

Scalp Arteriovenous Fistula Following Hair Transplantation: A Rare Case Report

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Abstract

A traumatic scalp Arteriovenous Fistula (AVF) caused by hair transplantation are extremely uncommon. It is a communication between branches of the arteries and draining veins in the scalp's subcutaneous tissue, Because of the very low incidence of this complication, available literature is limited to single case reports. The clinical manifestations of scalp AVF may range from a pulsatile mass to epilepsy. We present a case of scalp temporal AVF following hair transplantation.

Case Presentation

A 34 years old male referred to general surgery clinic with right temporal region swelling. The swelling started to noticed by patient one-year post hair transplant which done abroad since 2019. It is gradually increased in size, not associated by headache nor blurring of vision. Clinically patient was vitally stable, with right temporal swelling associated with right superficial temporal vessels, palpable thrill and audible bruit. The skin overlies intact and healthy.

Hematology and biochemical investigations were within normal limits.

Color Carotid Doppler ultrasound done and revealed right Superficial temporal artery with normal wall, normal wall thickening and no stenotic segments. At right frontal scalp, superficial temporal artery is seen dilated, tortuous with aneurysmal dilatation, AVF could not be rule out.

Cerebral CT angiography findings are suggestive of scalp arteriovenous fistula after hair transplantation in the right superficial temporal artery.

The patient was followed up by vascular surgery and treated surgically.

Case Discussion

Hair loss is common in our population which effect a 60% of men, 10% of women and more than 1.2 billion people suffer from baldness [1]. The hair transplant is the most common cosmetic procedure done. Every year, 225,000 hair transplant surgeries are conducted across the world [1,2,3].

Classically, hair transplantation techniques include the excision of tiny patches of superficial skin containing hair follicles, which are subsequently transplanted into a recipient location by an incision or punch insertion [1,3].

Hair transplant surgery per se has low risk, is relatively safe, and has minimum incidence of complications [2,3,4]. The complications may be a single complaint in the form of pain, itching, dissatisfaction related to the procedure's outcome, or surgical complication in the form of infection, wound dehiscence or skin necrosis [1,5].

A total of 533 hair transplant surgeries were reviewed in a single institution (4) [3]. There was a 4.7% chance of all complications, but no scalp AVFs were recorded [3].

Scalp Arteriovenous Fistulae (AVF) is described as a direct connection between arterial scalp arteries (distal branches of STA) and draining veins that is frequently considerably dilated and lacks capillary bed juxtaposition [1,3,4]. Most traumatic scalp AVF after hair transplantation reported cases show the malformation originating from the superficial temporal artery, less commonly from the occipital artery or both.

Symptoms include headache (25%), tinnitus (20%), pulsatile mass (94%), bruit and seldom epilepsy [3,4]. AVF of the scalp are quite uncommon complication of hair transplantation that is caused by direct vascular damage caused by punches, needles, and/or micro-blades [6].

In fact, scalp AVF after hair transplantation has only been recorded in situations where the traditional punch-graft method was used [2,3].

The cause of AVF after punch-graft hair transplantation is most likely due to direct traumatic damage to the superficial vasculature during the surgery. Mini-micrografting and other contemporary methods of hair transplantation, such as follicular unit transplantation, result in significantly less scalp damage and, as a result, a much lower risk of scalp AVF [1].

The other causes of AVF are including car accidents, diving accidents, penetrating injuries from sharp object assaults, and iatrogenic etiologies such temporomandibular joint arthroscopy. The research on scalp AVF after hair transplantation is mostly comprised of single case studies [6].

AVF have been effectively treated with surgical ligation, excision, direct puncture embolization, and selective angiography and embolization, with 100% resolution and no known sequelae yet [6].

Conclusion

Hair transplantation has low risk and can occasionally result in scalp arteriovenous fistulae. In the ultimate treatment of these lesions, both open surgical and endovascular interventions are often safe and effective.

References

1. Jeffrey S Epstein, M. (2022) Hair transplantation, Practice Essentials, Background, Anatomy.
2. Charles FL, Sacher M, Som PM, Haimov M (1985) Arteriovenous Fistula after Hair Transplantation. 6: 111-2.
3. Jason IL, Urakov T, Snelling B, Peterson EC (2018) 'Scalp arteriovenous fistula following hair transplantation: A case report and review of the literature', Clinical Medical Reviews and Case Reports, 5.
4. Alfaro AJ, Ortiz AFH, Mejia JA, Ortegon JDC, Gutierrez LC, et al. (2023) 'Traumatic scalp arteriovenous fistula post capillary implantation successfully treated using Phil Embolic agent', Surgical Neurology International. 14: 12.
5. Garg AK and Garg S (2021) 'Complications of hair transplant procedures—causes and management', Indian Journal of Plastic Surgery. 54: 477–482.
6. Molinaro S, Tweeana A, Vizzari FA, Giorgianni A (2022) 'Endovascular treatment of scalp AVF following hair transplantation: Case report', SN Comprehensive Clinical Medicine. 4.