Management of Femoral Pseudoaneurysms in Intravenous Drugs Users - A bubble trouble

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ABSTRACT

Introduction: Femoral pseudoaneurysm in the intravenous drug users is a challenge to the treating surgeon. Surgical options range from ligation with excision to reconstruction using various kinds of grafts. However there is no generalized consensus on the optimal surgical treatment and the controversy persists.

Methods: Medical charts of 10 consecutive patients presenting with infected femoral pseudoaneurysm of the lower limbs in emergency department,who underwent surgery in Bir Hospital from Jan 2008 to Dec 2010 were retrospectively analyzed. The patients were divided into two groups randomly based on the surgical management they had received. First was the reconstructive group and the second group underwent simple ligation of the femoral artery and excision of the pseudoaneurysm

Results: All cases underwent emergency surgery. Extra anatomical Iliofemoral bypass was done in total of 7 cases, of which polytetrafluroethylenePTFE graft in 5 and Vein graft in 2 cases. Ligation of the femoral artery and excision of the pseudoaneurysm was done in 3 cases. In the reconstructive group 2 cases had to be operated twice for bleeding, 1 with PTFE graft and other with vein graft whereas 2 cases had late graft infection and was attributed to reinjection of drugs through the graft. All 4 cases underwent reoperation with ligation. In the second group with simple ligation and excision except for mild claudication, there were no other major complications. There was no mortality in both the groups.

Conclusion: Intravenous drug users have high tendency to reuse femoral site for reinjection and thus arterial reconstruction maybe in jeopardy of recurrent infection and reoperation. Simple ligation with debridement and excision may prove to be a better option in cases of emergency surgery followed by delayed reconstruction if needed.

Key words: Drug abusers, Femoral pseudoaneurysm, Revascularization, Simple ligation,

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Introduction

Drug abuse has become a global problem and lately there has been a rise in vascular complications due to intravenous drug abuse. Latest Government report from Nepal have stated that total drug abusers have reached 46309 and 61.4%(28,439) are intravenous drug abusers.[1] Complications attributable to repeated non-sterile punctures aimed at finding easy peripheral venous access are common in drug abusers.[2] Approximately 75% of all admissions for accidental intra-arterial drug injections involve the lower limb; hence, the most common site of infected pseudoaneurysm is the inguinal region.[3,4]

Pseudoaneurysms, especially in the drug abusing population, represent a major challenge to the treating surgeon. The complications of pseudoaneurysms include painful swelling, skin necrosis, septicemia, injuries to adjacent structures, thrombosis, digital embolization, life-threatening hemorrhage, limb loss, and even death.[5-7]

Treatment of infected pseudoaneurysm varies from excision and ligation of the involved vessel to Ligation and routine revascularization.[3,8] Some authors have advocated a simple arterial ligation due to the high incidence of graft infection following immediate reconstruction. Some authors have adopted a more selective attitude towards revascularization, either simultaneously with ligation[4,9] or as a delayed procedure.[10]

This article seeks to highlight the range of presentations and the outcomes of the surgeries performed for patients with pseudoaneurysms from intravenous drug abuse over a 2-year period in a single institution and also highlight the existing controversies regarding the optimal surgical management and formulate a management protocol based on literature review and institutional experience. This study is conducted to highlight the existing controversies regarding the optimal surgical management and formulate a management protocol based on literature review and experience.

Method

Medical charts of 10 consecutive patients presenting with femoral pseudoaneurysm due to intravenous drug abuse who underwent emergency surgery in Bir Hospital from January 2008 to December 2010 were retrospectively analyzed. Information recorded for each patient included age, sex, presenting signs and symptoms, hematologic investigations, microbiology results, diagnostic modality, operative details, outcome of surgery, and postoperative complications. All patients had received broad spectrum intravenous antibiotics ceftriaxone, metronidazole and gentamycin, preoperatively and were continued postoperatively for a week. Operative treatment was performed in the emergency theater by the vascular surgeons. The patients were divided into two groups randomly based on the surgical management they had received. First was the reconstructive group and the second group underwent simple ligation and debridement. Extra anatomical Iliofemoral bypass was done in first 7 cases, with PTFE graft in 5 and Vein graft in 2 cases. Ligation of the femoral artery and excision was done in 3 cases. Daily dressing of open wounds and checking for ischemic signs on the limbs were carried out. At the time of discharge, there was no patient with gangrene of the limbs. All patients were advised Psychiatrist consultation at the time of discharge for their addiction problem. Mean period of follow up was 8.33 months. All the clinical, investigative data, operative notes and post operative follow up charts were compiled in a performa and analyzed using Words Excel

Result

A total of 10 patients presenting with femoral pseudoaneurysm in emergency department were treated. There were 9 male and 1 female, with ages ranging from 18 – 32 years (mean 26.1 years). Pseudoaneurysms occurred in the left groin in 7 patients, in the right groin in 2 patients. All of them were active drug abusers. Mean duration of abuse 2.95 years. Substances commonly abused were Phenargan, Diazepam, Morphine, and Tidigesic. All the patients presented with pain and swelling followed by bleeding in 6 patients and fever in 5 patients.

At least 3 of the patients were misdiagnosed as case of groin abscess and underwent incision and drainage and then the cases were referred to our hospital. All the 10 cases had Pulsatile mass on examination. Four patients had limb edema and though distal pulse was not felt manually they were present in all the cases on Doppler examination. Seven patients had leucocytosis and 40 % were anemic. 3 cases were anti HCV positive. None tested positive for HIV or HbsAg. Diagnosis was reached both by clinical and USG Doppler examination.

