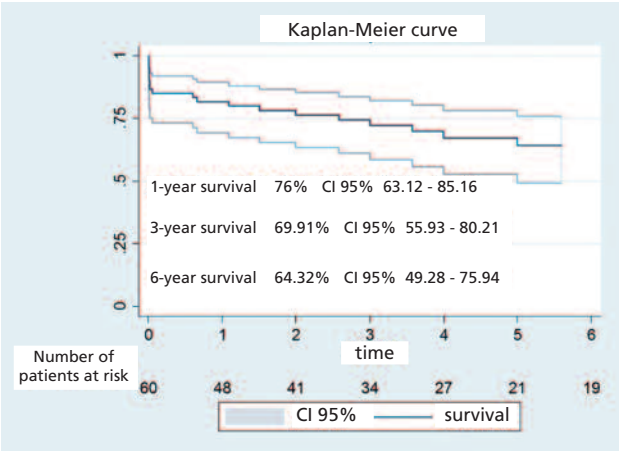

Fig. 1. Kaplan-Meier survival curves at 1, 3 and 6 years.

aortic atheromatosis. (5) Our results demonstrate that the occurrence of MI has no linear correlation with the full coverage of the thoracic aorta and the ensuing occlusion of all intercostal arteries. This can be explained by the spinal cord vascularization model proposed by Griepp. (6) This model shows that spinal cord irrigation depends on multiple collateral arteries that supply the anterior spinal artery, instead of a single dominant Adamkiewicz artery, which was considered essential to maintain perfusion of the spinal cord. (6) It should also be mentioned that not only can MI occur during or immediately after endovascular treatment but also in the long term, as was the case in two of our patients. (6) The only two measures applied systematically to prevent MI were to maintain an elevated and stable mean blood pressure (≥ 90 mmHg) during the intervention and to prevent blood loss.

In our series, we performed medullary protection in those cases in which the entire thoracic aorta was covered and the abdominal aorta had been previously operated. Although risk of compressive hematoma of the spinal cord exists due to puncture of the spinal canal, we believe that this technique must be used as a prophylactic measure only in this scenario. We may conclude that endovascular treatment of the descending thoracic aorta should not be considered a factor causing MI. Only 3 patients (4.48%) out of 62 undergoing endovascular repair with total aortic coverage presented MI in our series, two temporary and one permanent. In our opinion, the only predictive factor is previous aortic repair in the abdominal area. In this scenario, all patients should have been operated with medullary protection, maintaining a stable mean blood pressure ≥90 mmHg throughout the intervention and for the first 48 hours after the procedure.

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REFERENCES

1. Gravereaux EC, Faries PL, Burks JA, Latessa V, Spielvogel D, Hollier LH, et al. Risk of spinal cord ischemia after endograft repair of thoracic aortic aneurysms. J Vasc Surg 2001;34:997-1003. http://doi.org/ffdzcb
2. Bavaria JE, Appoo JJ, Makaroun MS, Verter J, Yu ZF, Mitchell RS. Endovascular stent grafting versus open surgical repair of descending thoracic aortic aneurysms in low-risk patients: a multicenter comparative trial. J Thorac Cardiovasc Surg 2007;133:369-377. http://doi.org/dg2zx5
3. Greenberg R, Resh T, Nyman U, Lindh M, Brunkwall J, Brunkwall P, et al. Endovascular repair of descending thoracic aortic aneurysms: An early experience with intermediate-term follow-up. J Vasc Surg 2000;31:147-e156. http://doi.org/c785hh
4. Carroccio A, Marin ML, Ellozy S, Hollier LH. Pathophysiology of paraplegia following endovascular thoracic aortic aneurysm repair. J Card Surg 2001;11:359-e366.
5. Bertoni H, Azzari F, Girela G, Salvo G, De la Vega A, Romero G, et al. Intentional Occlusion of the Left Subclavian Artery during Endovascular Repair of the Descending Thoracic Aorta. Rev Argent Cardiol 2011;79:21-6
6. White RA, Donayre CE, Walot I, Lippmann M, Woody J, Lee J, et al. Endovascular exclusion of descending thoracic aortic aneurysms and chronic dissections: Initial clinical results with the AneuRx device. J Vasc Surg 2001;33:927-934. http://doi.org/dt4fcf

