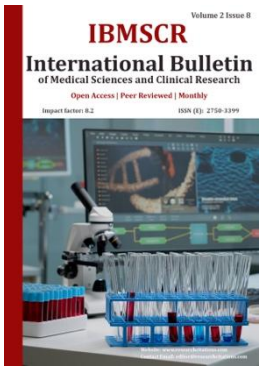

ISSUES OF DESIGNING MEDICAL CLOTHING FOR THE REHABILITATION OF FEMALE PATIENTS AFTER HEART SURGERY

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https://doi.org/10.5281/zenodo.18095579

Abstract. The article presents the results of a statistical analysis of cardiovascular surgical operations among women at the republican level. Medical discomfort in female patients during the rehabilitation period after open-heart surgery and ways to eliminate it were analyzed. The article examines the design of specialized medical clothing to facilitate recovery and improve patients' quality of life.

Keywords: sternotomy, female patients, bras, corsets, rehabilitation, medical clothing.

Relevance. According to the Statistics Agency of Uzbekistan, cardiovascular diseases accounted for 58.9% of deaths in 2024 [1]. According to the World Heart Federation (WF), in 2020, ischemic heart disease accounted for 43.19% of all deaths in Uzbekistan [2]. With this indicator, Uzbekistan ranks third in the world. In the world, women make up about 30-40% of patients who have undergone heart surgery.

Most heart surgeries are performed through median sternotomy. Sternotomy is a surgical operation that allows for a vertical incision of the sternum and access to open heart surgery, and stabilizing the sternum in the postoperative period is an essential clinical task [3].

Studies show that women often turn to cardiac surgery late - in most cases, the disease is detected in a severe stage [4]. For this reason, the frequency of complications and mortality after heart surgery in women is somewhat higher. Women usually experience symptoms of cardiovascular diseases in a way unlike men's, which leads to late diagnosis and treatment [5].

It was revealed that the types of women's diseases in the republic, as well as the number of patients undergoing surgical interventions, the timing of their treatment, and the insufficient development of special medical clothing - corsets, bandages, and breastplates for the wound zone under rehabilitation conditions have not been sufficiently studied.

Analysis of the results. A total of 519 heart surgeries were performed at the Vakhidov Republican Specialized Scientific and Practical Medical Center of Surgery in 2024, of which 382 were male patients, and 137 were female patients. In January-September 2025, a total of 385 heart operations were performed, of which 112 were performed on women.

Among the primary diseases of female patients in cardiac surgery performed in January-September 2025, Coronary Artery Bypass Graft (CABG) surgery (58%), chronic rheumatic diseases (17.9%), and mitral valve defects (9.8%) prevailed.

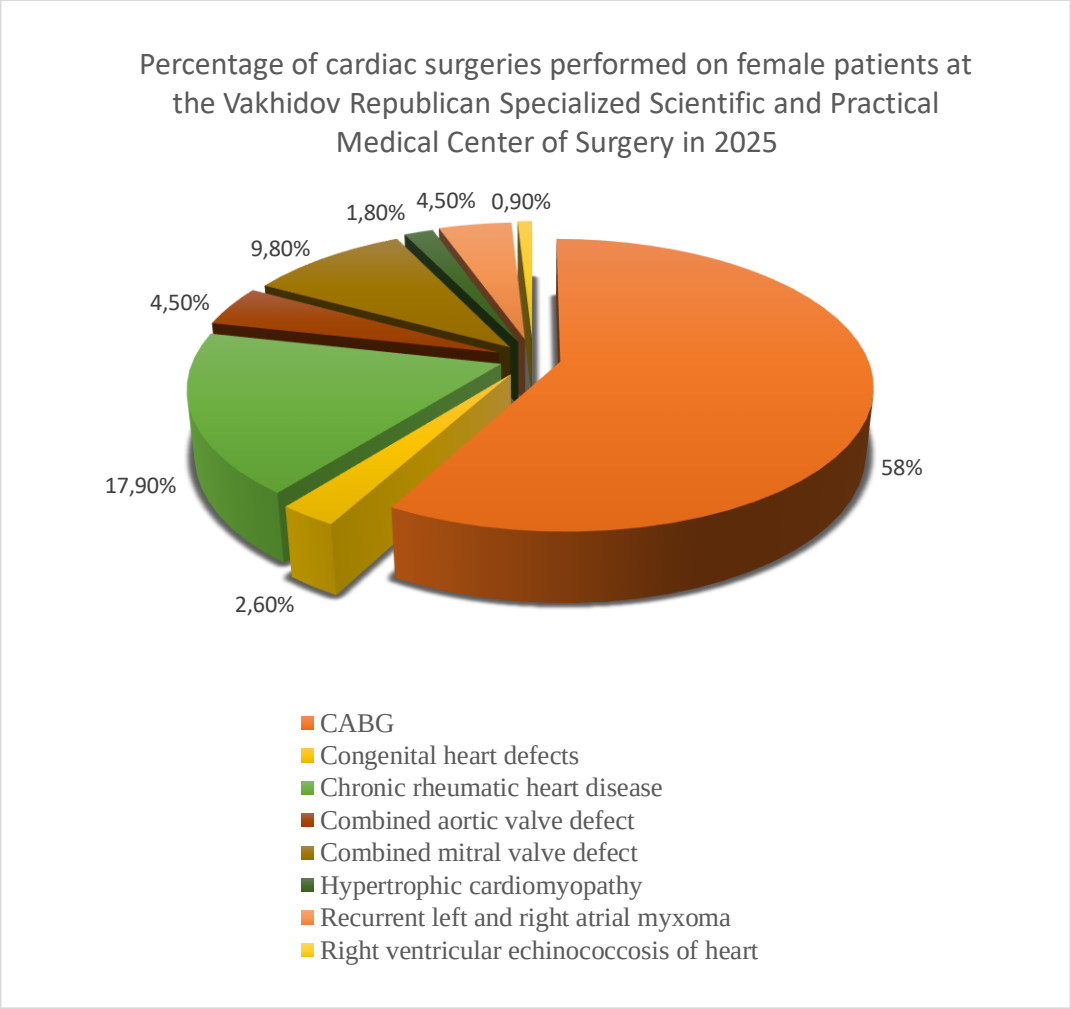

Figure 1. Types of cardiac surgery performed on female patients at the Vakhidov Republican specialized scientific and practical medical center of surgery in 2025

