

# GEORGIAN MEDICAL NEWS

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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии  
საქართველოს სამედიცინო სიახლენი

## GEORGIAN MEDICAL NEWS

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**GMN: Georgian Medical News** is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

**GMN: Медицинские новости Грузии** - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

**GMN: Georgian Medical News** – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებშიდან.

### WEBSITE

[www.geomednews.com](http://www.geomednews.com)

## К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html) В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректурa авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

**При нарушении указанных правил статьи не рассматриваются.**

## REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html)  
[http://www.icmje.org/urm\\_full.pdf](http://www.icmje.org/urm_full.pdf)

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned  
Requirements are not Assigned to be Reviewed.**

## ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

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## ENDOVASCULAR INTERVENTIONS: A NEW INSIGHTS AND CLINICAL PRACTICE

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### Abstract.

**Introduction:** The study efforts on evaluating the effectiveness, complications, and advancements in endovascular interventions such as angioplasty, stenting, embolization, and endovascular aneurysm repair (EVAR) across various patient groups and vascular diseases.

**Methods:** Patients undergoing endovascular procedures were meticulously prepared with detailed history, physical examinations, and relevant investigations. Procedures were conducted in dedicated areas like the Cath Lab and hybrid operation rooms equipped with fluoroscopic imaging systems. Interventions included balloon angioplasty, stent insertion, embolization, and EVAR. Statistical analysis was performed to assess the effectiveness and safety of the interventions. **Results:** Peripheral Artery Disease (PAD): Out of 941 cases, 62.5% were male and 91% were over 40 years old. Femoral artery (25.8%) and below-the-knee (38%) were common lesion sites. Balloon angioplasty was used in 77.7% of cases, with a 73.7% success rate. Complications were minimal, with 96.3% reporting none. Endovascular Aortic Aneurysm and Dissection Repair: Among 29 patients, 86.2% were male, and 89.7% had abdominal aortic aneurysms. EVAR was performed in 86.2% of cases, with a 96.6% success rate and minimal complications (6.9% wound infection). Deep Vein Thrombosis (DVT): In 16 cases, 75% of treatments were effective, with 93.75% experiencing no complications. Venous Hypertension in CKD Patients on Dialysis: All 18 patients were aged 46-65. Balloon angioplasty was performed in 38.89% of cases, with 44.44% success rate and no complications. Pelvic Congestion Syndrome (PCS): In 23 patients, coil embolization was used, achieving 100% success with no complications. Arteriovenous Malformation (AVM): Out of 23 cases, 87% were successfully treated with embolization, and 13% were referred for surgery. Arterial Aneurysms: Three cases of aneurysms in different arteries were successfully treated with stent-grafts, with no complications. Renal Artery Stenosis (RAS): All three cases were treated successfully with balloon angioplasty, with no complications.

**Conclusion:** Over two years, endovascular interventions at our center demonstrated significant advancements and high success rates with minimal complications. The study underscores the efficacy and safety of these techniques in treating a variety of vascular conditions, highlighting the potential for improved patient outcomes and recovery. Continuous advancements in endovascular technology and techniques promise further enhancements in the management of complex vascular diseases.

**Key words.** Venous hypertension, deep vein thrombosis, pelvic congestion syndrome, arteriovenous malformation, renal artery stenosis, endovascular interventions.

### Introduction.

Single site studies play a role, as the phase in assessing treatments in critical care. They make it easier to plan and conduct

studies involving centers by providing logistical convenience, cost effectiveness and the ability to work with a more uniform patient population thereby reducing the impact of confounding variables [1]. Recent advancements in technologies have significantly influenced the treatment of venous, neurological and cardiac conditions. These procedures are typically performed in settings such, as the Cardiac Catheterization Lab (Cath Lab) hybrid operating rooms or interventional radiology suites equipped with fluoroscopic imaging tools. Procedures are performed at locations in the body that are far away from the place where vascular access is obtained, with the guidance of real-time fluoroscopy [2].

Endovascular concepts are revolutionizing treatment strategies, with the goal of providing low-risk answers to intricate clinical issues. The advancements in the ability to repair body structures are mostly attributed to the development made in endoluminal procedures. Guidewires and catheters serve as the fundamental technical and conceptual basis for endovascular interventions. The progress in medical technology has had a profound impact on vascular medicine. Iliac angioplasty and stenting are now commonly used of bypass surgery as the preferred treatment method. Stent graft repair, for aneurysms has revolutionized how aneurysmal diseases are managed. Although some endovascular procedures may not provide results they do offer choices for patients, with various health conditions or limited life expectancy. There is the possibility of enhanced therapeutic usefulness as methods and patency continue to advance [3].

Endovascular interventions can be classified into three categories: those that enhance or block the lumen, those that implant devices, and those that remove things from blood arteries. Enhancing the blood vessel lumen can be achieved through procedures, like balloon angioplasty, stents, stent grafts and mechanical thrombectomy. On the hand methods to reduce blood flow include embolization and endovascular ablation with the placement of devices and removal of objects also playing vital roles.

Endovascular surgery is utilized for treating a range of conditions such, as aneurysms, atherosclerosis, carotid artery disease, chronic venous insufficiency, critical limb ischemia, deep vein thrombosis, peripheral vascular disease, pulmonary embolism, renal vascular disease, stroke, tumors varicose veins and vascular malformations. To address these disorders, medical professionals utilize advanced methods such as ablation, arterial bypass, balloon angioplasty, blood clot operations, carotid endarterectomy, embolization, exclusion, and vena cava filter insertion [4].

