

Azygos-Atrial Bypass in Catheter Associated Superior Vena Cava Syndrome

Katater İlişkili Superior Vena Cava Sendromunda Azigo-Atrial Bypass

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ABSTRACT

Thrombogenic superior vena cava syndrome is an uncommon, dangerous complication of long-standing central venous catheter use. The increased use of central venous catheters has resulted in more non-malignant cases of superior vena cava syndrome across all age groups. A 23-year-old patient who underwent Hemodialysis (HD) due to Chronic Renal Failure, was admitted to our clinic with swelling in the neck, face, and eyes 2 years after the insertion of a double-lumen indwelling catheter for HD. Beside those complaints, the patient had active bleeding from trachea. After venography, it was observed that there was complete occlusion in the Superior Vena Cava (SVC) and the upper venous system was drained into the Right Atrium via the Azygos vein and the Azygos vein was fully occluded where it was poured into the Atrium. Surgical decision was given together with Interventional Radiology. The operation was performed with sternotomy. After sternotomy, an Azygos-Atrial bypass was performed as an Off-Pump technique. On the first postoperative day, the edema in the neck, face and eyelids decreased. The patient, who had no complaints in the follow-ups, was discharged with medical treatment.

Keywords: Superior Vena Cava Sendromu, Azygos-Atrial bypass, Central Venous Catheter-related thrombosis

Received: 06.21.2022

Accepted: 09.22.2022

ÖZET

Trombojenik superior vena cava sendromu, uzun süreli santral venöz kateter kullanımının nadir görülen, tehlikeli bir komplikasyonudur. Santral venöz kateter kullanımının artması, tüm yaş gruplarında malign olmayan superior vena cava sendromu vakalarının artmasıyla sonuçlanmıştır. Kronik Böbrek Yetmezliği nedeniyle Hemodiyaliz (HD) uygulanan 23 yaşında bir hasta kliniğimize başvurdu. HD için çift lümenli kalıcı kateter takılmasından 2 yıl sonra boyun, yüz ve gözlerde şişlik. Bu şikayetlerin yanında hastanın soluk borusundan aktif kanaması vardı. Venografi sonrası Superior Vena Cava'da tam tıkanıklık olduğu ve üst venöz sistemin Azygos ven yoluyla Sağ Atriya drene olduğu Azygos veninde Atriya döküldüğü yerde tam tıkalı olduğu görüldü. Girişimsel Radyoloji ile birlikte cerrahi karar verildi. Ameliyat sternotomi ile yapıldı. Sternotomiden sonra Off-Pump tekniği olarak Azygos-Atriyal baypas yapıldı. Ameliyat sonrası birinci gün boyun, yüz ve göz kapaklarındaki ödem azaldı. Takiplerinde herhangi bir şikayeti olmayan hasta medikal tedavi ile taburcu edildi.

Anahtar Sözcükler: Superior Vena Cava Sendromu, Azygos-Atriyal bypass, Santral Venöz Kateter ilişkili tromboz

Geliş Tarihi: 21.06.2022

Kabul Tarihi: 22.09.2022

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doi:<http://dx.doi.org/10.12996/gmj.2023.16>

INTRODUCTION

Common causes for that can impinge on the SVC include malignancies, infectious etiologies, thymoma, intravascular devices such as catheters and pacemakers, inflammatory processes, and aortic aneurysms(1). Superior vena cava(SVC) thrombosis can occur by primary thrombus extension from the upper extremities or internal jugular(IJ) veins, but more commonly occurs in the setting of indwelling CVCs(Central Venous Catheter) or pacemaker wires(2). The most frequent signs and symptoms were face or neck swelling(82%), upper extremity swelling(68%), dyspnea(66%), cough(50%) and dilated chest vein collaterals(38%)(2). In this case, we aimed to perform surgery in SVC syndrome.

