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Case Report

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Surgical Repair Option of Arteriovenous Fistula Secondary to Vascular Interventional Trauma

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ABSTRACT

Femoral artery catheterization is an invasive vascular access route used for Coronary Angiography (CAG), intra-aortic balloon pump implantation, hemodialysis catheters and other similar purposes. Complications such as Arteriovenous Fistula (AVF) may develop during the placement of arterial cannulae or catheters. The first choice in the treatment of AVF repair is invasive methods. In this report, we present the surgical treatment of a patient with AVF complication. In our case, AVF developed immediately after femoral artery catheterization during the CAG procedure.Treatment of AV fistula planned by invasive embolization. Because of the risk of occlusion in femoral vein it is not performed. surgical repair is one of the options in AVF treatment and successfull results can be obtained like in our case.

KEYWORDS: Arteriovenous fistula, Invasive methods, Surgical repair treatment

CASE PRESENTATION

A 17-year-old male patient admitted to the pediatric cardiology clinic with chest pain ongoing for 5 months. The patient underwent catheterization from the femoral region during CAG application and was discharged after 2 days.

The patient was admitted to our clinic 3 months later with complaints of claudication and pain in the right lower extremity. Physical examination revealed thrill and murmur in the right inguinal region and lower extremity Doppler ultrasonography and CT angiography were performed.

AV fistula formation was observed between the deep femoral artery and the femoral vein (Figure 1). When the treatment plan was prepared, it was decided to close the AV fistula by invasive embolization. If embolization was performed directly from the deep femoral artery to the femoral vein, there was a risk of occlusion. Therefore, this treatment option was not preferred.

Open surgery was recommended and the patient was operated under general anesthesia. The incision was made with the right inguinal region and the main, superficial and deep femoral arteries and femoral veins were examined and vascular clamps were placed. The fistula line was fixed from the deep femoral artery to the femoral vein (Figure 2). The AVF was ligated at the root of the deep femoral artery and ligated with the femoral vein, and then incised. Vibration loss was observed following surgery. Following bleeding control, no pathological or ischemic condition was observed in distal peripheral perfusion. Postoperative first day postoperative control CT angiography showed no residual filling defects of the fistula.

Figure 1: AVF view on angiography

Figure 2: Access to the fistula after surgical exploration

DISCUSSION

Increased vascular interventions due to femoral catheterization have led to an increase in complications such as AVF, pseudo aneurysm and vascular occlusion in the early or late period [1]. In addition, arteriovenous fistula is common in sharp, penetrating and armed fever injuries [2]. Doppler ultrasonography and peripheral angiography is sufficient for diagnosis. Some of these complications may resolve spontaneously over time. The treatment of unrecoverable iatrogenic fistulas is usually surgical [3].

Although stent grafts have been used predominantly in the treatment of thoracic and abdominal aneurysms in recent years, it is unfortunately not possible to use these stents in the inguinal and femoral regions [4-6]. The main problem in the treatment of these complications by stenting or embolization is the risk of obstruction of the superficial or deep femoral artery if the lesion is close to the femoral artery bifurcation. Although limited in number, invasive treatment methods have been reported in the closure of iatrogenic fistulas.

Invasive methods are the first choice in the treatment of AVF repair. [7-8] In this case, the choice of embolization in the observation of AVF was found to be risky because of the possibility of closure of the femoral artery and surgical treatment was preferred.

CONCLUSION

Although interventional alternative treatment modalities are on the agenda for the treatment of AVF complications, we think that surgical treatment may be more advantageous and may be the first choice in the treatment of some similar cases like in ours.

DECLARATION

Ethics approval and consent to participate have been taken from Altınbas Unıversıty Medicine School Ethical Committee. The author's confirm that this study is based to the principles outlined in the Declaration of Helsinki.

CONSENT OF PUBLICATION

Informed written consent was given prior to the inclusion of patients parents' in the study. Availability of data and material has been gathered by all authors. Authors' contributions Authors Huseyin Avni Solgun and Farid Gojayev have been contributed to all steps of article writing and design.

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