New Heart Centre: Eskisehir City Hospital-First Results

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ABSTRACT

Introduction: To evaluate the first results of our clinic, in a newly opened hospital, where active surgery is started a few days following patient admission.

Patients and Methods: Clinical practices performed in the Eskisehir City Hospital Cardiovascular Surgery Clinic between 1st November 2018, and 1st August 2019, were examined in the study. During this time, 104 open-heart procedures, two carotid endarterectomies, 225 vascular surgery interventions and 86 peripheral endovascular interventions were performed in our clinic.

Results: The total number of in-hospital deaths was six. Of these, three patients were in emergency situations, and two patients were on routine dialysis because of chronic kidney failure. A patient who underwent aortic and mitral valve replacement died of a multiple-organ failure on the 17th postoperative day. Of the 97 coronary bypass operations, four were performed using the beating-heart bypass technique.

Conclusion: Our team, each from a different centre, performed the first open-heart surgery a few weeks after the opening of a new hospital, and it made it sustainable by reaching 104 cases in 9 months. Considering that the newly opened heart surgery clinics in our country have been operating under the supervision of a well-established centre, we think that our clinic, which has achieved this by its own means, has shown a great success.

Key Words: CABG; heart valve; vascular; new centre

Yeni Bir Kalp Merkezi: Eskişehir Şehir Hastanesi-İlk Sonuçlar

ÖZET

Giriş: Bu çalışmanın amacı, yeni açılan bir hastanede, hasta kabulünden birkaç gün sonra aktif cerrahiye de başlanan kliniğimizin ilk sonuçlarını değerlendirmektir.

Hastalar ve Yöntem: 1 Kasım 2018-1 Ağustos 2019 tarihleri arasında Eskişehir Şehir Hastanesi Kalp ve Damar Cerrahisi Kliniğinde gerçekleştirilen klinik uygulamalar çalışmaya dahil edilmiştir. Bu süre içerisinde kliniğimizde 104 açık kalp ameliyatı, 2 karotis endarterektomi, 225 damar cerrahisi girişimi, 86 periferik endovasküler girişim yapılmıştır.

Bulgular: Hastane mortalitesi toplam altı hastada görüldü. Bunlardan üç tanesi acil şartlarda vakaya alınan hasta, iki tanesi kronik böbrek yetmezliği sebebiyle rutin diyaliz programında olan hastaydı. Aort ve mitral kapak replasmanı yapılan bir hastamız, postoperatif 17. günde çoklu organ yetmezliği sebebiyle kaybedildi. Doksan yedi koroner baypas operasyonunun dört tanesi atan kalpte baypas tekniği kullanılarak yapıldı.

Sonuç: Her biri farklı bir merkezden gelen ekibimiz, sıfırdan kurulan bir hastanenin açılışından birkaç hafta sonra, ilk açık kalp ameliyatını yapmış ve 9 ayda 104 vakaya ulaşarak bunu sürdürülebilir kılmıştır. Ülkemizde özellikle son 20 yılda yeni açılan kalp cerrahisi kliniklerinin, köklü bir merkezin koordinatörlüğünde faaliyete geçtiği düşünüldüğünde; kendi imkanlarıyla bunu başaran kliniğimizin örnek teşkil ettiğini düşünüyoruz.

Anahtar Kelimeler: CABG; kapak; damar; yeni merkez

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INTRODUCTION

Within the scope of the Health Transformation Program, the Turkish Ministry of Health has defined centres where cardiology and cardiovascular surgery services are given together as 'heart centres' to minimise deaths due to heart disease, and to intervene early in patients who have heart attacks, taking into account accessibility. According to the current data of the General Directorate of Public Hospitals, there are 80 public hospitals in 59 provinces in Turkey[1]. To increase the quality and quantity of health service provision, the construction of the city hospitals, which are planned as centres of excellence with a focus on patient satisfaction, was started in 2013 with the Eskisehir City Hospital. Currently, 10 city hospitals are providing healthcare, six of which are actively performing open-heart surgery[1]. Our first open-heart surgery was performed successfully on 15 November 2018, at the Cardiovascular Surgery Clinic of the Eskisehir City Hospital, which started patient admission in November 2018.

A circular on Heart Center Services was issued by the Turkish Ministry of Health last July with the aim of regulating the procedures and principles related to the planning, installation and processing of heart centres in Turkey[2]. Accordingly, the annual number of cases, and mortality and morbidity rates of the heart centres where interventional cardiology and heart surgery were actively performed, would be subject to audit to continue the service of these centres or to open new centres in the same city.

The aim of this study was to examine the services provided by the Eskisehir City Hospital Cardiovascular Surgery Clinic, which is about to complete its 1st year since the beginning of patient admission. We believe that our first results are very valuable for our centre, which serves Eskisehir and the regional provinces, in a centre established from the ground up with physicians, operating rooms, intensive care units (ICU), and all equipment. We believe that our results are also important in terms of being the first among the qualified health services provided in the city hospitals that have been implemented with the cooperation of the public–private sector to help patients obtain premium, comfortable and qualified health services.