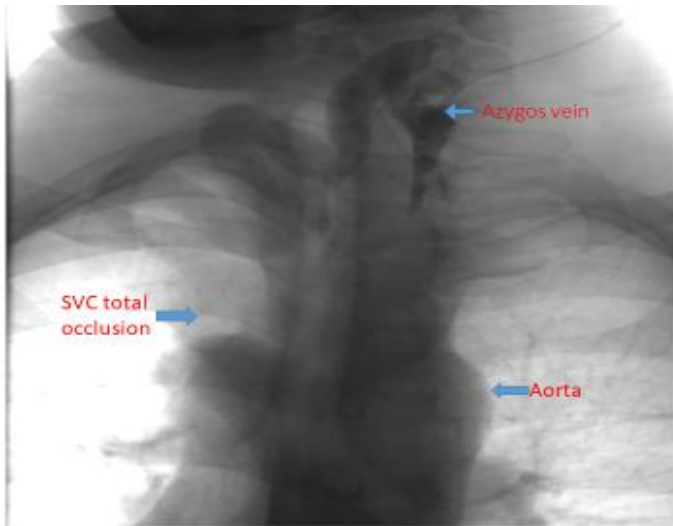


Figure 1. SVC Syndrome Preop Image

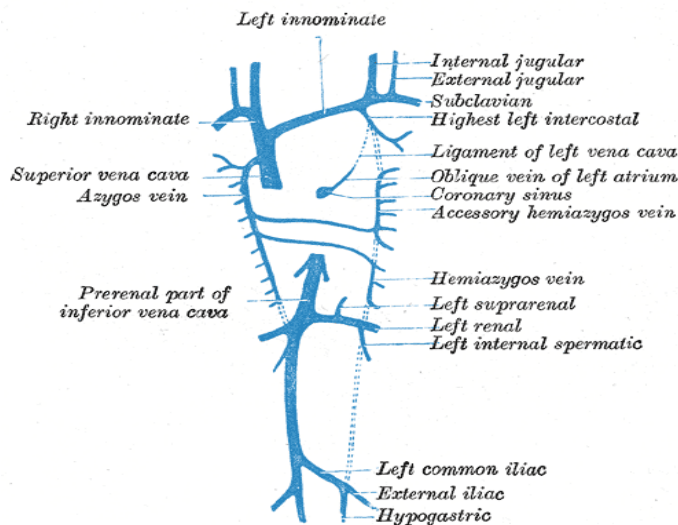


Figure 2: Azygos Vein Anatomy

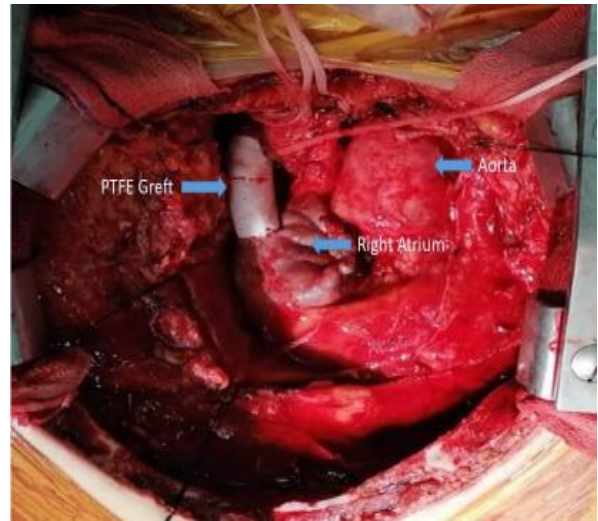


Figure 3. Azygo-Atrial bypass with intraoperative

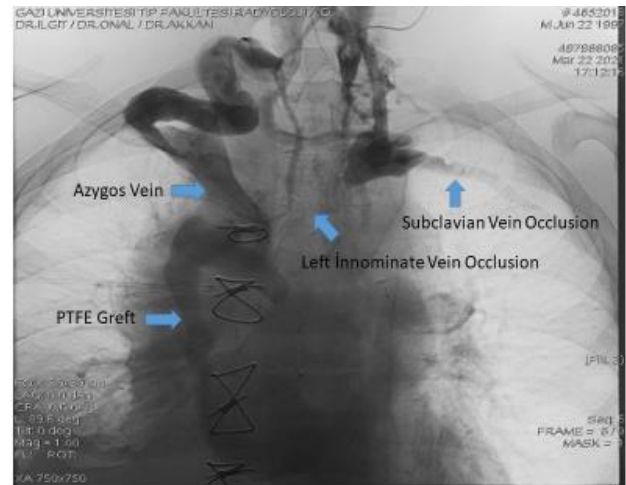


Figure 4. Postoperative blood flow to the atrium PTFE graft

CASE REPORT

A 23-year-old male patient developed CRF(chronic kidney failure) at the age of 5 due to VUR(vesicourethral reflux) and had been undergoing HD for 18 years. He had HD from the right sided permanent HD catheter for 10 years. A-v fistula was created several times in the right arm and finally basilic superficialization was performed. After basilic superficialization, the permanent HD catheter was removed. Two years later, the patient presented to the emergency department with the complaints of recurrent active throat bleeding and swelling in the face and neck. In the upper extremity venography of the patient, the subclavian vein was occluded and the catheter did not progress. In the venography performed by sending a catheter from the Azygos vein, which became prominent in the neck, it was observed that the SVC was totally occluded. Since the patient's subclavian vein, innominate vein occlusion was previously, the azygos vein drains the upper venous system. When the SVC was totally occluded, the patient's symptoms developed because the flow in the azygos vein was occluded. Consultation of the patient to Interventional Radiology revealed that a percutaneous intervention was not able to be performed so surgical repair was decided. After Median Sternotomy, the pericardium was opened and total occlusion of SVC. An off-pump end-to-side anastomosis was performed between the Right Atrium and Azygos Vein with a 16 mm PTFE(Polytetrafluoroethylene) graft. After the operation blood flow was ensured and the swelling in the neck, face and eyes decreased on the 1st postoperative day and completely disappeared at the time of discharge. Control venography was performed on the 6th postoperative day and Azygo-Atrial By-pass graft was patent and blood flow was observed.

Acetylsalicylic acid 100 mg/day treatment was started and the patient was discharged with recommendations. The patient did not have any complaints or findings in his routine controls.

