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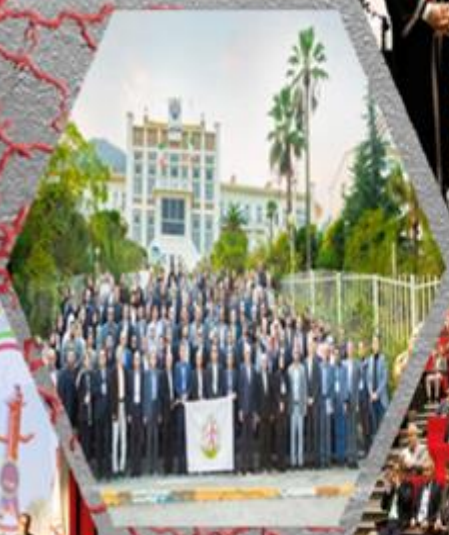

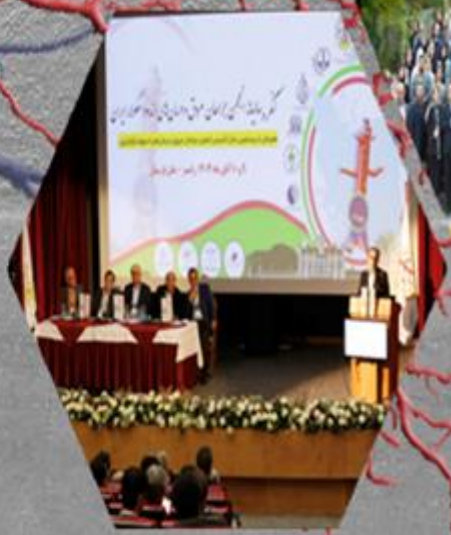

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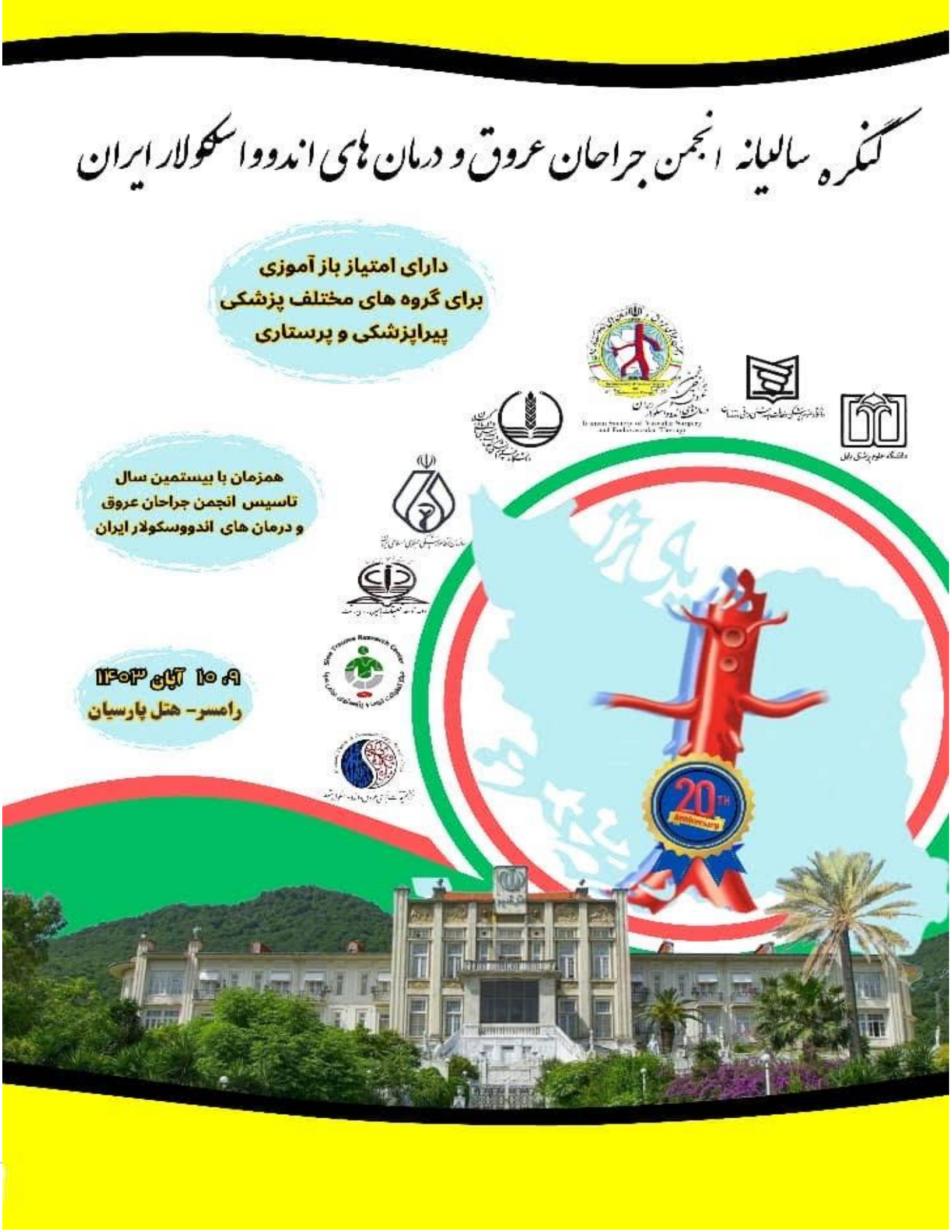

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Conference of Iranian Society of Vascular Surgeons

The Latest of vascular surgery

(30-31 Oct 2024, Ramsar)

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Case Report

Para-anastomotic aneurysm after abdominal aortic surgery: screening, diagnosis & management

Javad Salimi[1*], Amirali Ahrabi[1]

1. *Vascular Surgery Department-Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran*

ABSTRACT

Para-anastomotic aneurysms are either true aneurysms or pseudo-aneurysms and continues to be a late complication of abdominal aortic reconstruction for occlusive or aneurysmal disease with high morbidity and mortality rate. Para-anastomotic aneurysms tend to be asymptomatic until rupture. Screening and early diagnosis have a great role in the outcome of these patients. Treatment can be approached both surgical or endovascular repair base on the location and size of this complication. We present two patients were diagnosed with proximal and distal anastomotic pseudo-aneurysm 10 and 15 years, one patient after transabdominal repair of a symptomatic abdominal aortic aneurysm and other one total occlusion of abdominal aorta.

Case 1): A 66-year-old man admitted 10 years after open surgical repair of abdominal aortic aneurysm. History of MI and CABG 11 years ago. Patient has ICD with LVEF 20%. The aortic pseudo-aneurysm was 57 mm. The pseudo-aneurysm was managed successfully with Four-fen fEVAR extended to the abdominal previous tube graft and the patient achieved a good recovery.

Case 2): A 76-year-old man admitted 20 years after open surgical repair of abdominal aortic occlusive disease. The distal aortic graft anastomosis to both iliac arteries pseudo-aneurysm was 70mm and 45mm. The pseudo-aneurysms were managed successfully with open surgery.

Keywords:

Aortic Aneurysm,
Aortic Occlusion,
Four-Fen Fevar,
Para- Anastomotic Pseudo- Aneurysm

Corresponding Author(s):
Javad Salimi (MD)
Address: *Professor of Surgery, Sina Hospital, Tehran University of Medical Science, Tehran, Iran*
E-mail: *mjsalimi@tums.ac.ir*

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Vascular Surgeons Congress Handbook
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Review Article

Review on common polymers in fabrication of artificial vessels used in vascular surgery and dialysis

Nafiseh Jirofti[1], Davood Mohebbi Kalhori[2*], Gholamhossein Kazemzade[3], Reza Taheri[4], Marziyeh Khodadost[5]

1. *Assistant Professor of Chemical and Biomedical Engineering, Chemical Engineering Department, Faculty of Engineering, University of Sistan and Baluchestan, Iran*
2. *Biomedical Engineering Laboratory (Central Lab) University of Sistan and Baluchestan, Iran*
3. *Chemical engineering Ph.D. student, University of Sistan and Baluchestan, Iran*
4. *Associate Professor of Surgery, Department of Vascular Surgery, Vascular and Endovascular Surgery Research Center, Imam Reza Hospital, Mashhad University of Medical Sciences, Iran*
5. *Surgical Oncology Research Center, Imam Reza Hospital, Mashhad University of Medical Sciences, Iran*

ABSTRACT

Disease related to coronary artery is one of the important subgroups of cardiovascular diseases. Replacement of the blocked or narrowed arteries is an usual surgery for treatment of these diseases. Nowadays autografts are the best replacement for diseased vessels. Saphenous veins, radial arteries and internal mammary arteries are known as gold standards for transplants of damaged arteries in patients who suffer from cardiovascular diseases, but in many of them the autografts are not available because of different reasons such as age, small size, varicosities and previous removal. So due to the large number of requirements especially for small diameter vascular grafts, it is necessary to find a suitable replacements for diseased blood vessels. Nowadays tissue engineering attempts to design and fabricate artificial blood vessels which have the most accordance with native vessels. Also progresses in biomaterial and bioreactor technologies make it possible to fabricate synthetic vascular scaffolds which can optimal mimic the conditions of autografts. So, in this paper we focused on common polymers in fabrication of artificial vascular scaffolds.

Keywords:

Artificial grafts scaffolds, Dialysis, Polymer, Tissue engineering

Corresponding Author(s):
Davood Mohebbi Kalhori
Address: *Biomedical Engineering Laboratory (Central Lab) University of Sistan and Baluchestan, Sistan and Baluchestan, Iran*
E-mail: *davod.mohebbi@gmail.com*

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Review Article

Intravascular ethanol embolization – mechanism, applications, and safety

Shahram Akhlaghpour[1*]

1. *Interventional Radiologist, Pardis Noor Medical Imaging Center*

ABSTRACT

Absolute ethanol (≥99.5%) is a potent liquid embolic agent used in interventional radiology for vascular occlusion. Since the 1980s, it has been used to treat conditions such as renal cell carcinoma and arteriovenous malformations (AVMs). Ethanol induces coagulative necrosis by denaturing proteins in vessel walls, leading to permanent occlusion. Lower concentrations (≤70%) only cause temporary effects, making high-purity ethanol essential for lasting results.

Clinically, ethanol embolization is effective for hypervascular tumors and AVMs, as it destroys the endothelium, minimizing recurrence risks. Its ability to obliterate AVM nidus can lead to long-term remission or cure.

Due to systemic toxicity, ethanol must be administered cautiously. The recommended maximum dose is ~1 mL/kg body weight per session, with slow, incremental injections (≤0.1 mL/kg every 5–10 minutes) to prevent complications like hemolysis, arrhythmias, or hypoglycemia.

Potential risks include tissue necrosis, nerve damage, and cardiopulmonary effects such as pulmonary artery spasm or hypotension. To enhance safety, techniques like mixing ethanol with Lipiodol (for fluoroscopic visibility) or using balloon occlusion catheters (to prevent reflux) are employed.

For high-risk cases (e.g., superficial lesions), diluted ethanol (50–75%) may be used to reduce tissue damage. Pain management is critical, often requiring general anesthesia or sedation, along with local anesthetics (e.g., lidocaine) and post-procedure opioids.

These advancements have improved the precision and safety of ethanol embolization, making it a viable option for complex vascular lesions. However, careful technique and monitoring remain essential to minimize risks.

