

## Review Article

### Study on the Quality of the Varicose Vein Surgical Process

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#### Abstract

**Introduction:** Currently, surgical intervention for chronic venous disease (CVD) is performed on an outpatient basis.

**Objective:** To describe the perceived satisfaction of patients and the care quality indices associated with the intervention.

**Methods:** A retrospective cross-sectional observational study was conducted including all patients operated on between January 15, 2021, and March 25, 2021. Participants were provided with two questionnaires: one assessing satisfaction and another evaluating the patients' perceived quality of life. Data on quality indicators were collected. IBM SPSS was used to perform comparative and associative statistical analyses.

**Results:** A total of 57 patients were included in the study, of whom 64.9% were women (mean age: 50 years). Satisfaction: 94.4% of respondents rated the Angiology and Vascular Surgery Service with scores higher than 7 (scale of 1-10). The best-rated aspect was the care provided by the staff, while the lowest-rated was the food quality. Perceived quality of life: median score of 15 (IQR 13.0; 18.0). Care quality: success rate of 94.7%, cancellation rate of 5.3%, and checklist compliance rate of 96.5%. There were no hospital admissions or reinterventions.

**Conclusion:** In our series, patient satisfaction and care quality demonstrated high levels, although improvements in certain variables could lead to better outcomes.

**Keywords:** Ambulatory surgery; Healthcare questionnaires; Patient satisfaction; Quality indicators; Varicose veins/surgery

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#### Introduction

The VEIN-TERM Consensus, published in 2009, defines chronic venous disease (CVD) as a pathological condition of long duration resulting from anatomical or functional alterations of the venous system. It manifests through symptoms and signs that require investigation and treatment [1].

CVD is the most prevalent vascular condition affecting the lower limbs (LL). In Spain, the prevalence reaches 48.5%, significantly higher in women (58.5%) compared to men (32.1%) [2].

The annual cost of CVD treatment in some European countries is estimated to reach 2% of healthcare expenditures [3]. The socioeconomic impact of CVD is justified by its high prevalence, the cost of consultations and treatment, and the deterioration in quality of life experienced by affected patients.

For varicose vein management, surgical treatment has proven to be more cost-effective compared to conservative approaches. Among these, endovenous treatments offer less postoperative pain and faster recovery, with thermal ablation currently being the first-line technique. The classic saphenectomy, considered the gold standard for many years in the treatment of CVD, involves the removal of the saphenous vein that supports collateral varicose veins [4]. Although it remains the preferred technique in the National Health System due to its lower costs for hospitals, it is more expensive overall as it involves a longer period of work incapacity.

Major Ambulatory Surgery (MAS), also known as outpatient or day surgery, refers to discharging the patient on the same day of the intervention after a period of observation. Since its introduction in the 1990s, there has been significant growth in surgeries performed under this regimen. MAS is now the predominant surgical approach for CVD (including both endogenous and classical resection techniques) [5]. This ensures high patient safety and satisfaction within a framework of clinical efficiency.

Patient satisfaction has gained importance over the last decade and is a crucial objective of MAS. Continuous monitoring of care quality standards is essential to detect potential problems and implement necessary measures to address and prevent them [6].

#### Objective

The objective of this study is to determine the levels of perceived short-term satisfaction and care quality among MAS patients treated for CVD of the lower limbs (LL) at the La Paz-Carlos III University Hospital.

The primary objective is to assess the overall satisfaction level of patients undergoing ambulatory surgery for LL-CVD and to evaluate the quality care indices of the surgical intervention.

Secondary objectives include identifying healthcare deficiencies perceived by patients, understanding the importance attributed to them, and discovering flaws in the care received.

The working hypothesis is that general patient satisfaction will reach 70%.

## Patients and Methods

This is an observational, descriptive, cross-sectional study. It includes patients treated for lower limb chronic venous disease (LL-CVD) through MAS by the Angiology and Vascular Surgery Service at La Paz University Hospital in Madrid from January 15, 2021, to March 25, 2021, who attended their first follow-up appointment post-surgery. As this study is part of a service improvement plan, the Ethics Committee responded that no formal approval was required.

