



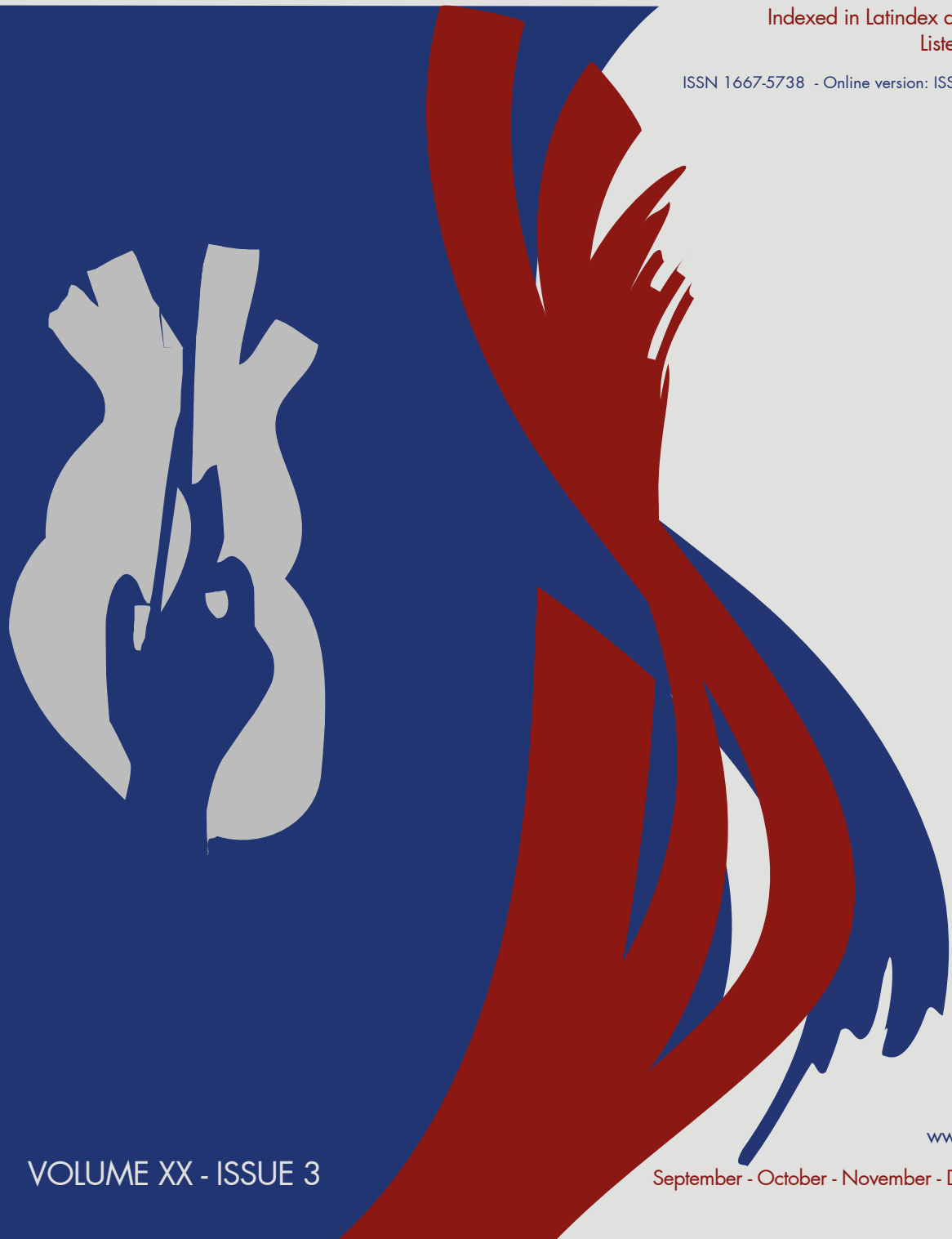
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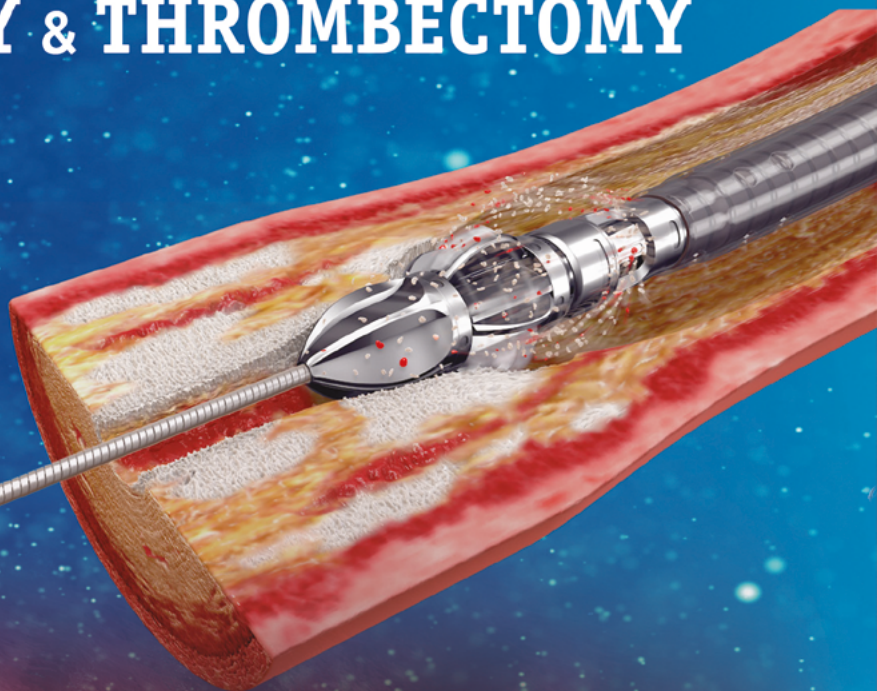
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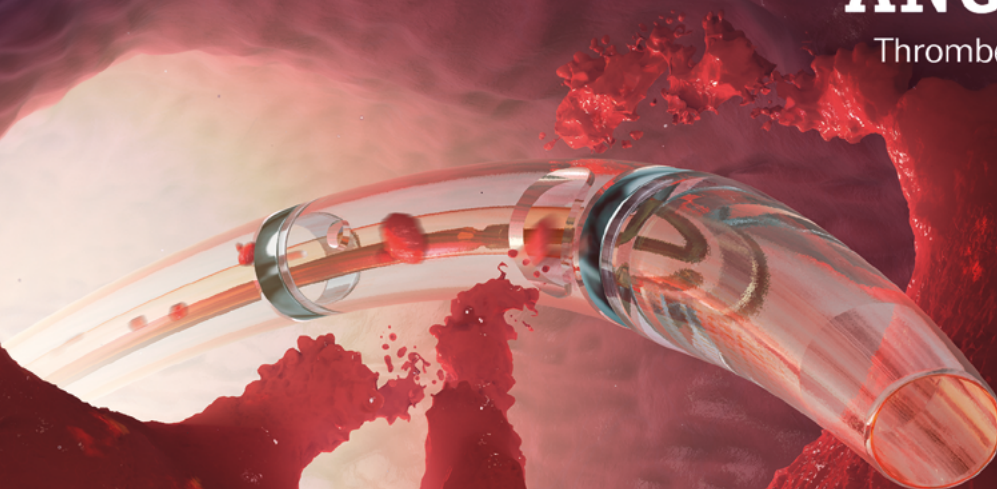
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MYOCARDIAL REVASCULARIZATION SURGERY WITH BILATERAL INTERNAL MAMMARY ARTERY