Keywords:
Arteriovenous Malformations,
Coagulative necrosis,
Renal Cell Carcinoma,
Vascular occlusion

Corresponding Author(s):
Shahram Akhlaghpour
Address: *Interventional Radiologist, Pardis Noor Medical Imaging Center*
E-mail: *shahram_ak@yahoo.com*

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Original Article

Percutaneous sclerotherapy with bleomycin and ethiodized oil: A promising treatment in symptomatic giant liver hemangioma

Niloofar Ayoobi Yazdi[1], Mohammad-Mehdi Mehrabinejad[1], Habibollah Dashti[1], Ramin Pourghorban[1], Mohssen Nassiri Toosi[1], Hadi Rokni Yazdi[1]

1. *From the Department of Radiology, School of Medicine, Advanced Diagnostic and Interventional Radiology Research Center (N.A.Y., M.M.M., H.R.Y.), Hepatobiliary and Liver Transplantation Division, Department of General Surgery (H.D.), and Liver Transplantation Research Center (M.N.T.), Imam Khomeini Hospital, Tehran University of Medical Sciences, Qarib St, Keshavarz Blvd, Tehran 14194, Islamic Republic of Iran; and Department of Radiology, Sina Hospital, Tehran University of Medical Sciences, Tehran, Islamic Republic of Iran (R.P.).*

ABSTRACT

Percutaneous sclerotherapy with bleomycin has been proven to have a potential benefit in the management of low-flow venous malformations. Liver hemangiomas are considered low-flow venous malformations. Thus, percutaneous sclerotherapy could potentially have a promising result in their management. To investigate the feasibility, efficacy, and safety of percutaneous sclerotherapy with bleomycin in the management of symptomatic giant liver hemangioma (GLH). This single-institute prospective study was conducted between September 2018 and July 2020. Percutaneous sclerotherapy was performed using a mixture of bleomycin and ethiodized oil under guidance of US and fluoroscopy in participants with GLH who were experiencing related abdominal pain or fullness. Technical success was recorded. Change in symptom severity, according to visual analog scale (VAS), was considered the primary outcome of the study. Volume change, based on the lesion volume at CT, and complications, based on the classification of the Society of Interventional Radiology, were regarded as secondary outcomes. The primary and secondary outcomes were recorded 6 and 12 months after the procedure. Comparison was performed by using the Wilcoxon signed-rank test or paired t test.

Twenty-eight participants (mean age, 45 years ± 9; 25 women) were evaluated. Technical success was 100%. The mean VAS score was 8.3 before the procedure, which decreased to 1.4 (84.7% reduction) and 1.5 (83.5% reduction) at 6- and 12-month follow-ups, respectively ($P < .001$ for both). All participants reported relief of symptoms (17 of 28 participants [61%] with complete relief; 11 [39%] with partial relief) at 12-month follow-up. Mean GLH volumes dropped from 856.3 cm3 to 309.8 cm3 (65.7% reduction) and 206.0 cm3 (76% reduction) at 6- and 12-month follow-ups, respectively ($P < .001$ for both). No major complications were detected.

Percutaneous sclerotherapy is a safe and feasible method with promising results in the treatment of patients with symptomatic giant liver hemangioma.

Keywords:
Aortic Aneurysm,
Aortic Occlusion,
Four-Fen Fevar,
Para- Anastomotic Pseudo- Aneurysm

Corresponding Author(s):
Hadi Rokni Yazdi
Address: *Department of Radiology, Sina Hospital, Tehran University of Medical Sciences, Tehran, Islamic Republic of Iran*
E-mail: *hadirokni@yahoo.com*

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Review Article

Artificial intelligence for the vascular surgeon, Review of 10 article about AI in last 3 years aneurysm

Maryam Sadat Tabatabaeiyan[1*]

ABSTRACT

In recent years, artificial intelligence (AI) has permeated different aspects of vascular surgery to solve challenges in clinical practice. Although AI in vascular surgery is still in its early stages, there have been promising developments in its applications to vascular diagnosis, risk stratification, and outcome prediction. By establishing a baseline knowledge of AI, vascular surgeons are better equipped to use and interpret the data from these types of projects. This review aims to provide an overview of the fundamentals of AI and highlight its role in helping vascular surgeons overcome the challenges of clinical practice. In addition, we discuss the limitations of AI and how they affect AI applications.

Keywords:
Artificial intelligence,
Vascular surgery

Corresponding Author(s):
Maryam Sadat Tabatabaeiyan
Address:
E-mail: *maryamtaba64@gmail.com*

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Observational Study

Endovascular management of superior vena cava syndrome: An observational experience from two tertiary centers

Hossein Najdsepas[1*]

1. *Department of Vascular Surgery, Rasool-e-Akram Hospital, Iran University of Medical Sciences, Tehran, Iran*

ABSTRACT

Superior vena cava (SVC) syndrome arises from extrinsic compression or intrinsic obstruction of the SVC, commonly due to malignancy or repeated hemodialysis catheterization. Endovascular therapy has emerged as a key treatment strategy, particularly in non-malignant cases related to hemodialysis access. In this observational study, data from 32 patients who had advanced SVC obstruction (Stanford-Doty types III and IV) were reviewed. The underlying causes of advanced SVC obstructions included malignancy (n=4), central venous port placement (n=2), and repeated hemodialysis catheterization (n=26). Endovascular procedures included stenting (n=6), balloon venoplasty, and lesion traversal using snaring techniques (n=27) or sharp penetration methods (n=21). Most patients experienced symptom relief following intervention. Complications were observed in a subset of patients, including hemothorax (n=3), cardiac tamponade (n=2), and one procedure-related mortality following venoplasty using an 18 mm balloon. Stent deployment was selective, and technique adaptations such as unilateral brachiocephalic vein stenting were employed to optimize outcomes while minimizing complications. Endovascular approaches offer effective management for SVC syndrome, especially in non-malignant cases secondary to hemodialysis access. Despite generally favorable outcomes, careful technique selection and awareness of potential complications are essential for patient safety. Long-term follow-up and further studies are warranted to optimize procedural strategies and improve outcomes.

Keywords:

Endovascular,
SVC syndrome,
Sharp penetration,
Superior vena cava syndrome

Corresponding Author(s):
Hossein Najdsepas
Address: *Department of Vascular Surgery, Rasool-e-Akram Hospital, Iran University of Medical Sciences, Tehran, Iran*
E-mail: *hsepas@gmail.com*

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Original Article

Production of central venous catheters and evaluation in vitro & in vivo

Reza Taheri[1*], Hossein Taheri[1], Hassan Talebi[2]

1. *Vascular and Endovascular Surgery Research Center, Mashhad University of Medical Sciences, Mashhad, Iran*
2. *Health Technology Development Center, Bo Ali Research Institute, Mashhad University of Medical Sciences, Mashhad, Iran*

ABSTRACT

In the Iran more than 1 million central venous catheters (CVCs) are inserted every year. For this reason, efforts have long been made to product CVCs and evaluate in vitro & in vivo. This research started in 2018 in partnership of the Mashhad University of Medical Sciences (MUMS), Ferdowsi University of Mashhad, Tavan sazan taranom salamat company and Mashhad Puya vessels company.

After the preparation of materials and equipment, Tavan sazan taranom salamat company started making Two lumen CVCs since 2022.

The in vivo test done in two phases. In the first phase for assessment of immune system response to substances used in CVCs, the samples were implanted in rabbit. Bioburden, Irritation, Sterility, Skin Sensitization, Sub-acute Systemic Toxicity, Hemocompatibility, Genotoxicity, cytotoxicity, Sub-chronic Systemic Toxicity test and Acute Systemic Toxicity tests evaluate by Nicopharmed laboratory.

In the second phase a research team from MUMS and a veterinarian team from Ferdowsi university will assessed CVCs in sheep. results were Successful.

Keywords:

Central venous catheter,
In vivo test,
Production

Corresponding Author(s):
Reza Taheri
Address: *Vascular and Endovascular Surgery Research Center, Mashhad University of Medical Sciences, Mashhad, Iran*
E-mail: *Taherir@mums.ac.ir*

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Original Article

Evaluation of the impact of using autologous saphenous vein as an alternative for hemodialysis access in hemodialysis-dependent ESRF patients

Masoud Ostadi Sefidan[1*]

1. *Vascular and Endovascular Surgery Research Center Mashhad, Mashhad, Iran*

ABSTRACT

Given the limited flexibility and high cost of polytetrafluoroethylene (PTFE) grafts, combined with the rapid progression of the disease, the great saphenous vein (GSV) may be the best option for patients with inaccessible deep veins in the upper extremities. This recommendation is further supported by the increasing number of patients requiring hemodialysis and the necessity to establish safe and reliable vascular access. The present study aimed to investigate the use of autologous saphenous vein as an alternative for hemodialysis access in dialysis-dependent end-stage renal failure (ESRF) patients, along with a control group using PTFE grafts.

This non-randomized clinical trial was conducted in 1403 on patients with chronic renal failure and ESRD who were candidates for permanent dialysis access. The participants were referred to Zakaria Clinic and Velayat Hospital in Mashhad. They were divided into two intervention groups: autologous saphenous vein implantation and artificial vein implantation. Clinical data, including infection rate, cannulation, blood vessel ischemia, aneurysm, seroma leak, failure rate, one-year patency rate, and vein occlusion, were evaluated immediately after surgery, at six weeks, and three months post-surgery, and compared between the two groups.

Overall, 56 patients with chronic renal failure and ESRD, with a mean age of 55.3 ± 13.99 years, were included in this study. No cases of infection, seroma leakage, or hematoma were observed in patients undergoing saphenous vein and artificial vein implantation. The findings indicated that there was no significant difference between the two groups in terms of access (χ^2=0.076; P=0.783). Only one case of vein perforation, pseudoaneurysm, hemorrhage, ischemia, and two cases of edema were reported in the artificial vein group, which did not differ significantly between the two groups. Three months after surgery, a significant difference was observed between the two groups in terms of thrombosis, with a higher rate in the artificial vein group (P=0.049). The frequency of AVF failure three months after surgery was significantly higher in the artificial vein group than in the saphenous vein group (χ^2=0.076; P=0.783).

The findings of this study showed that if transplantation is necessary in hemodialysis-dependent ESRF patients, autologous saphenous vein transplantation can be preferred over artificial grafts due to the fewer complications of this method.

Keywords:

Artificial vessel,
AVF rupture,
Great saphenous vein,
Pseudoaneurysm, Pseudo- Thrombosis

Corresponding Author(s):
Masoud Ostadi Sefidan
Address: *Vascular and Endovascular Surgery Research Center Mashhad, Mashhad, Iran*
E-mail: masoud.6813@yahoo.com

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Original Article

Hemodialysis patients with high-flow arteriovenous fistulas: An evaluation of the impact on cardiac function

Pouya Tayebi[1*], Naghmeh Ziaie[2], Sasan Golshan[3], Ali Bijani[4], Fatemeh Mahmoudlou[5]

1. *Department of Vascular and Endovascular Surgery, Rouhani Hospital, Babol University of Medical Sciences, Babol, Iran*
2. *Department of Cardiology, Rouhani Hospital, Babol University of Medical Sciences, Babol, Iran*
3. *Department of General Surgery, Rouhani Hospital, Babol University of Medical Sciences, Babol, Iran*
4. *Social Determinant of Health Research Center, Babol University of Medical Sciences, Babol, Iran*
5. *Student Research Committee, Babol University of Medical Sciences, Babol, Iran*

ABSTRACT

Patients undergoing hemodialysis often experience changes in cardiac function when they have a high-flow arteriovenous fistula (AVF). This study aimed to assess the effect of high-flow AVFs on cardiac function in patients undergoing hemodialysis.

A longitudinal study was conducted on hemodialysis patients with high-flow AVFs. Echocardiographic parameters, such as left ventricular ejection fraction (LVEF), left atrial diameter (LAD), left ventricular end-diastolic dimension (LVEDD), right ventricular end-diastolic dimension (RVEDD), inferior vena cava diameter (IVCD), systolic blood pressure, and diastolic blood pressure, were measured and compared before and after AVF creation.

