NEU PRESS

Mevlana Tıp Bilimleri Dergisi
Mevlana Medical Sciences
eISSN:2757-976X

ARAŞTIRMA MAKALESİ/RESEARCH ARTICLE

DOI:http:/dx.doi.org/10.56752/Mevmedsci.2026.105
Mev Med Sci, 2026; 6(1): 35-41

Gender, Age, and Operation Type Differences in Early Postoperative Complaints After Open Heart Surgery

Açık Kalp Ameliyatı Taburculuğu Sonrası Sık Görülen Sorunların Cinsiyet, Yaş, Operasyon Türü ve Birbirleri ile İlişkisi

Mehmet Isik[1], Muhammet B Cavlak[1], Hanefi Furkan Oz[1], Mehmet Sinan Iyisoy[2]

[1]Necmettin Erbakan University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Türkiye
[2]Necmettin Erbakan University, Faculty of Medicine,Department of Medical Education, Konya, Türkiye

Makale Tarihleri/Article Dates:
Geliş Tarihi/Received: 2 October 2024
Kabul Tarihi/Accepted: 2 February 2026
Yayın Tarihi/Published Online: 10 April 2026

Sorumlu Yazar/Corresponding Author:
Mehmet Işık
Necmettin Erbakan University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Türkiye
e mail: drmisik@hotmail.com

Açıklama/Disclosure: Yazarların hiçbiri, bu makalede bahsedilen herhangi bir ürün, aygıt veya ilaç ile ilgili maddi çıkar ilişkisine sahip değildir. Araştırma, herhangi bir dış organizasyon tarafından desteklenmedi. Yazarlar çalışmanın birincil verilerine tam erişim izni vermek ve derginin talep ettiği takdirde verileri incelemesine izin vermeyi kabul etmektedirler.

ÖZET

Amaç: Açık kalp ameliyatı yapılan hastaların taburculuk sonrası ilk altı haftada görülebilen semptom ve bulgularının yaş, cinsiyet, ve operasyon tipi ile ilişkisinin araştırılması, ek olarak semptom ve bulguların sıklığı, ortaya çıkma zamanları ve çoklu uyumunun analizi amaçlandı.
Metot: Temmuz 2023-Kasım 2023 tarihleri arasında, açık kalp ameliyatı yapılan 160 hastanın taburculuk sonrası ilk 6 haftadaki şikâyetleri ve başlama zamanı ileriye dönük incelendi.
Bulgular: En sık görülen semptom ve bulgular, sırasıyla, uyku bozukluğu %45.6, dispne %37.5, göğüs ağrısı %33.1, kol ve omuz ağrısı %32.5 idi. En az görülenler ise sternum dehissensi %6.8 ve fiziksel aktivite kısıtlılığı %6.2 oldu. Yara yeri enfeksiyonu, kadınların %43'ünde erkeklerin %21'inde görüldü (p:0,004). Uyku bozukluğu, kadınların %56'sında erkeklerin %40'ında saptandı (p:0,05). Anksiyete, izole kapak ameliyatında (p:0,02), bacak ağrısı CABG'de (p:0,03) sıktı. Dispne (p:0,01), cinsel aktivite bozulması (p:0,03) ve kol-omuz ağrısı (p:0,08) yaşla değişkenlik gösterdi. Çoklu uyum analizinde; anksiyete, nöropsikolojik şikayetler ve gastrointestinal şikayetler birliktelik gösterdi. Yine, çoklu uyum analizinde ağrı, uyku bozukluğu, dispne ve yara enfeksiyonun diğer değişkenlerden ayrıştığı görüldü.
Conclusion: Açık kalp ameliyatı taburculuğu sonrası görülen şikayetler, cinsiyet, operasyon türü ve yaş ile ilişkili olarak değişmektedir. En erken bulgu anksiyete iken, en geç şikayet cinsel aktivite bozukluğu oldu. Anksiyete, nöropsikolojik ve gastrointestinal şikayetler birliktelik gösterdi. Bir diğer birliktelik gösteren şikayet grubu ağrı, uyku bozukluğu dispne ve yara enfeksiyonu idi.

Anahtar Kelimeler: Kalp cerrahisi, taburculuk sonrası problemler, dispne, ağrı, uyku bozukluğu.

