

Traumatic Pseudoaneurysm of the Superficial Temporal Artery after Paintball Injury

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Paintball is a game in which players compete, in teams or individually, to eliminate opponents by hitting them with pellets containing paint (referred to as a paintball) from a special gun called a paintball marker. This game has been gaining popularity since the early 1980s worldwide. A primary health concern has been the risk of injury to the eye; numerous case studies have reported on ocular injuries resulting from a projected paintball [1,2]. To prevent ocular injuries, goggles should be worn at all times during the game. It has been shown that with this sole measure, ocular injuries have declined substantially [2,3]. Traumatic pseudoaneurysm of the scalp arteries is a very uncommon complication of blunt head trauma and has been exceptionally described in associa-

tion with this game [4,5]. We present a case of traumatic pseudoaneurysm of the superficial temporal artery secondary to paintball injury.

PATIENT DESCRIPTION

A 16 year old male presented to Hadassah Medical Center with a 6 month history of a slowly growing mass on his right lateral forehead, which rapidly arose hours after he had been shot during a paintball game. The nodular mass presented focal tenderness, and a focal post-traumatic scalp hematoma was suspected. After a couple of months the nodule was asymptomatic, but instead of shrinking, it became enlarged, causing cosmetic concern. Examination revealed that it was pulsatile [Figure A].

Doppler ultrasound confirmed the vascular nature of the subcutaneous mass. Contrast head computed tomography showed the dense contrast opacification of the frontal mass. The frontal bone was normal and no intracranial abnormalities were detected. After considering the

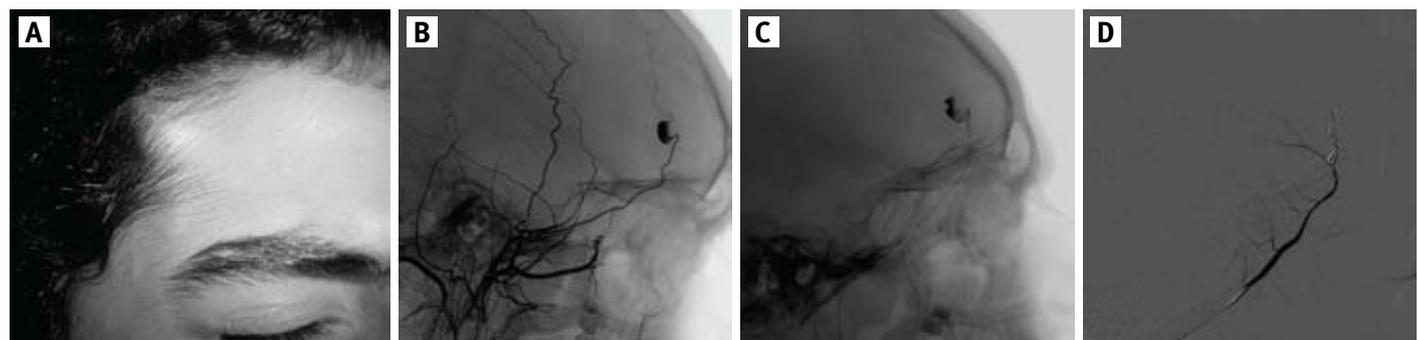
different therapeutic options and patient preference, endovascular treatment was recommended.

Under local anesthesia, a 5 F introducer sheath was placed at the right femoral artery under ultrasound guidance. A guiding catheter was placed at the origin of the external carotid artery [Figure B]. Co-axially, a microcatheter was navigated through the frontal branch of the superficial temporal artery and placed immediately proximal to the pseudoaneurysm [Figure C]. Detachable coils were deployed at this level, completely occluding the vessel and the pseudoaneurysm [Figure D]. Doppler ultrasound examination after 12 hours showed absence of flow into the lesion. At 2 months follow-up, the forehead nodule presented a marked shrinkage and was not readily visible.

COMMENT

Parallel to the widespread practice of paintball, head and neck injuries related to the practice of the game are also increasing. To protect themselves and others

[A] Subcutaneous nodule on the right forehead. **[B]** Unsubtracted right external carotid angiogram depicts the superficial temporal artery pseudoaneurysm. **[C]** Selective angiogram of the frontal branch of the superficial temporal artery shows the pseudoaneurysm in detail. **[D]** Endovascular occlusion of the injured vessel and pseudoaneurysm.



from injury, paintball participants must follow several rules with regard to proper clothing and personal safety equipment, paintball gun features, safety signage, and safer games areas [1]. However, the game is becoming popular in places other than paintball fields where safety rules are not adhered to. The ASTM (American Society for Testing and Materials International) state that protective equipment providing eye and adnexal protection from paintballs must be worn; however, no further recommendations have been made to specifically protect other parts of the head [3].

Our literature review found only two case reports of traumatic pseudoaneurysms of scalp arteries after paintball – one involving the superficial temporal artery [4] and one the occipital artery [5]. Both cases were successfully managed surgically with no complications. Given the rarity of traumatic pseudoaneurysms in scalp arteries, this third case report in relation to paintball is indicative of the elevated risk inherent in the game. Based on these observations, we

recommend that official authorities reevaluate the safety precautions for paintball play and introduce protective helmets for the entire head. It is also imperative to inform paintball participants of the risks of ocular and head injuries.

A pseudoaneurysm of the superficial temporal artery is a rare lesion that appears as a pulsatile cystic mass in the region of the forehead and should be suspected if it appears shortly after blunt trauma. Patients may likely consult dermatologists, plastic surgeons and neurosurgeons, but due to the rarity of the entity pitfalls may occur. This entity might be confused with an inclusion cyst or even a lipoma, so differential diagnoses and special investigations are paramount before any curative treatment is attempted. Therapeutic options include manual compression, percutaneous injection of thrombin and other substances, and surgical removal of the pseudoaneurysm. Only recently, endovascular alternatives have been considered as an attractive therapeutic

modality. This option was selected in the presented case for cosmetic reasons (no scalp incision is required); furthermore, there are no risks of infection, hematoma or facial injury, and the procedure is performed under local anesthesia.

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