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Unexpected Angiographic Finding: a Remnant Guidewire

Entrapment and fracture of coronary guidewire is a rare complication of percutaneous coronary interventions. Up to 2015, only 67 cases worldwide had been published (1), in which multiple strategies to approach this problem were described. However, many of those episodes were not reported or published. Most authors choose percutaneous or surgical removal of the material, while only a few prefer a more conservative approach. We present a case for whom a conservative approach had been chosen 4 years before, despite it was a sizeable fragment.

The patient is a 65-year-old woman with hypertension, diabetes, dyslipidemia, morbid obesity, and a family history of early ischemic cardiomyopathy. She was transferred to our health care center with no available previous records, but the patient referred that she had been implanted six stents due to a myocardial infarction four years before. It was surprising that the patient was under antiplatelet therapy with prasugrel in monotherapy in addition to the rest of the treatment for chronic ischemic cardiomyopathy.

The patient presented at the emergency room with symptoms suggestive of a several-day history of respiratory tract infection; in this context, the patient had an episode of angina-like chest pain and mild infero-

lateral ST-segment depression, which improved immediately with intravenous nitrates. An evaluation from the cardiology unit was requested, and in the guided anamnesis the patient referred similar discomfort during intense exertion which occasionally required sublingual nitroglycerin to improve, but denied previous episodes at rest since her revascularization performed 4 years before.

Blood test targeted slightly increased markers of myocardial injury, and although a type-II non-ST-segment elevation myocardial infarction was suspected, due to increased demand, and given the patient's history, she was admitted in the cardiology unit. The echocardiography showed a non-dilated left ventricle with preserved systolic function and absence of significant heart valve diseases. The infectious condition impressed of non-complicated viriasis of the upper respiratory tract without infiltrates in the chest x-ray or significant abnormal results in the blood test. The coronary angiography targeted a remnant angiographic guidewire from the left main coronary artery (LMCA) to the distal circumflex artery, which seemed to be caged by the LMCA stent and did not involve flow (Figures 1A and B). All stents were patent, with no significant irregularities in the rest of the epicardial vessels and some non-revascularizable stenosis in small-sized vessels. An intracoronary optical coherence tomography was proposed, but it was finally decided not to perform intravascular imaging studies given the unnecessary risk they would entail. Once the infectious condition was resolved, symptoms of angina did not recur.

Given the limited evidence in the literature about the management of these cases and the patient's stability during the 4 years since the guidewire fracture, we decided to empirically preserve the previous antiplatelet therapy with prasugrel indefinitely. We had serious doubts as to whether or not add systemic anticoagulation to the treatment, since most authors support its use. (2) Again, given the advantage of the patient's proven good progress without anticoagulant therapy, we considered it would add an excessive risk of bleeding without margin to provide great benefits.

Guidewire fracture is rarely encountered during a percutaneous coronary intervention, with an estimated incidence of 0.1-0.2% of angioplasties. (3) Excessive axial rotation, traction forces –especially if the tip is entrapped–, or excessive bending are the most common mechanisms causing guidewire fracture. (4) The junction point between the most flexible distal 3-cm tip and the rest of the guidewire is the point where fracture generally occurs. (5) An association has been found between guidewire fractures and the use of certain intracoronary instruments such as a thrombus aspirator or a rotational atherectomy device. (6)

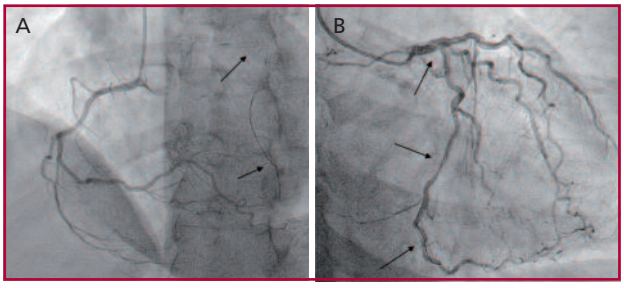

Fig. 1. Right (A) and left (B) coronary angiographies; the arrows show the remnant guidewire

