

Original article:

Postoperative Discomfort among Patients with Aortic Disease: A Post-Discharge Cross-Sectional Analysis

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Abstract

Background: Aortic diseases (AD) include Ascending Aorta aneurysm, Ascending Aorta aneurysm with Aortic arch aneurysm, and Aortic root aneurysm requiring surgical intervention and Aortic dissection DeBakey type I and type II are life-threatening disorders. There has been a shift of focus on AD treatment from open repair to endovascular treatment. The survival rate of patients with AD is also improving as there is an improvement in surgical treatment. Many studies have reported that discomfort is an essential determinant of people's lives, as patients with chronic pain might fall into disability or be unable to work.

Methods: A retrospectively cross-sectional study was conducted among 117 participants from a single tertiary care G. B. PANT hospital in New Delhi. The data was compiled from the hospital's medical record database (MRD), and confidentiality of data was maintained. Amid the COVID-19 pandemic, a telephone follow-up and face-to-face interviews (29 patients) from September 2020 to Jan 2022 were conducted. Data related to Demographic variables and clinical profiles related to disease, diagnosis and treatment were collected using a questionnaire. The responses were recorded in the questionnaire. The primary outcomes were the incidence and discomfort symptoms. SPSS v22.0 software was used to analyse and describe the primary data of patients.

Results: A total of 136 patients were included in the study; 117 patients comprised the survival group and 19 death group. 53 of 117 patients reported discomfort. The discomfort symptoms reported were diverse and mainly manifested as chest pain(44%,52/117), back pain (44%,52/117), chest tightness (36%,42/117), dizziness (32 %,38/117) and weakness (29%,34/117). The multivariable analysis predicted that the discomfort increased significantly when the patient was positive for an alcohol drinking history. However, length of discharge was associated with a reduced incidence of discomfort.

Conclusions: postoperative discomfort symptoms reported in the present study varied, and some subjects reported multiple symptoms. Therefore, attention to patients' physical condition after the operation and early targeted guidance can prevent serious aortic surgery-related consequences. Early diagnosis, sensible drinking, and long-term follow-up are required to monitor the patients' recovery.

Keywords: Aortic disease, Ascending Aorta aneurysm, aortic disease

Background:

Aortic diseases (AD) include Ascending Aorta aneurysm, Ascending Aorta aneurysm with Aortic arch aneurysm, Aortic root aneurysm requiring surgical intervention, Aortic dissection DeBakey type I and type II are life-threatening disorders. Many studies have reported high (as high as 35%) mortality among AD patients in a short time when there are other serious complications¹⁻³ There has been a shift of focus on AD treatment from open repair to endovascular treatment⁴, and many patients are undergoing surgical intervention for AD.⁵ The survival rate of patients with AD is also improving as there is an improvement in surgical treatment patients with AD face many psychological and physical problems for months or years.⁶ Heart surgery is considered a life-threatening event for patients and is associated with an intense invasion of one's body and integrity.^{7,8} The focus of Most clinical studies is postoperative complications instead of patients' subjective symptoms. Many studies have reported that discomfort is an essential determinant of people's lives, as patients with chronic pain might fall into disability or be unable to work.^{9,10}

Moreover, patients with physical discomfort would be at an increased risk of developing psychological distress,¹¹ leading to adverse cardiovascular events¹² However; very little attention is paid to described discomfort symptoms in patients with AD after discharge. The present study is aimed to understand the characteristics and incidence and explore postoperative determinants of discomfort symptoms in AD patients to help patients achieve a higher quality of life after surgery and clinical decision making.

Materials and Methods:

Study design

A retrospectively cross-sectional study was conducted among 117 participants from a single tertiary care G. B. PANT hospital in New Delhi. The data was compiled from the hospital's medical record database (MRD) system, and confidentiality of data was maintained. Amid the COVID-19 pandemic, a telephone follow-up along with the face to face interview (29 patients) taken from September 2020 to Jan 2022. Data collection tools were finalised by reviewing the related literature. The convenience sampling technique was used to enrol the Participants. Inclusion criteria: (1) Patients diagnosed with AD; (2) Hospitalisation for the first time ; (3) underwent surgery; (4) above 18 years of age.