One hundred hemodialysis patients with high-flow AVFs (mean age: 55.95±13.39 years, mean body mass index: 24.71±3.43 kg/m²) were studied. LVEF significantly decreased (51.10%±5.39% to 47.50%±5.79%), while LAD, LVEDD, and IVCD significantly increased after AVF creation (P<0.05). Systolic (132.49±16.42 mmHg to 146.60±17.43 mmHg) and diastolic (79.98±8.40 mmHg to 83.33±9.68 mmHg) blood pressure substantially rose post-fistularization (P<0.001). Notably, LVEF reduction was more significant in brachio-cephalic AVFs (46.29%±4.24%) compared to distal radio-cephalic or snuffbox AVFs (49.17%±7.15%) (P=0.014).

High-flow AVFs can significantly affect echocardiographic parameters in hemodialysis patients, thereby increasing the risk of cardiac failure. Close cardiac monitoring may be necessary for early intervention. Distal AVFs may be preferable in patients with decreased cardiac function.

Keywords:

Arteriovenous fistula,
Renal dialysis,
Four-Fen Fevar,
Heart function tests

Corresponding Author(s):
Pouya Tayebi
Address: *Department of Vascular and Endovascular Surgery, Rouhani Hospital, Babol University of Medical Sciences, Babol, Iran*
E-mail: *p.tayebi@mubabol.ac.ir*

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Original Article

Cardiac consideration in hemodyalisis access

Naghmeh Ziaie[1*]

1. *Fellowship of Heart Failure and transplant, Associated professor of Babol University of Medical Sciences, Iran*
2. *Department of Cardiology, Rouhani Hospital, Babol University of Medical Sciences, Babol, Iran*

ABSTRACT

The presentation discusses the cardiovascular implications of hemodialysis access, particularly its role in heart failure (HF). Between 30-70% of hemodialysis patients have HF, with 30% developing new-onset HF, especially with arteriovenous fistulas (AVF). Additionally, 25% of kidney transplant recipients with AV access may require its closure.

Pathophysiology: Hemodialysis access leads to systemic vasodilation, increased sympathetic activity, and elevated cardiac output. Over weeks to months, this results in right and left ventricular (RV/LV) dilation, pulmonary hypertension, and heart failure.

Choosing Dialysis Modality: Patients with HF should be classified based on NYHA and ACC/AHA stages. For NYHA class I-II (Stage C), a radial-cephalic AVF is preferred. Advanced HF (NYHA III-IV, Stage D) may require tunnelled central venous catheters instead of AVFs, with some experts considering peritoneal dialysis.

Risk Factors for AVF-Related HF: Include RV dilation, ischemic cardiomyopathy, valvular disease, pulmonary hypertension, atrial fibrillation, male sex, and high AV access flow rate.

Clinical Manifestations & Diagnosis: Symptoms may include dyspnea unresponsive to diuretics. Monitoring involves regular follow-ups, echocardiography, and right heart catheterization. High-output HF is suspected if AV fistula flow (Qa) exceeds 1.5-2 L/min or the Qa:CO ratio is >0.3.

Management: Initial management includes optimizing volume status, correcting anemia, and treating hypertension. If HF persists, options include closing unused AVFs, reducing AVF blood flow surgically, or switching to a tunneled catheter or peritoneal dialysis. In refractory cases, AVF closure may be necessary.

Post-Transplant Considerations: High-output HF can occur after kidney transplant but routine AVF closure is not recommended. Right heart catheterization is preferred for accurate hemodynamic assessment.

This summary highlights the critical considerations in managing HF in hemodialysis patients with AV access.

Keywords:
AV access.
hemodialysis,
HF

Corresponding Author(s):
Naghmeh Ziaie
Address: *Associated professor of Babol University of Medical Sciences, Babol, Iran*
E-mail: *ziaiexn@yahoo.com*

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Case Report

Effect of vein histology in success of arteriovenous fistulas

Hassan Ravari[1*], Gholamhossein Kazemzadeh[1], Bijan Abedian[1]

1. *Vascular and endovascular surgery research center, Mashhad University of medical sciences, Mashhad, Iran*

ABSTRACT

Hemodialysis patients require reliable access for adequate dialysis, and arteriovenous fistula (AVF) being the preferred method. Success of AVF may be influenced by the histopathology of the venous system. The aim of this study was to assess the impact of venous histopathology on AVF outcomes in hemodialysis patients.

An arteriovenous fistula was created in 107 patients with chronic kidney disease (CKD), and samples were taken from vein during the surgical procedure. The fibrin deposition and hyperplasia of the vein wall analyzed. The relationship between these findings and the successful function of the fistula evaluated.

Structural changes such as increased vein wall thickness, fibrin deposition, and hyperplasia were identified in patients with CKD especially in older patients. These histopathological alterations did not significantly correlate with the maturation of AVFs after 3 months follow up. 21 patients showing distinct fibrosis and 16 presenting with non-mature fistulas, the statistical analysis revealed no significant relationship between the histological changes observed in the vein histology and AVF maturation success ($p>0.05$).

Fibrin deposition in the intima and media layers of veins has a significant relationship with age and the underlying disease of CKD. Fistula maturation in the short term (3 months) does not show a relationship with fibrosis. It is necessary to monitor the patients in the long term, probably the survival rate of the fistulas is related to the histological changes of the vein wall in the long term.

Keywords:

Arteriovenous fistula (AVF), Hemodialysis, Vein histology

Corresponding Author(s):
Hassan Ravari (MD)
Address: *Vascular and endovascular surgery research center, Mashhad University of medical sciences, Mashhad, Iran*
E-mail: ravarih@mums.ac.ir

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Case Report

Diagnosis of the displacement of the nontunneled hemodialysis catheter into the carotid artery

Morteza Khavanin Zadeh[1*], Haleh Chehrehgosha[2]

1. *Professor, Department of General Surgery, Hasheminejad Kidney Center, School of Medical Sciences, Iran University of Medical Sciences, Tehran, Iran*
2. *Assistant professor, Department of Endocrinology, Hazrat Rasool Hospital, School of Medical Sciences, Iran University of Medical Sciences, Tehran, Iran*

ABSTRACT

Internal jugular veins are increasingly used to insert hemodialysis catheters in patients requiring dialysis, but their use can be accompanied by various complications. One of those is the placement of the catheter in the carotid artery. The aim of this study is to pose one of the important and life-threatening complications of improper placement of hemodialysis venous catheter in the carotid artery1.2.3.4.

In this article, we introduce a patient that has suffered one of the rare but fatal complications of hemodialysis catheterization. The patient has undergone catheterization for hemodialysis on December 26, 2022, without the use of ultrasound guidance.

There was a 71-year-old male patient with a history of diabetes and hypertension who was a candidate for emergent dialysis. A nontunneled catheter was placed on the right side of the neck. He complained of of numbness in the left limbs associated with decreased level of consciousness during every hemodialysis session. It also accompanied with a mild bleeding around the catheter's entrance. Chest radiography was done to ensure the accuracy of the catheter location. Surprisingly, chest x-ray showed that the tip of the catheter was placed in the right carotid artery (Figure 1).

So, after exploration of the common carotid artery, the catheter was removed from the carotid artery and the carotid artery was repaired. The catheter tip did not have any thrombosis, and the backflow was well established.

After 48 hours of intensive care, the patient was finally discharged without any lateralization symptoms or hemodynamic changes or hematoma.

In this article, we introduced a patient with a rare but dangerous complication of hemodialysis catheter. We emphasized that the usage of ultrasound during venous catheterization can prevent these errors in the catheter placement. The neurological symptoms due to incorrect catheterization in the carotid artery could be an alarm for this condition.

Keywords:

Carotid artery,
Hemodialysis catheter,
Improper catheterization,
Ultrasound

Corresponding Author(s):
Morteza Khavanin Zadeh
Address: *Department of General Surgery, Hasheminejad Kidney Center, School of Medical Sciences, Iran University of Medical Sciences, Tehran, Iran*
E-mail: *mkhavanin@yahoo.com*

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Original Article

Evaluation of the efficacy of an interdialytic ethanol enoxaparin lock solution for preventing tunneled catheter infections in hemodialysis patients

Amir Ahmad Arabzadeh[1*]

1. *Department of Surgery, School of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran*

ABSTRACT

Infections related to central venous catheters (CVCs) are a major complication for hemodialysis (HD) patients, leading to increased morbidity, mortality, and healthcare costs. Effective prevention strategies are needed to reduce infection rates and improve patient outcomes.

This study aimed to investigate the effectiveness of tunneled CVCs containing a combined solution of ethanol 40% v/v and enoxaparin 1000 U/mL in reducing the incidence of catheter-related infections in HD patients.

A double-blind pilot clinical trial was conducted on 30 chronic kidney failure patients undergoing HD at a referral center in Ardabil. All patients had tunneled silicone CVCs inserted through the internal jugular vein. Patients were included if they were over 18 years of age, had been on HD for at least two months, and had no prior infections or antibiotic use. Patients with catheter failure, ongoing infection, or who underwent kidney transplantation were excluded. Data on infection symptoms, culture results, and adverse reactions were collected and analyzed.

Out of the 30 patients included in the study, the mean age was 63.1±13.7 years. Infection symptoms, primarily local inflammation at the catheter site, were observed in 50% of the patients. Blood cultures showed a 10% infection rate, with positive cultures in 6.7% of patients from the arterial line and 3.3% from the venous line. The identified causative agents were Escherichia coli (3.3%) and Staphylococcus epidermidis (6.7%). No significant adverse reactions were reported in any patients receiving the combined enoxaparin and ethanol solution. The overall infection rate remained low, demonstrating a statistically significant reduction compared to baseline infection rates ($P<0.05$).

Interdialytic ethanol- enoxaparin lock solution effectively reduces infection rates in HD patients. These findings suggest this combined approach as a promising strategy for infection prevention. However, further studies with larger sample sizes and multi-center participation are necessary to confirm the efficacy and safety of this method in reducing catheter-related infections.

Keywords:

Chronic kidney Disease,
Hemodialysis,
Central venous catheter,
Infection prevention,
Enoxaparin, Ethanol,
Catheter-related infections

Corresponding Author(s):
Amir Ahmad Arabzadeh
Address: *Department of Surgery, School of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran*
E-mail: *amir_medico@yahoo.com*

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Prospective Cohort Study

Optimizing central venous access devices (CVADs) insertion in thrombocytopenic patients: Balancing efficacy and safety

Hossein Farsavian[1], Mahdi Davoodi[1], Mohammad Javad Najafi[2*], Mahmoud Manouchehri Amoli[3], Ahmad Zahmatkesh[4], Mahmoud Nazarpour[2]

1. *Assistant Professor of vascular surgery, Department of surgery, Faculty of Medicine, Mazandaran university of medical sciences, Mazandaran, Iran*
2. *Clinical Research Development Unit of Imam Khomeini Hospital, Mazandaran university of Medical Science, Sari, Iran.*
3. *Virginia Commonwealth University, Virginia, USA*
4. *Vascular Surgeon, Department of surgery, Faculty of Medicine, Mazandaran university of medical sciences, Mazandaran, Iran*

ABSTRACT

To explore the complications associated with central venous access devices (CVADs) placement in patients with severe thrombocytopenia (platelet count < 50 × 10^9/L) and to identify a safe platelet count threshold for CVAD insertion.

Prospective cohort study. Imam Khomeini Sari Hospital, associated with Mazandaran University of Medical Sciences, Iran, from September 2020 to September 2023.

Individuals aged 18 to 80 years with a platelet count of less than 50,000/dl, excluding those designated for subcutaneous port procedures or on anticoagulant therapy.

