

## Short Case Report

# An unpublished case of focal infection on a vascular endoprosthesis graft

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**Abstract – Observation:** A patient with a prosthetic superior vena cava graft had complications of thrombosis and infection. The blood cultures were positive for *Peptostreptococcus micros* and *Prevotella denticola*. The latter are known to exist in oral cavities. Clinical and radiological examinations of the oral cavity revealed the presence of oral infectious foci. **Commentary:** Superior vena cava prosthetic graft infections of oral origin have not previously been described in the literature. The highlighting of oral infectious foci, their eradication, and the follow-up of patients who had been subject to a vascular graft procedures are essential elements in preventing any associated lesions.

## Observation

A 55-year-old patient was hospitalized at the Department of Pulmonary and Internal Medicine because of suspected graft infection of the superior vena cava (SVC). She presented with relevant medical-surgical history of a bronchopulmonary squamous carcinoma of the upper right lobe treated by a pneumonectomy with lateral clamping of SVC.

Nine days later, when faced with an SVC syndrome (venous return obstruction by compression and/or invasion of the SVC causing: edema, dyspnea, headache, cyanosis, cough, bilateral jugular pulse), a bypass and endoprosthesis (Goretex® diameter 12) of the SVC were performed. Thirty-four months later, after two episodes of unexplained febrile dyspnea, the patient again suffered from a SVC syndrome. The angiography and the 18FDG positron-emission tomography (PET) scan revealed a thrombosis of the distal end of the endoprosthesis, as well as a pathological hypermetabolism in relation to a peribronchial tissue lesion encompassing the SVC prosthesis (Fig. 1). An infectious origin was suspected. *Peptostreptococcus micros* and *Prevotella denticola* were isolated from blood cultures. Intravenous antibiotic therapy combining amoxicillin (12 g per day) with metronidazole (500 mg thrice daily) and anticoagulant therapy was initiated. Considering the bacterial species identified, an

oral origin was highly suspected. The oral-dental checkup revealed intraoral infectious foci, requiring avulsions of the first left maxillary molar, the second left mandibular premolar, and third left mandibular molar, with periapical infection, root perforation, and pericoronary cyst, respectively (Fig. 2).

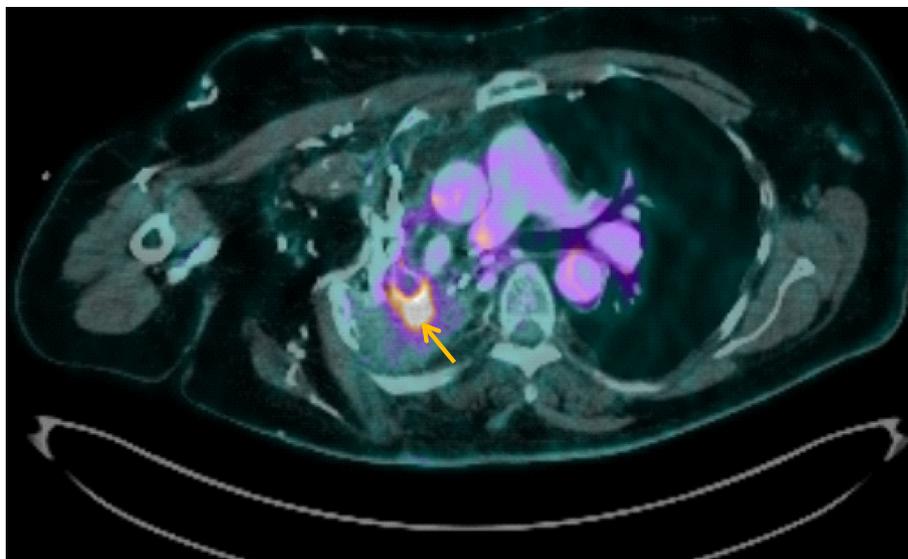
The bacteriological results of the dental specimens found the presence of a polymorphic flora. Despite this result, which could be explained by the fact that samples were collected during previous antibiotic therapy (6 weeks in duration), oral origin was not questioned considering the specificity of *Peptostreptococcus micros* and *Prevotella denticola* for the oral cavity.

The patient had a favorable recovery, and the infection of the prosthesis appeared to have been controlled with antibiotic therapy. An antibiotic suspension (amoxicillin 1 g, clavulanic acid 125 mg thrice daily) was prescribed. There were no clinical signs of infectious disease. CRP levels were decreased to 7–10 mg/L, a clear decrease in hypermetabolism at the site of the prosthesis was detected by the 18 FDG PET scan. Eighteen months later, the patient was still in good general condition, and the antibiotic suspension was discontinued. No new fresh procedures were indicated.

## Comments

Focal infection of oral origin may cause remote lesions, localized or generalized to various organs, tissues, or devices.

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**Fig. 1.** Positron emission tomography (PET scan) revealing the distal tip of the vascular graft thrombus (arrow).



**Fig. 2.** Panoramic X-ray showing infectious foci of 26, 35, and 38.

The pathophysiological mechanisms are the following: spontaneous bacteremia (aggravated by poor oral hygiene or infections), or iatrogenic (via various oral procedures), the spread of bacterial toxins, immune responses that cause acute or chronic inflammatory reactions, and aspiration of oral bacteria [1,2].

Late-onset infections of vascular prosthesis, occurring  $>4$  months after implantation ( $\leq 4$  months: early-onset infection), mainly concern aortic prostheses (abdominal and thoracic 2.3%), and peripheral arteries 4.8%. Infection of an SVC vascular prosthesis with an oral origin is rare (this was confirmed in our case by the presence of *Peptostreptococcus micros* and *Prevotella denticola* in the blood), and has never been reported in the literature.

Bacterial species most often found in vascular prosthesis infections, are *Staphylococcus* (20–53% cases). *Streptococcus*, *Pseudomonas*, and *Enterococcus* are found

in 10–15% cases. Anaerobic bacilli are found in 5% cases [3].

In our case, the health emergency caused by the thrombosis lead to SVC syndrome and required immediate intervention and the vascular prosthesis placement, without an assessment for oral infectious foci.

There are recommendations for the management of oral infectious foci from the French Society of Oral Surgery [4]. However, no recommendations for the management of vascular prosthesis patients have been issued. The infection of vascular prostheses is still rare (0.5–4%), but they are extremely serious with 10–25% mortality within 30 days of diagnosis and up to 50% after 1 year [3]. The management of these cases requires a multidisciplinary approach, through the prevention and elimination of oral infectious before implantation of vascular prostheses, and after the establishment of regular follow-up (apart from emergency circumstances, when the situation permits).

**Conflicts of interests:** The authors declare that they have no conflicts of interest in relation to this article.

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