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## RESEARCH ARTICLE

### AORTIC DISSECTION RETROSPECTIVE STUDY OF A SERIES OF 20 CASES

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#### Abstract

Aortic dissection is a very serious condition that must be recognized early and whose treatment is a medical and surgical emergency. Management involves multidisciplinary expertise. In our retrospective study, we report 20 cases of aortic dissection surgically treated at Department of Cardiovascular Surgery at the University Hospital Avicenne of Rabat between 2004 and 2019, we analyze the epidemiological, clinical, paraclinical and surgical techniques performed in order to know the advantage very serious condition and hope for a better support. The average age in our study was 55 years with a male predominance, the main risk factor is hypertension, which was present in 14 of our patients. The master of the symptom is chest pain that is a constant sign in all patients and review key diagnostic confirmation is CTA in the absence of TOE emergency. All dissections were type A surgically treated. The surgery was based primarily on the Bentall technique consisting in the replacement of the ascending aorta dissected and aortic valve prosthesis in a synthetic in 13 of cases, while 7 cases underwent a replacement of aorta dissected by a prosthetic tube Dacron extra coronary position. The average duration of CPB and aortic clamping were 160 +/-20 min and 120 +/- 20min respectively with the implementation of a femoral cannulation sometimes associated with cannulation bicarotidienne. The intra-hospital mortality rate was 35%, 5 patients died following bleeding; one patient died from biventricular dysfunction and one patient died from renal failure; others showed a favorable trend with simple post-operative within our service.

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#### Introduction:-

Aortic dissection (AD) is a medical and surgical emergency, the diagnosis of which has been considerably facilitated in recent years by the development of reliable and readily available diagnostic methods such as echocardiography, spiral angiography, and even magnetic resonance imaging. The prognosis remains serious, especially when the ascending aorta is concerned (type A), which makes it a surgical emergency and requires the fastest possible transfer of the patient to a cardiac surgery center. The goal of the intervention is to replace the ascending aorta at high risk of rupture and if possible to resect the front door. The prognosis for dissections of the descending thoracic aorta (type B) is better; treatment is above all medical in the absence of complications. Anyway, the treatment being palliative,

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these patients must benefit from an annual clinical follow-up and by imaging of sections, because of the risk of evolutionary complications dominated by the aneurysmal development of the unrepaired aorta.

#### **Définition:-**

Acute dissection is defined by the longitudinal cleavage of the aortic wall at the level of the media from an intimal breach (entrance door) located at a variable level of the thoracic aorta and favoring the irruption of blood under pressure in the cleaved part and therefore its extension downstream.

A dissection is said to be "acute" if it is detected within 14 days of the first symptoms; beyond that, it is a "chronic" AD.

We report cases of aortic dissection operated in the cardiovascular surgery department at the Avicenn University Hospital between 2004 and 2019, we will analyze the epidemiological, clinical, paraclinical data, the surgical techniques performed for these patients as well as their immediate postoperative evolution in order to make known advantage this very serious pathology and highlight the need for intimate medico-surgical coordination for a satisfactory result.

#### **Methods:-**

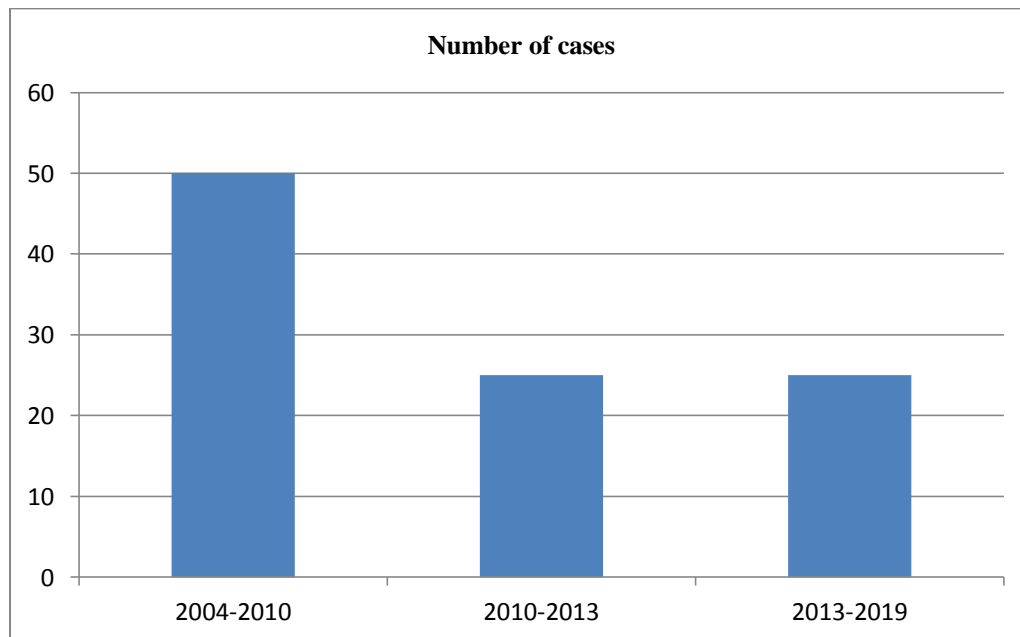
This is a retrospective study spread over 15 years, between 2004 and 2019, of 20 patients operated for aortic dissection in the cardiovascular surgery department A at the Avicenn University Hospital in Rabat. (Diagram 1)