Ultrasound-guided CVAD insertion using the Seldinger technique.

Incidence of hemorrhagic complications post-CVAD insertion, requirement for blood product transfusions to amend platelet counts, frequency of non-bleeding complications, and complications related to blood product transfusions.

The study comprised 137 participants, 54% of whom were men, with an average age of 46.90 ± 15.70 years. No significant correlation was found between the site of CVAD placement (jugular vs. femoral) and the incidence of major or minor bleeding. Femoral catheters were associated with a higher rate of infection. No complications related to transfusion of blood products or mortality seen, indicating that CVAD implantation can be safely performed in patients with thrombocytopenia or coagulation disorders. The study suggests a platelet count threshold of 10 × 10^9/L may be safe for CVAD insertion.

CVAD insertion in thrombocytopenic patients, even with platelet counts below 10 × 10^9/L, is safe and associated with minimal complications when performed under ultrasound guidance by experienced surgeons. This finding supports the use of a lower platelet count threshold for CVAD insertion than currently recommended in guidelines, potentially reducing the need for platelet transfusions prior to CVAD placement.

Keywords:

Central venous access devices, Thrombocytopenia, Ultrasound guidance, Platelet count, Safety, Efficacy

Corresponding Author(s):
Mohammad Javad Najafi
Address: *Clinical Research Development Unit of Imam Khomeini Hospital, Mazandaran university of Medical Science, Sari, Iran*
E-mail: *mjnajafi@rocketmail.com*

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Original Article

Evaluation of endovascular (intravascular) therapeutic results of aortic dissection and abdominal and thoracic aortic aneurysms using multi-layer flow modulating stent under the guidance of digital differential angiography

Morteza Noaparast

1. *Department of General Surgery, Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran*

ABSTRACT

Aneurysm and dissection are among the vascular problems that have a high mortality rate. There are various treatments for them that the use of stent- grafts has received much attention in recent years. The aim of this study was to determine the results of endovascular (intravascular) treatment of abdominal and thoracic aortic aneurysms using MFM stent.

The present study was a non-randomized prospective trial study without a control group on a human sample, in which 21 patients were selected by available sampling method and entered the study. The main study variables along with medical history and patient demographic information were recorded in a pre-designed checklist at the beginning of the study and then the main study variables were recorded at one-month and 10-month intervals. The main variables of the study are the results obtained from DSA and CTA methods. SPSS software version 20 was used to analyze the data.

Based on the results of the study, the technical success rate of stenting surgery was 100 and no deaths or spinal cord injuries were reported. Follow-up of 15 patients (9 patients with aneurysm diagnosis and 6 patients with dissection diagnosis) also showed that aneurysm and dissection mortality was not reported and one-month and 10-month mortality of patients undergoing MFM stent surgery was 0%. No aneurysm rupture was reported during the period, and none of the patients required reintervention. Findings related to 10-month follow-up in patients with dissection showed; After MFM stenting, the length of the true lumen increased significantly but the length of the false lumen did not show a significant change.

Based on the findings of the present study and also reviewing the available evidence, MFM stent has a desirable and acceptable technical success in the treatment of abdominal aortic aneurysm and it is generally effective in the short-term, but to prove its long-term results, large clinical trials with the control group and multi-year follow-up are required.

Keywords:
Aneurysm, Dissection, MFM stent

Corresponding Author(s):
Morteza Noaparast
Address: *Department of General Surgery, Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran*
E-mail: *mnoaparast@sina.tums.ac.ir*

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Original Article

Internal iliac artery preservation strategies in the endovascular treatment of aortoiliac aneurysms

Mehrdad Vahedian[1*]

1. *Vascular and endovascular surgeon, KMU Medical university, Iran*

ABSTRACT

Endovascular aneurysm repair (EVAR) nas become the most utilized treatment for abdomtnat aortic aneurysms (AAA), but the presence of common illac dilatation or aneurysm may prevent the achievement of effective distal seal and fixation. Ideal repair in these cases should involve both effective preservation of the pelvic circulation and durabte exctusion of the AAA. Untlateral or bilāterāl internat iliac artery (IIA) preservation with iiac branch đevices (IBD) is safe, feasible and effective with technical and clinical outcomes comparable to standard EVAR. The versatility of current devices has allowed extended application to complex cāses, būt must be considered carefully in difficult anatomies. Pending long-term durability results and formal cost-" éffectiveness appraisals, IBD implantation has several advantages to anatomically eligible patients as compared with other available open or endovascular/nybrid solutions for IIA preservation during EVAR for aortoiliac aneurysms.

Keywords:
IBD,
EVAR, IIA

Presenter Author(s):
Mehrdad Vahedian (MD)
Address: *Vascular and endovascular surgeon, KMU Medical university, Iran*
E-mail: *m_vahedian@kmu.ac.ir*

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Case Report

A rare case of aortobronchial fistula caused by aortitis

Behzad Azimi[1*], Hamideh Moradi Shahrbabak[2], Alireza Haghbin Toutounchi[1]

1. *Vascular and Endovascular surgery department, Imam Hossein hospital, Shahid Beheshti university of medical sciences, Tehran, Iran*
2. *Infection department, Imam Hossein hospital, Shahid Beheshti university of medical sciences, Tehran, Iran*

ABSTRACT

Aortobronchial fistulas (ABFs) are rare and fatal condition. Hemoptysis is the most common presentation. ABFs. The management of ABF can be surgical or thoracic endovascular aortic repair (TEVAR). TEVAR can be a safe and less invasive procedure for the treatment of ABFs. The prognoses of patients with ABFs are poor with a high morbidity and mortality.

We presented the case of a 59-year-old man with chronic, constant chest pain and frequent cough. He visited our center three times, each time undergoing a cardiac assessment, which consistently returned normal results. Three weeks later, the patient presented to the emergency department with new symptoms: unilateral knee swelling, irritation, pain, and warmth. Laboratory tests revealed elevated CRP and ESR levels, along with leukocytosis. Based on these findings, the patient was admitted with a preliminary diagnosis of septic arthritis. The culture of aspirated knee fluid revealed Streptococcus pneumoniae.

During his hospital stay, the patient experienced massive hemoptysis. A pulmonology consult was obtained, and a CTA was recommended to rule out a potential pulmonary embolism. The CTA did not show any filling defects in the pulmonary vasculature. However, it did reveal suspicious haziness and signs of aortic dissection. Following these findings, a vascular surgery consult was requested. The CTA confirmed the presence of a pseudo-aneurysm and an aortic dissection that had fistulized into the bronchial tree. The patient was promptly managed for the dissection, with careful control of his blood pressure. Thoracic endovascular aortic repair (TEVAR) was performed within the next 12 hours. The procedure was successful, and the patient was discharged without complications.

Given the patient's history and clinical findings, potential differential diagnoses included collagen vascular diseases or an infection-related cause. Blood cultures were positive for Streptococcus pneumoniae, suggesting the knee joint as the primary source of infection. Ultimately, the patient was diagnosed with pneumococcal aortitis. He was treated with appropriate antibiotics, and his follow-up was uneventful.

Keywords:
Aneurysm,
Aortic dissection,
Arterial fistula,
Pneumococcal infection

Corresponding Author(s):
Behzad Azimi
Address: *Vascular and Endovascular surgery department, Imam Hossein hospital, Shahid Beheshti university of medical sciences, Tehran, Iran*
E-mail:*behzadazimi51@yahoo.com*

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Case Report

Sudden AION after endovascular surgery: A case report

Milad Sarafi[1*]

1. *Department of Surgery, Surgery Research Center, School of Medicine, Rasool-E Akram Hospital, Iran University of Medical Sciences, Tehran, Iran*

ABSTRACT

One of the rare complications of general surgeries is acute vision loss. An underlying cause of this rare complication is ischemic optic neuropathy. In this article, we present a rare case of sudden bilateral visual loss after performing an endovascular surgery due to acute right upper extremity ischemia.

A 67-year-old woman presented with numbness and coldness in her right hand the patient had a medical history of hypertension and gastroesophageal reflux disease. In physical examination right radius and ulnar artery pulses were absent and an abnormal sensation in the distal part of her right upper extremity was noted. In the Operating room embolectomy was performed on her Brachial, Ulnar, and Radial arteries. The morning after the surgery the patient complained of acute vision loss in both of her eyes. She was diagnosed with Non-Arteritic Acute Ischemic Optic Neuropathy (NA-AION). Treatment with glucocorticoids was initiated and the patient's visual loss improved in the course of two weeks. Possible pathological explanations could be attributed to general surgery complications, such as blood loss and hypotension, or thromboembolic events.

Bilateral perioperative visual loss, often linked to spinal and cardiac surgeries and rarely vascular surgeries, may result from complications like hypotension and blood loss, or embolic and thrombotic events. More research is necessary to understand the connection with AION.

Keywords:
Perioperative Visual Loss, Acute Ischemic Optic Neuropathy, General Surgery, Embolectomy

Corresponding Author(s):
Milad Sarafi
Address: *Department of Surgery, Surgery Research Center, School of Medicine, Rasool-E Akram Hospital, Iran University of Medical Sciences, Tehran, Iran*
E-mail: *miladsarafi@gmail.com*

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Case Report

Management of huge common iliac artery aneurysm in a 3-month-old neonate

Javad Salimi[1*], Mohammad Ashori[1], M Reza Fattahi[1]

1. *Vascular Surgery Department-Sina Hospital, Tehran University of Medical Sciences,Tehran, Iran*

ABSTRACT

Pediatric arterial aneurysm is a rare disease with challenging management because of arterial size in this period of life. Among them, idiopathic -congenital arterial aneurysm is extremely rare. This is a case report of a right common iliac artery idiopathic aneurysm with a run of the right external iliac artery. An 18-weeks-old male neonate who had been asymptomatic with a right lower abdominal bulging that had been incidentally detected as a cyst since prenatal sonography screenings. Abdominal CT angiography at age three months of age revealed a 5.2 cm × 4.5 cm × 5.1 cm, right-sided, partially calcified, fusiform, iliac artery aneurysm. He underwent an operation and aneurysm resection. A pathological examination confirmed that it was a true aneurysm, considering that all layers of the vascular wall were stretched with no deficit. The patient was discharged a week after the surgery without any complications. Eighteen months passed since the surgery, and the patient is doing well without any pain or growth disorder.

Keywords:
Iliac Artery,
Aneurysm, Neonate

Corresponding Author(s):
Javad Salimi (MD)
Address: *Professor of Surgery, Sina Hospital, Tehran University of Medical Science, Tehran, Iran*
E-mail: *mjsalimi@tums.ac.ir*

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Case Report

A case of simultaneous adrenalectomy and dissection repair with direct sheath placement into the Aorta and systematic review of cases with hyperaldosteronism and vascular

Meghdad Ghasemi Gorji[1], Alireza Keshtkar[2], Ali Rafiei[3], Parsa Yazdanpanahi[3], Alireza Karimi[3*]

1. *Assistant professor of Vascular Surgery, Department of Surgery, School of Medicine, Namazi Teaching Hospital, Shiraz University of Medical Sciences, Iran*
2. *Research center of Noncommunicable diseases, Jahrom University of Medical Sciences, Jahrom, Iran*
3. *Department of Vascular Surgery, Shiraz University of Medical Science, Shiraz, Iran Iran*

ABSTRACT

The incidence of acute aortic dissections (AAD) is 3-6 patients per 100,000 in a year with a high mortality rate of 40% at the initial diagnosis and increasing by the hour up to 90%. There are several known risk factors for AAD, however, the most common risk factor is systemic hypertension (HTN). Different conditions have been reported to be associated with resistant HTN including hyperaldosteronism (HA).