ABSTRACT

Objective: In this study, it was aimed to investigate the relationship between age, gender, and operation type of symptoms and findings that can be seen in the first six weeks after discharge of patients who underwent open heart surgery, as well as to analyze the frequency of symptoms and findings, their onset times, and their coexistence.
Method: Between July 2023-November 2023, the complaints of 160 patients who underwent open heart surgery happened in the first 6 weeks after discharge and the onset time were prospectively examined.
Results: The most common complaints were sleep disorder 45.6%, dyspnea 37.5%, chest pain 33.1%, arm and shoulder pain 32.5%, respectively. The least common ones were sternal dehiscence (6.8%) and physical activity limitation (6.2%). Wound infection was seen in 43% of women and 21% of men (p=0.004). Sleep disorder was detected in 56% of women and 40% of men (p=0.05). Anxiety was common in isolated valve surgery (p=0.02) and leg pain was common in CABG (p=0.03). Dyspnea (p=0.01), impaired sexual activity (p=0.03) and arm-shoulder pain (p=0.08) varied with age. In coexistence analysis; Anxiety, neuropsychological complaints and gastrointestinal complaints showed coexistence. Similarly, in the coexistence analysis, pain, sleep disorder, dyspnea and wound infection were seen to be differentiated from other variables.
Conclusion: Complaints seen after the discharge from open heart surgery vary depending on gender, type of operation and age. While the earliest symptom was anxiety, the latest complaint was sexual activity disorder. Anxiety, neuropsychological and gastrointestinal complaints were observed together. Another group of related complaints were pain, sleep disorder, dyspnea and wound infection.

Key words: Cardiac surgical procedures, postoperative problems, dyspnea, pain, sleep disorder.

Atıf yapmak için/ Cite this article as: Isik M, Cavlak MB, Oz HF, Iyisoy MS. Gender, Age, and Operation Type Differences in Early Postoperative Complaints After Open Heart Surgery. Mev Med Sci. 2026; 6(1): 35-41

INTRODUCTION

In patients undergoing open heart surgery, complications related to different systems may occur in the perioperative or post-discharge period. These complications include bleeding, pain, arrhythmia, atelectasis, nausea-vomiting, neuropsychological disorders, renal failure and wound infection. Patients are usually discharged within 5-7 days if no postoperative problems develop. Post-discharge complications are usually observed within the first six weeks (1). The most common problems observed in this period have been reported as insomnia, pain, activity limitation, stress intolerance, cognitive and nutritional disorders (2). It was reported that 14.2% of the patients were worried that their sexual life would not be the same as before and 31.4% experienced fear of death (3). There is not enough data in the literature regarding the relationship between post-discharge symptoms and findings and the type of operation, and their multiple compatibility.

In this study, the frequency of symptoms and findings that can be seen in the first six weeks after discharge of patients who underwent open heart surgery was determined and the relationship of these symptoms and findings with age, gender, and type of operation was analyzed. Additionally, the emergence times and coexistence of symptoms and findings were investigated.

METHODS

Patients who underwent open heart surgery [isolated coronary artery bypass grafting (CABG), isolated valve Mitral valve replacement (MVR), isolated Aortic valve replacement (AVR) and mitral ring annuloplasty (MRA) and combined surgeries (valve+CABG, valve+ascending aorta or CABG+ascending aorta)] in our clinic between 15 July 2023 and 15 November 2023 and who came to the outpatient clinic control between the 1st week after discharge and the 6th week after discharge were included in the study (The first 6 weeks of follow-up are conducted by our clinic, and subsequent follow-ups are conducted by the cardiology clinic; therefore, this study only covers the first 6 weeks). Patients who underwent median sternotomy were received in the study. Patients with peripheral arterial disease, congenital heart disease, emergency cases, and those who missed one or both follow-up visits were excluded from the study.

Additionally, if the complaints questioned were present in the preoperative period, these patients were not included in the study. Patients who underwent thoracotomy and partial sternotomy were excluded from the study. A total of 160 patients were included in the study. Post-discharge dyspnea, gastrointestinal complaints (nausea, vomiting, constipation, diarrhea, heartburn and pain), neuropsychological complaints (attention deficit, memory complaints, fear of death, nightmares, hallucinations, etc.), wound infection, chest pain. They were recorded by asking whether they had any problems related to leg pain, arm and shoulder pain, sleep disorder, sexual activity disorder, physical activity limitation, nutritional disorder, anxiety, sternal separation-dehiscence, and if so, the onset time of the complaints. In addition, some complaints were confirmed by examination (such as wound infection, sternal dehiscence).