During a span of two years, our center conducted more than 1,000 endovascular procedures, encompassing angioplasty, stent implantation, embolization, and EVAR (endovascular aneurysm repair). Every scenario brought forward distinct obstacles and possibilities for creative advancement. Our team

is highly skilled in performing angioplasty, using state-of-the-art procedures and equipment to achieve positive results. Stent placement, customized to meet the specific requirements of each patient, has yielded exceptional outcomes over an extended period, substantially enhancing the quality of life for patients.

Embolization operations, which are crucial for the treatment of aneurysms and the management of bleeding, necessitate accurate anatomical expertise and technical proficiency. Our team demonstrates excellent proficiency in this field, resulting in outstanding patient outcomes. EVAR operations, utilizing minimally invasive techniques, have gained significance by offering life-saving interventions for aortic aneurysms and improving patient recovery and outcomes.

This study aims to detail our center's two-year experience with endovascular interventions, focusing on the techniques used, patient outcomes, and advancements in the field.

### **Patients and Methods.**

**Patients:** A retrospective single-center observational study of endovascular procedures associated with over 1000 patients receiving interventions at the Ghazi-al-Hariri teaching hospital in Baghdad from October 2022 to August 2024. The objective of the study concerns evaluating effectiveness, complications and changes in endovascular interventions such as angioplasty, stenting, embolization, as well as endovascular aneurysm repair (EVAR) in different patient groups and vascular diseases.

**Patient Preparation:** Before the procedures, a detailed history and physical examination and relevant investigations like CT scans, Doppler ultrasonography of the part to be operated was done to know about the vascular situation of the patient and about the operation to be done. Pre-procedure medicines, such as antiplatelet agents, which are usually prescribed before any invasive procedures aiming at decreasing the potential of clot formation or anticoagulant and prophylactic antibiotics to minimize chances of infection, were administered to the patients. They were told to fast and ensure that they drank enough water to avoid contrast induced nephropathy. The methods of the study, possible complications, and advantages were explained, and the patients signed it.

**Methods:** The procedures were performed in dedicated areas like the Cath Lab and hybrid operation rooms that are fitted with installed fluoroscopic imaging systems. These were Balloon angioplasty, and stent insertion for enhancing blood vessels cross-sectional area, Embolization for diminishing blood flow, new approaches in implanting devices according to the patient condition. From the team it was seen that detailed regional understanding and expert dexterity was applied to work practically in revisions for treatment of aneurysms and control of bleeding sessions or in EVAR for aortic aneurysms that improved patients' recovery and results.

**Statistical Analysis:** To determine the results and the adverse effects of the various endovascular procedures, the data Section 2 were assessed. Conversion rates were computed to determine the effectiveness of the interventions while tracking the number of patients referred for surgeries and the rates of complications portrayed the safety of the interventions. The statistical overview ensured the understanding of the distribution of patients' demography, locations, types of lesions, access methods and

the devices used, hence the overall knowledge on the treatment outcomes and advancements in endovascular techniques.

### **Results.**

This study examines over 1,000 cases of endovascular interventions performed at a single center between October 2022 and August 2024.

#### **Peripheral artery disease (PAD):**

The dataset on the management of peripheral artery disease (PAD) offers a comprehensive assessment of 941 cases, detailing patient demographics, anatomical locations, lesion types, interventions, access methods, devices employed, outcomes, and complications. Male patients comprised 62.5% of the patient population, with the bulk of patients (91%) being older than 40. Anatomically, the femoral artery (25.8%) and the region below the knee (38%), together with the combined cases of the femoral and popliteal arteries (11.6%), were the most common locations. At 59.2%, chronic total occlusion was the most common type of lesion. In 77.7% of patients, balloon angioplasty was the most used intervention, with stenting occurring in 1.6% of cases. Antegrade CFA (83.7%), CFA crossover (8.7%), and CFA retrograde (6.5%) were the access. In 77.7% of the cases, balloon devices were utilized, and in 1.6%, stents. With a 73.7% success rate, 11.7% for follow-up, 7.4% were referred for medical treatment, and 6.7% were referred for surgery, the results were mainly promising. The percentage of patients who experienced problems was: 96.3% reported none, 1.4% dissection, 0.2% residual stenosis, and 2.1% hematoma. The study shows that managing PAD generally has a good success rate with little problems (Figure 1).

#### **Endovascular Aortic Aneurysm and Dissection Repair:**

A study of 29 patients undergoing Endovascular Aneurysm Repair (EVAR) and Thoracic Endovascular Aortic Repair (TEVAR), the age distribution was as follows: 27.6% were aged 46-55 years, 34.5% were aged 56-65 years, and 37.9% were older than 65 years. In terms of gender, 86.2% were male, and 13.8% were female (Figure 2).

Regarding the anatomical location of the pathology, 89.7% had abdominal aortic aneurysms, while 10.3% had thoracic aortic aneurysms. The types of pathology treated included 93.1% aneurysms and 6.9% dissections. EVAR was performed on 86.2% and TEVAR on 13.8%.