A 57-year-old Persian man came to our clinic with occasional claudication after 30 m distance walking, left leg pain, and symptoms of chronic limb ischemia including a cold left leg with a shiny appearance. He had a past medical history of recently diagnosed resistant hypertension, a past surgical history of a femoropopliteal bypass, and a balloon angioplasty. his computed tomography angiography (CTA) of the abdominopelvic cavity and lower limbs revealed a dissection of the infrarenal aorta at the bifurcation of common iliac arteries, occlusion of the left external iliac artery (EIA), dissection of the left common iliac artery (CIA), and a mass measuring 6 x 5 x 2 cm was identified in the patient's left adrenal gland. The opening of the false lumen was from the distal part of the false lumen so we decided to use an antegrade approach to this dissection. He underwent simultaneous surgery for aneurysmal repair and adrenalectomy.

A vast systematic search of the literature in Scopus, Web of Science, PubMed, and Google Scholar was done to identify cases of HA relating to vascular dissection that were either treated with surgery or medication. Our results support the theory suggesting HA can be considered a risk factor for VD despite its effects on HTN.

Keywords:
Adrenal glands, Hyperaldosteronism, Dissection, Blood Vessels, Aortic Dissection

Corresponding Author(s):
Alireza Karimi
Address: *Department of Vascular Surgery, Shiraz University of Medical Science, Shiraz, Iran*
E-mail: *dralirezakarimi1988@gmail.com*

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Case Report

Novel repair of acute Stanford type B aortic dissection using combined endovascular graft and transfemoral replacement of vascular plug

Mohammad Raiszadeh[1*], Azime Khosronejad[2], Soroush Dianaty[3], Batool Ghorbani Yekta[4,5]

1. *Trauma Research Center, School of Medicine, Baqiyatallah Al-Azam Hospital, Baqiyatallah University of Medical Sciences, Tehran, Iran.*
2. *Shahid Beheshti University of Medical Sciences, Tehran, Iran.*
3. *Student Research Committee, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran.*
4. *Department of Physiology, Faculty of Medicine, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran.*
5. *Men's Health and Reproductive Health Research Center, Shahid Beheshti University of Medical Sciences, Tehran, IranI*

ABSTRACT

We present successful treatment of dissected thoracoabdominal aorta using combined thoracic endovascular aortic repair and transfemoral replacement of Amplatzer™ vascular plug in a 38-year-old patient. Computed tomography angiography revealed a false lumen from the left subclavian artery to the left common iliac trunk, with re-entries connecting it to the true lumen of the aorta. We replaced the prosthetic endovascular graft just below the left subclavian artery to the top of the superior mesenteric artery. Amplatzer™ vascular plug was replaced below the diaphragm in a closed transfemoral procedure to prevent re-entry. The patient was discharged in good condition and 2 years postoperation imaging showed complete pseudoaneurysm closure.

Keywords:
AMPLATZER septal occlude, TEVAR, Aortic Dissection, Graft, Pseudoaneurysm

Presenter Author(s):
Mohammad Raiszadeh1
Address: *Trauma Research Center, School of Medicine, Baqiyatallah Al-Azam Hospital, Baqiyatallah University of Medical Sciences, Tehran, Iran*
E-mail:

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Case Report

Right aberrant subclavian artery & aortic coarctation in a 35 years old patient with posterior TIA & claudication

Mohammad Hossein Hassani[1*]

1. *Cardiac & Vascular Surgery Department, Razi Hospital, Birjand, South Khorasan, Iran*

ABSTRACT

The patient is a 35 year old living in Birjand, who was diagnosed with HTN and upper limbs Blood Pressure discrepancy in screening exams in high school. The patient didn't go through follow up investigation and he didn't take medication for his condition. Four years prior to being referred to vascular surgery clinic, he had been admitted in hospital due to dizziness and passing out. A significant difference in BP of upper extremities was revealed in physical examination and the patient underwent CTA. An anomalous Aortic Arch was missed and patient was simply prescribed with antihypertensive medication. Recently the patient referred to our vascular surgery clinic due to increasingly frequent drop attacks in association with blurred vision and right arm weakness and claudication. He was very underweight. After an extensive physical evaluation and taking full history, the absence of pulses in right hand and both femoral artery was recorded. The patient's CTA from 4 years ago was reviewed and the diagnosis of Aortic Coarctation was stablished. It should be mentioned that the origin of Right Subclavian artery was not clear. The subclavian steal syndrome was clinically present. We performed CTA and Color Dupplar Ultrasound, which affirmed the diagnosis and Aortic Coarctation and an Atretic Right Aberrant Subclavian Artery was shown posterior to Esophagus. The plan of treatment for the patient was. He underwent Carotid to Subclavian artery bypass with PTFE graft form supraclavicular approach, which was successful. The patient was transferred from ICU to the ward on 2nd post-op day. The drains was not functional and after 4 days the surgical site was explored due to lymphatic leakage which was ligated and drain was placed again. The patient was discharged and the drains were removed after two weeks. The bypass graft was patent. In the 6 weeks post-op follow-up, the patient had developed pleural effusion, for which Thoracocentesis was done and a pigtail catheter was placed. After 3 days there was no drainage and the catheter was removed. The patient did not developed pleural effusion afterwards. At 8 month follow-up the patient is well. The lungs are expanded. He is hypertensive but equal in right and left arms. The Sinus XL stent for the Coarctation just distal to left SCA is ordered and we decide to do the angioplasty in following days after the needed equipment is fully provided.

Keywords:
Right Aberrant SCA,
SCA Steal Syndrome,
Aortic Arch Coarctation

Corresponding Author(s):
Mohammad Hossein Hassani
Address: *Cardiac & Vascular Surgery Department, Razi Hospital, Birjand, South Khorasan, Iran*
E-mail: *m.hos.hassani@gmail.com*

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Review Article

Benefits of retrograde access for peripheral angioplasty

Mohammad Reza Radpey

1. *Department of Vascular Surgery, Shiraz University of Medical Sciences, Shiraz, Iran*

ABSTRACT

Patients with Critical Limb-Threatening Ischemia (CLTI) often experience stenosis or occlusion in their Below-the-Knee (BTK) arteries, making recanalization crucial for effective wound healing. Interventional recanalization is typically preferred over surgical bypass due to the unique anatomy of BTK arteries and the presence of various comorbidities in these patients. However, challenges arise because BTK lesions are frequently complex and involve calcified Chronic Total Occlusions (CTOs). The inability to recanalize these CTOs can hinder effective intervention.

When an antegrade approach fails, retrograde tibio-pedal access becomes a promising alternative for achieving successful recanalization. This technique allows for better navigation and access to difficult lesions that may not be amenable to traditional approaches.

This review will explore the fundamental concepts and advanced techniques associated with retrograde tibio-pedal access, highlighting its importance in the management of CLTI patients with complex BTK lesions. By understanding these methods, healthcare professionals can improve outcomes for patients suffering from this debilitating condition.

Keywords:
Below-the-Knee,
Critical Limb-Threatening Ischemia,
Chronic Total Occlusions

Corresponding Author(s):
Mohammad Reza Radpey
Address: *Department of Vascular Surgery, Shiraz University of Medical Sciences, Shiraz, Iran.*
E-mail: *rezaradpey@gmail.com*

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Case Report

Wire get out of right foot after enteral venous atheterisation

Reza Shojaee[1*], Rohollah Davoodabadi[2], Melika Moazzami[3], Mohammadreza Rezaei[3], Mohamadreza Rohani[4]

1. *Vascular surgeon, department of surgery, assistant professor, Arak medical university, Iran*
2. *Interventional cardiologist, assistant professor, Arak medical university, Iran*
3. *Department of vascular surgery, researcher, Arak medical university, Iran*
4. *Gasteroenterologist, assistant professor, Arak medical university, Iran*

ABSTRACT

Central venous catheterization is a common useful implement used for Intravenous administration; rapid fluid delivery and guide wire retention is a rare but dangerous complication of central venous catheterization that is usually identified incidentally after the procedure.

A 29-year-old female patent with only symptom of pain and burning in plantar side of her right foot with guide wire emerging out through the plantar side of the right foot about two years after central venous catheterization. There were four wire fragments that one of them protruded through the skin, two wire fragments were removed by using trefoil endovascular snare and one fragment moved to the surface and removed by a small incision.

Experience and attention during performing the procedure are needed, to minimize such complications which are preventable.

Keywords:
CVC,
Endovascular Retrieval

Presenter Author(s):
Reza Shojaee
Address: *vascular surgeon, department of surgery, assistant professor, Arak medical university, Iran*
E-mail: *reza.shojaee@gmail.com*

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Original Article

Surgical solution for unsuccessful RE-stenting

Mohammadreza Toobaei Babazad

1. *Department of Surgery, Zanjan University of Medical Sciences, Zanjan, Iran*

ABSTRACT

Chronic deep venous obstruction, often caused by deep venous thrombosis (DVT), leads to significant morbidity, including lower limb swelling, venous claudication, and ulceration. Despite advancements in endovascular treatments, some patients experience stent thrombosis and recurrent symptoms, necessitating alternative surgical interventions such as the Palma procedure (cross-pubic femoro-femoral venous bypass).

This prospective case-series study, conducted from October 2016 to October 2018, included 15 patients (8 male, 7 females; mean age 40.5 years) with prior iliac stenting failure due to stent thrombosis. All patients underwent the Palma procedure after unsuccessful re-stenting attempts. Preoperative assessments included duplex ultrasound (DUS) and venography. The procedure involved harvesting the contralateral great saphenous vein (GSV) and anastomosing it to the common femoral vein (CFV) without creating an arteriovenous fistula (AVF). Postoperative management included anticoagulation, elastic compression, and regular DUS surveillance.

All 15 patients achieved 100% graft patency at discharge, with no mortality or major complications. Clinical improvements were significant: 60% of patients reported complete resolution of pain, and 46.7% had no residual edema. Varicose veins, pigmentation, and ulcers also showed marked improvement. The mean Venous Clinical Severity Score (VCSS) decreased from 13 to 4 postoperatively. Follow-up DUS at 3, 6, 12, 18, and 24 months confirmed sustained graft patency in all patients.

The Palma procedure is a viable surgical option for patients with chronic iliac vein obstruction who fail endovascular treatments. Proper patient selection, meticulous surgical technique, and postoperative anticoagulation contribute to excellent graft patency and significant clinical improvement. This study supports the use of the Palma procedure as an effective alternative for managing refractory deep venous obstruction.

Keywords:

Venous Bypass (Palma Procedure),
Iliofemoral Vein Obstruction,
VCSS (Venous Clinical Severity Score)

Corresponding Author(s):
Mohammadreza Toobaei Babazad
Address: *Venous Bypass (Palma Procedure) Iliofemoral Vein Obstruction VCSS (Venous Clinical Severity Score)*
E-mail: *mohammadreza_toubaei@ymail.com*

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Case Report

Scalp AVM

Jamal Jalili Shahri[1*], Ruhollah Amani[1], Milad Hejazi2, Aysan Dehghani[2], Reyhaneh Aftabi[2]

1. *Vascular and Endovascular Surgery Research Center, Mashhad University of medical sciences, Mashhad, Iran*
2. *Faculty of Medicine, Urmia University of Medical Sciences, Urmia, Iran*

ABSTRACT

The management of scalp AVMs poses significant difficulties because of its elevated shunt flow and intricate vascular anatomy.

The patient, a 21-year-old lady, presented with postoperative scalp bleeding after seborrheic keratosis excision. After the surgical removal of seborrheic keratosis, the patient experienced excessive bleeding from the scalp area while changing the bandage. The bleeding was subsequently diagnosed as a pseudoaneurysm by the utilization of ultrasound imaging. A lesion with soft tissue density of 35x8 mm dimensions was seen in the skin, subcutaneous and subgaleal tissue in the right occipital region. The occipital branch of the right external carotid artery served as the feeding artery for this lesion and the superficial veins of the scalp served as the venous drainage system for this lesion.