The questions were asked the same to all patients in an outpatient clinic environment and were recorded by the same doctor. For our prospective study, study protocol approval (2023/4560) was obtained from the local faculty ethics committee and written informed consent was obtained from the patients. The study was carried out in accordance with the principles of the Declaration of Helsinki, (Clinical trial number: not applicable). The relationship of symptoms and findings with type of operation, age and gender were analyzed. In addition, the time of occurrence of symptoms and findings was determined and their relationship with each other was investigated using coexistence analyses. Artificial intelligence was not used at any stage of the article writing.

Statistical method

Mean and standard deviation are given descriptively for numerical variables, and frequency and percentage statistics are given for categorical variables. Chi-squared, Fisher's exact test and coexistence analyses were used in the analysis of categorical variables. T-test analysis was used to analyze numerical variables. Analyses were performed with the R 4.3.1 (R Core Team, 2024) R: A Language and Environment for statistical computing, R foundation for statistical computing, Vienna Austria. $p<0.05$ was considered significant.

RESULTS

Of the patients, 68.1% (n:109) were male and 31.9% (n:51) were female. The mean age was 60.7 (22-79) years. The distribution of operations was 62.5% (n:100) CABG, 11.8% (n:19) isolated valve, 25.6% (n:41) combined operations. Of the isolated valve operations, 9 were AVR and 10 were MVR. Combined surgeries included 20 double valve, 7 CABG+valve and 14 aortic surgeries (Bentall 5, Ascending aorta+valve 7, Ascending aorta+CABG 2). Bentall cases were patients who underwent elective surgery due to ascending aortic aneurysms. Distribution of detected symptoms and findings: Sleep disorder 45.6% (n:73), dyspnea 37.5% (n:60), chest pain 33.1% (n:53), arm and shoulder pain 32.5% (n:52), (none) The rate of patients without pain complaints was 39% (n:63), gastrointestinal complaints 31.8% (n:51), wound infection 28.1% (n:45), leg pain 26.2% (n:42), anxiety 25% (n:40), nutritional disorder 14.3% (n:23), neuropsychological complaints 12.5% (n:20), sexual activity disorder 10% (n:16), sternal dehiscence 6.8% (n:11) and physical activity limitation

Table 1. Distribution of symptoms and signs according to gender.

Variables[2]	Male, N=109[1]	Female, N=51[1]	P[2]
Dyspnea	36 (33.03%)	24 (47.06%)	0,08
Gastrointestinal complaints	34 (31.19%)	17 (33.33%)	0,8
Neuro-psychological complaints	16 (14.68%)	4 (7.84%)	0,2
Wound infection	23 (21.10%)	22 (43.14%)	0,004
Chest pain	33 (30.28%)	20 (39.22%)	0,3
Leg pain	33 (30.28%)	9 (17.65%)	0,09
Arm and shoulder pain	32 (29.36%)	20 (39.22%)	0,2
Sleeping disorder	44 (40.37%)	29 (56.86%)	0,05
Sexual activity	11 (10.09%)	5 (9.80%)	0,9
Physical activity limitation	8 (7.34%)	2 (3.92%)	0,5
Nutritional disorder	14 (12.84%)	9 (17.65%)	0,4
Anxiety	30 (27.52%)	10 (19.61%)	0,3
Sternal dehiscence	8 (7.34%)	3 (5.88%)	>0,9

[1]Mean±SD; n(%)
[2]Welch Two Sample t-test; Pearson's Chi-squared test; Fisher's exact test

Table 2. Distribution of symptoms and signs according to surgery type.

Variables[2]	CABG, N=100[1]	Isolated valve N=19[1]	Combined Operation N=41[1]	P[2]
Dyspnea	35.00 (35.00%)	7.00 (36.84%)	18.00 (43.90%)	0,6
Gastrointestinal complaints	33.00 (33.00%)	3.00 (15.79%)	15.00 (36.59%)	0,3
Neuro-psychological complaints	15.00 (15.00%)	3.00 (15.79%)	2.00 (4.88%)	0,2
Wound infection	24.00 (24.00%)	8.00 (42.11%)	13.00 (31.71%)	0,2
Chest pain	31.00(31.00%)	6.00(31.58%)	16.00(39.02%)	0,6
Leg pain	33.00 (33.00%)	2.00 (10.53%)	7.00 (17.07%)	0,03
Arm and shoulder pain	32.00 (32.00%)	8.00 (42.11%)	12.00 (29.27%)	0,6
Sleeping disorder	44.00 (44.00%)	11.00 (57.89%)	18.00 (43.90%)	0,5
Sexual activity	8.00 (8.00%)	2.00 (10.53%)	6.00 (14.63%)	0,5
Physical activity limitation	7.00 (7.00%)	2.00 (10.53%)	1.00 (2.44%)	0,3
Nutritional disorder	18.00 (18.00%)	2.00 (10.53%)	3.00 (7.32%)	0,2
Anxiety	30.00 (30.00%)	6.00 (31.58%)	4.00 (9.76%)	0,02
Sternal dehiscence	8.00 (8.00%)	1.00 (5.26%)	2.00 (4.88%)	0,9

[1]n(%); Mean±SD
[2]Pearson's Chi-squared test; Fisher's exact test

6.2% (n:10) was found.