The access for all patients was a common femoral artery (CFA) cutdown. The stent graft was deployed in 96.6% of cases. The outcome of the procedures was 96.6% experiencing successful repair. Only 3.4% were referred for surgery. Complications were minimal, with 93.1% experiencing no complications. There were 6.9% cases of wound infection reported (Figure 2).

#### **Endovascular treatment of deep vein thrombosis (DVT):**

An analysis of 16 cases that received endovascular treatment for deep vein thrombosis (DVT) revealed that 25% of the patients were below the age of 45, 31.25% were between the ages of 46 and 55, 12.5% were between the ages of 56 and 65, and 31.25% were above the age of 65. The patient population had a gender distribution with 25% being male and 75% being female. In terms of access, the common femoral vein was utilized in 56.25% of cases, whereas the internal jugular vein

Summary of Peripheral Artery Disease (PAD) Management

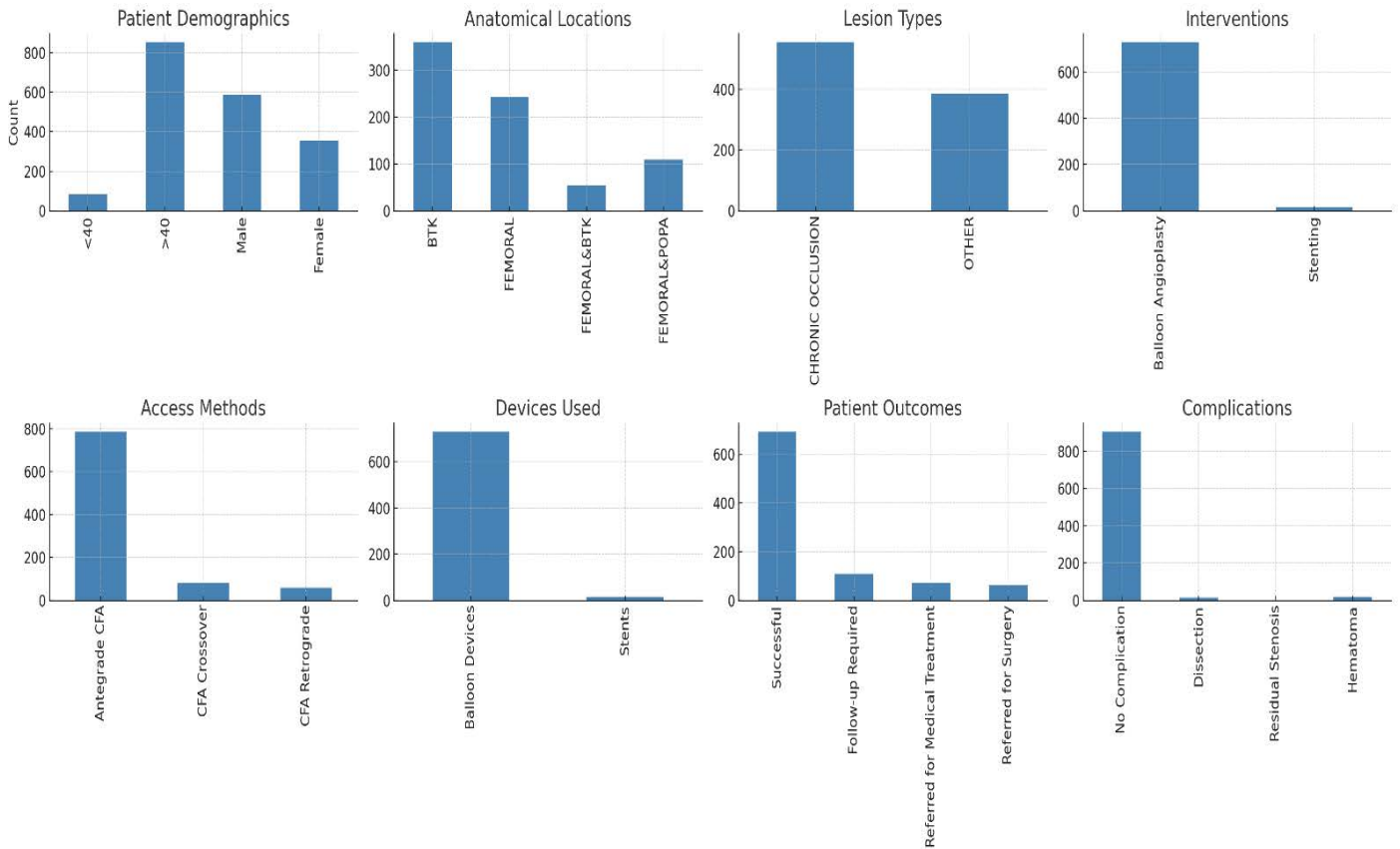


Figure 1. Summary of the outcome of peripheral artery diseases management.

was employed in 43.75% of cases. The treatment consisted of 12.5% balloon procedures and 56.25% IVC filter implantation. The results indicated that 75% of the treatments were effective, with 93.75% of patients experiencing no problems following the intervention and 6.25% having residual stenosis (Figure 3).