After standard preparation, we inserted a pair of consecutive, interconnected purse string sutures around the outer edge of the lesion beneath the galea. We executed double-row purse string suturing around the lesion to temporarily obstruct the blood flow through the feeding arteries. Next, the top layer of skin was cut apart, and skin flaps were made by removing the source of the problem from the skin and subsequently from the deep layer of tissue without any bleeding. Subsequently, the feeding arteries and the draining veins responsible for removing waste were tied up. The skin is primarily closed and then covered with a compression wound dressing secured by a knot.

To reduce the chances of intraoperative hemorrhage following surgical removal of scalp arteriovenous malformations (AVMs), one effective method is to utilize the DROPS technique. This technique is applicable to various AVMs, including non-cerebral ones. Surgical excision can be performed confidently in a bloodless field without the need for a skin transplant.

Keywords:
Scalp, AVM,
Intraoperative, Bleeding

Corresponding Author(s):
Jamal Jalili Shahri
Address: *Vascular and Endovascular Surgery Research Center, Mashhad University of medical sciences, Mashhad, Iran*
***E*-mail:** *JaliliSJ@mums.ac.ir*

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Original Article

Comparison of the effectiveness of daflon and pentoxifylline in the management of chronic venous insufficiency: A clinical trial

Iman Heydari[1], Mahin Tatari[2], Pezhman Kharazm[3]

1. *Resident of General Surgery, Clinical Research Development Center, 5th Azar Medical Center, Golestan University of Medical Sciences, Gorgan, Iran*
2. *Statistical Science Department, Sapienza University of Rome, Rome, Italy*
3. *Assistant Professor of Vascular Surgery, Clinical Research Development Center, 5th Azar Medical Center, Golestan University of Medical Sciences, Gorgan, Iran*

ABSTRACT

Chronic Venous Insufficiency (CVI) is one of the most prevalent diseases in developed countries. It occurs secondary to venous hypertension. Its clinical manifestations differ from limb heaviness to venous ulcer. Compressive therapy is the mainstay of CVI management. Several medications have been proposed for the management of CVI in conjunction with compressive therapy. However, none of them have gained high levels of recommendation according to the existing guidelines. In this study, we compare the effectiveness of Daflon and Pentoxifylline in the management of CVI patients.

99 patients with the diagnosis of CVI and clinical grade of 2 or more according to the CEAP classification were randomized blindly into two groups of Daflon and Pentoxifylline. The VCSS questionnaire was completed for each patient in addition to the demographic questionnaire at the start of treatment and the end of 6 months of the study.

Both Pentoxifylline and Daflon drugs significantly and effectively reduced the patients' VCSS score (Pentoxifylline 37% and Daflon 40%). All indices of pain, swelling, and hyperpigmentation were reduced. Daflon showed significantly better efficacy than Pentoxifylline in reducing VCSS scores.

Pentoxifylline and Daflon effectively reduce symptoms of patients with CVI and along with lifestyle modifications and compression therapy can improve patients' quality of life.

Keywords:

Chronic venous insufficiency, Daflon, Pentoxifylline, CEAP classification, VCSS score

Corresponding Author(s):
Pezhman Kharazm
Address: *Vascular Surgery, Clinical Research Development Center, 5th Azar Medical Center, Golestan University of Medical Sciences, Gorgan, Iran*
E-mail: *pezhmankh@goums.ac.ir*

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Case Report

Aortic perforation as EVAR complication: a case report study

Mohsen Moohebati[1*], Mostafa Dastani[1], Mostafa Ahmadi[1], Bahram Shahri[1], Susan Darroudi[2]

1. *Department of Cardiovascular, School of Medicine, Mashhad University of Medical Sciences, Mashhad,Iran*
2. *Vascular and Endovascular Surgery Research Center, Mashhad University of medical sciences, Mashhad, Iran*

ABSTRACT

Abdominal aortic aneurysms account for 1.3% of all deaths among men aged 65-85 years in developed countries. These aneurysms are typically asymptomatic until they rupture catastrophically. Repairing large or symptomatic aneurysms through open surgery or endovascular repair is recommended, while repairing small abdominal aortic aneurysms does not offer significant benefits. Abdominal aortic aneurysm is associated with the deterioration of the elastic media of the athermanous aorta.

An 80-year-old woman with a history of diabetes, hypertension, stenosis, and CABG over 10 years ago was admitted to our hospital with complaints of abdominal pain.

Upon sonography investigation, it was revealed that she had an aortic aneurysm in her abdomen measuring 70 mm by 100 mm. A CT angiography (Computed Tomography Angiography) was performed, showing an infrarenal aneurysm that extended into the common iliac artery.

After full implantation of the device and appropriate postdilation, during Suprarenal injection, we observed a small extraluminal (extra-aortic) extravasation. The patient remained stable clinically. We had two diagnoses: the first was perforation of both the aorta and the graft, and the second was aortic perforation with a type 1 endoleak. With aggressive proximal post dilation, the extravasation was successfully sealed. In the final projection, we achieved a good result.

Ultimately, endoleak type I was confirmed, and after post-dilation, the bleeding was successfully controlled. The patient had a follow-up after one year and did not report any issues.

Keywords:
Abdominal aortic aneurysms, EVAR, Extravasation, Endoleak type I and II

Corresponding Author(s):
Mohsen Moohebati
Address: *Department of Cardiovascular, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*
E-mail: *mouhebatim@mums.ac.ir*

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Original Article

CLaCS: cryo-laser cryo-sclerotherapy – a synergistic approach to telangiectasia treatment

Niki Tadayon[1*]

1. *Department of General and Vascular Surgery, Shohada Tajrish Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran*

ABSTRACT

CLaCS (Cryo-Laser Cryo-Sclerotherapy) is an innovative technique for treating telangiectasia by combining three synergistic modalities:

1. Transdermal Laser Therapy
2. Sclerotherapy
3. Targeted Cryotherapy

The procedure begins with transdermal delivery of an intense laser to the affected veins. This induces endothelial damage and tunica media edema, leading to partial vein contraction within 0–10 minutes. Subsequently, sclerotherapy is administered—originally using hyperosmolar 50% dextrose—to enhance endothelial injury through an osmotic mechanism.

Throughout both steps, cold air at –20°C is applied directly to the treatment site. This cryotherapy minimizes discomfort, reduces the risk of post-procedure pigmentation, and enhances vasoconstriction. The synergy between thermal laser-induced vein collapse and sclerosing agent entrapment leads to more effective and longer-lasting vein obliteration.

CLaCS represents a modern, multimodal strategy in the management of telangiectasia, offering enhanced efficacy, reduced complications, and improved patient comfort.

Keywords:

CLaCS, Telangiectasia Synergy

Corresponding Author(s):
Niki Tedin
Address: *Department of General and Vascular Surgery, Shohada Tajrish Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran*
E-mail: *nntadayon@gmail.com*

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Case Report

Left subclavian angioplasty in two post CABG patients presenting with exertional chest pain and arm claudication

Seyed Kianoosh Hosseini[1*], Behshad Naghsh Tabrizi[2]

1. *Interventional cardiology department, Hamadan University of Medical Sciences, Farshchian Heart Center, Hamadan, Iran*
2. *Interventional cardiology department, Hamadan University of Medical Sciences, Farshchian Heart Center, Hamadan, Iran*

ABSTRACT

Case 1: A 68-year-old gentleman with history of CABG surgery presented with low threshold angina FC III and left arm claudication. Left arm BP was 65 mm Hg lower than the right. The patient was admitted with the diagnosis of ACS. Coronary and bypass graft angiography showed severe ostial left main and proximal RCA stenosis and patent SVG to RCA and LIMA to LAD. Left circumflex artery was patent. There was severe stenosis of left subclavian artery proximal to the origin of left vertebral and left internal thoracic arteries. A pressure gradient of 70 mm Hg was recorded between proximal and distal of the stenosis. Heart team decision was left subclavian angioplasty. Left brachial arterial access was obtained and a 7 French sheath was advanced. A hydrophilic 0.035-inch guidewire was passed through the lesion and was exchanged with a Terumo stiff 0.035-inch after advancement of a diagnostic 6 French catheter. A balloon expandable Omnilink 10 * 39 mm stent was deployed directly. The pressure gradient was decreased to zero after stenting.

Case 2: A 65-year-old gentleman with a history similar to case 1. There was near total occlusion of proximal left subclavian artery. Left radial and right femoral arterial access were obtained. Attempt to cross the lesion through the femoral approach with a 0.035-inch hydrophilic guidewire was unsuccessful. The lesion was crossed through the left radial access using a coronary guidewire and balloon angioplasty using the coronary balloon was performed. The 6 F guide catheter was crossed the lesion and 0.035-inch guidewire was snared using the femoral approach. Stenting was performed through the femoral approach and the pressure gradient was disappeared.

Both patients became symptom free and are participating in regular follow up visits and had no events up to now.

Keywords:
Subclavian artery stenosis, Subclavian artery angioplasty, CABG, Arm claudication

Corresponding Author(s):
Seyed Kianoosh Hosseini (MD)
Address: *Interventional cardiology department, Hamadan University of Medical Sciences, Farshchian Heart Center, Hamadan, Iran*
E-mail: *k.hoseini86@gmail.com*

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Review Article

An overview of application of artificial intelligence (AI) in vascular surgery and endovascular treatments

Azar Darvishpour[1,2*], Shiva Mahdavi Fashtami[3]

1. *Associate Professor of Nursing, Department of Nursing, Zeyinab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran*
2. *Social Determinants of Health (SDH) Research Center, Guilan University of Medical Sciences, Rasht, Iran*
3. *Master of Internal -Surgical Nursing, Pirouz Hospital, Guilan University of Medical Sciences, Rasht, Iran*

ABSTRACT

Artificial intelligence (AI) is making significant strides in vascular surgery and endovascular treatments, enhancing both the precision and outcomes of these procedures. This study aimed to review application of AI in vascular surgery and endovascular treatments.

The present study is a systematic review. In order to collect data, English articles available in Web of science, Google scholar, Pubmed, Scopus databases were reviewed from January 2019 to July 2024 with the keywords "Artificial Intelligence", "Vascular Surgery", and "Endovascular Treatment". The data analysis was done by qualitative content analysis.

Among the 100 articles related to the research purpose, 12 articles were included in the study. By analyzing the data 3 main categories were emerged including "Preoperative planning and risk assessment", "Intraoperative assistance", and "Postoperative Care and Monitoring". In relation to preoperative planning and risk Assessment, AI algorithms can analyze vascular anatomy and the extent of atherosclerosis, helping to classify the severity of the disease and plan the best treatment approach. AI-based coronary artery disease (CAD) evaluations, such as Heart Flow's FFR CT Analysis, have shown to improve long-term survival rates in patients undergoing vascular surgery by identifying asymptomatic CAD and guiding postoperative coronary revascularization. About intraoperative assistance, real-time AI assistance during procedures, such as cerebral aneurysm coiling, provides notifications for device movements, enhancing the safety and accuracy of the intervention. AI systems can assist in the autonomous navigation of catheters and guide-wires, potentially reducing the risk of complications and improving procedural efficiency. Regarding the postoperative care and monitoring, AI can help in predicting perioperative complications and integrating data from various specialties to offer evidence-based solutions for patient management. Continuous monitoring and analysis of patient data post-surgery can help in early detection of complications and timely interventions.

These advancements highlight the potential of AI to transform vascular surgery and endovascular treatments, making them safer and more effective.