ABSTRACT

Introduction: The internal mammary artery is the only graft with a long-term impact on mortality in patients with coronary artery disease. Some questions limit the use of both arteries simultaneously, such as prolonged surgical time, risk of sternal infections, especially in diabetic and obese patients. This study sought to describe the 5-year experience in patients revascularized with bilateral internal mammary artery (BIMA). **Methods:** Descriptive cohort follow-up study. 42 patients underwent myocardial revascularization with BIMA between 2015-2020, Manuel-Uribe-Ángel Hospital, Envigado-Colombia. Secondary and primary information sources. Univariate analysis was developed for the description of variables. **Results:** Mean age of 55.2 years, 19% were diabetic, mean body mass index (BMI) 24.5 kg/sq.mt; severe coronary artery disease 90.5%, 95.2% with complete revascularization. No patient presented surgical site infection. Median follow-up of 5.1 years during which 5.4% suffered an acute myocardial infarction, 13.5% required percutaneous coronary intervention, 16.2% died, 33.3% of which were attributed to a cardiac cause. **Discussion:** The participants had a normal average BMI, 19% were diabetic; they had adequate metabolic control, presenting mean glycosylated hemoglobin of 7.09%. In the studied population there were no cases of surgical site infection and 16.2% of the cohort presented angina, which is lower than that described in other studies. Incidence of acute myocardial infarction and percutaneous coronary intervention was similar to the ones reported in other studies. **Conclusion:** In the studied population, patients with BMI in the normal range and glycemia with adequate metabolic control, myocardial revascularization with BIMA was a safe technique with acceptable medium-term cardiovascular outcomes.

Key words: myocardial revascularization, coronary artery bypass, internal mammary-coronary artery anastomosis, treatment outcome

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INTRODUCTION

The internal mammary artery has anatomic and physiological properties that create resistance to coronary disease⁽¹⁾. Protection against intimal hyperplasia, vasospasm and atherosclerosis is reflected in a superior performance of grafts, showing up to 90% patency at ten years as compared to a risk of occlusion of almost 50% with venous grafts^(2,3). The use of the left internal mammary artery (LIMA) was established as the gold standard in myocardial revascularization surgery, having proven a significant advantage in post-op results in the long term, even impacting mortality^(1,4). Eventually, based on the promising results of the use of LIMA, the associated use of the right mammary artery was proposed as it showed identical anatomic properties as the contralateral artery; this is how both arteries have come to be used simultaneously for revascularization (BIMA, *bilateral internal mammary artery*).

However, there have been some concerns about this intervention, for which reason it has not gained universal acceptance. Such concerns include longer surgical time, the complexity involved in the technique to harvest the graft and the potential increased risk of sternal infection in high-risk populations, such as diabetic and obese patients⁽⁵⁾. Thus, saphenous vein and radial artery grafts remain as the alternative of choice for many surgeons, and the use of the BIMA technique has been estimated to reach 5 to 20% of all revascularization procedures⁽⁶⁾.

Based on recent results of studies on coronary revascularization with the BIMA technique, new information was obtained on the advantages and limitations of the technique, reopening the risk versus benefit arguments⁽⁷⁾. The disadvantages mentioned by some authors are the increased risk of sternal infection⁽⁸⁾; prolonged surgical time⁽⁷⁾ and the complexity and rigor involved in the procedure⁽⁹⁾.

Recent studies have reported that revascularization with BIMA has a similar performance as other techniques, like LIMA, in the short term; however, it shows higher arterial patency at ten years of follow-up⁽¹⁰⁾. The trend has been to use this technique in young adults, although European guidelines do not provide a specific cut-off age⁽¹¹⁾. However, the double mammary technique is being used more and more frequently in elderly patients⁽¹²⁾. There are safety and effectivity reports, even in populations older than 70, diabetics and obese patients, traditionally classified as high-risk for BIMA⁽¹³⁾.