Management of these situations is extremely complex, and there is little evidence to draw on. Guidewire remnants within the coronary tree can lead to severe complications, such as vessel perforation, embolic phenomena, in-situ thrombosis, and vessel occlusion. (2) For this reason, percutaneous removal of the material is recommended, resorting to surgery when the interventional approach is unsuccessful.

Several techniques have been described for percutaneous guidewire retrieval. If the proximal part of the fragment is in the aorta, loops are often used with satisfactory outcomes. When all the remnant guidewire is entrapped within the coronary artery, two main approaches are used: one of them consists in attempting to pull out the fragment using as wedge a balloon or micro-catheter, while the other approach consists in wrapping the fractured guidewire with two other wires, and pulling it out with a twisting action. (1) When these strategies fail, some authors choose stent implantation to wrap the fragment, which remains trapped between the stent mesh and the endothelium, thus minimizing the risks mentioned above. If myocardial ischemia with or without circulatory instability arises during guidewire removal, it is recommended to stop the interventional technique and opt for surgery. Surgery is mandatory when extravasation of contrast medium evidences vessel laceration. (1)

The literature reports that small fragments in distal positions can be treated conservatively with close follow-up and anticoagulant and antiplatelet therapy. (2) In addition to assessing the 4-year follow-up of a conservative strategy, the main characteristic in our patient was that the fragment size was considerably large, with a course from the LMCA to the distal circumflex artery. The fractured guidewire was at the level of the stent in the LMCA, which made it impossible to perform percutaneous retrieval with the techniques described above; thus, a conservative strategy was probably chosen to avoid cardiac surgery, which would have entailed a high risk in a patient with those comorbidities. Once again, based on the patient's good progress during the last 4 years, we ruled out any change of strategy that, against all odds, seems to be working well.

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REFERENCES

1. Abdulrahman M, Al-Moghairi, Hussein S. Al-Amri. Management of retained intervention guide-wire: a literature review. Curr Cardiol Rev 2013;9:260-6. http://doi.org/bdww

2. Khonsari S, Livermore J, Mahrer P, Magnusson P. Fracture and dislodgment of floppy guidewire during percutaneous transluminal coronary angioplasty. Am J Cardiol 1986;58:855-6. http://doi.org/d4bv8t

3. Hartzler GO, Rutherford BD, McConahay DR. Retained percutaneous transluminal coronary angioplasty equipment components and their management. Am J Cardiol 1987;60:1260-4. http://doi.org/cvpq6r

4. Lotan C, Hasin Y, Stone D, Meyers S, Applebaum A, Gotsman MS. Guide wire entrapment during PTCA: a potentially dangerous complication. Cathet Cardiovascular Diagn 1987;13:309-12. http://doi.org/fsrk44

5. Vrolix M, Vanhaecke J, Piessens J, De Geest H. An unusual case of guide wire fracture during percutaneous transluminal coronary angioplasty. Cathet Cardiovasc Diagn 1988;15:99-102. http://doi.org/dg78f9

6. López-Mínguez JR, Dávila E, Doblado M, Merchán A, González R , Alonso F. Rupture and intracoronary entrapment of an angioplasty guidewire with the X-Sizer thromboatherectomy catheter during rescue angioplasty. Rev Esp Cardiol 2004;57:180-3. http://doi.org/bdwx

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Primary Cardiac Leiomyosarcoma in a Pregnant Woman