This study consisted of a retrospective analysis of data from clinical records and made it possible to determine the epidemiological, clinical, paraclinical aspects, to detail the surgical techniques performed for these patients, as well as their immediate postoperative evolution in order to promote awareness of this very serious pathology and to highlight the need for intimate medico-surgical coordination for a better result.

#### **Epidemiology:**

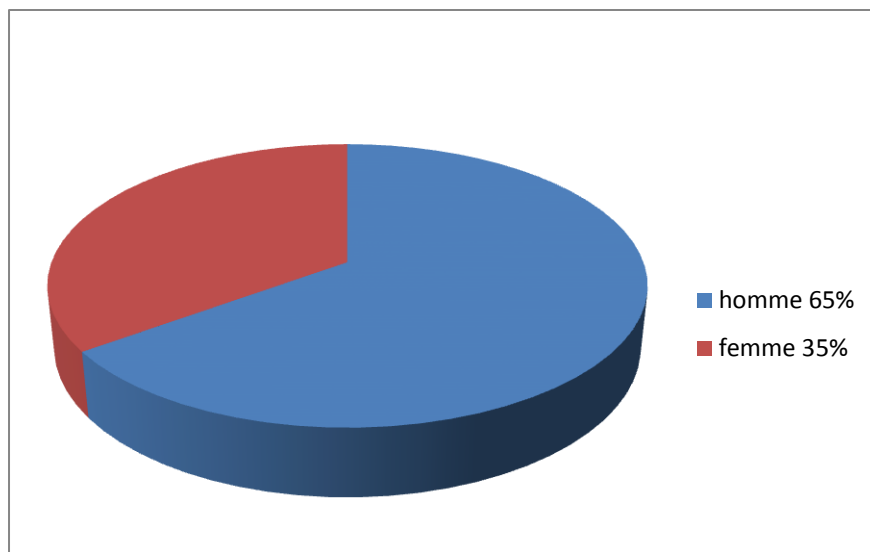
The number of cases in our study is relatively low (20 cases over 15 years, this is due to:

1. The difficulty of diagnosis at the emergency level
2. The seriousness of the pathology quickly leading to sudden death
3. The management strategy for these patients.
- 4.



**Figure 1:-** Diagramm n° 1: number of cases operated from 2004 to 2019.

The middle age (55 years); 14 patients were hypertensive which favors the involvement of hypertension in the disease and its consideration as an essential factor.



**Figure 2:-** Distribution of patients by sex

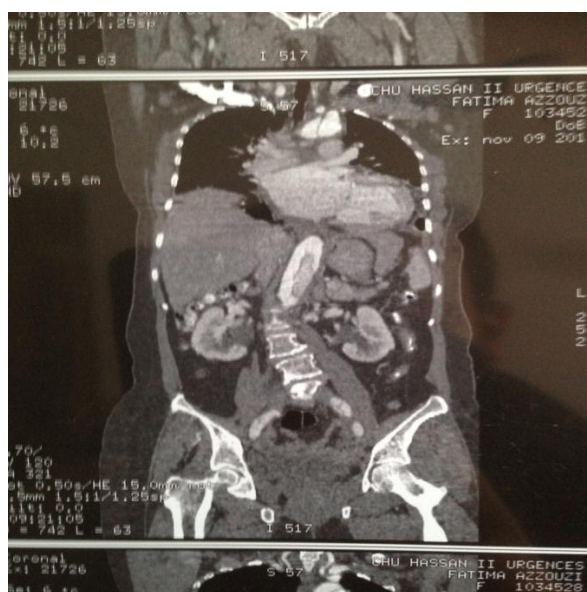
#### **Clinical Data:**

Chest pain is found in almost all cases; the blood pressure asymmetry found in 10 cases; the aortic insufficiency found in 12 patients explains the dysfunction (1/3 of the cases) and the dilation of the left ventricle (2/3 of the cases); 5 patients show signs of right heart failure which is consistent with the data in the literature.