Method of data collection

Data related to Demographic variables and clinical profiles related to disease, diagnosis and treatment were collected. Demographic variables included age, sex, education level, marital status, place of residence, smoking, drinking and history of hypertension. The clinical profile included types of operations, heart rate at admission and blood pressure, length of stay and discharge, whether the AD was diagnosed in the first-ever visit to the hospital, and whether the patient reported any symptoms of discomfort using a questionnaire. The patients were contacted on the telephone, and the responses were recorded in the questionnaire Performa

The follow-up results were coded in an Excel sheet. The primary outcomes were the incidence and discomfort symptoms. The discomfort was defined as the subjective pain experience or abnormal feeling that continuously existed from discharge to telephone follow-up.

The sample size of participants was calculated based on the estimated parameters previous study using $N = Z\alpha^2 P(1-P)/d^2$ formula, in which $\alpha=0.05$ and $Z\alpha=1.96$, and the estimated acceptable error for proportion d was 0.05.

Statistical analyses

SPSS v22.0 software was used to analyse and describe the primary data of patients. Numbers and percentages were used to report the categorical variables, and means and standard deviation were used to report the continuous variables (SD). Single-factor and multiple regression analyses were used to interpret the findings at a p-value 0.05 as a level of significance. Odds ratio (OR) and 95% confidence interval (CI) were also calculated. The patients who died after the operation were not included in the analysis of the causes.

Results :

Demographic and clinical characteristics of study subjects

One hundred thirty-six patients were telephonically followed up. One hundred seventeen subjects were alive, and 19 were dead after the repair. Most study subjects (76%) with AD who were alive after surgery were male, and the mean age of patients was about 50 years. Aortic open repair (Bentall's procedure ,Ascending aorta replacement ,Bentall's procedure with hemiarch replacements ,Ascending aorta with hemiarch replacement) was the survival group's primary surgical treatment. About 42 % of study subjects had a history of smoking, and around 55 % had a history of drinking alcohol. The majority had a history of hypertension (70%), and 78% had been diagnosed with AD in their first-ever visit to the hospital (Table. 1).

Table 1. Demographic and clinical characteristics of study subjects

Variable	Alive n=(117)	Dead n=(19)
Age (years)	49.83±9.29	47.32±8.24
Gender		
Male	89(76.1)	11(57.9)
Female	28(23.9)	8(42.1)
History of Smoking		
Yes	49(41.9)	10(52.6)
No	68(58.1)	9(47.4)
History of Drinking alcohol		
Yes	64(54.7)	9(47.4)
No	53(45.3)	10(52.6)
history of hypertension		
Yes	82(70.1)	13(68.4)
No	35(29.9)	6(31.6)
SBP, mmHg, SDs	132.77±11.74	131.16±12.47
DBP, mmHg, SDs	83.64±9.2	82.53±9.08
Length of stay, days, SD	12.96±2.2	10.84±3.67
Diagnosis made in the first visiting hospital		
Yes	92(78.6)	10(52.6)
No	25(21.4)	9(47.4)
Operative procedure		
Bentall's procedure	66 (56.41%)	6 (32%)
Ascending aorta replacement	49 (41.88%)	6 (32%)

Bentall's procedure with hemiarach replacements	02 (0.01%)	5 (26%)
Ascending aorta with hemiarach replacement	02 (0.01%)	2 (10%)

Discomfort symptoms among study subjects

Table 2 represents the discomfort symptoms reported by the study subjects. The main symptoms of discomfort among the survival group were chest pain(44%,52/117), back pain (44%,52/117), chest tightness (36%,42/117), dizziness (32 %,38/117) and weakness (29%,34/117). Other symptoms are enlisted in Table 2. Moreover, 53/ 117 patients reported discomfort after surgery, while others refused to have any discomfort related to surgery

Determinants of discomfort among study subjects

Table 3 shows the univariate and multivariate analysis of factors contributing to discomfort after AD repair surgery. The univariate analysis predicted that drinking alcohol and smoking are significantly associated with increased discomfort after surgery. On the other hand, the multivariable analysis predicted that when the patient was positive for alcohol drinking history, the discomfort increased significantly ($\beta =0.2376$, $p=0.0093$). However, length of discharge was associated with a reduced incidence of discomfort ($\beta =1.956$, $p=0.0529$)

