True and Anastomotic Femoral Artery Aneurysms: is the Risk of Rupture and Thrombosis Related to the Size of the Aneurysms?

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Objective: the management of asymptomatic femoral aneurysms remains controversial. The purpose of this study was to investigate the relation between the diameter of true and anastomotic aneurysms and the risk of rupture.

Design: retrospective study.

Material and methods: we reviewed the case records of 17 patients who underwent 17 arterial reconstructive procedures for true femoral aneurysms. In addition, the case records of 76 patients who underwent 90 arterial reconstructive procedures for femoral anastomotic aneurysms were identified and reviewed.

Results: the rupture rate for aneurysms less than 5 cm in diameter was 1.6% (one out of 64) compared with 16% (seven out of 43) for those larger than 5 cm. The thrombosis rate for aneurysms less than 5 cm in diameter was 17% compared with 5% for those larger than 5 cm.

Conclusions: this study seems to show that the risk of rupture of femoral artery aneurysms is related to the diameter of the aneurysms. However, the rise in the risk of rupture with increasing size seems less dramatic than for abdominal aortic aneurysm (AAA).

Key Words: Aneurysms; Femoral; Diameter; Size; Rupture; Thrombosis.

Introduction

The management of asymptomatic femoral aneurysms remains controversial. The diameter of an abdominal aortic aneurysm (AAA) is commonly believed to be the most significant predictor of rupture, the risk of rupture increasing with the diameter of the aneurysm. However, in a review of the literature we have found no studies correlating the diameter of femoral aneurysms with the risk of rupture. The purpose of this study was therefore to investigate this relationship.

Material and Methods

The case records of 17 patients who underwent 17 arterial reconstructive procedures for true femoral aneurysms from January 1989 to June 1994 were identified in our prospective vascular database and reviewed. True femoral aneurysms were defined as atherosclerotic aneurysms involving the common femoral or the deep femoral artery. In addition, the case records of 76 patients who underwent 90 arterial reconstructive procedures for femoral anastomotic aneurysms from January 1989 to June 1994 were identified and reviewed. Information recorded for each patient included age, gender, atherosclerotic risk factors (smoking, hypertension, diabetes mellitus), associated aneurysms, previous vascular surgery, and interval between primary operation and false aneurysm formation, presenting symptoms (rupture, embolism, thrombosis, expansion), duration of symptoms, diameter, modality of diagnosis, operative details, postoperative complications, and outcome. Operations for recurrence were not included in the total number of operations, but are included under the results of operation. Some parts of the results have been published previously.

Results

Anastomotic aneurysms

A total of 76 patients (37 women, 39 men) underwent a total of 90 operations (14 patients had bilateral false
femoral aneurysms). The median age was 69 years (range: 39–83). Seventy (91%) patients were smokers, 11 were hypertensive and two were diabetic. The most frequent previous vascular surgery was an aorto-femoral bypass in 61 cases, 14 had a femorodistal bypass, 13 had a femoral thromboendarterectomy and two had an iliofemoral bypass. The interval between the primary operation and the operation for the false femoral aneurysm was 9.2 years (range: one month to 26 years). The most frequent presenting symptoms were an expanding swelling in the groin reported in 68 cases. Thirteen patients presented with thrombosis, four with rupture, five were asymptomatic, and none had distal embolisation. The average duration of groin swelling was 8 months. The average size of the aneurysms (at operation) was 4.2 cm. The diagnosis was made clinically in 62 cases, by ultrasonography in 16 cases, by angiography in 19 cases, by CT scanning in three cases and at operation in nine cases. The most common surgical procedure was a prosthetic bypass from the proximal prosthesis to the profunda femoral artery in 36 cases, 27 had a prosthetic bypass from the proximal prosthesis to the common femoral artery, 10 had a prosthetic bypass from the proximal prosthesis to the profunda femoral artery and the superficial femoral artery, four had a prosthetic bypass from the proximal prosthesis to the superficial femoral artery, three had a simple arteriorrhaphy, 3 had a femoro-femoral crossover to the profunda artery and 7 had various other procedures. Eight patients had a wound haematoma that needed surgical evacuation, three had a superficial wound infection, four had a lymphocele treated conservatively, one had his femoral nerve accidentally transected. The postoperative result was good in 60 patients (patients being without symptoms), eight had claudication, three rest pain, two needed femoral amputation, two had recurrence (after 4 months and 4 years), and one aneurysm ruptured. The average follow-up time was 11 months (range 1 week to 5 years).

