



## CLINICAL PROFILE OF ASCENDING AORTIC ANEURYSM: A RETROSPECTIVE OBSERVATIONAL STUDY

### Cardiology

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### ABSTRACT

**Background:** Ascending aortic aneurysm is common incidental finding on transthoracic echocardiography performed for unrelated indications. Usually seen in patients with underlying connective tissue disorders.

**Methods:** This was retrospective observational study involving ascending aortic aneurysm patients requiring surgical intervention during the period of Jan 2015 to Jan 2018

**Results:** Total 30 patients of ascending aortic aneurysm requiring surgical intervention were studied. Males outnumbered females with ratio of 5:1. Their age ranges from 14-72 years (mean=43.6years). Most of the patients of ascending aortic aneurysm also present with aortic regurgitation, 43%. Hypertension being the most commonly associated co-morbidity. Bentall's procedure, 67%, is most commonly needed surgical intervention. Bleeding, 16.67%, is the most common and independent risk factor for mortality with percentage of 26.67%

**Conclusion:** Bleeding is independent risk factor in ascending aortic surgery and careful application of hemostasis skills can bring down mortality associated with ascending aortic surgery.

### KEYWORDS

Ascending Aortic Aneurysm, Bentall's Procedure

### INTRODUCTION

Ascending aorta is termed as aneurysmal if it is dilated more than 50% of predicted (ratio of observed to expected diameter  $\geq 1.5$ ). The dilatation of aorta is common incidental finding on transthoracic echocardiography performed for unrelated indication.<sup>1</sup> incidence of ascending aortic aneurysm in children and adults is low. These aneurysms are usually seen in patients with underlying connective tissue disorder like Marfan's syndrome, Ehler-Danlos syndrome etc. or in cases with bicuspid aortic valve.<sup>2</sup>

The purpose of this study was to assess our experience in managing cases of ascending aortic aneurysm with various etiology in term of its outcome, morbidity and mortality etc. at KEM hospital, Parel, Mumbai.

### MATERIAL AND METHODS

The design of this study was retrospective observational study which was conducted at KEM Hospital, Parel, Mumbai. Which is tertiary care centre and also a teaching institute.

Retrospectively all the data gathered from all patients who had ascending aortic aneurysm and underwent surgical intervention for the same in our hospital during the course of 3 years i.e. from Jan, 2015 to Jan, 2018 and analysed to assess our experience in managing ascending aortic aneurysm.

**Inclusion criteria:** all patients of ascending aortic aneurysm who underwent surgical intervention.

**Exclusion criteria:** patients who had ascending aortic aneurysm and managed with medical line of management are not included in this study.

Data analysis is gathered was entered in computer and analysed using excel-2013 with the help of medical statistician.

### RESULTS AND DISCUSSION

During our study it was found that age group of 40-50 years (46.66%) is more commonly affected in the population with mean age of 43.6 years  $\pm$  14.08 years Standard deviation. The youngest patient observed in our study was 14 year old and oldest 72 years. Male predominance with male:female ratio of 5:1. On comparison with Clouse WD et al<sup>3</sup> and Muluk et al<sup>4</sup> mean age of presentation is 75.9 years and 44.8 years respectively. It is comparable with our study.

According to Hyun-Chel et al<sup>5</sup> & Katie cheung et al<sup>6</sup> male is the predominant gender affected which is consistent with our study.

It was seen that no pure aortic stenosis was seen associated with ascending aorta while aortic regurgitation, 13(43%), is most commonly associated lesion. 7(23%) had mixed aortic valvular lesion and 10(33%) had no valvular involvement. On comparison with Hyun-Chel et al<sup>5</sup> this finding of aortic regurgitation being most common association is comparable with our study.

In all 10(33%) out of 30 patients also had aortic arch involvement with ascending aortic aneurysm. One of 30 patients (3%) had associated ischaemic heart disease. Various surgical management were considered during management. Bentall's procedure 20(67%) being the most common modality of the surgical treatment. 6(20%) underwent bentall's with hemiarch replacement. 1(3%) underwent bentall's with arch replacement, Bentall's with CABG, and David's procedure each.

9(30%) underwent re-exploration with primary bleeding being the sole reason for re-exploration. When compared with studies done by Hyun-Chel et al<sup>5</sup> Muluk et al<sup>4</sup> it was found that their re-exploration rate was 9.6% and 1.8% respectively. This rate is much higher in our study, most probable reason which come to our conclusion was small size of our study as compared to them and in-equal distribution of patients in three years i.e. re-exploration rate was higher in first year and it decreased in consecutive 2 years.

**Table.1) Baseline patient characteristics**

Age $\pm$ SD	43.6 $\pm$ 14.08
Male/Female	25/5 (5:1)
Hypertension	9(30%)
Diabetes mellitus	3(10%)
COPD	1(3%)
Chronic renal failure	2(6.67%)
Mediastinitis	1(3.3%)
Emergency procedure	7(23.33%)
Neurological complications	3(10%)
<b>Aortic pathology</b>	
Dissection	5(16.67%)
Marfan syndrome	4(13.3%)
Bicuspid aortic valve	5(16.67%)
Maximum diameter of ascending aorta, mm $\pm$ SD	86 $\pm$ 11.9
Aortic valve regurgitation	13(43%)
Mixed aortic valve stenosis and regurgitation	7(23%)

**Table.2) mortality analysis**

Factors	Number of patients died
Emergency	4
Mediastinitis	1
Bleeding	5
Renal failure	2
acute aortic dissection	1

In all 8(26.67%) patients died during study. When we put glance at the mortality it was found that it was not a single cause which lead to mortality in much cases but multiple factors which contributed to it. Bleeding 5(16.67%) being the most common factor contributed to the mortality in surgically managed patients, with p-value of 0.019(i.e. statistically significant -  $X^2$ -test). Other major contributing factor was emergency surgery, 4(13.3%) lead to death after emergency surgery, with p-value of 0.11(i.e. statistically not significant -  $X^2$ -test). On comparing mortality with the studies done by Hyun-Chel et al<sup>5</sup> & Christian D.Etz, et al<sup>7</sup>, their mortality percentage was 5.5% and 3.9% respectively, which is much lower than our study, 8(26.67%). It could be because of small sample size as compared to them and unequal distribution of death cases over the period of 3 years i.e. it was more in first year and low in last 2 years. Randomization of data may decrease such fallacies.

Average duration of hospital stay in surgically managed patients during our study comes out to be 9.3 days  $\pm$  5.8 SD.

### Conclusion

In our present retrospective observational study 30 patients of ascending aortic aneurysm were studied. The most commonly affected age group in our study is 40-50 years. The average age of patient in our study is 43.6 years. The male to female ratio detected in our study is 5:1. Aortic regurgitation is the most common associated valvular pathology with the ascending aortic aneurysm. Hypertension is the most common associated co-morbidity. Bleeding being the most common and independent factor leading to mortality in surgical management of ascending aortic aneurysm. Average duration of hospital stay is 9.3days.

Presence of co-morbid conditions like hypertension, Diabetes mellitus at the time of presentation of patient to the hospital and emergency presentation are important co-morbid conditions and lead to fatal outcome in ascending aortic aneurysm surgery. Bleeding being independent high risk factor contributing to mortality, careful application of hemostasis skills during surgery can bring wonders in outcome of surgically treated ascending aortic aneurysm patients.

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