

Aortic Pseudo aneurysm 3 Years after Interposition Tube Graft for Acute Dissection of Ascending Aorta

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ABSTRACT

Introduction: Patients with primary acute aortic dissection are at higher risk of complications, including increasing aortic aneurysm diameter, aortic rupture, aortic pseudo aneurysm, and recurrent aortic dissection.

Case presentation: We presented the case of a recurrent pseudo aneurysm and rupture of the aorta in the distal ascending aorta and proximal arch 3 years after the initial procedure for acute aortic dissection. The patient had bleeding from previous skin incision. In computed tomography angiography, the site of rupture of the aorta and abnormal communication with sternum were confirmed.

Conclusion: Recurrent aortic dissection is a catastrophic event and has high mortality; however, it is rare and is treated in a short time by redo surgery.

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Case

A 66-year old man was referred to our center with intermittent bleeding from a small orifice in previous median sternotomy incision. The patient had a history of type 1 acute aortic dissection 3 years ago that was managed with aortic valve repair and interposition tube graft with Dacron for replacing the dissected ascending aorta. The case was discharged from

hospital in a good health condition; however, after 1 week, the patient had symptom and sign of deep sternum Wound infection and sternum dehiscence with need reoperation with debridement of wound and rewiring of sternum that ultimately healed sternum. In previous 2 months, the patient was in a good health condition without any significant problem;

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however, then from a small orifice in the mid part of sternum wound, he had intermittent nonstop bloody drainage and a large ischemic stroke with hemiplegic and aphasia. in the evaluation of the patient in computed tomography angiography of Mediastinal show an abnormal communication between skin and Proximal of aortic arch distal to suture line of Tube Graft and remnant of Aorta (Figures 1 and 2). For this patient, we decided to consult with an experienced cardiology interventionist for device closure with stent graft in the site of rupture of the aorta because high risk redo surgery and new CVA accident, However, few days after admission, the patient expired after sudden massive bleeding.

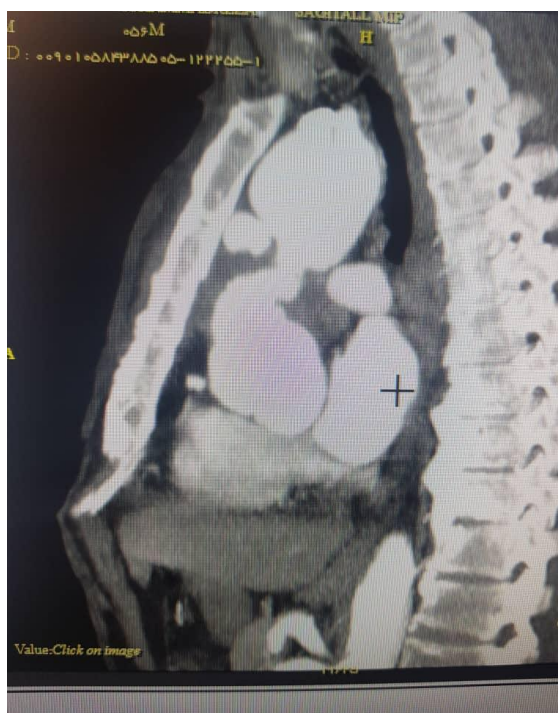


Figure 1. Abnormal communication between skin and distal aortic arch to suture line of tube graft



Figure 2. Aortic dissection and skin fistula

Discussion

Patients with primary acute aortic dissection are at higher risk of complications, including increasing aortic aneurysm diameter, aortic

rupture, aortic pseudo aneurysm, and recurrent aortic dissection (1-5). Recurrence of aortic dissection after primary surgery is observed in some cases especially in cases with Marfan syndrome or other vasculopathy. Congenital vasculopathy involves the media and Adventism of aorta and other large size arteries predisposed to later recurrent rupture and dissection of arteries (6-9).

The prevalence of recurrent aortic dissection was about 5% of all cases with aortic dissection (10). Improvement in postoperative management after primary intervention for acute aortic dissection consists of better and tight control of hypertension with the new generation of antihypertensive drugs resulting in the observation of fewer cases with recurrent aortic dissection (11). For this reason, the patient can suffer from another course of aortic dissection any time after the primary procedure.

Many cases of recurrent aortic dissection have Marfan syndrome (about 20% of all the recurrent aortic dissection cases) (12, 13). The diameter of descending aorta was significantly higher in patients who experienced recurrence of aortic dissection in comparison to the cases without recurrent aortic dissection. This refers to the fact that the large size of the remnant part of the aorta is an important key for estimating the possibility of aortic dissection recurrence (14).

According to the evidence, the presence of bicuspid aortic valve increases the risk of aortic dissection recurrence after the primary surgery (15). A recurrent aortic dissection is a catastrophic event for rare patients since it has a significantly higher risk of aortic redo surgery and all-cause mortality during 5 years, compared to the surgery for primary aortic dissection.