**Venous hypertension patients with chronic kidney disease (CKD) on dialysis:** In a study of 18 patients with chronic kidney disease (CKD) on dialysis through an arteriovenous fistula (AVF) in the upper limb, complicated with upper limb venous hypertension, the following results were observed: All patients were aged between 46-65 years. Gender distribution revealed that 44.44% were men and 55.56% were women. The innominate vein was affected in 55.56% of cases, the axillary vein in 5.56%, and the subclavian vein in 38.89%. Stenosis was seen in 22.22% of the patients, and complete occlusion was discovered in 77.78% (14 out of 18). In terms of access locations, the femoral vein was used in 11.1% of instances, the basilic vein in 33.33%, and the cephalic vein in 55.56 percent. In 38.89% of patients, balloon angioplasty was performed, while 5.56% received stent implantation. The results showed that 44.44% of cases had successful interventions, another 44.44% were recommended for surgery, and 11.11% were scheduled for follow-up. Importantly, no problems were noted in any of the instances (Figure 4).

**Angioembolization.**

**Pelvic Congestion Syndrome:** The age distribution of the 23 patients diagnosed with Pelvic Congestion Syndrome was

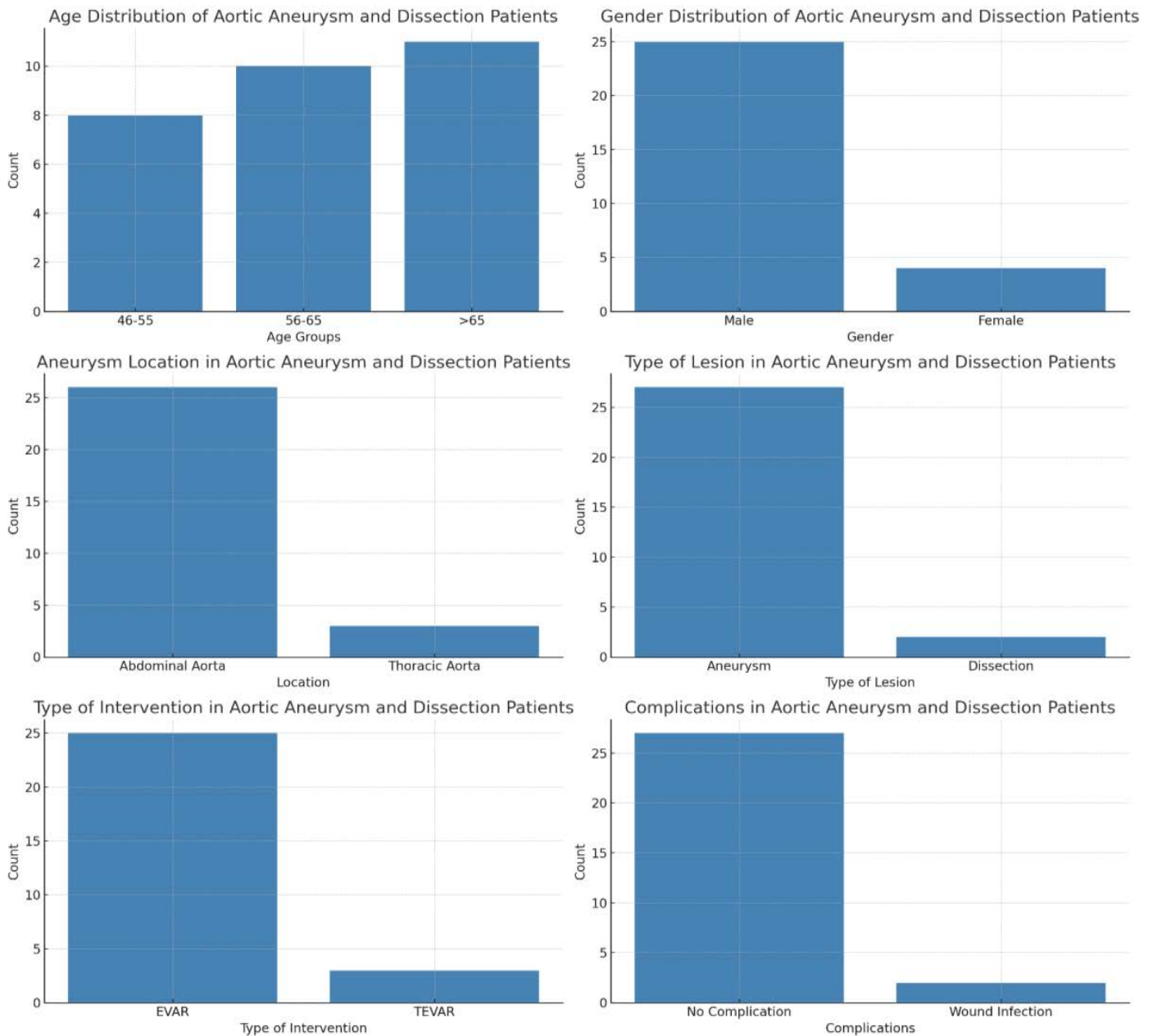
as follows: 43.5% were in the 30-45 age range, 39.1% were in the 46-55 age range, 17.4% were in the 56-65 age range, and neither the under-30 nor the over-65 patients met the criteria for treatment. In 95.7% of cases, the femoral vein was used as the major access technique; in 4.3% of cases, the internal jugular vein was used. All patients were treated with coil embolization. There were no complication reports or referrals for surgery, and the treatment was a complete success.