The relationship between symptoms and findings and gender was investigated. Wound infection was seen in 43.1% of women and 21.1% of men (p= 0.004). Sleep disorder was detected in 56.8% of women and 40.3% of men (p= 0.05). The distribution by gender is given in detail in Table 1. The relationship between symptoms and findings and surgery type was analyzed. Anxiety was seen in 30% of CABG surgery patients, 31.5% of isolated valve surgery patients, and 9.7% of combined surgery patients (p= 0.02). Leg pain was found to be 33% in CABG, 10.5% in isolated valve and 17% in combined surgery (p= 0.03). The distribution according to surgery type is detailed in Table 2. The relationship between symptoms and findings and age was investigated. A significant difference was detected for dyspnea (higher in older ages) (p= 0.01) and sexual activity disorder (higher in younger ages) (p= 0.03). Arm-shoulder pain (more at younger ages) (p=0.08) was found to be close to significance. No significant relationship was found between other variables and age (Table 3).

When looking at the average onset time of symptoms and signs, regardless of the type of operation; It was determined that dyspnea, chest pain, leg pain, arm and shoulder pain, sleep disorder, anxiety and malnutrition started within the first week (The earliest complaint was anxiety, on average, on the 2nd day). It was found that gastrointestinal complaints, neuropsychological complaints, physical activity limitation and wound infection started within the 2nd week on average. It was observed that sternal dehiscence started at the 4th week on average and sexual activity disorder started at the 6th week on average. Considering the frequency of onset of symptoms and signs after CABG; 2nd week of physical activity limitation, 4th-6th week of sternal dehiscence. It was found that sexual activity disorder started in the 6th week. It was observed that other symptoms and findings mostly started in the first week

Table 3. Relationship of symptoms and signs to age

	0, N = 100[1]	1, N = 60[1]	p[2]
	59.09±9.77	63.40±11.25	0.01
Gastrointestinal	0, N = 109[1]	1, N = 51[1]	p[2]
Age	60.57±9.83	61.00±11.97	0.8
Neuro-psychological	0, N = 140[1]	1, N = 20[1]	p[2]
Age	60.26±10.63	63.85±9.41	0.13
Wound infection	0, N = 115[1]	1, N = 45[1]	p[2]
Age	60.37±10.12	61.58±11.57	0.5
Chest pain	0, N = 107[1]	1, N = 53[1]	p[2]
Age	60.59±10.24	60.94±11.18	0.8
Leg pain	0, N = 118[1]	1, N = 42[1]	p[2]
Age	59.91±10.28	62.95±10.99	0.12
Arm-shoulder pain	0, N = 108[1]	1, N = 52[1]	p[2]
Age	61.78±9.87	58.48±11.55	0.08
Sleeping disorder	0, N = 87[1]	1, N = 73[1]	p[2]
Age	61.52±10.40	59.74±10.67	0.3
Sexual activity	0, N = 144[1]	1, N = 16[1]	p[2]
Age	61.10±10.60	56.93±9.35	0.03
Physical activity	0, N = 150[1]	1, N = 10[1]	p[2]
Age	60.48±10.54	64.10±10.21	0.3
Malnutrition	0, N = 137[1]	1, N = 23[1]	p[2]
Age	60.57±9.63	61.52±15.06	0.8
Anxiety	0, N = 120[1]	1, N = 40[1]	p[2]
Age	61.09±9.86	59.55±12.38	0.5
Dehiscence	0, N = 149[1]	1, N = 11[1]	p[2]
Age	60.40±10.63	64.82±8.24	0.12

