



RESEARCH ARTICLE

TRAUMATIC TRUE ANEURYSM OF SUPERFICIAL TEMPORAL ARTERY: A RARE CASE REPORT

Mohan Karki¹ and Y.B. Roka²

1. Consultant Neurosurgeon, Neuro Cardio & Multispecialty Hospital, Biratnagar, Nepal.
2. Senior Consultant Neurosurgeon, Neuro Cardio & Multispecialty Hospital, Biratnagar, Nepal.

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Abstract

True Superficial temporal artery aneurysm is commonly painful or painless and pulsating mass. It is rarely results from blunt traumatic injury to the side of head. Only small number of these cases has been reported in the previous literature. We describe diagnosis and management of a 34 year old male who had history of physical assault hit by bottle (glass), resulted in developing a true large aneurysm of left superficial temporal artery (STA). Simple selective ligation and excision of STA aneurysm was performed. Patient has been discharged without any post operative complication.

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Introduction:-

Aneurysm of superficial temporal artery is rare vascular lesions of external carotid artery systems and its first illustration was done by Bartholin in 1740 [1]. STA aneurysms are both traumatic and non-traumatic variety. It usually evolves in young adult 2 weeks to 8weeks within few weeks after blunt traumatic injury to the head [2], or spontaneous (non-traumatic) STA aneurysms are also reported [3]. Patients having STA aneurysm usually present with painful or painless pulsating mass along temporal artery, throbbing headache, or ear discomfort, with dizziness, rarely bleeding and neurological deficit, such as facial palsy[4]. Diagnosis is confirmed by history, physical examination, Doppler ultrasonogram and imaging studies such as 3D-computed tomography angiography and magnetic imaging angiography may be used to identify the lesion and to investigate other intracranial lesion. Various management methods for STA aneurysms have been reported such as simple compression, ligation and embolization etc [5,6]. Herein, we report a rare case of large true STA aneurysm induced by blunt trauma that was managed by proximal STA ligation with excision of aneurysm.

Case Presentation

A 34 year-old -male presented in emergency ward with complain of painful pulsating swelling over left temporal preauricular region. He had a history of physical assault hit by bottle (Glass) one month ago. Three-dimensional (3D) Computed tomography angiography (CTA) was performed and it revealed a large left superficial temporal artery (STA) aneurysm located just above to zygomatic arch (**Figure 1A and 1B**). Patient underwent surgery under general anesthesia. After exposure of distal, aneurysm was carefully dissected from surrounding tissues, the temporal fascia, parotid gland and zygomatic arch (**Figure 1C**). The dissected aneurysm was rotated and the proximal STA was ligated. Finally large STA aneurysm was excised. Patient recovered without any complication and recurrence. Simple palpation technique and ultra- sonogram were used to rule out any vascular problem during the follow up period.

Corresponding Author:- Mohan Karki

Address:-Department of Neurosurgery, Neuro Cardio & Multispecialty Hospital, Biratnagar, Nepal.

Discussion:-

Superficial temporal artery aneurysm usually develops spontaneously (congenital) or after blunt trauma to the head. Blunt traumatic injury over head is the principal cause in the occurrence of aneurysm of the superficial temporal artery. The preliminary explanation of a superficial temporal artery aneurysm was described by Thomas Bartholin in 1970. Since 1970, only few study of true traumatic STA aneurysm has been reported [7], however many cases of false traumatic STAs have been studied[8,9]. A true traumatic aneurysm develops when trauma weakens the arterial wall without break in wall and false traumatic aneurysm or pseudoaneurysm develops when break in the arterial wall with subsequent hematoma formation and ultimate hematoma organization to become connective a tissue sac;

The common occurrence site for STA aneurysm are zygomatic arch and above linea temporalis, where STA are exposed to higher mechanical stress because of close proximity to the bone. The main protective tissue that present between STA and skull is temporal muscle. Most STA aneurysm involves anterior branch of the STA as compared to proximal and its posterior branch of STA. Our study noted that proximal STA involvement at level of zygomatic arch. It developed after one month following blunt traumatic injury. Similarly, Iraklis et al reported that development of aneurysm of STA occurred between 2 week to 8weeks following blunt head trauma [2].