Postoperative rehabilitation plays a vital role in restoring the patient's quality of life. Especially when performing surgeries such as sternotomy, patients are forced to use special medical clothing for the wound area - corsets, bandages, and breastplates. However, the construction and materials of such medical clothing used in practice often do not fully ensure patients' physiological and psychological comfort. In particular, special corsets and breastplates developed for female patients are underdeveloped, and several problems with their appearance, functionality, and compliance with hygienic requirements have been reported [6].

Therefore, the development of new samples of specialized underwear that meet ergonomic and hygienic requirements, taking into account the needs of female patients who have undergone heart surgery in Uzbekistan, is an urgent task [7]. For this, it is necessary to review the world's experience and existing patents, as well as conduct surveys among patients and medical personnel. Based on the results of this study, innovative solutions have been proposed that can significantly improve patients' quality of life during the rehabilitation period.

During postoperative rehabilitation, the patient must follow lifestyle rules to help restore the sternum. During surgical procedures, bandages are applied to the wound site and secured to the skin with medical adhesive tape for an extended period. When adhesive tape is used to apply the bandage during dressing replacement, prolonged application can cause skin

inflammation. This, in turn, leads to additional problems. To prevent these problems, it becomes necessary to design a fastener or bandage that secures the bandage to the body. After applying the bandage, it is mandatory to wear a special corset tightly over the clothing. Because the rib cage bones need to heal, a corset is necessary to limit movement and help them heal.

In patients, the dressing is changed at the wound site once a day. The duration of dressing renewal is typically up to 1 month after surgery, and in some cases, depending on wound healing, the dressing can be applied for a more extended period. Exposure of the chest during dressing replacement causes discomfort in many women, and female patients feel the need for special underwear during dressing replacement after surgery. Considering this, the problem of developing linen with front fasteners for female patients is relevant.

After open-heart surgery, the breastband (or special medical breastband) and corsets for female patients constitute an essential part of the recovery process. These remedies protect the wound site, reduce pain, and promote proper bone healing.

Breastplates used after heart surgery are specially designed to support the heart, chest, and surrounding soft tissues, reduce swelling in the surgical area, and create comfort for the patient during breathing. For women who have undergone surgery, the medical breastband model is selected based on ergonomic, hygienic, aesthetic, and economic requirements.

In this case, the psychological and physical condition of female patients should also be taken into account to ensure a more painless recovery period. Therefore, the chosen model should be comprehensively accessible to the patient.

Conclusion. A total of 519 heart surgeries were performed at the Vakhidov Republican Specialized Scientific and Practical Medical Center of Surgery in 2024. In January-September 2025, a total of 385 heart operations were performed, of which 112 were performed on women. Issues of medical discomfort in female patients during the rehabilitation period after open heart surgery and the design of special medical clothing for their elimination were identified..

References:

1.O‘zbekiston Statistika Qo‘mitasi 2024 yil o‘lim ko‘rsatkichi. https://stat.uz/uz/rasmiy-statistika/demography-2

2.Women & Cardiovascular Disease. World Heart Federation. https://world-heart-federation.org/what-we-do/women-cvd/

3.Usmanov M. M, Odgerel Chimed-Ochir. Obesity, Burden of Ischemic Heart Diseases and Their Ecological Association: The Case of Uzbekistan. Int J Environ Res Public Health. 2022 Aug 22;19(16):10447. doi: 10.3390/ijerph191610447

4.Abdullah Al Hamid, Rachel Beckett, Megan Wilson. Gender Bias in Diagnosis, Prevention, and Treatment of Cardiovascular Diseases: A Systematic Review. Cureus. 2024 Feb 15;16(2): e54264. doi: 10.7759/cureus.54264

5.Leslie Cho, Melina R. Kibbe, Faisal Bakaeen, MD, Niti R. Aggarwal, MD, Melinda B. Davis, MD, Tara Karmalou, MD, Jennifer S. Lawton, MD. Cardiac Surgery in Women in the Current Era: What Are the Gaps in Care? Circulation, Volume 144, Number 14https://doi.org/10.1161/CIRCULATIONAHA.121.056025

6.X.A. Akbarova, M.A. Mansurova. Analysis and improvement of corsets and bandages used in the recovery period after cardiac surgery. International Scientific Journal "Science and Innovation". Series A. Volume 4 Issue 6. https://doi.org/10.5281/zenodo.15679264

7.Silva, T. R. A., Ono, J. N., Miname, F. C. B. R., Gowdak, L. H. W., Mioto, B. M., Santos, R. B. D., Dallan, L. R. P., & Machado Cesar, L. A. (2024). Benefits of using a support bra in women undergoing coronary artery bypass graft surgery: A randomized trial. Clinics (Sao Paulo, Brazil), 79, 100370. https://doi.org/10.1016/j.clinsp.2024.100370