PATIENTS and METHODS

Five cardiovascular surgeons and two outpatient clinics have been serving in our hospital since it started to accept patients on 31st October 2018. Starting with three-vessel coronary artery bypass graft surgery (CABG) in a 61-year-old male patient on 15th November 2018, our number of open-heart surgeries reached 104 as of 31st July 2019. A total of 424 patients underwent surgical and endovascular procedures between 1st November 2018 and 31st July 2019. The clinical procedures performed in the Eskisehir City Hospital Cardiovascular Surgery Clinic between 1st November 2018 and 1st August 2019 were included in the study.

RESULTS

Table 1 shows the number of patients admitted to the outpatient clinic after our hospital began to actively serve in November. All procedures performed between 1st November 2018 and 1st August are summarised in Table 2.

Of the 104 patients who received open-heart surgery, one had aortic and mitral valve replacement, two had mitral valve replacement, and two had aortic valve replacement. Of the remaining 97 CABG cases, 11 were emergency procedures. The remaining eight patients underwent angiography due to acute anterior myocardial infarction and persistent chest pain. Two patients were in cardiogenic shock and underwent surgery while receiving cardiopulmonary resuscitation. CABG was performed in four patients on beating hearts. Although we did not prefer coronary endarterectomy as a team, long-segment endarterectomy was performed in two patients due to vascular structures.

The mean cross-clamp time of the patients who underwent CABG surgery was 64.5 minutes, and the mean bypass time was 109.8 minutes. The mean ejection fraction (EF) was 52.4%, and the EF of five patients was < 40%. Detailed data of our patients who underwent open-heart surgery are presented in Table 3.

In 104 patients undergoing open-heart surgery, the total number of in-hospital deaths was six. Three of these patients were admitted in emergency situations. One died of postoperative acute renal failure, acute respiratory distress syndrome and multiple-organ failure that developed due to chronic kidney failure on the 17th postoperative day. Two patients who were on routine dialysis were diagnosed with chronic kidney failure. An intra-aortic balloon pump was placed in five of the dying patients during their follow-up in the ICU.

Iatrogenic coronary artery dissection developed during coronary angiography in 3 of 11 emergency CABG cases without causing mortality. We observed a cerebrovascular accident in one patient, acute renal failure in three patients, and sternal wound infection in one patient in the postoperative period.

Table 1. Cardiovascular surgery outpatient clinic services given between November 2018 and August 2019 in the Eskisehir City Hospital

Outpatient clinic	n
Cardiovascular surgery	9843

Table 2. Surgical and endovascular interventions and their numbers performed in the cardiovascular surgery clinic between November 2018 and August 2019 in the Eskisehir City Hospital

Surgery	n
CABG	97
MVR	2
AVR	2
AVR + MVR	1
MVR + CABG	1
Extirpation of cardiac myxoma	1
Carotid endarterectomy	2
FEM-POP bypass	1
Vessel repair	12
Embolectomy	22
AV fistula creation	90
Placement of permanent tunnelled dialysis catheter	18
Placement of port catheter for CT	2
VSM/VSP ligation/stripping	38
VSM/VSP RF ablation	40
Thoracoscopic sympathectomy (hyperhidrosis)	9
Peripheral diagnostic angiography	34
Peripheral endovascular revascularisation	44
Pharmacomechanical thrombectomy (DVT)	8
Total	**424**

AV: Arteriovenous; AVR: Aortic valve replacement; CABG: Coronary artery bypass grafting; CT: Chemotherapy; DVT: Deep vein thrombosis; FEM-POP bypass: Femoropopliteal bypass; MVR: Mitral valve replacement; RF: Radiofrequency; VSM: Vena saphena magna; VSP: Vena saphena parva.

Table 3. Preoperative and operational data of open-heart surgery patients

	Mean
Age (years)	63.1 (37-82)
BSA	1.88 (1.48-2.55)
EF (%)	52.4 (30-65)
CPB time (min)	109.8 (27-313)
CCA time (min)	64.5 (19-187)

BSA: Body surface area; CPB: Cardiopulmonary bypass; CCA: Cross-clamp to aorta; EF: Ejection fraction.

In the patient who had discharge at the sternal wound site, a negative-pressure wound therapy system was applied after debridement, and the patient was discharged with healing. No patients developed mediastinitis or fever lasting > 72 hours with reproduction in blood culture. There was no postoperative discharge at the incision sites of the saphenous vein preparation in any patient. No patients required revision surgery because of sternal dehiscence. One patient underwent revision on the first postoperative night. In 14 patients, atrial fibrillation developed during the postoperative intensive care follow-up. Ten of these patients were moderate-to-high risk in the preoperative evaluation by the Department of Chest Diseases, with a history of smoking and respiratory function tests lower than normal. The postoperative data of our patients are detailed in Table 4.