Table 2. Discomfort symptoms reported by the subjects

Symptoms of discomfort (n=117)	f(%)
Chest tightness	52(44.4%)
Back pain	50(42.7%)
Dizziness	42(35.8%)
Hypertrophic scar	41(35.04)
Weakness	38(32.5%)
Chest pain	34(29%)
Pain in the wound	16(13.7%)
Arthralgia	10(8.5%)
Edema of lower limbs	10(8.5%)
Difficulty in urination	9(7.7%)
Anorexia	9(7.7%)
Cough	7(6%)
Sinus discharge of wound	7(6%)
Headache	7(6%)
Blurred vision	6(5%)
Hard to breath	5(4.2%)
Vomit	5(4.2%)
Palpitations	5(4.2%)
Abdominal pain	5(4.2%)
Memory loss	5(4.2%)

Table3. Factors associated with postoperative discomfort of patients

Variables	Univariate analysis n=117		Multivariate analysis n=117	
	OR (95% CI)	P value	β	P value
Age	0.9789 (0.9405 to 1.0189)	0.2933	-	-
Smoking (yes)	2.4444 (1.1508 to 5.1922)	0.0187*	-	-
Drinking (yes)	2.5558 (1.1974 to 5.4553)	0.0137*	0.2376	0.0093
History of hypertension (yes)	0.6690 (0.3020 to 1.4818)	0.3214	-	-
SBP	0.9865 (0.9562 to 1.0177)	0.3908	-	-
DBP	0.9834 (0.9453 to 1.0230)	0.4053	-	-
Length of stay	1.1636 (0.9768 to 1.3861)	0.0821	1.956	0.0529
Diagnosis made in the first visiting hospital (yes)	1.0232 (0.4200 to 2.4923)	0.9598	-	-

Discussion:

The present study is the only one from India to report postoperative discomfort in patients with AD and highlight the influencing factors of the same. Many studies have reported that the prevalence of aortic dissection was higher in men between the age group of 40–60, ^{4, 13} and EVAR is the primary treatment for AD; similar findings are reported in the present study. The discomfort was common in postoperative patients with disease of the artery. One of the studies by Carlijn et al. reported that the participants who underwent aortic surgery had physical complaints such as thoracic pain, dyspnea or tachycardia ¹¹. Another study described the experiences of four out of 15 patients with open repair of abdominal aortic aneurysm and reported physical complications such as lacking appetite, experiencing altered taste sensations, and feeling overwhelming fatigue after surgery ¹⁴. In the present study, the incidence of self-reported postoperative discomfort was around 45% (53/117), and the main symptoms reported were pain, chest tightness, dizziness and weakness. However, some patients had multiple discomforts simultaneously and reported more than one symptom of discomfort.

The recovery of AD is a long-term process. The discharge time of patients included in this study ranged from 13-15 days. Patients with AD experienced more significant surgical trauma and needed more time to recover, which might explain the presence of discomfort depending on the discharge length ^{15, 16}. It was found that

positive drinking history was also one of the reasons for discomfort, which might be caused by the toxic effect of alcohol or its metabolites.

Many Previous hospital-based studies and studies from retrospective registry data from specialized centres indicated that the delay from onset of symptoms to diagnosis could range from 4.3 h to more than 24 h, and delayed diagnosis means patients receive treatment for AD more lately.^{17, 18} It can be inferred that delayed diagnosis might lead to devastating outcomes (amputations or renal failure), even death.¹⁹ Therefore improving the quality and efficiency of diagnosis and treatment can reduce the likelihood of severe consequences but also help reduce the occurrence of postoperative adverse events. Unfortunately, due to the lack of pre-diagnosis data, our study could not determine the specific time of diagnosis.

Limitations of the study include using the self-report method for reporting the discomfort; that is, the subjects reported the symptoms and no standardised tool was used, which might have some subjective bias. Second, this was a single bus, cross-sectional survey, and patients were discharged from the hospital from 6 to 18 months at the follow-up time. This study did not represent the long-term prognosis and outcome of patients with AD, so further follow-up is needed to improve the results and more multi-centre and cohort studies are needed. Finally, the sample size was small, the results were meaningful, and larger sample size was needed to generalise the findings.

Conclusion:

Patients with AD had a higher percentage of postoperative discomfort symptoms. Postoperative discomfort symptoms reported in the present study were varied, and some of the subjects reported multiple symptoms, which meant there were still problems with the recovery of patients. Therefore, attention to patients' physical condition after the operation and early targeted guidance can prevent serious consequences. Early diagnosis and guidance about sensible drinking will still be important problems that medical workers need to solve. However, long-term follow-up is required to monitor the patients' recovery.

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