Given the level of controversy this surgical intervention has arisen, this study sought to describe the results obtained in a cohort of patients

revascularized with BIMA so as to characterize the population and show the results of the technique, as well as its outcome at 5 years of follow-up.

MATERIALS AND METHODS

A descriptive study involving follow-up of a cohort, using secondary information sources and obtaining clinical records data and primary source data with telephone tracking. The study included all patients that underwent CABG with BIMA during the period 2015-2020 at the Hospital Manuel Uribe Ángel, Envigado, Colombia, recruiting a sample of 42 participants. Having undergone the surgical procedure was the only inclusion criterion and no exclusion criteria applied. The instrument used was a telephone survey conducted by the investigation group with the purpose of allowing follow-up and exploring the outcomes: acute myocardial infarction, angina, percutaneous coronary intervention and death.

IT tools like Excel, Word and Jamovi were used for analysis of the information with a CES University license. A univariate analysis was performed with the aim of describing variables included in the research.

The study was run in compliance with CIOMS International Ethical Guidelines for Health-related Research Involving Humans⁽¹⁴⁾ and the guidelines provided by 1993 Resolution 008430, where the Ministry of Health provides the scientific, technical and administrative regulations for health-related investigation, according to which this study was rated as "no risk". The Project received approval of the Bioethics Committee of Hospital Manuel Uribe Ángel.

RESULTS

Clinical characteristics

The study included 42 patients that underwent myocardial revascularization surgery with BIMA from 2015 to 2020. The study population was mostly males (88.1%), with an average age of 55.2 years. Most of the patients had preserved LVEF, with an average LVEF estimated at 51.2%. At the time of surgery almost one fifth of the patients reported to be active smokers (19%). As for baseline diseases, a prevalence of 11.9% chronic renal disease and 19% diabetes mellitus was found. Of the patients with the latter pathology, 11.9% received medical treatment, whereas 7.1% received insulin. Among diabetics, the mean glycosylated hemoglobin was calculated at 7.09%. A median BMI of 24.5 kg/sq.mt was estimated. Most of the patients had 3 vessels coronary disease, accounting for 52.4%, and 38.1% with more than 3 vessels involved (see *Table 1*).

Perioperative characteristics

Ninety-five point two (95.2%) % of the patients underwent complete revascularization. The average extracorporeal circulation time was 72.3 minutes, with a median aortic clamp time of 63 minutes. The median ICU stay was 2 days. As for postoperative complications, 14.3% of patients presented acute renal lesion, of which only 2.4% required renal replacement therapy. Atrial fibrillation was identified in 7.1% of patients and no cases of operative site infection by mediastinitis or sternal dehiscence were reported. One hundred percent (100%) of the arteries were harvested using the skeletonization technique (see *Table 2*).

Follow-up characteristics

Five patients were lost to the follow-up. It was possible to follow-up 37 patients with a median age

of 5.1 years and an interquartile range of 3 years. During this period none of the studied patients required reoperation. Five-point four percent (5.4%) presented acute myocardial infarction. Percutaneous coronary intervention was performed in 13.5% of patients and 16.2% of patients reported angina at some point during the follow up. Six deaths were recorded, 33.3% of which were due to cardiac causes. Of all deaths reported none occurred during the first postoperative month and the average survival was 2.7 years (see *Table 3*).

DISCUSSION

In the studied population, patients with BMI within a normal range and adequate glycemic control, myocardial revascularization with BIMA is a safe technique with acceptable cardiovascular outcomes in the medium term.

TABLE 1. Clinical characteristics of patients that underwent myocardial revascularization with BIMA, 2015-2020

Age (years) X (SD)	Age (years) X (SD)
Sex n (%)	
• Male	37 (88.1)
• Female	5 (11.9)
LVEF (%) X (SD)	51.2 (9.74)
Smoking n (%)	8 (19)
Chronic renal disease n (%)	5 (11.9)
Diabetes n (%)	
• Medical management	5 (11.9)
• Management with insulin	3 (7.1)
HbA1c (%) X (SD)	7.09 (1.71)
BMI (kg/m ²) Me (IQR)	24.5 (4.02)
Coronary disease n (%)	
• 2 vessels	4 (9,5)
• 3 vessels	22 (52,4)
• >3 vessels	16 (38,1)

TABLE 2. Perioperative characteristics of patients that underwent myocardial revascularization with BIMA, 2015-2020

Complete revascularization n (%)	40 (95.2)
Extracorporeal circulation time (minutes) X (SD)	72.3 (18.2)
Aortic clamp time (minutes) X (SD)	63 (15.8)
ICU Stay (days) Me (IQR)	2 (2)
Mechanical ventilation n (%)	
• <48 hours	37 (88.1)
• ≥48 hours	5 (11.9)
Post-op renal lesion n (%)	6 (14.3)
Post-op dialysis n (%)	1 (2.4)
Post-op atrial fibrillation n (%)	3 (7.1)
Surgical site infection n (%)	0

TABLE 3. Follow-up data of patients that underwent myocardial revascularization with BIMA, 2015-2020

Reintervention n (%)	0
Acute myocardial infarction n (%)	2 (5.4)
Percutaneous coronary intervention (%)	5 (13.5)
Angina n (%)	6 (16.2)
Death n (%)	6 (16.2)
Cause of death n (%)	
• Cardiac	2 (33.3)
• Non-cardiac	4 (66.7)
Average survival (years)	2.7

Myocardial revascularization surgery with a double mammary artery technique has proven to be safe in the short and medium term and showed better performance in the long term^(10,15). However, the use of BIMA has been controversial as it increases the risk of operative site infection and requires longer surgical time due to the technical difficulty involved⁽¹⁾.