Table 4. Follow-up data of patients undergoing open-heart surgery

Postoperative	n
Mortality	
When patients with emergencies, CRF and CCF were excluded	2
When patients with emergencies, CRF and CCF were excluded	6
Postop atrial fibrillation	14
Postop CVA	1
Postop acute renal failure	3
Wound site discharge	1

CVA: Cerebrovascular accident, CRF: Chronic renal failure, COPD: Chronic obstructive pulmonary disease, CCF: Congestive cardiac failure.

Our mean intensive care stay was 3 (range, 2-6) days. When patients with early mortality were excluded, our mean hospital stay was recorded as 7 (range, 6-18) days.

We preferred left internal mammary artery (LIMA) grafts for left anterior descending coronary artery bypasses, including emergency cases, considering the patient's haemodynamics. Our rate of using LIMA grafts, including emergency cases, was 83.51%. LIMA grafting was not performed according to the preference of the team in two elective patients aged > 70 years with obesity, diabetes and chronic obstructive pulmonary disease.

DISCUSSION

Today, cardiovascular diseases are the most important cause of mortality in the middle- and advanced-age group. This rate accounts for 30% of global deaths[3]. As in many countries of the world, the prevalence and incidence of coronary heart disease in Turkey are 4%-5% and 0.3%-0.4%, respectively. According to these data, given the progress in diagnostic methods and the number of newly opened centres, approximately 250.000-300.000 new patients with coronary artery disease are expected in Turkey every year[4]. Given the socioeconomic level of the population, it is obvious that having an appropriate number of

state hospitals with adequate facilities for the diagnosis and treatment of cardiovascular diseases is very important.

Cardiac surgery is the joint work of a team of cardiac surgeons, experienced anaesthesiologists and technicians, operating room nurses, perfusionists and intensive care and ward nurses all over the world. Therefore, it is not easy for a new centre to start active surgery and make it sustainable. In the past 20 years, many new centres have started to operate under the coordination of experienced centres such as the Kosuyolu High Specialization Hospital, Turkey High Specialization Hospital, and Siyami Ersek Chest and Cardiovascular Diseases Hospital to increase the number of heart centres available in Turkey[5]. We believe that it is important that the Eskisehir City Hospital Cardiovascular Surgery Clinic, which started patient admission in November 2018, performed the first open-heart surgery in a short period of 15 days, with its own team and facilities, and reached 104 cases in 9 months.

Our hospital aims to provide health services to the people of Eskişehir and the surrounding provinces such as Afyon, Kutahya, Bilecik and Duzce, due to the geographic location of the city, its dynamic and crowded population, as well as being a popular tourist destination. Of the 104 patients who underwent open-heart surgery, 25 (24%) were patients admitted from Bilecik. The distribution of surgical patients by province is shown in detail in Table 5.

Papadimos et al.[6] presented the initial results of low-volume centres and their comparison with the Society of Thoracic Surgeons (STS) data, and reported that the mortality rate was 2.38% (according to the STS data, the operative mortality was 2.53% during the same period). Our mortality rate was 2.1% when patients with chronic renal failure and congestive cardiac failure were excluded. Diken et al.[7] reported the 1st year results of their new centre in 2015. Their mortality was 0.9%. Early mortality for the CABG surgery was reported as 4.5% and late mortality as 2.3% in the study by Kirali et al.[5], where they published the first results of the Van High Specialization Heart Center, which was established in coordination with an experienced centre, Kosuyolu High Specialization Hospital. The difference in that study was that they did not exclude any patients. Koksal et al.[8] published the results of the first 100 patients who underwent open-heart surgery in 2002 and reported their mortality as 6% in patient groups without exclusion.

The mean cross-clamp time was 64.5 (range, 19-187) min, and the mean bypass time was 109.8 (27-313) min in operations with cardiopulmonary bypass in our study. Similarly, Korkmaz et al.[9] reported these periods as 67.8 min and 115.8 min, respectively, in a study in which they reported the results of the first 300 cases.

Through the Turkish Ministry of Health, it is aimed that the city hospitals become perfect centres equipped with modern technology to meet all the health needs of the patients[10]. Heart centres, which can intervene in cardiovascular diseases with similar success rates around the world, are the most important step in achieving this goal. For this purpose, our clinic, which performs both classic surgery and current endovascular treatment methods, is renewing itself daily in open-heart surgery and the treatment of peripheral vascular diseases. With a new team, the members of which come from different centres, we can say that our clinic, which started active surgery immediately after patient admission, will be an example for future heart centres in different parts of Turkey.

Table 5. Distribution of surgical patients by province

Provinces	n
Eskisehir	65
Bilecik	25
Kutahya	6
Afyon	4
Duzce	2
Other	2
Total	**104**

CONFLICT of INTEREST

The authors reported no conflict of interest related to this article.

AUTHORSHIP CONTRIBUTIONS

Concept/Design: İK
Analysis/Interpretation: İK
Data Acquisition: İK
Writting: İK
Critical Revision: İK
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