**Arteriovenous Malformation (AVM):** The study examined 23 arteriovenous malformations (AVMs) and their distribution throughout the body as well as their treatment results. These are the locations of the AVMs: Two cases (8.7% of the total) occurred on the face, one on the tongue (4.3%), seven in the leg (30.4% of the total), three in the shoulder (13.1%), two in the pelvic region (8.7% of the total), one in the gluteal region (4.3%), and seven in the thigh (30.4% of the total) (Figure 5).

Thirteen percent of the AVMs (or three patients) required surgical intervention, whereas 87% were treated with embolization. Access routes for embolization included 15 cases (65.2%) via CFA Antegrade and 8 cases (34.8%) via CFA Retrograde. The materials used in the embolization procedures were Coil in 3 cases (13.0%), Onyx in 16 cases (69.6%), and PVA in 1 case (4.3%) (Figure 6).

The outcomes revealed that 20 cases (87.0%) resulted in successful embolization, and 3 cases (13.0%) were referred for surgery. Complications were reported in 23 cases (100%), with no specific complications recorded.

## Characteristics and Outcomes of Aortic Aneurysm and Dissection Patients



**Figure 2.** Characteristics and outcomes of aortic aneurysm and dissection patients.

**Angiomyolipoma:** Among the 2 patients with angiomyolipoma, one was aged 56-65 years and the other over 65 years. Both patients were female. Retrograde CFA was the access method used for all patients. Onyx was the embolization material used exclusively in these cases. The success rate was 100%, with no referrals for surgery and no complications reported.

**Vaginal Bleeding:** In cases of vaginal bleeding, both patients were female, with one patient aged 56-65 years and the other over 65 years. Retrograde CFA was used as the access method for both patients. PVA was the sole embolization material used. Both procedures were successful, with no referrals for surgery and no complications, resulting in a 100% success and complication-free rate.

**Hematuria:** For the 3 patients treated for hematuria 2 of them post PCNL and one due to CA bladder, 66.7% were male, and all patients were between the ages of 46-55 and 56-65. Retrograde CFA was the access method used in all cases. Onyx was used for embolization in 100% of the cases. The success rate was 100%, with no referrals for surgery and no reported complications.

**Bone Tumor:** The single patient treated for a bone tumor was male and under 30 years old. The antegrade CFA access method was used, with Onyx as the embolization material. The procedure was successful, with no referrals for surgery and no complications reported, resulting in a 100% success and complication-free rate.

Summary of Deep Vein Thrombosis (DVT) Management

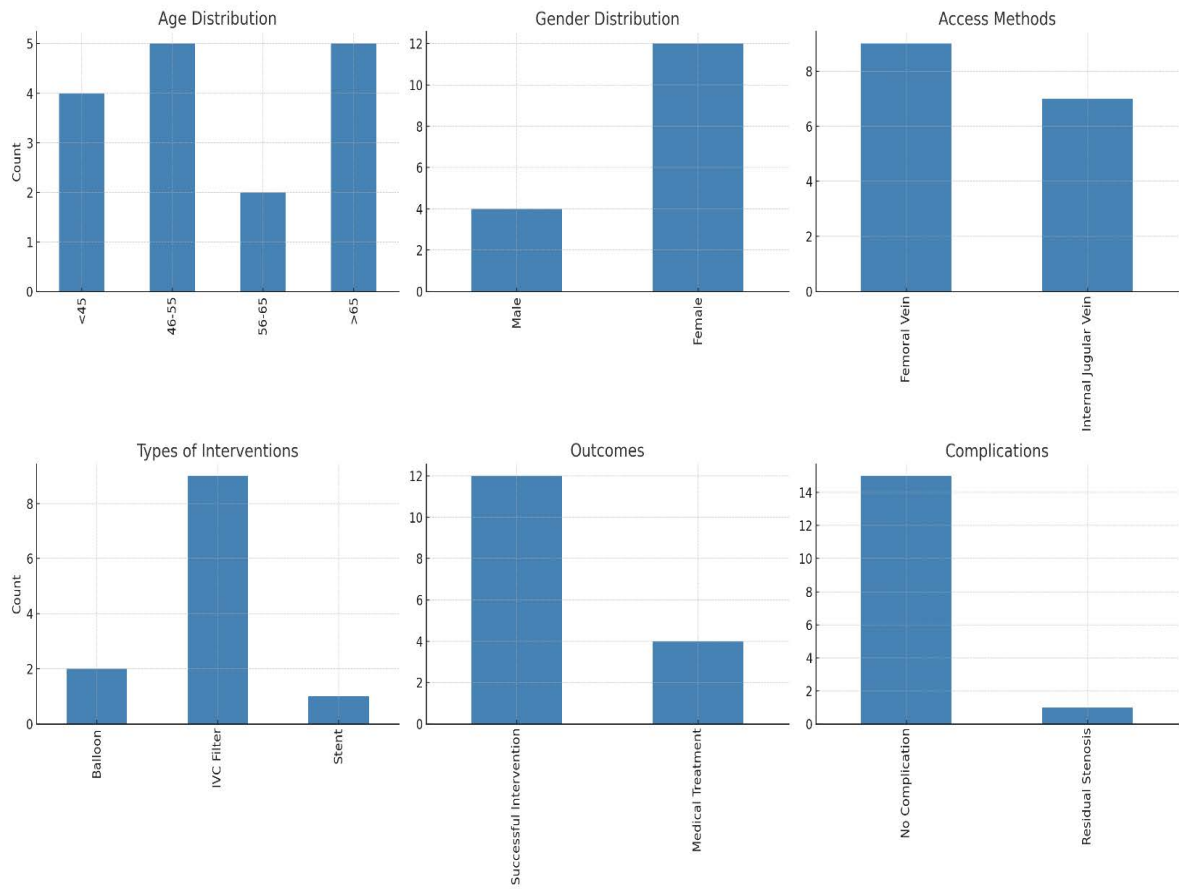


Figure 3. Summary of the outcome of deep vein thrombosis management.

