Short Communication

Limb Salvage Rate after ligation of Infected Femoral Pseudo Aneurysms in Intravenous Drug Abusers, Clinical Experience with 17 Cases

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Abstract

Background: Infected femoral artery pseudoaneurysm (IFAP) is a severe complication in parenteral drug abusers, with difficult and controversial management.

Methods: Seventeen consecutive patients were admitted to our department with IFAP due to intravenous drug abuse. In all 17 patients proximal and distal ligation of common femoral artery was performed with drainage of the abscess and excision of the pseudoaneurysm without reconstruction. The lower limb was monitored for symptoms of acute ischemia including coldness, sensory and motor impairment, as well as changes in color and capillary reffilling.

Results: In all 17 patients, the affected artery was ligated. Ligation of the common femoral or superficial femoral artery alone was performed in 13 and 4 of the cases, respectively. In eight cases the pseudoaneurysm involved the distal, in six the mid, and in three the inferior border of the inguinal ligament. We did not have bifurcation involvement and need for triple ligation (common, superficial and profunda femoral artery). Patients were closely observed during and following surgery, and this led to revascularization in two patients who demonstrated symptoms of acute ischemia. In one of them bypass surgery was performed 24 hours after surgery and led to amputation due to failed revascularization, and the other patient was required revascularization 2 months after ligation of common femoral artery because of severe intermittent claudication of affected limb.

Conclusions: In the setting of complex infected femoral pseudoaneurysms in patients prone to substance abuse, our work demonstrates that ligation and excision of IFAP without reconstruction may be the preferred option.


Keywords: Pseudoaneurysm ● Drug abuse ● Limb Salvage

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Introduction

Intravenous substance abuse is a major social and health problem in many countries. Acute arterial complications attributable to repeated non-sterile punctures aimed at finding easy peripheral venous access are common in drug abusers. Infected femoral pseudoaneurysm (IFAP) resulting from inadvertent (or intentional) intra-arterial puncture is a known complication in drug addicts who habitually self-inject via the groin. The hallmark of the clinical picture is a growing, painful, and often pulsating abscessoid groin swelling. Considering the difficulties in treatment and the unfavorable results, management of the infected pseudoaneurysm of the femoral artery is still controversial. Thus several techniques including simple ligation without revascularization, primary and delayed vascular reconstruction, and revascularization in cases with sign related to ischemia have been recommended. The advantages and disadvantages of each procedure have been debated previously in numerous studies. In the present study, we tried to describe the clinical manifestation and outcome of patients who underwent primary ligation and excision of the IFAP without revascularization in light of our own experience.

Methods

We reviewed the records of patients with femoral pseudoaneurysms complicating drug abuse presenting to the Department of Surgery, the University of Tabriz, Emam Reza Hospital from May 2007 to January 2009. Seventeen consecutive patients were admitted to our department with IFAP due to intravenous drug abuse. Diagnosis was made in regard to the previous history of local injection and the existence of a pulsatile, erythematous, and edematous mass at the injection site. Their medical records were retrospectively analyzed for this study. A pre-designed questionnaire was completed for each patient. Follow-up data were recorded in the questionnaire. Before surgery; all hemodynamically stable patients were subjected to duplex ultrasound study, which confirmed the presence of a pseudoaneurysm. Pseudoaneurysm was exposed to a vertical incision in the inguinal area. In all 17 patients proximal and distal ligation of common femoral artery was performed with drainage of the abscess and excision of the pseudoaneurysm without reconstruction. The cavity was then copiously irrigated with saline. All patients were preoperatively treated with broad spectrum antibiotics as an empirical therapy due to the high risk of infection. The lower limb was monitored for symptoms of acute ischemia including coldness, sensory and motor impairment, as well as changes in color and capillary refilling. Revascularization was the procedure of choice if a progressive ischemia of the limb was present. Patients were also recommended to visit the clinic frequently to diagnose any signs regarding possible ischemia (claudication) and disability to perform a second surgical procedure, if necessary (delayed vascular reconstruction).