Recent studies have shown that the rate of operative site infections may be reduced using the skeletonized technique of harvesting the mammary artery⁽⁸⁾. It is for this reason that the literature recommends this method^(11,16). In this research work the internal mammary artery was harvested using the skeletonized technique in all cases.

The studied population was characterized by comprising young adults with an average age of 55.2 years, mostly males (88.1%) with preserved ejection fraction (median of 51.2%). Although the trend in the literature has been recommending the use of BIMA in young patients, as is the case of the studied population, the literature also reports that the use of multiple arterial grafts is safe and effective in patients even after 70 years of age^(12,13,17).

Patients revascularized with BIMA presented a normal BMI, with a median of 24.4 kg/sq.mt. However, Vitulli et al. concluded that patients with obesity can also benefit from BIMA without increase in mortality^(2,18). Nineteen percent (19%) of them were diabetic and 7.1% insulin dependent. In these patients an adequate control of their metabolic condition was observed, recording a glycosylated hemoglobin value of 7.09%. Diabetes mellitus is considered a risk factor for unfavorable outcomes post-myocardial revascularization at large⁽¹⁹⁾. Saran et al. have proven that the use of BIMA is safe in high risk patients, including diabetics⁽⁷⁾. Safety in the use of BIMA in higher risk populations, defined in the literature as elderly or obese individuals, women, diabetics, patients with chronic pulmonary disease and reduced ejection fraction⁽⁷⁾ has been reassessed; however, high risk patients are not prevalent in the studied population.

No operative site infections were observed in this study; this finding is below the incidence reported in the literature, according to which up to 10% of patients may present this type of infection, 2% mediastinitis and 1% may require sternal reconstruction⁽⁸⁾.

During the follow-up it was found that 16.2% of patients reported some episode of angina. Davierwala et al. mention a post-op angina incidence of 28%, a rate that is higher than the one reported in this study⁽¹⁾. Five point four (5.4%) of patients presented acute myocardial infarction and 95.2% of patients underwent complete revascularization. Taggart et al. reported a myocardial infarction incidence of 4.5%⁽²⁰⁾, whereas Kurlansky et al. report an incidence of 5.2%⁽¹⁷⁾. The studied population had a similar evolution as that reported in the literature; the same happens with percutaneous coronary intervention, where the incidence reported was 15.2 to 30.4%, whereas in this study the incidence was 13.5%⁽²¹⁾.

Mortality for any cause reported in multiple studies amounts to about 20%^(20,21). In this study it was found that 16.2% of patients died during the follow-up and 33.3% of deaths were secondary to a cardiac cause.

Navarro Garcia found that 26.9% of patients had died at 10 years of revascularization surgery⁽²²⁾; this study found that mortality increases as from the fourth postoperative year, which, in a long-term follow-up could be compatible with the rate presented by this author.

This investigation has a limited scope as follow-up was by telephone interviews. There may be a bias in the information by not recording events like angina or acute myocardial infarction; however, mortality data does not show this bias and is the primary outcome in this study.

It has been found that the use of the double mammary artery technique has an impact on the long-term survival and a superiority trend has been found in the BIMA vs. single mammary artery grafting^(17,23,24). For this reason, authors like Buttar, suggest that the long-term benefit, added to the short-term benefit of the procedure, make double

mammary revascularization a safe technique in different risk populations⁽¹⁰⁾. This study presents limitations in its scope as it is descriptive, new investigations with greater methodological rigor are required to compare the use of BIMA vs. LIMA in this population.

In the studied population myocardial revascularization with double mammary artery was a safe technique, with acceptable cardiovascular outcomes in the medium term; however, given its methodological scope, the results of this study do not allow to draw conclusions for the general population. Studies with greater statistical power are required to be able to assess the outcomes of this procedure in the long term.

Conflicts of interest

The authors have no conflicts of interest to disclose.

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RESECTION OF PERIPHERAL ARTERIOVENOUS MALFORMATION IN THE ARM WITH DELTOID MUSCLE AND BASILIC VEIN

ABSTRACT

Arteriovenous malformations are potentially the most aggressive and difficult type of vascular malformations to treat. We report the case of a 25-year-old female patient who underwent surgery for recurrence of arteriovenous malformation in the right upper limb at the level of the pulsatile arm that caused pain on movement (Schobinger Stage II) and Cho-Do angiographic stage IIIb. with a history of resection of arteriovenous malformation in the same location in the previous 6 years. It was resolved with bloc resection of the angioma, the deltoid muscle, and the basilic vein.

Key words: arteriovenous malformations, vascular surgical procedures, vascular malformations, angiography, brachial artery

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THE CASE

We report the case of a 25-year-old patient who presented a malformation in the upper right limb at the level of the arm with progressive growth of 6 years of evolution (*Figure 1A*) that caused pain with movement, with a history of resection of arteriovenous malformation in the same limb (6 years earlier).

The physical examination revealed a malformation in the arm with the presence of pulsation and thrill (Schobinger Stage II). Laboratory at admission: leukocytes: 800 cells/ml (neutrophils 55%), hemoglobin 12.5 gr/dl, red cells 38%, urea 0.46 mg/dl, creatinine 79 mg/l, glucose 88 mg/dl, prothrombin time 17 sec., prothrombin concentration 72%. Angiotomography of the upper right limb was performed with multiplanar reconstruction, which revealed, at the level of the external mid-third of the right arm, in the thickness of the muscular plane and the subcutaneous cellular tissue, a malformation with multiple serpiginous and dilated vascular images measuring approximately 128 x 71 x 65 mm (*Figure 1B*). The axillary artery is presented as afferent vessel and the cephalic vein as efferent.