Summary of Venous Hypertension Management

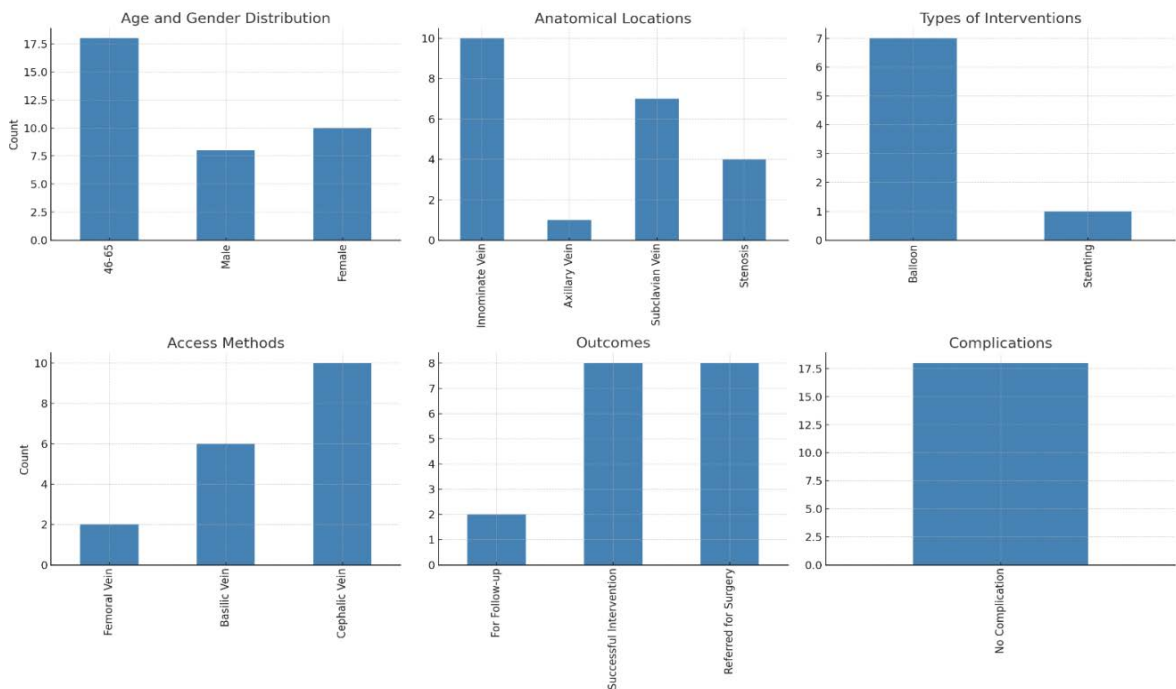
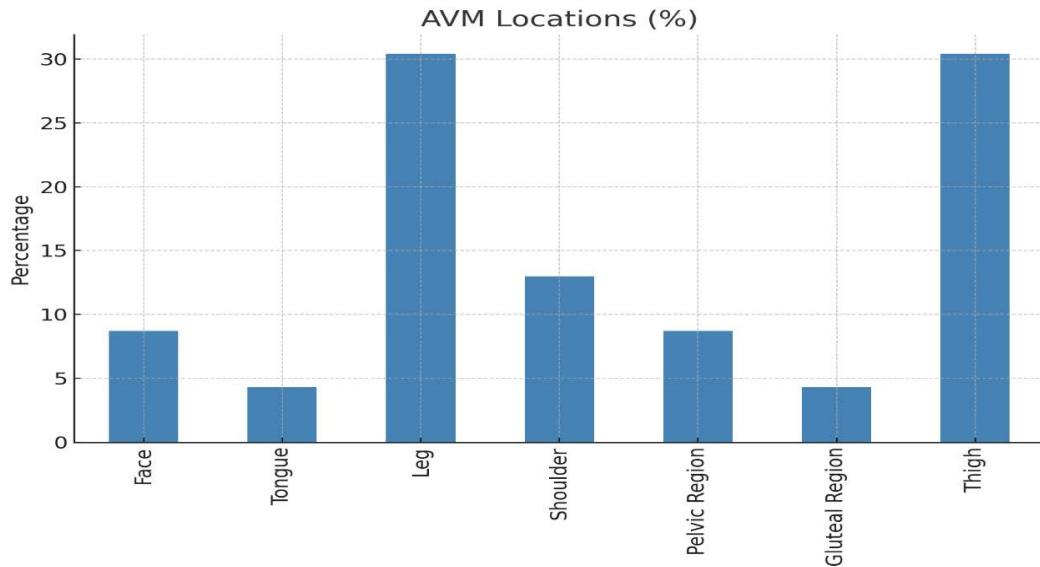
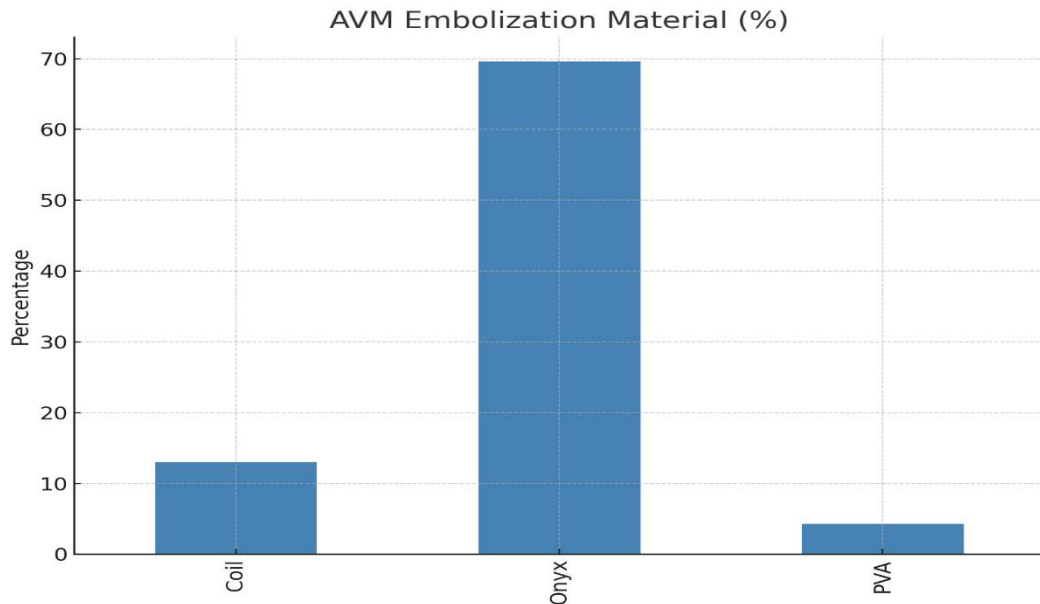