[1]Mean±SD
[2]Welch Two Sample t-test

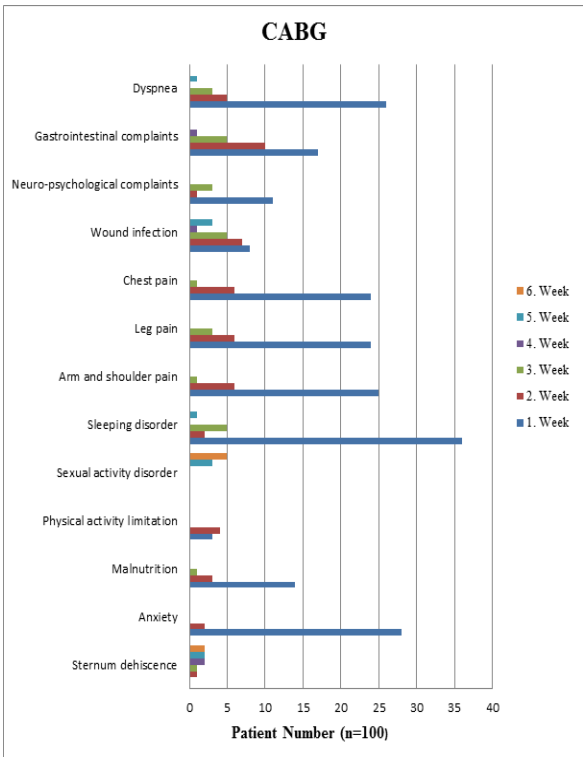


Figure 1. Distribution of the onset of symptoms and signs by week in patients undergoing CABG surgery

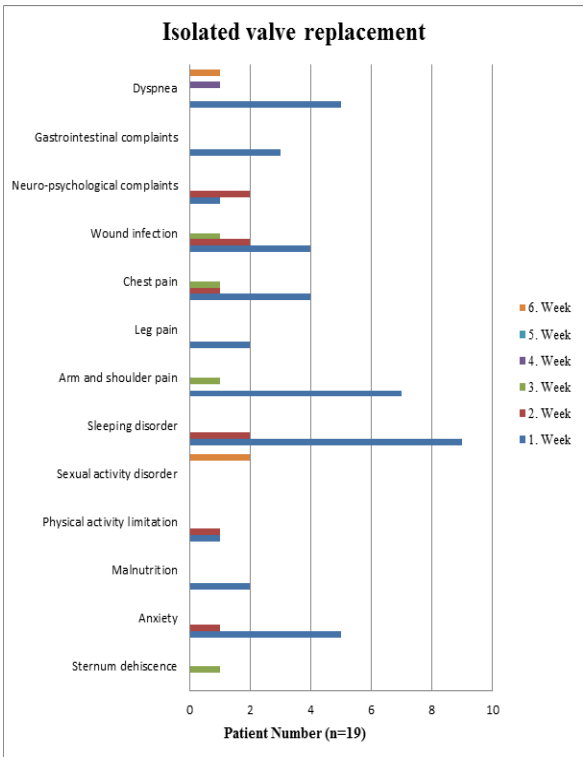


Figure 2. Distribution of the onset time of symptoms and signs by week in patients with isolated valve surgery.

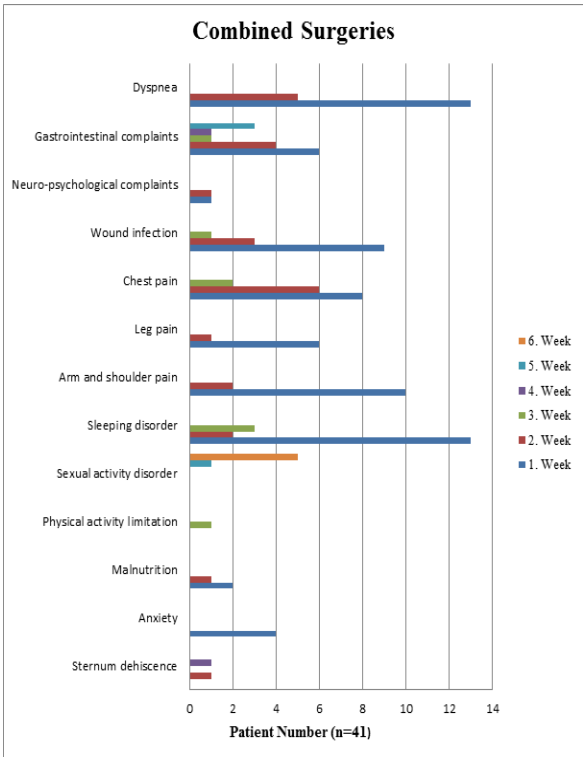


Figure 3. Distribution of symptoms and signs onset time by week in patients undergoing combined surgery