As a group, cases with recurrent aortic dissection as comparison to another aortic disease such as aneurysms are younger and have more atherosclerosis change in vascular system and hypertension. Recurrent aortic rupture after primary surgery was also more common in connective tissue diseases, such as Marfan syndrome. Some of the cases with recurrent aortic surgery tend to have known aneurysmal disease and often a history of cardiovascular surgery (16-17).

Conclusion

Currently, aortic dissection operation is a palliative surgery, and many postoperative lethal complications may be observed, such as abrupt rupture, sudden death, fistula, aortic pseudoaneurysm, and recurrent aortic dissection. For this reason, these patients should be urgently managed by intervention or cardiac surgery.

Conflicts of Interest

The authors declare that there is no conflict of interest.

References

- van de Laar IM, Oldenburg RA, Pals G, Roos-Hesselink JW, de Graaf BM, Verhagen JM, et al. Mutations in SMAD3 cause a syndromic form of aortic aneurysms and dissections with early-onset osteoarthritis. *Nat Genet.* 2011; 43:121-6.
- Aubart M, Gobert D, Aubart-Cohen F, Detaint D, Hanna N, d'Indya H, et al. Early-onset osteoarthritis, Charcot-Marie-Tooth like neuropathy, autoimmune features, multiple arterial aneurysms and dissections: an unrecognized and life threatening condition. *PLoS One.* 2014; 9:e96387.
- Moosavi-Movahedi AA, Golchin AR, Nazari KK, Chamani J, Saboury AA, Bathaie SZ, et al. Microcalorimetry, energetics and binding studies of DNA-dimethyltin dichloride complexes. *Thermochim Acta.* 2004; 414:233-41.
- Kirsch M, Legras A, Bruzzi M, Louis N. Fate of the distal aorta after surgical repair of acute DeBakey type I aortic dissection: a review. *Arch Cardiovasc Dis.* 2011; 104:125-30.
- Halstead JC, Meier M, Etz C, Spielvogel D, Bodian C, Wurm M, et al. The fate of the distal aorta after repair of acute type A aortic dissection. *J Thorac Cardiovasc Surg.* 2007; 133:127-35.
- Zierer A, Voeller RK, Hill KE, Kouchoukos NT, Damiano RJ Jr, Moon MR. Aortic enlargement and late reoperation after repair of acute type A aortic dissection. *Ann Thorac Surg.* 2007; 84:479-86.
- Zolfagharzadeh M, Pirouzi M, Asoodeh A, Saberi MR, Chamani J. A comparison investigation of DNP-binding effects to HSA and HTF by spectroscopic and molecular modeling techniques. *J Biomol Struct Dyn.* 2014; 32:1936-52.
- Kim JB, Kim K, Lindsay ME, MacGillivray T, Isselbacher EM, Cambria RP, et al. Risk of rupture or dissection in descending thoracic aortic aneurysm. *Circulation.* 2015; 132:1620-9.
- Ptaszek LM, Kim K, Spooner AE, MacGillivray TE, Cambria RP, Lindsay ME, et al. Marfan syndrome is associated with recurrent dissection of the dissected aorta. *Ann Thorac Surg.* 2015; 99:1616-23.
- Rylski B, Bavaria JE, Beyersdorf F, Branchetti E, Desai ND, Milewski RK, et al. Type A aortic dissection in Marfan syndrome: extent of initial surgery determines long-term outcome. *Circulation.* 2014; 129:1381-6.
- Isselbacher EM, Bonaca MP, Di Eusanio M, Froehlich J, Bassone E, Sechtem U, et al. Recurrent aortic dissection: observations from the international registry of aortic dissection. *Circulation.* 2016; 134:1013-24.
- Schoenhoff FS, Jungi S, Czerny M, Roost E, Reineke D, Matyas G, et al. Acute aortic dissection determines the fate of initially untreated aortic segments in Marfan syndrome. *Circulation.* 2013; 127:1569-75.
- Chamani J, Heshmati M. Mechanism for stabilization of the molten globule state of papain by sodium n-alkyl sulfates: spectroscopic and calorimetric approaches. *J Colloid Interface Sci.* 2008; 322:119-27.
- Leshnowar BG, Chen EP. When and how to replace the aortic root in type A aortic dissection. *Ann Cardiothorac Surg.* 2016; 5:377-82.
- Dell'Aquila AM, Concistre G, Gallo A, Pansini S, Piccardo A, Passerone G, et al. Fate of the preserved aortic root after treatment of acute -up. J type A aortic dissection: 23-year follow Thorac Cardiovasc Surg. 2013; 146:1456-60.
- Halstead JC, Spielvogel D, Meier DM, Rinke S, Bodian C, Malekan R, et al. Composite aortic root replacement in acute type A dissection: time to rethink the indications? *Eur J Cardiothorac Surg.* 2005; 27:626-32.
- Lai DT, Miller DC, Mitchell RS, Oyer PE, Moore KA, Robbins RC, et al. Acute type A aortic dissection complicated by aortic regurgitation: composite valve graft versus separate valve graft versus conservative valve repair. *J Thorac Cardiovasc Surg.* 2003; 126:1978-86.