Pseudoaneurysm of the Superficial Temporal Artery Following Craniotomy
—Case Report—

Masanori TSUTSUMI, Teruaki KAWANO, Tsutomu KAWAGUCHI, Yoshirou KANEKO, and Hidetoshi OOIGAWA

Department of Neurosurgery, Fukuoka Tokushukai Hospital, Kasuga, Fukuoka

Abstract

A 48-year-old male without marked blood coagulation disorder developed a pseudoaneurysm of the superficial temporal artery (STA) following craniotomy. Cerebral angiography revealed a pseudoaneurysm on the parietal branch of the STA. Total extirpation was performed, and the postoperative course was uneventful. Most pseudoaneurysms of the STA develop after trauma. Lesions rarely develop after craniotomy. However, pseudoaneurysm of the STA should be considered as a possible surgical complication.

Key words: pseudoaneurysm, superficial temporal artery, following craniotomy

Introduction

Aneurysms of the superficial temporal artery (STA) are relatively common. Spontaneous lesions have been associated with arteriosclerosis,11 congenital defect of the internal elastic membrane,12 and arteritis.18 However, most lesions are caused by trauma and are usually pseudoaneurysms.3-7,9-11,13-15 Pseudoaneurysms of the STA following craniotomy are rare.16,17 Here, we report a patient who developed a pseudoaneurysm of the STA after craniotomy for aneurysmal clipping.

Case Report

A 48-year-old male was emergently brought to our hospital because of sudden headache. Neurological examination found he was somnolent, but no other abnormal neurological findings. Blood examination revealed hepatitis C antibody, but no other abnormal findings including the coagulation system. Computed tomography revealed subarachnoid hemorrhage. Cerebral angiography showed a saccular aneurysm on the anterior communicating artery.

A right pterional craniotomy was performed on the same day. Intraoperatively, there was no bleedin tendency. Coagulation and hemostasis for hemorrhage of the skin was successfully achieved. The skin was sutured with 3-0 nylon. The postoperative course was uneventful. Seven days after surgery, removal of the thread was completed. Postoperatively, symptomatic vasospasm did not

Fig. 1 Photograph showing a mass, measuring approximately 30 mm × 30 mm, immediately below the wound in the right frontal region (arrow).
appear. The course was favorable. However, a mass measuring approximately 30 mm × 30 mm was detected immediately below the wound in the right frontal region 40 days after surgery (Fig. 1). The mass was elastic hard, partially dark red, pulsating, and indolent. Selective right external carotid angiography revealed an aneurysm on the parietal branch of the right STA (Fig. 2).

The aneurysm was removed under a diagnosis of pseudoaneurysm of the STA. Although the aneurysm showed marked adhesion to the peripheral subcutaneous tissues, the feeding artery was ligated proximal to the lesion, and the aneurysm was completely extirpated.

The postoperative course was good. No recurrence was detected during the 1-year postoperative follow up. The histological diagnosis was pseudoaneurysm without intima, internal elastic membrane, and media, which consisted of organized connective tissue.

**Discussion**

Traumatic cerebral aneurysms can be classified into three types, true, false, and mixed.\(^2\) False aneurysms are caused by communication between the vascular lumen and the hematoma cavity during the process of absorption of hematoma at the vascular injury site.\(^2,10\) The intima is false, and consists of the organized connective tissues of hematoma. There is no vascular wall structure.\(^3,10\)

The development of a pseudoaneurysm of the STA following craniotomy is very rare. Only two patients have been reported.\(^16,17\) One patient had coagulation disorder related to hemophilia.\(^10\) Surgery does cause trauma, but pseudoaneurysms may not easily develop following craniotomy based on the pathogenesis, since hemostasis for intraoperative hemorrhage from the STA can be immediately and sufficiently achieved by bipolar coagulation. In our patient, there was no bleeding tendency, and coagulation hemorrhage could stop the intraoperative hemorrhage of the STA. The etiology of the pseudoaneurysm in our patient was probably as follows: The STA was damaged by a suture needle when the skin was closed, and removal of the thread caused hemorrhage at the injury site, inducing hematoma and formation of the pseudoaneurysm.

Rupture during the course of spontaneous aneurysm has not been reported. However, pseudoaneurysm is an increasing mass, so trauma may cause severe hemorrhage. Therefore, extirpation is generally indicated.\(^3-5,10,13-16\) We performed extirpation at the request of the patient. However, embolization may also be an effective treatment.\(^10,15,16\) Surgical treatment including cosmetic stigmatization is needed in patients with dermal discoloration.\(^7,8,11,13\)

**References**


*Neurol Med Chir (Tokyo)* 40, May, 2000
STA Pseudoaneurysm Following Craniotomy


Address reprint requests to: M. Tsutsumi, M.D., Department of Neurosurgery, Fukuoka Tokushukai Hospital, 4–5 Sugukita, Kasuga, Fukuoka 816–0864, Japan.