All patients received systemic intravenous antibiotics-inj Ceftriaxone 1gm iv bd, and Metonidazole 500 mg iv tds, for 1 week. Inj Gentamycin given according to body weight for 5 days. Oral antibiotics were continued for a week postoperatively. Three cases underwent ligation and excision of the aneurysm after test ligation whereas 7 cases underwent reconstructive surgery i.e. 5 had PTFE graft reconstruction while 2 cases had reverse Saphenous vein graft. 2 cases had bleeding, both in reconstructive group -1 with vein graft, 1 with PTFE graft. Surgical site infection was seen in 5 cases, 3 in PTFE group, 1 each in vein graft group and ligation group, which was managed by dressing and secondary closure. 2 cases in ligation group complained mild claudication on 6 month and 1 year follow up, however nothing grave as to hampering the life style. 2 cases had late graft infection attributed to reinjection of drugs through the graft.

Four cases after reconstruction had to be re operated, 2 due to bleeding and 2 due to infected graft. All underwent triple ligation, making our grand total for ligation and excision group to 7. Post operatively all patients were assessed for critical limb ischemia clinically and with Doppler examination. All patients were discharged with Warfarin 5mg OD and dose adjustment was done accordingly in the out patient department based on the pt/inr report. the mean follow up 8.33 (2 – 16 months). There were no hospital mortality and all patients were discharged with a viable limb.

Discussion

The main purpose of this study was to compare the two different surgical approach for a case of infected pseudoaneurysm presenting in the emergency departmend. The cases were selected randomly.Initially we started with vein graft. One case had to be reoperated for bleeding, the other had surgical site infection. Then we shifted to using PTFE graft for our repair but 3 cases had to be reoperated and ligated. The whole graft was filled with pus due to infection because of reinjection by the patients. Recently we have started doing ligation with satisfactory results.

A pseudoaneurysm forms due to accidental arterial injection by contaminated needles. Infection continues and results in destruction of arterial wall and surrounding structures. The most common site of a pseudoaneurysm is in the groin followed by the axilla or medial aspect of the arm. Patients usually present with a pulsatile mass associated with cellulitis or sepsis and give a clinical impression of having an abscess. An incision and drainage of such an 'abscess' however would result in torrential hemorrhage.

A painful pulsatile groin swelling is the hallmark of the diagnosis, and it is therefore vital to rule out femoral pseudoaneurysms in drug addicts. In our study all the 10 cases had pulsatile swelling on examination. Seven cases had received medication, including antibiotics, before presenting, which explains the relative paucity of signs and symptoms of systemic infection. Fever was evident in only 40% of our patients and 3 cases were misdiagnosed as a groin abscess.

Reddy et al.[4] in 1986 advocated the use of digital subtraction angiography (DSA) preoperatively to confirm the diagnosis and delineate the anatomic location of the pseudoaneurysm. In recent years the noninvasive color flow duplex scan has become the investigation of choice but if time permits and a detailed anatomy is desired then angiography is considered.

Surgery is the definitive management and the options range from simple ligation and excision of the pseudoaneurysm which may or may not be followed by delayed revascularization to immediate reconstruction procedures using various grafts. The initial control of hemorrhage requires the ligation of the proximal vessel which is usually the common femoral or external iliac artery for groin lesions. Ligation of vessels distal to the aneurysm is usually required as back bleeding can be torrential. Ligation and excision of the pseudoaneurysm together with thorough debridement and drainage of the associated abscess had been the preferred treatment for infected pseudoaneurysm. [8]

There is still controversy as to the selection, timing, and method of revascularization.[3– 4] The burning issue of debate is when a simple procedure like ligation why go in for a complicated surgery that requires more expertise and more time? So is bypass procedure really needed and if so what is the correct timing and the method of revascularization?

Proponents of ligation feel that this is the best management for infected femoral pseudoaneurysm in iv drug abusers mainly because its an emergency. It's

safe, easy, cost effective, less challenging and a vascular expertise is usually not required.. The main drawback is that a very vigilant monitoring is needed to rule out ischemia and patient might need immediate bypass surgery. Series have reported almost 30% claudication rate and amputation 3-6%.[11-12]

Those who favor revascularization method is mainly because they feel that the main end point of the treatment is a viable limb. Infected field is bypassed and it minimizes chance of limb loss. Besides, with the various advances in antibiotics and vascular surgery why compromise a chance of regaining a normal life? But the veins are not always available, and one needs a trained surgeon and yet there still lies a high chance for graft infection and bleeding. [13-14] No formalized policy has been reached as to the optimal management of infected pseudoaneurysm. [15]

Based on literatures and our experience we have come up with a management protocol to help us treat our patients better.

The main deciding factor is the will of the patient and whether they want to stop abusing drugsBut studies have shown that despite rehabilitation they have high incidence of reuse and with graft placed subcutaneously the access just becomes easier[11]. Though the number in our series is very small, we had favorable outcome in ligation group as the reconstruction group had higher complications and reoperation rate.

Conclusion

Simple ligation and excision is the better option especially in an emergency management of infected femoral pseudoaneurysm which may be followed by delayed revascularization if and when needed.

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