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Original Article

Endovascular Treatment of Chronic Complicated Type B Aortic Dissection

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ABSTRACT

Background: Endovascular repair of aortic diseases is a well-established therapeutic alternative for patients with the appropriate anatomy and/or high surgical risk, as it provides lower morbidity and mortality rates. This study aimed to analyse the outcomes of asymptomatic patients undergoing endovascular treatment of thoracic aortic dissections with an aortic diameter > 5.5 cm or endoleaks. Technical success, therapeutic success, morbidity, mortality, and perioperative complication and reintervention rates were assessed. **Methods:** The present retrospective study, which was performed at a reference centre from January, 2010 to July, 2011, analysed consecutive patients undergoing endovascular repair of chronic complicated type B aortic dissections based on the Stanford classification. **Results:** Twenty-six patients were treated. The mean age was 56.4 ± 7 years, and 61.5% were males. Technical and therapeutic success rates were 100% and 74%, respectively. The perioperative mortality was 7.6%, and the mortality rate in the first year of follow-up was 19.3%. The reintervention rate was 15.3%. **Conclusions:** In the present study, endovascular treatment of chronic type B aortic dissections proved to be a feasible method associated with acceptable perioperative complication rates. The therapeutic success and reintervention rates indicated the

RESUMO

Tratamento Endovascular da Dissecção Crônica de Aorta Tipo B Complicada

Introdução: A correção endovascular das doenças aórticas está bem estabelecida como alternativa terapêutica para pacientes com anatomia adequada e/ou alto risco cirúrgico, proporcionando menores taxas de morbidade e mortalidade. Nosso objetivo foi analisar os resultados do tratamento de pacientes assintomáticos submetidos a tratamento endo-vascular de dissecções de aorta torácica complicadas, seja por diâmetro aórtico > 5,5 cm ou vazamentos. Avaliamos o sucesso técnico, o sucesso terapêutico, a morbidade e a mortalidade, e as taxas de complicações perioperatórias e de reintervenções. **Métodos:** Estudo retrospectivo, realizado em um centro de referência, no período de janeiro de 2010 a julho de 2011, em que foram analisados pacientes consecuti-vos submetidos a correção endovascular de dissecção crônica de aorta tipo B complicada pela classificação de Stanford. **Resultados:** Foram tratados 26 pacientes. A média de idade foi de 56,4 ± 7 anos e 61,5% eram do sexo masculino. Os sucessos técnico e terapêutico foram de 100% e 74%, res-pectivamente. A mortalidade perioperatória foi de 7,6% e a taxa de mortalidade no primeiro ano de seguimento foi de 19,3%. A taxa de reintervenção foi de 15,3%. **Conclusões:** Em nosso estudo, o

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necessity for stringent and careful clinical follow-up of these patients.

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tratamento endovascular da dissecção crônica de aorta tipo B demonstrou ser um método viável e associado a aceitáveis taxas de complicações perioperatórias. As taxas de sucesso terapêutico e de reintervenções obtidas demonstram a necessidade de seguimento clínico rigoroso e atento desses pacientes.

DESCRITORES: Dissecação. Aorta torácica. Próteses e implantes. Aterosclerose.

Stanford type B aortic dissection, which does not involve the ascending aorta, causes high rates of morbidity and mortality in its complicated form, occurring in younger patients and resulting in death from direct complications of the disease.[1] Spontaneous resolution is rare.[2] The risk factors that are often associated with this disease include hypertension, cardiovascular disease, lung diseases, and kidney dysfunction. Stanford type B aortic dissection predominates in the male gender (3:1), and approximately 30% of patients with type B dissections develop some type of complication.

Endovascular or surgical treatment is indicated when there is rapid increase in the aortic diameter, signs of rupture (mediastinal bruises, pleural effusion), ischaemic syndromes or intractable pain. In such situations, this intervention has superior results compared with clinical treatment.[3] The overall mortality for surgical repair of type B aortic dissections is approximately 30%, reaching 50% when surgery occurs in emergency situations.[1,4,5]

Endovascular devices allow for a treatment that is less invasive than surgery, preventing aortic clamping.[6] The stents occlude the dissection orifices, reorganise the vessel layers, and prevent blood entry between the vessel layers, leading to decompression, thrombosis, and fibrosis of the false lumen, thus contributing to favourable aortic remodelling and fewer adverse clinical events.[3] Endovascular treatment yields lower rates of blood transfusion, shorter hospital stays, reduced length of intensive care unit stays, and lower costs. Moreover, this therapy allows for reperfusion of ischaemic vascular beds in complicated dissections, with lower risks than found in open surgery.[7] The main disadvantage of this technique is that it predisposes the patient to an increased number of reinterventions in the medium- and long-term.[8,9]

Endovascular treatment of chronic type B aortic dissections is still controversial. The primary debate refers to the possibility of remodelling not occurring after occlusion of the inlet orifice, either because of the incapacity of the prosthesis to expand completely or due to the incapacity of the previously formed haematoma to be reabsorbed by the blood vessel wall.[2]

The aim of this study was to evaluate the clinical outcomes of asymptomatic patients undergoing endovascular repair of complicated type B aortic dissections by analysing the technical success, therapeutic success, morbidity and mortality, complications, and rate of reinterventions.

METHODS

Study type

A retrospective, observational, longitudinal study was conducted at a reference centre for cardiovascular diseases from January of 2010 to July of 2011. In total, 26 patients undergoing endovascular repair of type B aortic dissections were evaluated.

Inclusion and exclusion criteria

Patients with type B aortic dissections with aortic diameters ≥ 55 mm, as well as patients who were previously treated with stents that developed type I or III endoleaks, were included.

The study excluded patients with a proximal aortic neck containing thrombi or calcifications > 50% of the neck diameter, an external iliac artery diameter < 7 mm or a creatinine clearance < 30 mL/min.

A cardiac and/or anaesthetic risk assessment was not considered in the inclusion or exclusion of the patients.

Surgical technique

All procedures were performed in the Haemodynamics Laboratory of the Endovascular Intervention Centre (Centro de Intervenções Endovasculares – CIEV) of the Instituto Dante Pazzanese de Cardiologia (São Paulo, SP, Brazil).

For all cases, the diagnosis and treatment schedule were based on the angiotomography results; pre-operative arteriography was considered to be an optional diagnostic method. All of the tomography scans were reconstructed using OsiriX software version 3.2 for Macintosh (Department of Medical Imaging and Information Science of the University Hospital of Geneva – Geneva, Switzerland) in three-dimensional mode and multiplanar reconstruction mode; subsequently, the diameters, as well as the dissection angles and extensions of the proximal and distal aortic neck of the aorta were obtained (Figure 1).

All patients received general inhalational anaesthesia with cerebrospinal fluid monitoring in cases of second treatment of aortic aneurysms and in cases in which preoperative carotid-subclavian or carotid-carotid bypasses were performed.

After anaesthesia induction and appropriate antibiotic prophylaxis (1.5 g cefuroxime), treatment was