Results

All of our patients were male. The median age was 37 years (range, 26-53 years). Fifteen IFAP were on the left side, and 5 were on the right. According to their history, the mean duration of drug addiction was 5.5 years (1 to 7 years) and 17 months for IV drug injection; heroin was the main drug injected in these patients. The duration of symptoms ranged from 2 to 40 days (median, 15 days). Edema and bleeding were the most common clinical signs diagnosed in 7 patients at the time of admission, followed by erythema and pain in six, and infected discharge in 4 patients. One of them presented in poor general condition with signs of sepsis. Surgery was performed as soon as possible after the completion of evaluations. In all 17 patients, the affected artery was ligated. Ligation of the common femoral or superficial femoral artery alone was performed in 13 and 4 of the cases, respectively. In eight cases the pseudoaneurysm involved the distal, in six the mid, and in three the inferior border of the inguinal ligament. We did not have bifurcation involvement and need for triple ligation (common, superficial and profunda femoral artery). Patients were closely observed during and following surgery, and this led to revascularization in two patients who demonstrated symptoms of acute ischemia. In one of them bypass surgery was
performed 24 hours after surgery and led to amputation due to failed revascularization, and the other patient was required revascularization 2 months after ligation of common femoral artery because of intermittent claudication of affected limb. All of other patients were free of significant claudication symptoms during long-term follow-up period.

**Discussion**

During the past two decades the femoral artery has become the most common site for infected arterial aneurysms. Infected femoral pseudoaneurysm (IFAP) formation is a well documented complication of illicit drug use, and as drug use increases worldwide we can expect to see a corresponding increase in the incidence of this problem. These lesions are serious, posing a definite threat to both life and limb, if left untreated. Their natural history is of rapid progression to rupture and hemorrhage. The optimal management of IFAP in drug abusers remains debatable, because these lesions are not very common and because results in most published series are based on small numbers of patients. Current treatment options include excision and debridement of the IFAP with ligation of the common femoral artery without revascularization and excision and debridement of the IFAP with routine or selective revascularization. Ligation of the involved vessels alone, without arterial reconstruction has been reported by several authors as a viable option. Reddy et al, in a study of 54 cases of femoral artery pseudoaneurysm in drug addicts, classified the patients into 2 groups: patients with false aneurysms isolated to the common, superficial, or deep femoral artery were classified as group A, where as the remaining patients with lesions of the common femoral bifurcation were classified as group B. Group A patients were treated by aneurysm ligation and excision, as where group B patients underwent excision and triple arterial ligation or vascular reconstruction. In group A, no amputation was performed. However, in group B, with bifurcation involvement, 33% of patients who underwent ligation alone without revascularization finally required limb amputation. In the present study, all of our patients were classified as group A, so they underwent ligation and excision without revascularization. We have only one amputation. In our study we did not have bifurcation involvement and need for triple ligation. Even when arterial ligation does not lead to major amputation, a considerable number of patients will experience intermittent claudication; these patients are usually young, without advanced atherosclerotic lesions, and thus they lack significant collateral circulation. Stable claudication may be relatively innocent in the general population, but this may not be rule in drug abusers; these patients usually have poor personal hygiene and are at risk for skin and soft tissue infection, as well as wounds due to trauma that may not heal as a result of diminished arterial blood flow. Ligation may represent the simplest and most straight forward surgical treatment for IFAP, although some patients will have claudication. In the present study 7 patients had claudication after ligation of affected artery, but except one, they were not led to need for revascularization. When arterial revascularization is decided in these cases, the choice of graft is another challenging issue regarding this patient group. Although the GSV is generally the favored conduit for lower extremity arterial reconstruction, its availability is restricted in such patients, because superficial veins are commonly damaged by the prolonged direct injections. In the setting of complex infected femoral pseudoaneurysms in patients prone to substance abuse, our work demonstrates that ligation and excision of IFAP without reconstruction may be the preferred option.

**References**


