was also thin contrast filling in the left anterior and posterior tibial arteries, suggesting partial occlusion of the left anterior and posterior tibial arteries.



Figure 2. CT angiography of the lower extremities using contrast

The patient received oral anticoagulant treatment and non-steroidal anti-inflammatory drugs (NSAIDs), but there was no improvement in pain symptoms during outpatient treatment for approximately 1 month. Eventually, a decision was made to perform an open lumbar sympathectomy. The open lumbar sympathectomy was performed with the patient in the left lateral decubitus position, and a transverse incision was made at the level of the umbilicus from the anterior to the lateral axillary line. The incision was extended to open the retroperitoneal cavity, and exploration was performed until the lumbar sympathetic ganglia 2-4 were identified, followed by ganglion excision. Postoperatively, there was an improvement in the patient's pain symptoms, which initially were rated at 8/10, decreasing to 3/10 (VAS). The pain symptoms were felt to have improved even without using the previously given medication. No complications were found in the patient, such as ileus, wound infection, vascular injury, or ureteral injury as indicated by the absence of flank pain.



Figure 3. Open lumbar sympathectomy procedure during perioperative

DISCUSSION

This case report aims to discuss an open lumbar sympathectomy performed on a patient with Buerger's disease, which was the first procedure of its kind at Margono Soekarjo General Hospital but is now a method that rarely used. In this case, the patient was treated with anticoagulants and analgesics after undergoing amputation of the necrotic third toe of the right foot. However, there was no significant clinical improvement in the patient's pain symptoms, and the ulcer extending to the second digit of the right foot. Based on these indicators, an open lumbar sympathectomy was performed. There was a clinical improvement in the patient's pain, with the VAS score decreasing from 8/10 with treatment to 3/10 without treatment one month after the surgery. Lumbar sympathectomy aims to reduce sympathetic response in the affected leg. This decrease in sympathetic response can cause vasodilation, which can reduce rest pain in patients and prevent the need for amputation by improving the ulcer

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in the affected area. Nakajima reported a 60% improvement in symptoms in TAO patients based on personal experience. This finding is also consistent with other studies indicating a reduction in pain after lumbar sympathectomy in patients with Buerger's disease, preceded by cessation of smoking to improve its effectiveness. It can be concluded that sympathectomy can be chosen as a therapeutic approach to manage some cases of chronic pain, including in Buerger's disease.⁶⁻⁹

No complications were found in the patient following lumbar sympathectomy. Complications that may occur with lumbar sympathectomy include ureteral injury, paralytic ileus, ejaculation disorders, neuropathic complications, and, rarely, intestinal infarction. Complications following open lumbar sympathectomy are fewer when the procedure is performed through a retroperitoneoscopic approach. This minimally invasive procedure also results in shorter hospital stays, longer pain relief durations, and fewer recurrence symptoms. Therefore, minimally invasive lumbar sympathectomy is more effective in terms of shorter operation times and reduced complication rates. However, in developing countries, open surgery is performed in many healthcare centers because facilities for minimally invasive lumbar sympathectomy procedures are generally not available.^{5,10,11}

CONCLUSION

Minimally invasive lumbar sympathectomy has many advantages over open procedures. In several healthcare centers in Indonesia where facilities for minimally invasive procedures are not available, open lumbar sympathectomy remains an option. The improvement in rest pain symptoms in the Buerger's disease patient found in the reported case highlights that open lumbar sympathectomy can still be a viable alternative to consider.

REFERENCES

- I. Olin JW. Thromboangiitis Obliterans: 110 Years Old and Little Progress Made. *J Am Heart Assoc.* 2018;7: e011214.
- II. Aledari M, Alzamili R, Kadim M, Alwan AM, Afshari JT, Darban RA. Thromboangiitis Obliterans Or Buerger's Disease: Important Characteristics. *Journal of Pharmaceutical Negative Results.* 2023; Volume 14: Special Issue 1.
- III. Fardhani I M. Buerger's Disease (Thromboangiitis Obliterans) among Smokers: A Literature Review. *Int J Rare Dis Disord.* 2023; 6:050. doi.org/10.23937/2643-4571/1710050
- IV. Salimi J, Abbasi M, Chinisaz F, Yazdi SAM. Effect of Surgical Sympathectomy in Patients Diagnosed with Thromboangiitis Obliterans Compared to Pharmacotherapy and Bypass Surgery. *Iran Red Crescent Med J.* 2023; 25(6):e2382
- V. Goyal VD, Gupta B, Kumar S, Pal S. Thoracic Sympathectomy For Peripheral Vascular Disease Can Lead to Severe Bronchospasm and Excessive Bronchial Secretions. *Lung India* 2015;32:73-5.
- VI. Mohammed RHA. Vasculitis In Practice - An Update on Special Situations - Clinical and Therapeutic Considerations - Buerger's Disease: Clinical Aspects and Evidence-Based Treatments. *InTech*;2018. 10.5772/intechopen.69793 (Chapter 5).
- VII. Nakajima N. The change in concept and surgical treatment on Buerger's disease—Personal experience and review. *International Journal of Cardiology.* 1998;66:S273-S280.
- VIII. Cacione DG, Moreno DH, Nakano LC, Baptista-Silva JC. Surgical sympathectomy for Buerger's disease. *JRSM Open* 2017;8:205427041771766.
- IX. Rivera-Chavarría JJ, Brenes-Gutiérrez JD. Thromboangiitis obliterans (Buerger's disease). *Ann Med Surg* 2016;7:79–82.
- X. Haldipur H, Naniwadekar RG, Janugade HB. Minimally Invasive Procedure Vs Standard Open Approach For Lumbar Sympathectomy. *Journal of Pharmaceutical Negative Results.* 2022; Volume 13: Special Issue 5.
- XI. Ahmed AHS, Mahmoud AA, Abdelmalek WF, Rizk, MAEM. Role of laparoscopic lumbar sympathectomy in chronic limb-threatening ischemia due to nonreconstructable peripheral arterial disease. *The Egyptian Journal of Surgery.* 2024. 43(1):p 296-303.