Keywords:
Artificial Intelligence, Vascular, Endovascular, Surgery, Treatment

Corresponding Author(s):
Azar Darvishpour
Address: *Department of Nursing, Zeyinab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran*
E-mail: *Darvishpour@gums.ac.ir*

http://ijvset.gums.ac.ir

Review Article

New technologies in vascular surgery and endovascular treatments: A review study

Azar Darvishpour[1,2*], Shiva Mahdavi Fashtami[3]

1. *Associate Professor of Nursing, Department of Nursing, Zeyinab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran*
2. *Social Determinants of Health (SDH) Research Center, Guilan University of Medical Sciences, Rasht, Iran*
3. *Master of Internal -Surgical Nursing, Pirouz Hospital, Guilan University of Medical Sciences, Rasht, Iran*

ABSTRACT

The field of vascular surgery has witnessed remarkable advancements over the past few decades, driven by the integration of cutting-edge technologies. Among these advancements, endovascular treatments have emerged as a cornerstone, providing minimally invasive options that significantly reduce patient recovery times and improve outcomes. This study aimed to review new technologies in vascular surgery and endovascular treatments.

The present study is a systematic review. In order to collect data, English articles available in Web of science, Google scholar, Pubmed, Scopus databases were reviewed from January 2019 to July 2024 with the keywords “technology", "Vascular Surgery”, and "Endovascular Treatment". The data analysis was done by qualitative content analysis.

Among the 4028 articles related to the research subject, 18 articles were included in this study. Several new technologies in vascular surgery and endovascular treatments were identified. 1- Endovascular Stent Grafts are inserted through small incisions and guided to the affected area, where they reinforce the vessel walls and prevent rupture. 2- Drug-Eluting Stents are coated with medication that is slowly released to prevent the re-narrowing of arteries after they have been opened. 3- Intravascular Ultrasound (IVUS) provides real-time imaging from inside the blood vessels, allowing surgeons to visualize the vessel walls and the extent of disease. 4- Robotic-Assisted Surgery enable surgeons to perform complex vascular procedures with greater precision and control. 5- Laser Atherectomy uses laser energy to vaporize plaque within the arteries. 6- Cryoplasty, combines balloon angioplasty with cold therapy to treat arterial blockages. 7- Bioabsorbable Stents are designed to dissolve over time, leaving the artery free of any foreign material. 8- 3D Printing is being used to create custom vascular grafts and models for surgical planning.

These technologies are transforming vascular surgery and endovascular treatments, making procedures safer, more effective, and less invasive.

Keywords:
Vascular, Endovascular, Surgery, Treatment, Technology

Corresponding Author(s):
Azar Darvishpour
Address: *Department of Nursing, Zeyinab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran*
E-mail: Darvishpour@gums.ac.ir

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Original Article

A comparison of the effectiveness anti-platelet drugs in patients undergoing Coronary artery by-pass: a clinical trial

Behzad Imani[1*], Reza Safiaryan[2]

1. *Associated professor, Department of Operating Room, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan*
2. *Department of Heart Surgery, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran*

ABSTRACT

Anticoagulant effect of clopidogrel is of utmost importance in coronary artery disease, especially in prevention of coronary stent thrombosis. Recently, a new local brand of clopidogrel has been launched, as Osivix (by OSVEH Company, Tehran, Iran). This study was conducted with the aim to compare two locally prepared clopidogrel brands (Osivix & Plavix), in terms of the effect on inhibition of platelet aggregation in patients with coronary artery disease.

This was a double blind randomized study. Sample population consisting of 40 patients, were admitted at Ekbatan Hospital (Hamadan, Iran) for the management of coronary artery disease. Platelet aggregation tests of all these patients was measured (by Iran Blood transfusion organization) by factors of PRP, ADP and placket count. Patients received Plavix and Osivix treatments regimens for one month periodically after by-pass coronary surgery.

The mean value for PRP was 236260 and 1563290 plt/µl for Osvix and Plavix treatment group, respectively. The ADP amount for Osvix and Plavix Group was 64.9 and 52.5 µmol per µlit and the placket count for two above mentioned groups was 186190 and 121480 per µlit, respectively. The statistical analysis showed significant differences on Anticoagulant efficacy of Osvix and Plavix tablets.

The two brands of clopidogrel (Osivix & Plavix) had a significant difference in their effect on inhibition of platelet aggregation and the Plavix brand had the higher efficacy. Some more comprehensive clinical trials recommend.

Keywords:
Clopidogrel,
Platelet aggregation,
Osivix, Plavix

Corresponding Author(s):
Behzad Imani
Address: *Department of Operating Room, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan*
E-mail: *behzadiman@yahoo.com*

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Original Article

The interactive effect of preoperative consultation and operating room admission by a counsellor on anxiety level and vital signs in coronary artery bypass grafting. a clinical trial study

Behzad Imani[1*], Babak manafi[2]

1. *Associated professor, Department of Operating Room, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan, Iran.*
2. *Assistant professor, Department of heart surgery, School of medicine, Hamadan University of Medical Sciences, Hamadan, Iran.*

ABSTRACT

The purpose of this study was to provide appropriate preoperative supportive conditions to improve anxiety and vital signs for patients undergoing Coronary Artery Bypass Grafting - CABG- surgery.

This clinical trial study was performed on 90 patients undergoing CABG surgery in 2019. Sample was selected by convenience and were randomly divided into three groups: control (n=30), intervention1 (n=30), and intervention2 (n=30). The control group received only the routine preoperative counselling of ward and admitted to the operating room as usual; the intervention1 and intervention2 groups in addition received another two counselling sessions, then the intervention1 group was admitted in the operating room as usual, but the intervention2 group was admitted by the counsellor in the operating room. Data were collected using a three-part questionnaire including demographic characteristics, vital signs chart, and the Spielberger's State-Trait Anxiety Inventory.

The results showed that there was a significant difference in the mean anxiety of the three groups after admission in the operating room (intervention2 was lower than intervention1 and control groups, $p<0.001$; and intervention 1 group was lower than control group, $p<0.001$) and also there was a significant difference between the mean systolic blood pressure, heart rate and respiratory rate of the three groups ($p<0.001$) but the mean of the variables of temperature and diastolic blood pressure in the three groups were not significantly different ($p=0.59$ and $p=0.225$, respectively).

Our results revealed preoperative consultation and admission in the operating room by the consultant can reduce the level of anxiety and stability of vital signs of patients undergoing CABG.

Keywords:

Coronary Artery Bypass, Respiratory Rate, Blood Pressure, Temperature, Heart Rate, Operating Rooms; Counsellors; Anxiety, Control Groups

Corresponding Author(s):
Behzad Imani
Address: *Department of Operating Room, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan*
E-mail: *behzadiman@yahoo.com*

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Original Article

Self-care training and informational support of patients with a mechanical heart valve on the international normalized ratio and bleeding complication

Behzad Imani[1*], Reza Safiaryan[2]

1. *Associated professor, Department of Operating Room, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan*
2. *Department of Heart Surgery, School of Medicine, Hamadan University of Medical Sciences, Hamadan, Iran*

ABSTRACT

The aim of the study was to determine the effect of self-care training and informational support of patients with a mechanical heart valve on the international normalized ratio (INR) and bleeding complications.

Design: A quasi-experimental study. Participants were recruited via convenience sampling and were randomly divided into two groups: control (n = 80) and intervention (n = 80). Participants in the control group received only routine training; in addition, the intervention group received 6 sessions of self-care training and 6 months of informational support. Monthly the level of INR and incidence of bleeding were determined. Data were analyzed using the independent t-test and x2 in SPSS16 software at a significance level of 0.05.

During 6 months of follow-up, except for the third month, the frequency of INR levels in the therapeutic target range (2.5–3.5) in the intervention group was significantly higher than that in the control group ($p < 0.05$). Also in the intervention group, the incidence of bleeding complications was lower than that in the control group, but this difference was not statistically significant ($p > 0.05$).

Proper self-care trainingand informational support in patients with mechanical heart valve replacement have positive results. By maintaining self-care, the level of a therapeutic target range of INR can be maintained and the incidence of bleeding complications can be reduced.

Keywords:
Self-Care, Heart Valve Replacement, International Normalized Ratio, Bleeding Complications

Corresponding Author(s):
Behzad Imani
Address: *Department of Operating Room, School of Paramedicine, Hamadan University of Medical Sciences, Hamadan*
E-mail: *behzadiman@yahoo.com*

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Review Article

Emerging technologies for vascular access in hemodialysis patients: A review of current innovations

Mahdi Falah Heydari Nezhad[1], Roya Mansour-ghanaei[2,3]*

1. MS.c student in Geriatric nursing, Student Research Committee, Zeynab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran
2. Department of nursing, Zeynab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran
3. Gastrointestinal and Liver Diseases Research Center, Guilan University of Medical Sciences, Rasht, Iran

ABSTRACT

Vascular access is crucial for hemodialysis, directly affecting patient outcomes and treatment efficacy. Traditional methods often face challenges such as high complication rates and limited durability. Recent technological innovations—including bioengineered grafts, endovascular arteriovenous fistulas, 3D printing, artificial intelligence, and drug-coated devices—offer promising solutions to these issues. This review explores these emerging technologies and their potential to transform vascular access management in hemodialysis, thereby enhancing patient care.

This review adhered to PRISMA guidelines to ensure a systematic and transparent approach. A comprehensive search of scientific databases, including PubMed, Web of Science, Scopus, and Embase, was conducted to identify relevant articles published from 2018 to 2024. Studies were included if they focused on innovations in vascular access for hemodialysis and were published within the specified timeframe. Articles were excluded if they did not meet these criteria or employed unsuitable study designs. Out of 30 articles initially identified, 12 met all inclusion criteria and were selected for review.

The review identified several emerging technologies advancing vascular access management in hemodialysis. Bioengineered grafts demonstrated improved biocompatibility and reduced infection rates. Endovascular arteriovenous fistulas showed high success rates and shorter maturation times through minimally invasive techniques. Artificial intelligence effectively predicted vascular access complications, while 3D printing enhanced pre-surgical planning with precise anatomical models. Drug-coated devices reduced restenosis rates. Collectively, these innovations represent significant advancements in the safety, durability, and effectiveness of vascular access for hemodialysis.

Emerging technologies such as bioengineered grafts, endovascular arteriovenous fistulas, artificial intelligence, 3D printing, and drug-coated devices represent significant advancements in vascular access management for hemodialysis, enhancing durability and reducing complications. Continued research is essential for optimizing these technologies in clinical practice.

Keywords:
Artificial Intelligence,
Hemodialysis,
Vascular Access Devices

Corresponding Author(s):
Roya Mansour-ghanaei
Address: *Department of nursing, Zeynab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran*
E-mail: rmghanaei@gmail.com

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Review Article

Factors influencing arteriovenous fistula failure in hemodialysis patients- A systematic reviews

Nasibeh Rafipour Arboukalayeh[1], Roya Mansour-ghanaei[2,3*], Somayeh Ghasemi Penchah[1], Maryam Rajabpour Nikfam[1], Fatemeh Mohammadi Nakhjiri[1]

1. *Pirouz Hospital, Guilan university of Medical Sciences, Rasht, Iran*
2. *Department of nursing, Zeynab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran*
3. *Gastrointestinal and Liver Diseases Research Center, Guilan University of Medical Sciences, Rasht, Iran*

ABSTRACT

The creation of an arteriovenous fistula (AVF) is one of the most common vascular access methods used for hemodialysis in patients with end-stage kidney disease. However, AVF failure remains a significant challenge, impacting patient outcomes and healthcare costs. This study aims to identify the key factors influencing AVF failure in hemodialysis patients.

