AORTOURETERIC FISTULA AFTER AORTOFEMORAL BYPASS COMPLICATED BY PROSTHESIS INFECTION. CASE REPORT

Aurel Mironiuc¹, Marius Fodor¹, Adriana Albu², A. Oprea¹, A. Eni¹, Daniela Branzan¹, Dana Demco¹

ABSTRACT

Aortoureteric fistula is a rare complication of vascular surgery. In the presented case, it developed after an aortofemoral bypass complicated by prosthesis infection. The acute onset through massive hematuria required an emergency diagnosis and surgical treatment. The elimination of aortoureteric fistula and the revascularization through extra-anatomical axillo-femoral bypass were the stages of surgery. The associated diseases and the extension of surgery can explain the death of the patient. Aortoureteric fistula is a rare vascular emergency with great mortality (50-80%) that requires different approaches adapted for each case.

Key Words: infected aortofemoral bypass, aortoureteric fistula, extra-anatomical bypass

INTRODUCTION

One of the severe complications of the aortofemoral bypass with TEROM prosthesis is the infection of the synthetic material.¹ The partial dehiscence of the proximal anastomosis and the creation of a fistulous pathway with one of the adjacent cavitary organs represent a vascular emergency. Aortoureteric fistula is a rare complication (for example, the British literature only describes 8 cases), manifested by repeated and massive hematuria.²⁻⁸ The surgical strategy consists of the elimination of the fistula, the elimination of the infected synthetic material and the re-establishment of circulation through extra-anatomical bypass.³

CASE PRESENTATION

A 66 year-old male patient was admitted to the emergency department with the following symptoms: massive macroscopic hematuria with acute onset, fatigability and dyspnea.

Pathological history showed: 1). Left common aortofemoral bypass with TEROM prosthesis (10 years ago) for critical ischemia of the left lower limb through obstruction of the iliofemoral vascular axis, complicated by hemorrhage and exposition of the prosthesis in the Scarpa triangle (cured by ligation of the femoral artery the amputation of the left thigh); 2). Left nephrectomy (6 years ago) for uretero-hydronephrosis and hematuria; 3). The ligation of the left pelvic ureter through median laparotomy (3 months after the left nephrectomy) for the relapse of hematuria; 4). Ischemic heart disease in the dilation stage (coronarography = multiple troncular disease), mitral insufficiency.
The physical examination showed pallor, hypotension (7/4), tachycardia (120/ min), macroscopic hematuria, fistula aperture in the lower left side of the belly. (Fig. 1).

Vascular examination: carotid artery and common femoral artery thrill, the presence of the pulse in the right axillary and radial arteries; the absence of the pulse in the left common femoral artery; viable stump in the middle third of the left thigh. The prostate gland had a medium size without hemorrhage signs.

In the emergency department, the diagnosis was reno-ureteral and bladder hemorrhage of unknown cause and hypovolemic shock. Three blood units were administered, the antiagregant medication was stopped and vital functions were maintained. Hematuria has stopped in few hours.

After the acute episode resolved, the following complementary explorations were performed:

1) Ultrasonography of the iliac fossa and the left abdominal side ultrasound: the periprosthetic cavity.

2) Doppler ultrasound evidenced the distal aorta with 18 mm in diameter, the thrombosed aortic stump of the prosthesis, the thrombosed left common and external iliac arteries and the permeable left iliac vein. The right iliac vascular axis was permeable but with successive stenoses.

3) Fistulography at the level of the aperture from the left side of the belly (Fig.2): opacification of the left ureteric stump and the bladder.

The urological examination ruled out a reno-ureteric and bladder cause of hematuria.

Taking into consideration history, the physical exam and complementary explorations, the final diagnosis was left aortoureteric fistula after left common aortofemoral bypass complicated by prosthesis infection and after left nephrectomy.

The patient presented 2 episodes of hematuria that determined an emergency operation. The surgical protocol was:

1) Oblique laparotomy in the left side of the belly at the level of the old incision made for the extra peritoneal approaching of the aorta. The distal aorta was uncovered and the prosthesis stump and posterior partially dehiscent anastomosis were exposed. (Fig.3)
2) The fistula was situated between the dehiscent aortoprosthetic anastomosis and ureteric stump in the iliac area. (Fig. 4)

The immediate postoperative outcome was favorable with oscillating systolic blood pressure but with functional bypass and viable left thigh.

3) The prosthesis fragment was removed, the ureteric stump was resected (6 cm) and ligated, the distal aorta was ligated above the origin of the inferior mesenteric artery and the right and left common arteries. (Fig.5) Secretion was taken from the fistula for bacteriological examination. Laparorrhaphy was performed after lavage and drainage.

4) The right lower limb was revascularised by right axillofemoral bypass with 8 mm TEROM prosthesis. (Fig. 6)

The immediate postoperative outcome was favorable with oscillating systolic blood pressure but with functional bypass and viable left thigh stump. At 24 hours postoperation, the patient developed sudden signs of heart failure, with dropped blood pressure, followed by irreversible cardiorespiratory arrest, despite resuscitation measures.

DISCUSSION

The diagnosis of arterioureteric fistula must be taken into consideration in case of a patient with vascular surgery who presents massive hematuria. Aortoureteric fistulas are rare and can appear after an aortofemoral bypass. In the patient with heart disease the hypovolemic shock was associated with massive hematuria. The gravity and the poor prognosis of the aortoureteric fistula are underlined through case presentation.
The complementary explorations indicated for demonstrating the aortoureteric fistula are arteriography in emergency and ascending pyelography.\textsuperscript{3,5} The cardiovascular fragility of the patient only required a Doppler ultrasound examination and a fistulography, which demonstrated the ureteric communication.

The relapse of hematuria in the case of the aortoureteric fistula required the emergency surgery. The stages of surgery were: 1) The elimination of the fistula (the ligation of the distal aorta and the ureter); 2) The revascularization of the lower limbs by extra-anatomical axillofemoral bypass.\textsuperscript{3,7} In the presented case, the ligation of the distal aorta was performed above the origin of the inferior mesenteric artery (without left colon ischemia). A right axillofemoral bypass was carried out for the revascularization of the right lower limb, the left iliac vascular axis being thrombosed and the stump of the left thigh being viable.

The postoperative evolution of patients with aortoureteric fistula depends on associated heart and brain diseases and the adaptation capacity of the circulatory system to extra-anatomical bypasses.\textsuperscript{1,3} The gravity and the poor prognosis of the aortoureteric fistula are underlined through this clinical case.\textsuperscript{9,10,12} Postoperative mortality varies from one study to another, ranging between 50-80\% and remains high in spite of the emergency treatment of the aortoureteric fistula.\textsuperscript{3,11,13} Heart disease, hypovolemic shock and the extension of surgery could explain patient death through acute myocardial infarction.

**CONCLUSIONS**

Aortoureteric fistula is a rare complication of vascular surgery and requires an emergency diagnosis and treatment.

The aim of the surgery, in the case of aortoureteric fistula after aortofemoral bypass complicated by the infection of the prosthesis, is to eliminate the fistula (proximal and distal ligation of the aorta, ligation of the ureter) followed by an extra-anatomical axillofemoral bypass for the revascularization of the lower limbs.

**REFERENCES**