TREATMENT AND RESULTS

An incision is made of the internal aspect of the arm from the elbow fold to the axilla. Dissection by planes and trans arterial angiography of the afferent vessel are performed (*Figure 1C*). The humeral and axillary arteries are skeletonized (*Figure 2A*), maintaining vascular control and en bloc resection of the angioma (*Figure 2B*) along with the deltoid muscle and the basilic vein with ligation of the arterial collaterals. Two drains are inserted in the axillary cavity and the deltoid bed. Closure by planes, hospital discharge on day five and postoperative control at 14 days (*Figure 2C*).

DISCUSSION AND CONCLUSIONS

Vascular malformations, based on an angiogenesis and vasculogenesis dysplastic disorder, are always present at birth (even if asymptomatic) and never resolve spontaneously. These disorders may remain inactive during a long time, even before mechanical or hormonal influences promote their growth. With the increase in size, vascular malformations may cause pain and functional deterioration that

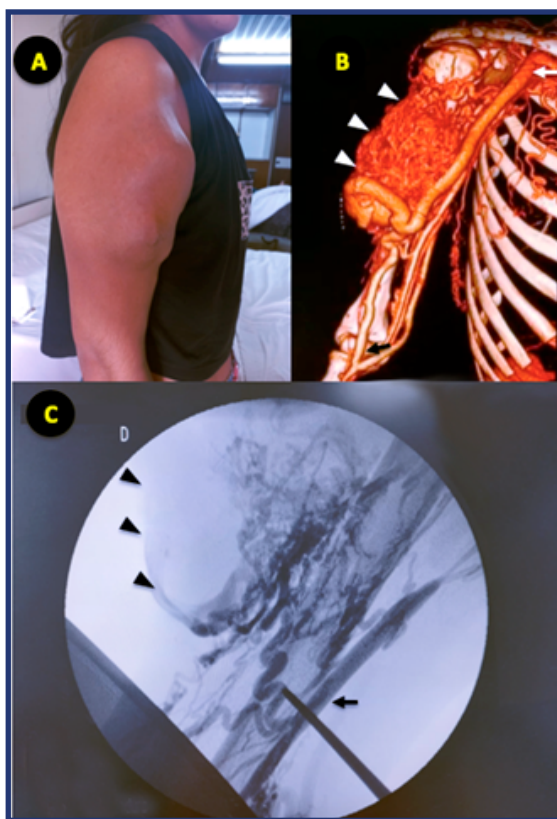


FIGURE 1. A. Preoperative image of the right arm. B. Angiotomographic reconstruction showing the axillary artery as afferent vessel (white arrow) of the angioma (white arrow tip) and the cephalic vein (black arrow) as efferent vessel. C. Intraoperative transarterial angiography: the humeral artery marked (black arrow) and shadow of the angioma (black arrow tips).

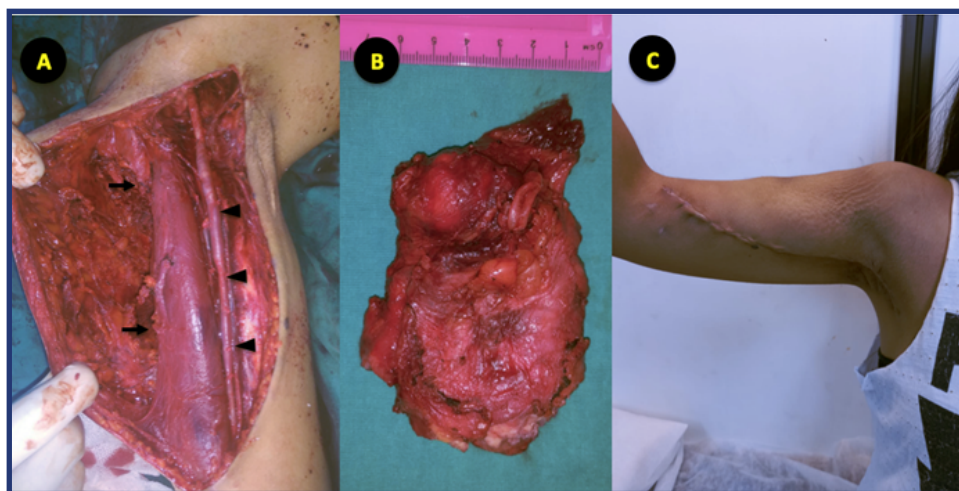


FIGURE 2. A. Skeletonization of the deep humeral artery (black arrow tips). Section site of the distal portion of the deltoid muscle (black arrows). B. Surgical specimen: angioma. C. Postoperative photograph of the right arm.

require treatment. The diagnosis must approach the morphology, lesion extension, type of dominant vessel and possible complications, considering dermal, orthopaedic, neurological and organic manifestations of the lesion. Vascular malformations may be comprised of a single type of vessel, combined vascular components and malformations with additional non-vascular anomalies, therefore they are classified as “simple or combined vascular malformations”, as well as “vascular malformations associated to other anomalies”⁽¹⁾.

Arteriovenous malformations (AVM) are fast-flow vascular anomalies. With the increase in size, it becomes more and more difficult to localize the area of connections of direct arteriovenous shunts, the so-called AVM nest, and differentiate the feeding arteries and the outflow drainage veins. Diagnostic images must provide information on the location, extension, composition and diameter of the feeding and drainage vessels, all of them essential elements for a successful minimally invasive approach of AVMs⁽²⁾.