Diagnostic tools for STA aneurysm are ultrasonogram, 3D CT angiography and MR angiography. CT angiography is the gold standard diagnostic tool for true STA aneurysm[5]. We applied 3D CT angiography to diagnose and differentiate STA aneurysm from other vascular diseases. We should differentiate STA aneurysm from other pathological diseases such as lipoma, hematoma, lymphadenopathy, supraorbital nerve neuroma, dural arteriovenous fistula, arteritis, cyst, neoplastic diseases such as schwannoma, parotid gland tumor, meningocele and subcutaneous abscess[4]. Temporo-mandibular arthroplasty, hair transplantation, cyst removal, laceration and gunshot wound are most common experience penetrating injuries which are often associated with STA aneurysm. Various spot injuries including hockey, rugby, squash, baseball, and minor head injuries or skull fracture may also be associated with STA aneurysm. Bole P reported that blunt injury accounted for more than 75% of these STA aneurysms as compared to other vessels injury[10] .

STA aneurysm appears in both sex, but common in male. Painless, pulsating mass, ear discomfort are most commonly encountered complaints and less common complaints are pain, headache, hemorrhage, cosmetic defect and some neurological issue such as facial palsy. STA aneurysm may occasionally lead to severe hemorrhage and be associated with bothersome symptoms however it has benign progress. Winslow and Edwards reported that 85% were traumatic, 81% of the cases were less than age of 40 year and 85% occurred in men [11]. The young men are more commonly affected due to more involvement in violent activity as well as they often mobilize outside because of many reasons. Similar to other studies, our study also had young men of age 23 year. Scheter and Gutstein also reported that 92% STA aneurysms in their report were traumatic and approximately 80% of the cases were male [12].

Several treatment methods have historically been described including operative intervention consisted of opening the tumor and applying the pressure or ligation of common carotid artery or ligation external carotid artery such as ligation of proximal and distal branch of STA followed by excision of aneurysm. Winslow and Edwards in 1934 reported that 77 cases were treated surgically out of 93 patients with 67 cures, 2 improvements, and one recurrence [11]. With development in endovascular field, embolization technique has also been used for a traumatic proximal STA aneurysm [6]. However complications have also been noted in 1% -3% of all patients having embolization such as local inflammation, pain, catheter-induced thrombosis, pulmonary emboli, aneurismal rupture and embolization to the internal carotid artery. So simple surgical procedure for traumatic STA aneurysm is effective, and avoids recurrence. Three ruptured aneurysm cases have been described in past 24 year even rupture of STA aneurysms case are rare, with one of these patient having severe hemorrhage [13]. Similar to this study, ruptured left true STA aneurysm was also noted in our study. Simple ligation of proximal STA ligation with excision of aneurysm sac was performed. Postoperative facial nerve palsy is also major complication which can be prevented by carefully dissection of preauricular surrounding tissue during STA aneurysm surgery. No any surgical complications including facial palsy were reported in our report.