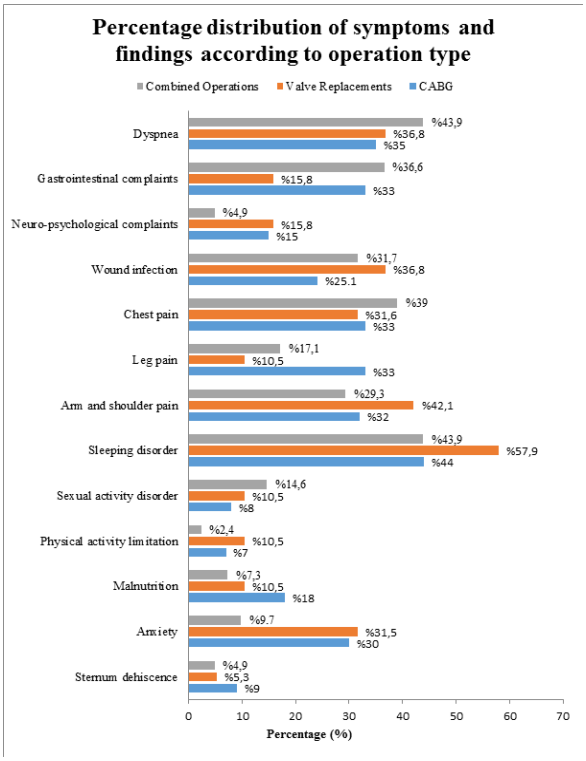
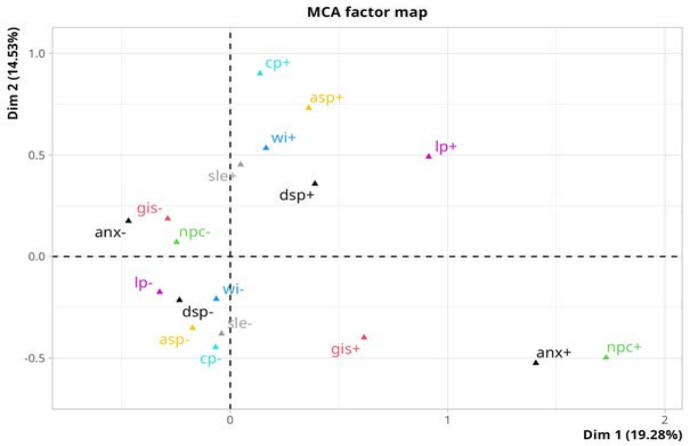


Figure 4. Percentage distribution of symptoms and findings according to operation type



Abbreviations: ank: anxiety, gis: gastrointestinal complaints, npc: neuro-psychological complaints, sle: sleeping disorder, cp: chest pain, asp: arm and shoulder pain, wi: wound infection, lp: leg pain, dsp: dyspnea.

Figure 5. Multiple correspondence analysis graph showing the relationship between symptoms and findings in terms of onset time.

(Figure 1).

Frequency of onset of symptoms and signs in isolated valve surgeries; neuropsychological complaints week 2, physical activity limitation week 1-2. It was determined that sternal dehiscence started in the 3rd week and sexual activity disorder mostly started in the 6th week. Other symptoms and signs were found to often begin in the first week (Figure 2). Frequency of onset of symptoms and signs in combined surgeries; neuropsychological complaints 1-2 weeks, physical activity limitation 3th weeks, sternal dehiscence 2-4 weeks. It was observed that sexual activity disorder frequently started in the 6th week. It was found that other symptoms and findings mostly started in the first week (Figure 3). The percentage distribution of symptoms and findings according to operation type is given in Figure 4. In coexistence analysis; Anxiety, neuropsychological complaints and gastrointestinal complaints were found to be differentiated from other symptoms and findings. Again, in the coexistence analysis, chest pain, arm-shoulder pain, leg pain, sleep disorder, dyspnea and wound infection were found to be differentiated from other variables (Figure 5).

DISCUSSION

After CABG surgery, approximately 7-14% of patients are readmitted to the hospital within 30 days after discharge (4,5). An additional 10% present to the emergency department, mostly for complications arising from surgery and for

surgery-related care (4,5). It has been reported that the most common problems of patients in the 1st and 3rd weeks after discharge from open heart surgery are insomnia, nausea, loss of appetite and chest incision pain (6,7). In another study, it was determined that they experienced pain, ineffective individual coping, activity intolerance, and deterioration in sleep patterns and appetite in the first eight weeks after CABG (8). In our study, the most common complaint in the first 6 weeks after discharge was sleep disorder with 45.6%. This was followed by dyspnea with 37.5%, chest pain with 33.1%, and arm and shoulder pain with 32.5%, respectively. When the presence of pain was categorized alone, it was the most common problem with 61%. The least common conditions were sternal dehiscence 6.8% and physical activity limitation 6.2%.