AVMs are potentially the most aggressive type of vascular malformations. They comprise malformations in arteries, veins and capillaries, with direct arteriovenous communications that give way to an arteriovenous shunt. These malformations may present themselves as capillary pseudomalformations with pulsation to palpation or a murmur, as a red, warm and painful lesion that enlarges⁽³⁻⁴⁾. AVMs are difficult to treat successfully, since they invariably progress due to the rapid flow in arteriovenous connections. AVMs may lead to serious clinical problems. Schobinger’s classification for AVMs is established and is valuable for the clinical evaluation of the real status of vascular anomalies. It also helps in the risk stratification for possible therapeutic

indications. Schobinger distinguishes four stages, namely, Stage I (inactive AVM with local cutaneous hyperthermia), Stage II (increased arteriovenous shunt, presence of pulsation and murmur), Stage III (destructive AVM, ulcerations, bleeding and pain), and Stage IV (decompensated AVM, cardiac insufficiency or failure)⁽¹⁾.

Embolization, sclerotherapy or a combination of them is the first-choice therapy in vascular malformations as they offer a treatment modality with low morbidity and acceptable results, but it is prone to a greater number of complications in AVM⁽⁵⁾.

The publication by Ranieri et. al⁽⁶⁾ presents 46 cases of vascular malformations, most of them (95.7%) treated with this interventional therapy. In 14 patients (34%) with AVM, embolization was performed with EVOH, the majority (58.8%) required one to three embolizations; however, 22 patients (47.8%) required a surgical approach following embolization therapy; further, in one third of these (14 patients, 30.4%), it was necessary to proceed to total resection of the vascular malformation. Six patients were reported to require primary partial amputation as a result of complications.

In our published case, with a IIB Cho-Do angiographic stage, the angioma infiltrated the fibers of the deltoid muscle, which was an indication for total en bloc resection. Embolization with EVOH could have been performed for the purposes of cytoreduction, but this option was not taken due to the risk of hand ischemia caused by distal embolization.

Conflicts of interest

The authors have no disclosures to declare.

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VASCULAR ACCESS FOR HEMODIALYSIS BY ULNAR-BASILIC-TRANSPOSITION IN AXILLARY LOOP

ABSTRACT

The population on dialysis is increasing because of multiple factors, including the rise in life expectancy that has taken place during this century and the admission of increasingly younger patients affected by diseases such as diabetes. Further, the life expectancy of the population on dialysis has also grown thanks to improvements in medical technology. Classical native vascular accesses like Brescia-Cimino radiocephalic AVF, the brachiocephalic AVF and transposition of basilic and ulnar veins continue to be the first choice since they present higher patency and lower complication rates as compared to prosthetic materials. Once all conventional access alternatives in the upper limbs have been exhausted, a viable alternative is the creation of an ulnar-basilic AVF in axillary loop.

This procedure was performed with good results in four patients with an age range of 30 to 52 with chronic renal insufficiency, receiving dialysis three times a week.

Key words: hemodialysis, vascular access, arteriovenous fistula, PTFE prosthesis, axillary artery, basilic vein

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INTRODUCTION

Currently, the population on dialysis is increasing due to multiple factors⁽¹⁾, such as the increase in life expectancy in this century and the admission of increasingly younger patients due to diseases such as diabetes. The life expectancy of the population on dialysis has also increased as a result of improvements in medical technology at the service of patients with Chronic Renal Insufficiency. In recent years, more than 7,000 patients have been admitted annually and in worse conditions than in previous years. The latter is explained by the fact that there is a reduction in previous contact with the nephrologist, which determines the admission of a high percentage of young patients with severe anemia and great clinical deterioration. The main cause of admission is diabetic nephropathy and nephroangiosclerosis⁽¹⁾. Although there has been an increase in recent years in the population on peritoneal dialysis (PD), the highest percentage of patients continues with the hemodialysis (HD) modality, with the use of temporary catheters as the first admission modality. This increases the risk of death from 40 to 52%^(1,2).

Classic native vascular accesses such as the Brescia-Cimino Radiocephalic AVF, the Brachiocephalic AVF, and transpositions of the basilic and ulnar veins continue to be the first choice^(3,4) as they present a higher rate of patency and a lower rate of complications compared to prosthetic materials⁽⁵⁾. Within the prosthetic materials, PTFE prostheses have advantages because they allow for repairs such as thrombectomies and reanastomosis. They also have shorter waiting times for puncture as there are prostheses with rapid puncture technology, heparinized and with external structural support such as rings that allow crossing flex zones. However, PTFE prostheses can develop serious infectious complications that increase the morbidity and mortality of patients. On the other

hand, none of the existing prostheses has demonstrated greater patency than the vein. The greater survival of patients, as well as the long times on the waiting list for transplantation and peritoneal exhaustion make it necessary to use these accesses for a long time, which can lead to local and systemic complications. Such complications include infection, puncture pseudoaneurysm, anastomotic pseudoaneurysm, stenosis, distal ischemia⁽⁶⁾, bacterial endocarditis, and pulmonary embolism. Given the exhaustion of all the possibilities of conventional access in the upper limbs, an alternative is the creation of an ulnar-basilic AVF in an axillary loop.