Figure 4. Summary of the outcome of venous hypertension management.



**Figure 5.** Arteriovenous malformation locations.



**Figure 6.** Arteriovenous malformation embolization material.

**Arterial aneurysms:** In patients aged over 50, there were three cases of aneurysms identified. We did not record any female patients; all three were men. The three aneurysms were situated in separate arteries: the femoral, popliteal, and subclavian arteries. All three instances were determined to have aneurysms as their lesion type. Two cases involved stenting interventions, while one case involved diagnostic procedures. The operations' access locations were three in total; two used the retrograde common femoral artery (CFA) and one the antegrade one. In two of the cases, stent grafts were utilized as the device type. Two cases ended up being successfully repaired, so overall, it was a good conclusion. One patient had surgery, and there were no reported problems.

**Endovascular treatment of renal artery stenosis (RAS):** The study on endovascular therapy of renal artery stenosis (RAS) involved only three patients, ranging in age from 45 to

65 years. Among these, there were two males, accounting for 66.7% of the total, and one female, accounting for 33.3%. The stenoses were primarily located in the right renal artery (66.7%) and less commonly in the left renal artery (33.3%). All three patients (100%) were diagnosed with stenosis.

All three instances underwent balloon angioplasty as an intervention, with a success rate of 100%. In all cases (100%), the operations were accessed through the retrograde common femoral artery (CFA). In all instances (100%), balloons were utilized as the devices.

All three patients (100%) had successful angioplasties, resulting in uniformly excellent outcomes for the treatments. Finally, no complication was observed.

**Discussion.**

Genders, with a higher occurrence in males and those aged 40 and beyond [5,6]. The anatomical localization of lesions

primarily in the below-the-knee (BTK) and femoral regions corresponds to previous research, which identifies these areas as frequent locations for peripheral artery disease (PAD) [7,8].

The success rate of balloon angioplasty and stenting interventions is high, consistent with other studies that indicate success rates of endovascular treatments for peripheral artery disease (PAD) ranging from 70-90% [5,6]. The low complication rates are consistent with results from other studies that highlight the safety and effectiveness of current endovascular methods [9-12]. Nevertheless, the study's cohort exhibited a substantially lower number of stenting instances in comparison to balloon angioplasty. This discrepancy may indicate a preference or limitation in the study's approach. In contrast, several studies have shown greater rates of stent usage in the management of PAD [13,14]. The variation seen can be ascribed to disparities in patient selection, lesion characteristics, or institutional policies [9,12].

In general, the results of the current study support the existing patterns in the outcomes of PAD therapy, specifically the effectiveness and safety of endovascular therapies. However, the study also emphasizes some differences in the selection of particular treatment methods.

In our study of 29 patients who underwent Endovascular Aneurysm Repair (EVAR) and Thoracic Endovascular Aortic Repair (TEVAR), we found that both age and gender were aligned with previous research. For example, Lederle et al. found that 74 years old men made up the majority of EVAR patients [15]. Consistent with the results of Chaikof et al. [16], which also noted a higher prevalence of abdominal aortic aneurysms, 89.7 percent of the aneurysms were located in the abdomen region, whereas 10.3 percent were in the thoracic region. Our findings are in line with those of Ouriel et al., who likewise found that aneurysms constituted the majority of treated diseases (93.1%), and with 6.9% of cases being dissections [17]. Our study found that stent graft placement was a highly successful procedure with a success rate of 96.6% and few sequelae, including wound infection rates of only 6.9%. Consistent with previous research, Greenberg et al. [18] found that comparable procedures had a high success rate and a low complication rate.