Regarding the relationship between symptoms and findings and gender, it has been reported that pain and sleep disorder are more common in women after CABG than in men (9,10). In our study, the most common complaint in both genders was found to be sleep disorder. Sleep disorders were found more frequently in women (56% / 40%) and this difference was statistically significant (p= 0.05). We believe that pain is a factor in sleep disorder being the most common complaint in both genders. Coexistence analysis also supported our view (pain and sleep disorder were found to occur together in the same patients). It has been reported in the literature that postoperative pain severity prevents general activity, deep breathing and sleep quality (11,12). Another result that showed significance in terms of gender in our study was wound infection (43% in women, 21% in men, p= 0.004). Wound infections can be affected by many factors, including patient-related factors (age, diabetes, immune system, nutrition, personal care, length of hospital stay, socioeconomic status) and risks related to the surgical process (sterility suitability, operation time, materials used, etc.) (4, 13).

There was no sufficient data in the literature analyzing the relationship between symptoms and findings and the type of surgery. In our study, it was found that anxiety and leg pain had a significant relationship with the type of surgery. Anxiety was seen most frequently in those who had isolated valve surgery (p= 0.02). Leg pain was most common in those who had CABG surgery (p= 0.03). In heart valve patients, a long period of time usually passes until the decision for surgery is made. During this period, patients are followed with medical treatment and echocardiography. We believe that the length of this process may be effective in the development of anxiety. The frequent occurrence of leg pain in CABG patients may be associated with the removal of the saphenous vein for coronary grafting in these patients. The complaint of dyspnea after CABG increases with advanced age. The reason for this has been shown to be a decrease in lung reserve with increasing age (14). In our results, a significant relationship was found between dyspnea (p= 0.01) and sexual activity disorder (p= 0.03) and age. A trend towards significance was detected between arm and shoulder pain and age (p= 0.08). While dyspnea complaints were more common in older ages, in line with the literature, sexual activity disorder and arm-shoulder pain were more common in younger ages. It was expected that pain sensitivity and sexual activity would decrease with age.

When the symptoms and findings were examined in terms of onset time, it was observed that in almost all types of operations, dyspnea, chest pain, leg pain, arm and shoulder pain, sleep disorder, anxiety and malnutrition were observed within the first week after discharge. It was a known situation that pain complaints continued immediately after surgery and in the first weeks after discharge (12). Postoperative dyspnea complaints may occur due to advanced age, malfunctioning ventricle, and presence of pleural effusion, atelectasis due to insufficient breathing due to sternotomy pain, pneumonia, diaphragmatic dysfunction and decreased thoracic compliance (14-16). In our coexistence analyses, it was determined that anxiety, neuropsychological complaints and gastrointestinal complaints coexisted in the same patients. This association has been reported similarly in other studies (17,18).

In our study, sternal dehiscence (average 4th week) and sexual activity disorder (average 6th week) were found to be the complaints that started the latest. In the literature, many different time intervals (1-780 days, median value is day 21) have been reported as the onset time of sternal dehiscence (19). In our six-week follow-up period, sternal dehiscence was detected between 10-40 days. We believe that the reasons for the different time interval are patient factors (presence of osteoporosis, inappropriate physical activity and lying position) and surgical risks (inappropriate closure materials, improper sternum opening and closure). The probable reason that the latest onset complaint is sexual activity disorder; Sexual desires and desires are suppressed due to pain and other complaints in the first weeks.

Our study has some limitations. These include being a single-center study, the wide age range, the relatively low number of cases other than CABG, and the inability to classify surgery types more specifically due to this small number.

CONCLUSIONS

As a result, complaints after cardiac surgery discharge vary depending on gender, type of operation and age. On average, the earliest presenting symptom was anxiety, while the latest presenting complaint was sexual activity disorder. In coexistence analyses, anxiety, neuropsychological and gastrointestinal complaints showed coexistence. Another

common complaint group was pain; sleep disorder, dyspnea and wound infection. Providing preoperative and postoperative education based on the frequency of identified problems may contribute to better outcomes.

Abbreviations

CABG: Coronary arteries bypass grafting
MVR: Mitral valve replacement
AVR: Aortic valve replacement

Ethics Committee Approval: Permission was granted by the local ethics committee for the study protocol (2023/4560) and every patient provided written informed consent.