DISCUSSION

For appropriate patient groups who have undergone complete anatomical reconstruction with Azigo-Atrial Bypass and have no postoperative symptoms, the first choice method may be an alternative to interventional therapy. It should not be forgotten that surgical repair will be much more effective and safe in some patient groups, as in our patient. Percutaneous stenting is another form of management for device-related SVC syndrome in order to retain the leads in situ and conserve its application with excellent short-term outcomes. Long-term data and efficacy for this modality, however, remains unknown. The choice between such procedures and a surgical approach remains unclear, but guidelines suggest that in those with larger masses, surgical extraction remains more desirable⁽³⁾. A surgical approach, which required circulatory arrest and cardiopulmonary bypass, was required due to the extent of thrombus formation within the SVC⁽⁴⁾. Ideally, the procedure should be tailored to suit each individual patient. Whichever method is used, the goals are to relieve symptoms, to minimize the risk of complications (infection, central nervous system sequelae and upper respiratory edema and stridor) and to ensure long-term patency of the SVC⁽⁵⁾. The preferred synthetic material is polytetrafluoroethylene (PTFE), which can take the form of a thin membrane or patch for repairing the SVC; alternatively, PTFE can take the form of a tube graft (commonly with external reinforcing rings) for reconstructing or bypassing the vessel⁽⁶⁻¹⁰⁾. Whenever possible, one should perform an anatomic reconstruction, thereby avoiding the need for perioperative and postoperative anticoagulants. In our patient, PTFE graft was used and full flow was achieved and he was discharged with only antiaggregant treatment.

CONCLUSION

The patient underwent complete anatomic reconstruction with Azigo-Atrial Bypass and had no postoperative symptoms, and was discharged with a single antiaggregant. There were no problems with routine checks.

Conflict of interest

No conflict of interest was declared by the authors.

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