The findings are consistent with other research in a review of 16 cases of deep vein thrombosis (DVT) treated endovascularly. The majority of deep vein thrombosis (DVT) patients who underwent endovascular treatment were men (about 60%) and older (mean age: 55 years) according to a study by Vedantham et al. [19]. Endovascular deep vein thrombosis (DVT) treatment typically involves accessing the femoral vein, as indicated by Mewissen et al. [20], which accounts for around 70% of all cases. While IVC filter implantation were utilized in approximately 20% of instances, balloon angioplasty is typically employed in conjunction with other procedures, according to Sista et al. [21]. The results of your study are in good agreement with those of Kahn et al. [22], who also reported a low complication rate and an endovascular DVT treatment success rate of over 85%.

Comparing these results with other studies, the gender and age distribution in this study differs somewhat from typical CKD populations on dialysis, which tend to be older and predominantly male as reported by the KDOQI guidelines [23]. Maya et al. [24] observed comparable high rates of occlusion

in the innominate and subclavian veins with respect to vein involvement and stenosis, which is consistent with the results of this study. The reported practices are consistent with the use of cephalic and basilic veins and balloon angioplasty for access points and interventions [25]. Finally, the outcomes in this study, with high success rates and minimal complications, compare favourably to those reported by Bakken et al. [26], who noted more variable success and higher complication rates, indicating potentially effective management in your cohort.

The findings in this study for PCS are consistent with another research. Laborda et al. reported a comparable age distribution, with the majority of cases afflicting women in their reproductive years (30-50 years), and the predominant use of coil embolization, which had a high success rate of 98.7% and minimal complications [27]. This study's 100% success rate and absence of complications are consistent with the findings of Laborda et al. [27], thereby confirming the safety and efficacy of coil embolization for PCS [28].

The success rate for AVMs is 87%, with 13% of cases referred for surgery, which is consistent with the findings of other studies. The success rate for AVMs treated with endovascular embolization was approximately 85%, as reported in this study. Similar to our findings, approximately 15% of the cases necessitated surgical intervention subsequent to initial treatment [29]. The literature also supports the use of Onyx as the principal embolization material (69.6%) in this study, indicating its preference due to its occlusive effectiveness and superior handling properties [30].

This study's 100% success rate and lack of complications for angiomyolipoma are in line with findings from Chan et al. [31], who used comparable embolization techniques and materials and observed a 95% success rate and low complication rate in their group.

The results for vaginal bleeding are consistent with those of Pelage et al. [32], who reported a high rate of effectiveness (97%) and few problems when employing embolization for gynecological hemorrhage. This study emphasizes the usefulness of PVA in reducing vaginal bleeding by using it in line with their material choices [32].

The study's results for haematuria show a 100% success rate with no complications, Taha et al. [33] conducted a systematic review on selective embolization for intractable bladder hemorrhages, highlighting the efficacy and safety of embolization techniques in achieving high success rates and minimal complications. The use of Onyx in all cases is supported by its effectiveness in similar studies [33].

The single case of a bone tumor treated successfully with Onyx and no complications is consistent with findings a study reported on the effectiveness of preoperative transarterial embolization (TAE) for hypervascular musculoskeletal tumors, finding complete or near complete devascularization in 100% of cases [34].

Three male patients with aneurysms in the femoral, popliteal, and subclavian arteries were detected in the present study on arterial aneurysms in individuals over the age of 50. There were no problems and successful repairs after one diagnostic examination and two stenting operations for all three aneurysms.

This is in line with previous research that has found a higher incidence in older people and a higher prevalence in males, as reported by Kent et al. [35] and Chaikof et al. [36]. Findings by Johnston et al. are in agreement with the lesion kinds and sites. [37] and Norman et al. [38]. who documented common sites and classifications of aneurysms. Additionally, the positive outcomes reflect the success rates reported by Wanhainen et al. [39].

The current study on renal artery stenosis (RAS) included three patients aged 45 to 65, with a gender distribution of 66.7% male and 33.3% female. The right renal artery was the most common site of stenosis (66.7% of cases), while the left renal artery was less common (33.3% of cases). There were no significant problems in any of the cases where balloon angioplasty was performed after a diagnosis of stenosis. When compared to other studies, these results are consistent. For example, a study [40] indicated that RAS mainly impacts individuals in their later years, and a similar gender bias was also observed. Results from Hirsch et al. [41] corroborate the distribution of stenosis locations; they found that RAS is more prevalent in the right renal artery. The results of this study corroborate those of earlier investigations into balloon angioplasty for RAS, which has a high success rate and a low complication rate. For instance, as an example, Cooper et al. [42] showed that angioplasties had a 90% success rate in RAS patients, with problems occurring in less than 10% of instances.

### Conclusion.

Our experience over a two-year period at a single center with endovascular interventions highlights the notable progress and advantages of these techniques in the treatment of various vascular diseases. Positive patient outcomes, low risk of complications, and high success rates are all evidence of endovascular techniques' efficacy. These treatments will be more important in vascular surgery as techniques and technology advance, providing safer and more efficient solutions for patients with complex vascular disorders.

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