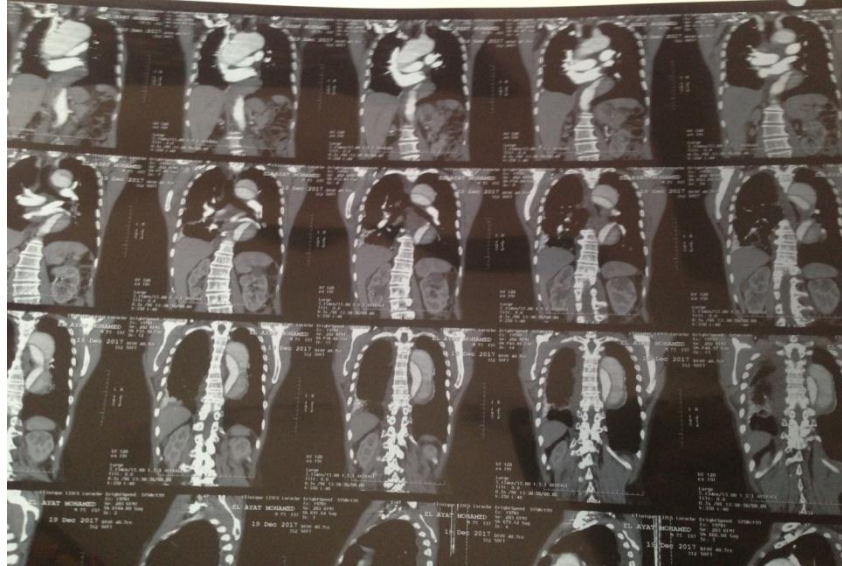
#### **Paraclinical Exams:**

In our series all the patients presented with a mediastinal enlargement on the chest X-ray, 15 patients presented abnormalities with the ECG type of enlarged cavities in 13 cases and signs of ischemia in the other 2 cases (10%).

Trans-thoracic ultrasound strongly suspects the diagnosis and points to CT angiography in all patients. [15]. [16]. Angiography was the confirmatory exam. [17]. ETO was not done in any patient; due to unavailability at the emergency level.



**Figure3 :**Image of a CT scan showing aortic dissection.



**Figure 4:-** Image of a CT scan showing aortic dissection.

#### **Treatment:**

In our series, the mean duration of CEC implemented using cannulas in the femoral position in all cases associated with bicarotid cannulation in two cases lasted 160 min and clamping was 120 min. The aortic clamping is relatively long compared to the other series which in most cases belong to centers specialized in aortic surgery. [18].

The CEC is relatively long compared to the other series this is due to the mechanical assistance by CEC requested in 4 patients and prolonged up to 35 min on average in the 4 cases.

In our series, the Bentall technique consisting in replacing the dissected aorta and the aortic valve with reimplantation of the coronaries was performed in 13 patients, the 7 others benefited from a replacement of the dissected aorta with conservation of the valve aortic.



**Figure 5:-** Peroperative image objectifying the Bentall technique.

#### **Evolution:**

The average mortality from aortic dissections is around 25% in the different series.

In our series, the post-operative mortality rate was 35%, far exceeding the average mortality of comparable series, 5 patients died following bleeding; one patient died from biventricular dysfunction and one patient died from renal failure. The 13 other patients presented a good postoperative evolution with a length of stay in intensive care varying from 3 to 6 days to finally join our service. The intraoperative mortality rate, in particular hemorrhagic, was slightly reduced between 1996 and 2012 from 26% to 22% due to the development of surgical techniques in recent years.

However, this decrease is not significant, and this is due to the severity of the disease itself because most often the deceased patients immediately come to the hospital with fatal complications (aortic rupture or severe aortic insufficiency).

The left ventricle dysfunction was aggravated in a case going from 45% of Ejection Fraction (EF) to 35%. It had also happened the 1st time in 2 other patients in immediate postoperative showing 34% and 37% of EF.

### **Conclusion:-**

Acute aortic dissection is an extreme emergency requiring multidisciplinary management, and hospitalization in a cardiac intensive care unit near a cardiovascular surgery service.

Its prognosis is catastrophic in the absence of treatment; intraoperative mortality is around 20% to 30% depending on the series reported in the literature despite advances in diagnostic and therapeutic management.

Type A aortic dissection is a surgical emergency that requires the fastest possible patient transfer to a cardiac surgery center. The goal of the intervention is to replace the ascending aorta at high risk of rupture and if possible to resect the front door in order to prevent any fatal aortic rupture.

Currently endovascular treatment alone or combined with surgery contributes in some cases to better management of this pathology.

### **Competing Interests:**

The authors have declared that no competing interest exists.

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### **Author's contributions:**

MY drafted the manuscript and all authors read and approved the final manuscript.

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