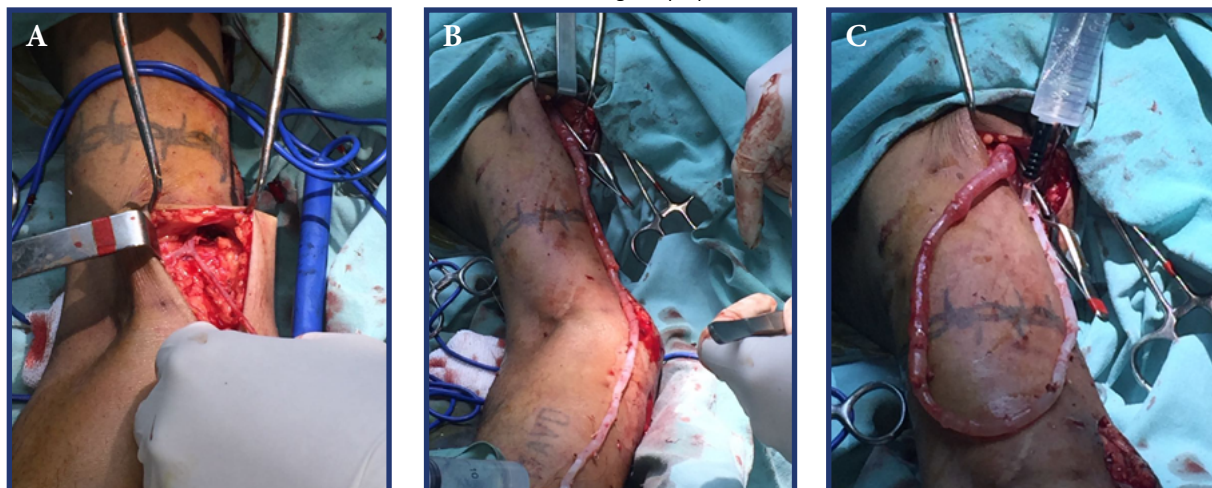
OBJECTIVES

To describe the behavior of the ulnar-basilic venous axis transposed subcutaneously anastomosing to the distal axillary artery as AVF for hemodialysis.

METHODS

Four patients between 30 and 52 years long-standing chronic renal failure on hemodialysis three times a week were considered. Two of them with transient catheter dialysis and another two with permanent tunneled catheter. The four patients had diabetes, hypertension, and a history of multiple native and prosthetic accesses in both arms. In none of the cases the axillary cavity had been previously approached. Only two of them presented thrombosis of the brachial artery without a palpable distal pulse but without signs of ischemia and with normal pulse oximetry. All of them underwent total basilic AVF in the axillary loop, extracting said native graft from the forearm or ulnar area and the arm area, from a deeper location and with disconnection of the median elbow (*Figures 1A and 1B*) until reaching the axillary region, creating a "subcutaneous loop" (*Figure 1C*) aided by tunnelers and "passage ports"

FIGURES 1A, 1B AND 1C. Harvesting and preparation of the basilic vein.



(Figure 2), until reaching the proximity of the axillary artery. Said technique of skeletonization and tunneling of the entire basilic vein was performed in a single step using staggered dermal approaches with the corresponding anesthesiological support through the implementation of neuroleptanalgesia associated with the use of 1% lidocaine without epinephrine. Finally, a spatulated anastomosis was performed with the axillary artery in a lateral-terminal manner (Figure 3), leaving a native conduit of optimal caliber and length. Then, meticulous hemostatic closure of the wounds in simple skin planes was carried out (Figure 4).

RESULTS

All the accesses began to be punctured between days 40 and 50 (Figure 5A) with good dynamics, no signs of dysfunction and presented acceptable dynamics during dialysis. PA: 120-180; VP: 200-220; QB: 400-450ml/Hs; kTv: 1.9-2.1 (Figure 5B). Neither of the two

patients with brachial thrombosis showed signs of vascular access steal syndrome. All patients presented medium-term patency without complications to date and showed identical values during the first twelve months of follow-up.

CONCLUSIONS

Though there are no randomized studies on this type of transpositions and more complex approaches done under general anesthesia are required, this technique seems to be a valid alternative, providing good venous patency in the medium and long term. Moreover, the technique used in these cases decreases the use rate of prosthetic material.

Conflicts of interest

The authors have no disclosures to declare.



FIGURE 2. Tunnelization.

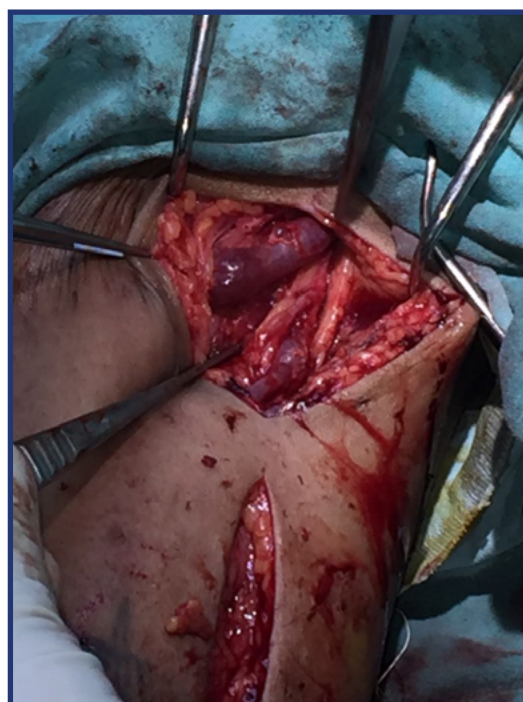
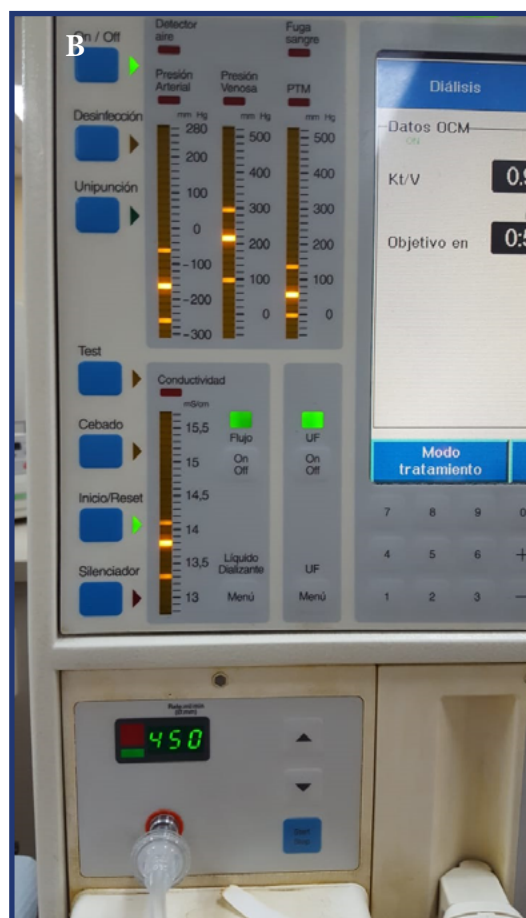


