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C F Lanzieri, M Sacher, P M Som and M Haimov

*AJNR Am J Neuroradiol* 1985, 6 (1) 111-112

<http://www.ajnr.org/content/6/1/111.citation>

This information is current as  
of March 26, 2025.

## Arteriovenous Fistula after Hair Transplantation

Charles F. Lanzieri,<sup>1</sup> Michael Sacher,<sup>1</sup> Peter M. Som,<sup>1,2</sup> and Moshe Haimov<sup>3</sup>

The most common cosmetic operation for men is hair transplantation [1]. The punch-graft technique has emerged as the simplest and most effective method. It is carried out under local anesthesia and has relatively few complications [2]. We report a rare complication of punch-graft transplantation, an arteriovenous malformation; it has not been previously documented angiographically in the literature.

### Case Report

A 64-year-old man who had undergone a series of punch-graft transplantation procedures first noticed enlargement and pulsation of his right superficial temporal artery 3 weeks after the last procedure.

Over a 2–3 month period the artery continued to enlarge, and the pulsations interfered with his sleep. Cerebral angiography showed an arteriovenous fistula at the recipient transplant site in the parietal region (fig. 1). After surgical resection the superficial temporal artery returned to normal size and the patient was asymptomatic.

### Discussion

Autologous, full-thickness punch grafts have become very popular since their introduction in 1954 because of their simplicity, effectiveness, and relatively few complications [1–3]. This method of hair transplantation is usually performed as an office procedure and involves harvesting small cylinders

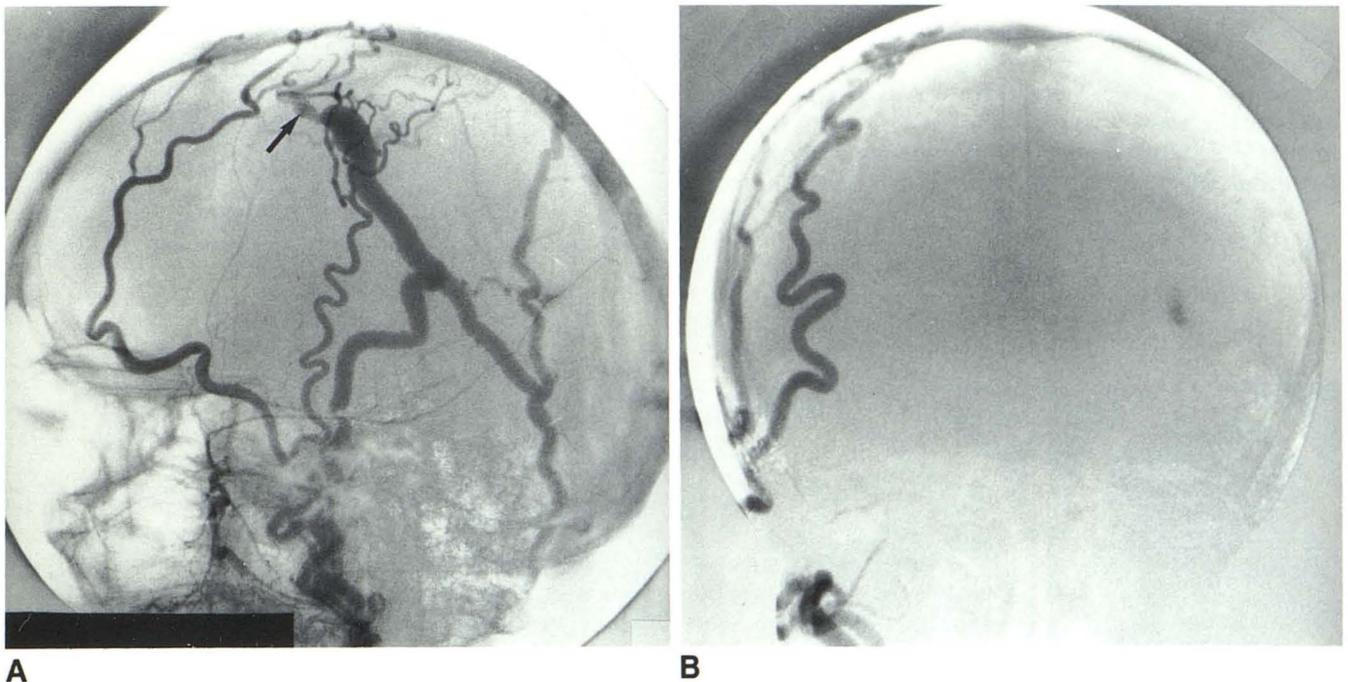


Fig. 1.—Lateral (A) and posteroanterior (B) views of right external carotid artery. Wide fistulous channel between superficial temporal artery and vein (arrow).

Received April 9, 1984; accepted July 3, 1984.

<sup>1</sup> Department of Radiology, Mount Sinai Medical Center, and School of Medicine of the City University of New York, New York, NY 10029. Address reprint requests to C. F. Lanzieri, Mount Sinai Hospital, 1 Gustave L. Levy Pl., New York, NY 10029.

<sup>2</sup> Department of Otolaryngology, Mount Sinai Medical Center and School of Medicine of the City University of New York, New York, NY 10029.

<sup>3</sup> Department of Vascular Surgery, Mount Sinai Medical Center and School of Medicine of the City University of New York, New York, NY 10029.

of autologous, full-thickness skin from hairy donor sites and transplanting them to bald recipient areas by means of a skin biopsy punch [1-3]. Mild discomfort and bleeding are usually encountered at both the donor and recipient sites [4]. Local infection occurs occasionally; however, antibiotic therapy usually is not required [2]. Scarring and keloid formation are rare and may result in a cosmetically poor "cobblestone" appearance to the scalp [3, 5].

Small arteriovenous fistulae are uncommon complications of hair-transplant surgery. They are usually less than 1 cm in diameter, dome shaped, pulsating, bluish masses that disappear within 2-3 weeks [6]. Iatrogenic pseudoaneurysms were a rare complication in one large series and occasionally required resection [7].

Large arteriovenous fistulae in the scalp after hair transplantation have been reported twice [1, 4], but we found no angiographic demonstration of such a fistula in the literature. Our case illustrates a relatively typical posttraumatic scalp arteriovenous fistula with a somewhat irregular channel connecting the arterial branch to the vein. It is tempting to

postulate that a pseudoaneurysm may have been created at the time of surgery that subsequently ruptured or dissected into the venous side.

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