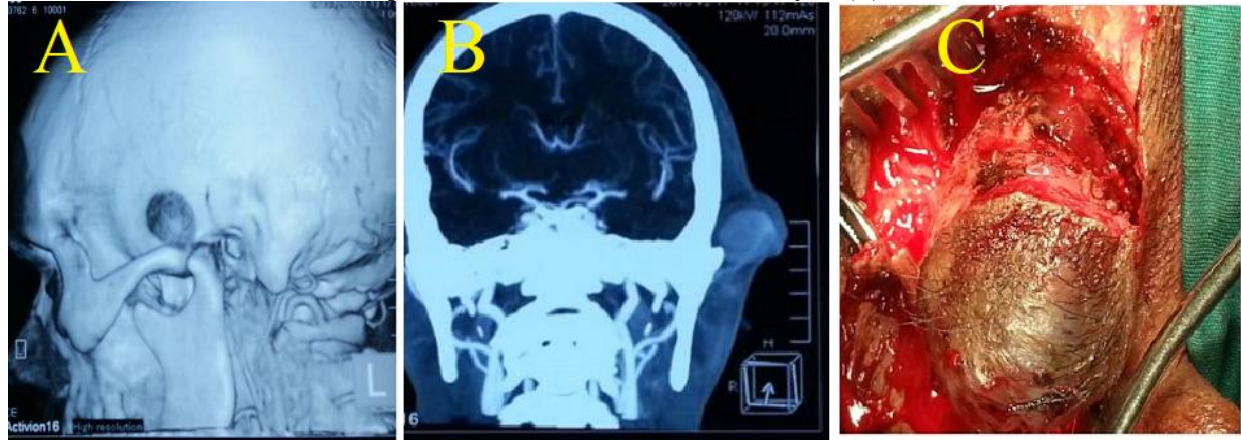
Conclusion:-

Superficial temporal artery aneurysm induced by trauma is rare vascular problem. True superficial temporal artery aneurysm is usually diagnosed as pulsating mass over temporal and pre-auricular region. It is diagnosed by

computed tomography angiogram, which is standard diagnostic tool. Simple ligation of superficial temporal artery branch with resection of aneurysm is safe and curative surgical approach.

Figure Legend

Figure 1:- Three dimensional computed tomography angiogram demonstrating a giant aneurysm arising from main trunk of left superficial temporal artery and located lateral to zygomatic arch (A,B) and Photograph showing operative view before removal of aneurysm (C)



References:-

- Desanti L: Des Tumeurs Anev. dela region temporale. Arch Gen Med 154:543, 679, 1884
- Iraklis IP, Christos D D, Daniel J R; Superficial temporal artery aneurysm. J Vasc Surg 27:374-7,1998
- Nishioka T, Kondo A, Aoyama I, Nin K, Shimotake K, Tashiro H, Takahashi J, Kusaka H: A case of spontaneous superficial temporal artery aneurysm. No Shinkei Geka 16:1009-1012, 1988
- Hiroshi K, Tadashi H, Junnichi I, Norio T, Takuya O, Hitoshi Y, Hiroshi T, Mitsuharo N, Kazunori A: Three case of spontaneous superficial artery aneurysm with literature review. Neurol Med Chir (Tokyo) 54:854-860, 2014 10.2176/nmc.cr2013-0033
- Myer CM, Donegan O: Traumatic aneurysm of proximal superficial temporal artery. Head Neck Surg 5:181-5,1983 10.1002/hed.2890050214
- Field PL, Tress BM, O'Brien MD, Levant BA: Embolization of traumatic aneurysm of the maxillary artery. Aust N Z J Surg 49:244-6, 1979 10.1111/j.1445-2197.1979.tb04948.x.
- Park SK, Bong HJ, Jang DK, Yoon WS, Han YM, Jang KS: Traumatic true aneurysm of superficial temporal artery. Aesthetic Plast Surg 36:934-7, 2012 10.1007/s00266-012-9909-y.
- Ayman N AI-S, Madan E: Superficial temporal artery aneurysm: case report and review of literature. J Oral Maxillofac Surg 78:1147-1150,2020 10.1016/j.joms.2020.01.033.
- Braga SF, Ferreiro J, Vasconcelos J, Gouveia R, Sousa P, Brandao D, Brandao P, Vaz AG: False aneurysm of superficial temporal artery: clinical report and literature review. Rev Port Cir Cardiorac Vasc 19:99-102,2012
- Bole P, Munda R, Purdy RT: Traumatic Pseudoaneurysm: review of 32 cases.J Trauma 16:63-70,11976
- Winslow N, Edward M: Aneurysm of temporal artery. Surgery 208:696-702.1969,1935.
- Schecter MM, Gutstein RR: Aneurysms and arteriovenous malformation of superficial temporal vessels. Radiology 97:549-57,1970 10.1148/97.3.549.
- Murphy JG, Mikhail W, Gordon KL: Traumatic aneurysm of the superficial temporal artery secondary to hair transplantation. Ir Med J 60:457-60,1981.