This systematic review adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A comprehensive search was conducted across reputable databases such as PubMed, Web of Science, Scopus, and Google Scholar, covering the period from 2017 to 2024. Search terms included "dialysis," "arteriovenous fistula," "fistula failure," and "hemodialysis." Two reviewers independently assessed the retrieved articles based on predefined inclusion and exclusion criteria. Studies focusing on AVF failure in hemodialysis patients were selected. The methodological quality was critically appraised using established tools. In total, 19 studies met the predefined criteria for inclusion in this review.

The systematic review indicates that multiple factors contribute to AVF failure, including demographic factors (age, female gender), underlying conditions (diabetes, hypertension, atherosclerosis), hematological and biochemical parameters (low hemoglobin, elevated cholesterol levels, high serum calcium and phosphorus levels), vascular factors (vein quality, vascular thrombosis), technical factors (surgeon's skill, fistula location), care parameters (patient's inability to self-care, quality of nursing care), and other factors (number of hemodialysis sessions, iron administration).

Given the role of multiple factors in AVF failure, modifying care and technical parameters could improve the quality of life for hemodialysis patients and reduce healthcare costs.

Keywords:
Arteriovenous fistula, Fistula failure, Hemodialysis, Dialysis

Corresponding Author(s):
Roya Mansour-ghanaei
Address: *Department of nursing, Zeynab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran*
E-mail: *rmghanaei@gmail.com*

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Review Article

Assessing the risk factors of phlebitis incidence related to peripheral catheter: Review study

Maryam Rajabpour Nikfam[1], Parand Pourghane[2*], Somayeh Ghasemi Penchah[3], Fatemeh Mohammadi Nakhjiri[4]

1. *Master of management, Pirouz Hospital, Guilan university of Medical Sciences, Rasht, Iran*
2. *Ph.D. in nursing education (Heart rehabilitation), Langrood, Faculty of Nursing, Midwifery and Paramedical Sciences of East of Guilan, Guilan University of Medical Sciences, Rasht, Iran*
3. *Master of nursing, Pirouz Hospital, Guilan university of Medical Sciences, Rasht, Iran*
4. *Master of management, Pirouz Hospital, Guilan university of Medical Sciences, Rasht, Iran*

ABSTRACT

Peripheral vascular catheters are the most common catheters used in hospitals. Phlebitis is the most common complication of using these catheters. The present study was conducted with the aim of investigating the factors affecting the occurrence of phlebitis caused by peripheral vascular catheters.

In this review article, first, 164 English and Farsi articles were searched in the reliable databases of web of science, whily, pub med, springer, scopus, science direct, magiran with the keywords peripheral vascular catheter and phlebitis in the range of 2014-2024. Were identified, by re-reading the articles and further investigation, 24 articles were selected according to the topic and purpose of the study.

The results of this study showed that the most important factors affecting the development of phlebitis caused by the use of peripheral vascular catheters include individual factors (age, sex, race, education, smoking, duration of hospitalization and background factors), chemical factors (type and frequency of injections, type and volume of solution and injectable drug), mechanical factors (catheter size and flexibility, location of catheter installation and fixation, placement technique, injection speed), bacterial factors (failure to disinfect the skin, non-observance of hand hygiene by medical personnel, nursing care of the catheter, the way the patient participates in the care of the catheter).

Considering the role of various individual, chemical, mechanical and bacterial factors in the occurrence of phlebitis, it is recommended to use multiple policies to reduce complications and treatment costs. In this regard, it is necessary to improve the level of knowledge and performance of nurses, educate patients, and provide standard equipment by managers.

Keywords:
Catheter, Peripheral Vessels, Phlebitis, Review Study

Corresponding Author(s):
Parand Pourghane
Address: *Faculty of Nursing, Midwifery and Paramedical Sciences of East of Guilan, Guilan University of Medical Sciences, Rasht, Iran*
E-mail: *pourghanep@gmail.com*

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Review Article

Survey the educational self-care needs toward central venous catheterization among hemodialysis patients: A mini review study

Kazem Hosseinzadeh[1*]

1. *Associate Professor of Health Education and Promotion, Department of Nursing, Langroud School of Nursing and Midwifery, Guilan University of Medical Sciences, Guilan, Iran*

ABSTRACT

Hemodialysis is a life-saving treatment for kidney failure that removes wastes and extra fluids from the blood and regulates blood pressure. Hemodialysis patients encounter several challenges during and after central venous catheterization. This is a mini review study according to scientific databases to reveal the patients' educational needs about central venous catheterization. In this review study according to PRISMA method we included 23 articles in late year. The most educational self-care needs in hemodialysis patients with CV catheter were seven; respectively: 1) Hand washing procedure, 2) Hygiene dressing change, 3) Infection symptoms, 4) pain relief, 5) Physical movement, 6) Rest and Sleep disorders, and 7) Interpersonal communication. Catheter site infection was the common problem among hemodialysis patients in this review study. It is noticeable that patients with inadequate level of knowledge about hygiene hand washing procedure and also hygiene catheter site dressing change mentioned higher rate of catheter site infection symptoms. Also, in some cases the patients experience fear of catheter dislocation during ordinary physical life activities. This fear leads the patients to decrease daily appropriate physical activities. According to these findings it is necessary to address the educational self-care needs of hemodialysis patients during and after catheterization to promote their abilities and competencies to live healthy with catheterization.

Keywords:

Central Venous Catheterization,
Hemodialysis,
Educational Needs, Self-cara,

Corresponding Author(s):
Kazem Hosseinzadeh
Address: *Associate Professor of Health Education and Promotion, Department of Nursing, Langroud School of Nursing and Midwifery, Guilan University of Medical Sciences, Guilan, Iran*
E-mail: *Kazemhosseinzadeh@gmail.com*

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Reviews Article

Uncertainty in patients undergoing coronary artery bypass surgery

Amaneh Mahmoudian[1*], Masoumeh Rafat[2]

1. *Assistant Professor, Nursing Ramsar Care Research Center, Health Research Institute, Babol University of Medical Science, Babol, Iran.*
2. *Nursing student, Fatemeh al-Zahra Nursing School, Ramsar Faculty of Nursing, Babol University of Medical Sciences, Babol, Iran*

ABSTRACT

Surgery creates psychological concerns and emotional reactions for every patient. One of these surgeries is coronary artery bypass graft surgery (CABG), in which patients undergoing this procedure cannot form a correct cognitive framework for the disease, which in turn leads to a feeling of uncertainty. In this regard, this study aims to determine the uncertainty in patients undergoing CABG was performed.

This study reviews published studies on the uncertainty in patients undergoing CABG. Search in database Medline (PubMed), Embase،Scopus, Science Direct, Google Scholar, Irandoc with keywords Nursing, CABG, Care and Uncertainly And its Persian equivalent was done from the articles of 2014 to 2024.

This study provides evidence that most patients undergoing CABG surgery experience a moderate level of uncertainty with a strong negative relationship between the level of uncertainty and postoperative health outcomes, namely mental health and readiness for discharge.

The results showed that nurses should pay attention to the mental state of patients because the level of uncertainty is mainly caused by the patient's lack of knowledge about the disease and fear of recurrence of symptoms. Also, they should be able to support these patients based on a comprehensive care model, with clear, understandable, and simple instructions leading to better results to reduce uncertainty, and there is a need to revise the nursing curriculum.

Keywords:
Nursing, CABG, Care, Uncertainty

Corresponding Author(s):
Amaneh Mahmoudian
Address: *Nursing Ramsar Care Research Center, Health Research Institue, Babol University of Medical Science, Babol, Iran*
E-mail: *mahmoudianamaneh@yahoo.com*

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Case Report

Artificial intelligence in nursing patients after heart surgery

Sahebeh usefi[1*], Amaneh Mahmoudian[2], Safiyeh Faghani[1], Masoumeh Rafat[1]

1. *Ramsar Nursing School, Babol University of Medical Sciences, Babol, Iran*
2. *Nursing care Research Center, Health Research Institue, Babol University of Medical Science, Babol, Iran*

ABSTRACT

Nowadays, the use of new technologies, in addition to reducing the cost of medical care, optimizes the use of hospital resources and the quality of care. One of the new technologies used in the health field is artificial intelligence, which can play an important role in providing quality care, improving the performance of the health system and the way nurses make decisions in caring for patients after heart surgery.

This study reviews published studies on artificial intelligence in nursing patients after heart surgery. Search in database Medline (PubMed), Embase،Scopus, Science Direct, Google Scholar, Irandoc with keywords Nursing, Artificial Intelligence, Cardiac Disease CABG And its Persian equivalent was done from the articles of 2014 to 2024.

The results showed that the use of artificial intelligence, innovations for nursing care of patients after heart surgery, reducing disease diagnosis errors, increasing the speed of emergency response in emergencies, improving the quality of care, psychological support of the patient, remote care and rehabilitation. It provides by using smart technology, but it cannot be considered as their substitute, and despite its many advantages, it comes with challenges that must be taken into account, such as accuracy, respect for privacy and data security, and ethical limitations, clarity of instructions, Informed consent, accountability and influence on independence.

Artificial intelligence is one of the important achievements of technology that has a direct impact on organizational performance in the field of health, improving processes in health care and improving patient safety. In this regard, it is suggested to amend the government policies for its better use in health care, efficient use of health information, strengthening human resources in the development of informatics, providing the necessary infrastructure for the use of this technology in the field of health and treatment, and providing training courses.

Keywords:
Nursing,
Artificial intelligence,
Heart surgery, Care

Corresponding Author(s):
Sahebeh usefi
Address: *Instructor, School of Nursing and Midwifery, Babol University of Medical Sciences, Babol, Mazandaran, Iran*
E-mail: *usefisahebeh9194@gmail.com*

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Reviews Article

The role of feedback-based training on the quality of self-care in hemodialysis patients

Fatemeh Karjalian[1], Parand Pourghane[2*], Pouya Nematzad Khamsi[3]

1. *Master's degree in Adult Special Care Nursing, ShahidAmlaki Hospital, Guilan Social Security, Langroud, Iran*
2. *Associate Professor, Department of Nursing, Zeynab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran*
3. *Instructor, Department of Nursing, Zeynab (P.B.U.H) School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran*

ABSTRACT

One of the diseases that affects people's quality of life today is chronic kidney failure. Patients with chronic kidney failure, who will eventually need vascular surgery and be treated with dialysis, face many challenges in their daily life, which will affect their normal life. In the meantime, education can play an important role in improving their quality of life and managing these challenges and help the patient play an important role in improving their conditions. This study was conducted with the aim of determining the impact of feedback-based training on the quality of life of hemodialysis patients.

Methodology: In this review, a collection of articles published on care, patient, dialysis and education in 2014-2024 with Farsi and English keywords education, patients, hemodialysis, self-care have been examined through PubMed, Medline, Ovid, Science Direct and Google Scholar databases and search engines, a total of 12 English articles and 27 Persian articles that were directly related to the topic were found, of which 16 articles were considered in this review, they took.

Conclusion: With appropriate training to patients, we can witness things such as improvement of socio-economic adaptation, adaptation of the patient to his disease, increase and improvement of self-care, improvement of the level of efficiency, reduction of depression and anxiety of patients, and the level of compliance with the treatment of patients undergoing hemodialysis treatment. increased Also, in this regard, appropriate sports activities, including sports programs designed according to the patient's condition, improve the physical and mental condition of hemodialysis patients. Performing these activities is recommended to hemodialysis patients due to the ease of use, no complications, low cost, applicability at any time and place, and no need for special equipment.

Keywords:
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Corresponding Author(s):
Parand Pourghane
Address: *Department of Nursing,Zeynab (P.B.U.H) School of Nursing and Midwifery,Guilan University of Medical Sciences, Rasht, Iran*
E-mail: *Pourghanep@gmail.com*