FIGURE 3. Anastomosis of the axillary artery.



FIGURE 4. Closure of wounds.

FIGURES 5A AND 5B. Postoperative controls.



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SELECTED ARTICLES

We hereby present comments on a selection of articles recently published in internationally acclaimed medical journals. We believe these papers deserve special attention due to the quality and importance of the conclusions reached by the studies. Our objective is to keep an open look on new aspects of scientific research or review articles that may, in turn, update aspects of our own medical specialty.

Also, the Editorial Committee will consider suggestions on recent articles that the readers think deserve to be commented in this section (revista@caccv.org.ar).

PHARMACOLOGICAL COMBINATION FOR DISTAL ARTERIOPATHY IN DIABETICS

KALANTZI K, ET AL. EFFICACY AND SAFETY OF ADJUNCTIVE CILOSTAZOL TO CLOPIDOGREL-TREATED DIABETIC PATIENTS WITH SYMPTOMATIC LOWER EXTREMITY ARTERY DISEASE IN THE PREVENTION OF ISCHEMIC VASCULAR EVENTS

Am Heart Assoc. 2021;10:e018184

<https://doi.org/10.1161/JAHA.120.018184>

In a prospective, open, multicenter study, investigators from Aristotle University of Thessaloniki, included type 2 diabetic patients with intermittent claudication that had been receiving clopidogrel 75 mg/day for at least 6 months, who were randomly assigned 1:1 to continue monotherapy or to add cilostazol 100 mg twice daily. The mean follow-up duration was 27 months. The first composite efficacy parameter was ischemic cerebrovascular accident or transient cerebrovascular accident, myocardial infarction and death for a vascular cause. Secondly, the ankle/brachial index (ABI) and pain-free walking distance were measured, as well as hemorrhagic events, hospitalization due to acute ischemia of lower limbs, revascularization of lower limbs and death for non-cardiovascular causes.

The clopidogrel monotherapy group included 391 patients and 403 received combined clopidogrel-cilostazol treatment. In the latter group treatment was initiated with cilostazol at a dose of 50 mg twice daily during 15 days in order to avoid adverse reactions such as tachycardia, palpitations or headache, and then treatment continued at full dose during a minimum of 18 months and up to a maximum duration of 36 months. Controls were conducted monthly during the first year and every three months thereafter. Follow-up

was initially scheduled for a duration of one year, but upon observing the number of major events recorded during this period, it was decided to prolong follow-up for another 6 months.

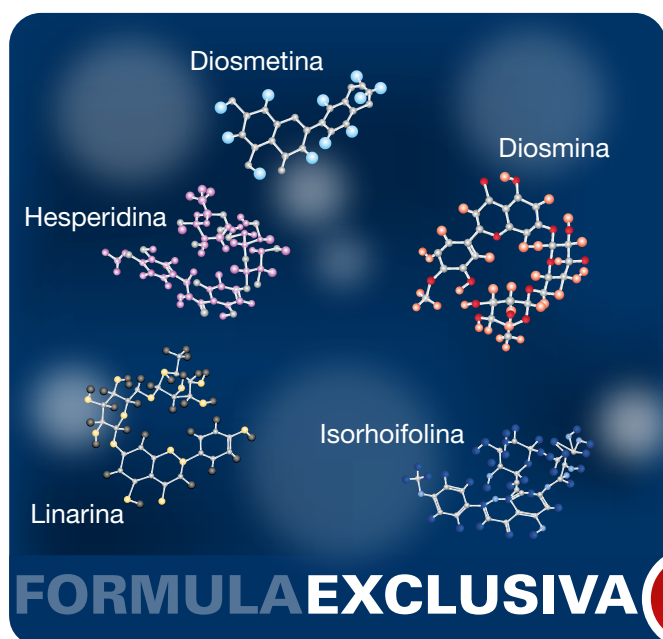
The composite primary endpoint of cerebrovascular accident, transient accident, infarction and death for a vascular reason was recorded in 15 patients (3.7%) of the 403 assigned to combined treatment and in 31 (7.9%) of those assigned to clopidogrel monotherapy, with a significant difference ($p=0.016$). Both, the ankle/arm index, as well as the pain-free walking distance improved in both treatment groups, but improvements in both parameters was significantly greater in the group assigned to addition of cilostazol. Other clinical data (thrombosis of coronary stents, hospitalization for acute ischemia of limbs, death for cardiovascular cause or any cause) did not reveal significant differences between both groups. No significant differences were observed in bleeding episodes either.

Authors affirm that the combination of cilostazol and clopidogrel improved the results of the primary endpoints of the study as well as the ankle/arm index and the pain-free walking distance and stress the significant reduction of cerebrovascular accidents and transient cerebral ischemia achieved with the study combination.

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