We report the case of a 19-year-old woman at 34-week gestation, who was admitted to Hospital Juárez de México with tachycardia, dyspnea, and hemoptysis. In the emergency room, she was diagnosed with heart failure and acute pulmonary edema. The patient had no history of heart disease. Chest X-rays showed congestive lungs characteristic of acute pulmonary edema and two-dimensional echocardiography revealed a 40 × 47 mm tumor within the left atrium, attached to the left superior pulmonary vein drainage. The rest of the cardiac structures were normal (Figure 1). She underwent surgery, and the tumor and implantation base were completely removed. The patient and her baby had no complications despite undergoing surgery and extracorporeal circulation. The histological study revealed a highly malignant pleomorphic leiomyosarcoma. Histopathological evaluations were performed with specific muscle actin, CD 34, desmin, myoglobin, vimentin, and PS 100, which confirmed the leiomyosarcoma (Figure 2A). The patient refused chemotherapy during her pregnancy and was delivered of a son by Cesarean section 5 weeks later, without any birth defects. Once again, the patient refused chemotherapy, and one year later she was readmitted due to primary tumor of the central nervous system. She underwent surgery of a low-grade astrocytoma (Figure 2B) without association with the cardiac tumor, so both were considered primary tumors.

Her central nervous system tumor was treated with chemotherapy and surgical resection; however, the patient died due to complications associated with the neurosurgical procedure.

Primary cardiac tumors are rare, with a reported prevalence of 0.001% to 0.026% at autopsy series; the most common tumors include metastases or direct cardiac invasion originating in the breast or the lung. (1)

Angiosarcoma is the most common type among primary malignant tumors, followed by rhabdomyosarcoma, fibrosarcoma, and mesothelioma. Leiomyosarcoma is a mesenchymal tumor originating from smooth muscle cells and accounts for less than 1% of malignancies. In the heart, it is located mainly in the left atrium and pulmonary veins. (2)

It usually causes dyspnea, pericardial effusion, chest pain, atrial arrhythmias, peripheral embolism, or heart failure, and occasionally weight loss and fever. It is a highly metastatic tumor with a high recurrence rate in the same site once resection is performed. (3)

Therefore, prognosis is poor, with a mean survival rate of 6 months since diagnosis.

In general, the characterization of sarcomas can be difficult, but the use of immunohistochemical markers can provide accurate identification and differentiation, as cellularity is usually high in some areas. The nuclei of tumor cells typically elongate with a variable degree of pleomorphism; a wide frequency of mitotic figures are found and immunohistochemical staining with proliferation marker Ki-67 and stainings such as smooth muscle alpha-actin and desmin are typical –as was the case of this patient. (2)

In the treatment of cardiac tumors, the surgical option itself does not provide its complete and effective eradication because the tumor often involves a large myocardial portion leading to incomplete surgical resection or systemic dissemination. Survival rate varies from one case series to another, averaging between 17-28 months for those with complete resection, and 6 months in the case of incomplete resection. (4)

The role of adjuvant chemotherapy is still controversial. Some studies have found that conventional postoperative chemotherapy does not alter the clinical course, while other studies have reported the efficacy of combining surgery and adjuvant therapy. (1)

In conclusion, we believe this case is important because we managed to completely eradicate the malignant tumor with a timely surgical treatment, prolonging the life of the mother and her son for some time. However, a new primary tumor in the brain caused the patient's death. According to the database, this is the first case in Latin America with cardiac leiomyosarcoma in a pregnant woman.

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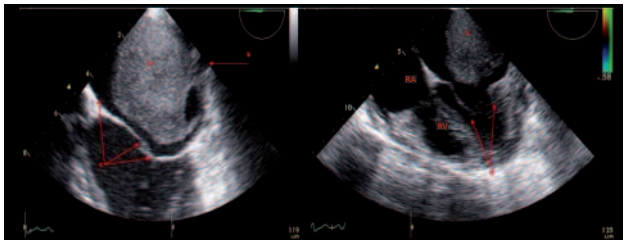

Fig. 1. Two and 4-chamber two-dimensional transthoracic echocardiography, showing left intra-atrial tumor (a), left superior pulmonary vein drainage (b), atrial contour (c) and free mitral valve (d). RA: Right atrium. RV: Right ventricle