Conflict of interest: The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Financial conflict of interest: Author declares that he did not receive any financial support in this study.

Address correspondence to: Mehmet Isik,
Necmettin Erbakan University, Faculty of Medicine, Department of Cardiovascular Surgery, Konya, Türkiye
e-mail: drmisik@hotmail.com

KAYNAKLAR

1. House MA, Griego L. Nursing role in management congestive heart failure and cardiac surgery. In: Lewis SM, Collier CI, Heitkemper MM, editors. Medical surgical patient. 4th ed. Toronto: Mosby; 1998. p. 932-64.
2. Yılmaz M, Çifçi ES. A model defining the needs of patient care at home after open heart surgery: functional health pattern. Turkish J Thorac Cardiovasc Surg 2010;18(3):183-9.
3. Gültekin G, Özbayır T. Koroner bypass ameliyatı olan hastalara taburcu olmadan önce verilen eğitimin etkinliğinin karşılaştırılması. Ulusal Cerrahi Kongresi Cerrahi Hemşireliği Seksiyonu Panel ve Bildiri Özet Kitabı. 15-19 Mayıs 2002, Antalya: Ritm Matbaa; 2002. s. 309-17.
4. Montrief T, Koyfman A, Long B. Coronary artery bypass graft surgery complications: A review for emergency clinicians. Am J Emerg Med. 2018;36(12):2289-97.
5. Hannan EL, Zhong Y, Lahey SJ, et al. 30-day read missions after coronary artery bypasses graft surgery in New York state JACC Cardiovasc Interv, 2011;4 (5):569-576.
6. Gallagher R, McKinley S, Dracup K. Post discharge problems in women recovering from coronary artery bypass graft surgery. Aust Crit Care 2004;17:160-5.
7. Goodman H. Patients' perceptions of their education needs in the first six weeks following discharge after cardiac surgery. J Adv Nurs1997;25:1241-51.
8. King KB, Parinello KA. Patient perceptions of recovery from coronary artery bypass grafting after discharge from the hospital. Heart Lung 1988;17:708-15.
9. Bak, E, Marcisz, C. Quality of life in elderly patients following coronary artery bypass grafting. Patient Preference and Adherence, 2014:8;289–99.
10. Parry M, Watt-Watson J, Hodnett E, Tranmer J, Dennis CL, Brooks D. Pain experiences of men and women after coronary artery bypass graft surgery. J Cardiovasc Nurs. 2010 May-Jun;25(3):E9-15.
11. Muthukrishnan A, Muralidharan TR, Subash J, et al. Association of poor sleep quality with risk factors after coronary artery bypass graft surgery: A prospective cohort study. Journal of Vascular Nursing, 2020:38(2); 83-92
12. Tüfekçi H, Akansel N, Sivrikaya SK. Pain Interference with Daily Living Activities and Dependency Level of Patients Undergoing CABG Surgery. Pain Manag Nurs. 2022;23(2):180-7.
13. Uzunköy A. Surgical site infections: Risk factors and methods of prevention. Ulus Travma Acil Cerrahi Derg. 2005; 11(4): 269-81
14. Mavili İ, Şahutoğlu C, Pestilci Z, et al. Etiological Factors Concerning The Early Complications That Occur Following Coronary Artery Bypass Graft Surgery GKDA Derg 2016:22(1):16-23.
15. Sargın A, Aşkar FZ, Kocabaş S. Preoperative, Intraoperative and Postoperative Predictors of Postoperative Respiratory System Complications in Patients Undergoing Open Heart Surgery GKDA Derg 2013;19:175-83.
16. Gray E, Dasanayake S, Sangelaji B, et al. Factors influencing physical activity engagement following coronary artery bypass graft surgery: A mixed methods systematic review, Heart&Lung, 2021;50:5,589-98,
17. Langarita-Llorente R, Gracia-Garcia P. Neuropsicologia del trastorno de ansiedad generalized a: Revision sistematica [Neuropsychology of generalized anxiety disorders: a systematic review]. Rev Neurol. 2019 Jul 16;69(2):59-67.
18. Haug TT, Mykletun A, Dahl AA. Are anxiety and depression related to gastrointestinal symptoms in the general population? Scand J Gastroenterol. 2002;37(3):294-8.
19. Tanyeli O. Alternative Sternal Closure Methods in Patients with Dehisced Sternum: Prosand Cons of Sternal Talon and Titanium Sternal Plate Fixation. Selcuk Med J 2019;35(2): 99-104.