**True aneurysms**

Seventeen patients, one woman and 16 men, underwent a total of 17 operations. The median age was 71 years (range: 43–85 years). Fifteen (88%) patients were smokers and three were hypertensive. None had diabetes. Associated aneurysms were identified in 11 (65%) patients: 5 (29%) had an abdominal aortic aneurysm, three (18%) had contralateral femoral aneurysms, and three (18%) had a popliteal aneurysm. The most frequent presenting symptom was an expanding swelling in the groin reported in 11 (65%) cases. The average duration of groin swelling was 5 months. Thrombosis was reported in three (18%), rupture in four (24%), and two were asymptomatic. None had distal embolisation. Two of the three deep femoral aneurysms presented with rupture, the third with expansion. The largest diameter of the aneurysm (at operation) was median 5.4 cm. The diagnosis was clinical in 14 cases, by ultrasonography in eight cases, by angiography in four cases, by CT scanning in four cases and at operation in four cases. In 14 cases the aneurysm involved the common femoral artery, in three the deep femoral artery (3/17 = 18%). The most frequent surgical procedure was an interposition prosthetic graft in 10 (59%) cases. The complications were one case of wound haematoma that needed surgical evacuation, two cases of wound infection that were treated conservatively, and one case of lymphocele also treated conservatively. The postoperative results were good in 15 cases (patients being asymptomatic), one had rest pain and one needed amputation. No patients had recurrence. The average follow-up time was 9 months (range: 1 week to 3 years).

**Relation between diameter and risk of thrombosis or rupture**

The relation between diameter of the aneurysms and risk of thrombosis is given in Fig. 1. The thrombosis rate for aneurysms less than 5 cm in diameter was 17% compared with 5% for those larger than 5 cm. The relation between diameter of the aneurysms and
Although the common femoral artery diameter is much smaller than the abdominal aorta diameter. It is debatable whether it is acceptable to combine a series of true and false aneurysms. Adherences between the prosthesis and the inguinal ligament may cause the wall of the artery to tear during hip movement. Also, the presence of bacteria, documented by scanning electron microscopy in 20 out of a series of 26 cases, may be a factor in host arterial-wall degeneration as a cause of anastomotic false aneurysms. However, Figs 1 and 2 seem to suggest that the relation between the size of aneurysms and the risk of rupture and thrombosis is similar for true as well as for false aneurysms.

Discussion

Foster et al. found that the rupture rate for AAA less than 6 cm in diameter was 16% compared with 51% for those larger than 6 cm. Similarly, Darling et al. found that the rupture rate for AAA less than 4 cm in diameter was 10% compared with 25% for those between 4 and 7 cm and 46% for those larger than 7 cm. Sterpetti et al. confirmed these findings. They found that the rupture rate for AAA less than 5 cm in diameter was 5% compared with 39% for those between 5 and 7 cm and 65% for those larger than 7 cm. Our study seems to show that the risk of rupture of femoral artery aneurysms is related to the diameter of the aneurysms. However, the rise in the risk of rupture with increasing size seems less dramatic than for AAA. Fig. 2 seems to suggest that a diameter of 5.0 cm could be considered as the cut off point for the risk of rupture in femoral artery aneurysms. This cut-off point is almost similar in infrarenal abdominal aneurysms, although the common femoral artery diameter is much smaller than the abdominal aorta diameter.

References


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