The sample size was calculated assuming an initial satisfaction rate of 70% with a 95% confidence level. The study was not promoted to ensure that professionals did not alter their behavior, thereby allowing the values obtained to reflect reality. Two anonymous, self-administered questionnaires were used: a satisfaction questionnaire and a perceived quality of life.

The first was a validated satisfaction questionnaire for MAS. It comprises forty items aimed at patients, addressing the evaluation of professionals in their interpersonal and scientific-technical skills, the accessibility and comfort of the hospital, service accessibility, and loyalty to the service and hospital. This questionnaire includes eighteen items rated using an adapted Likert scale from 1-10 points (1 being the most negative evaluation and 10 the most positive), fourteen dichotomous questions, six categorized questions, and two open-ended questions.

The second questionnaire administered was the VasculQoL-6 (Vascular Quality of Life Questionnaire), which evaluates patients' perceived quality of life. It comprises six items, each with four possible answers rated from 1-4 (1 being the worst perceived quality and 4 the best). Total scores range from 6 to 24 points, with higher scores corresponding to better perceived quality of life.

Additionally, through retrospective review, various quality indicators for MAS were measured. These were divided into: - **Process indicators** (related to patient care activities) - **Outcome indicators** (desired or adverse aspects of care received) - **Sentinel indicators** (serious and undesirable events resulting from care).

Process indicators include cancellation rates, suspension rates, preoperative recommendations rates, informed consent rates, checklist rates, and discharge report rates. Outcome indicators include hospital admission rates, readmission rates, emergency department visitation rates, success rates, and surgical wound infection rates. The reoperation rate was considered the sentinel indicator for the study. The monitoring of these indicators aimed to ensure predetermined quality standards were maintained.

Statistical analysis was performed using IBM SPSS-25®. Dichotomous and categorical qualitative variables are presented as absolute and relative frequencies. For numerical variables, means, standard deviations, and cumulative percentages were calculated, with cut-off values of 5 and 7.

## Results

We analyzed 57 patients with surgical treatment for varicose veins. The age variable had a mean of 50 years with a standard deviation of 12.07. The eldest patient was 70 years-old, and the youngest was 24 years old. 64.9% (37) of the patients were women, and 35.1% (20) were men.

Regarding the type of intervention performed, 89.5% (51) of the patients underwent saphenectomy with complementary phlebectomy, while 10.5% (6) only underwent phlebectomy.

Patient ratings of various items using a 1-10 scale are summarized in according to their median, interquartile ranges, and cumulative percentages (lower or higher satisfaction levels, with cut-off points at values 5 and 7).

The worst-rated item was "food quality," with only 42.9% of patients giving it a score above 7 (scale of 1-10). The importance that patients attribute to this item is reflected in the variable "value of food quality," which was rated above 7 points (scale of 1-10) by 56.5% of respondents. These items recorded the highest number of missing responses during data collection.

The best-rated items were the variable "nursing care," which showed an accumulated percentage of 98.2% for scores above 7 (scale of 1-10). Similarly, the variable "value of nursing care" achieved the same score. These were followed by the variables "evaluation of the Angiology and Vascular Surgery Service," "value of being informed about treatment," and "would you recommend the service to family members?"—all presenting an accumulated percentage exceeding 90% for scores above 7 (scale of 1-10).

68.4% (39) of patients knew the name of their physician, while only 22.8% (13) knew the name of their nurse. The results for the item "Do you think the admission time was appropriate?" indicate that 96.4% (53) of patients considered the time they spent admitted to the hospital to be adequate, compared to 3.6% (2) who deemed it insufficient. However, when evaluating the consistency between the information received and the hospital stay, 82.5% (47) of respondents stated that it was consistent, compared to 14.5% (8) who disagreed.

The remaining items in the questionnaire can be divided into variables of perceived satisfaction during the preoperative, intraoperative, or postoperative periods. The preoperative variables are summarized in and presented as absolute and relative frequencies.

Similarly, patients evaluated the intraoperative experience positively. Of the total 57 patients, 50.9% (29) rated their experience in the operating room as "better than expected," and 49.1% (28) rated it as "as expected," with none of the respondents reporting the experience as "worse than expected." Regarding immediate pain, 73.7% (42) of patients reported experiencing no pain upon waking.

When analyzing postoperative variables, it was found that only 3.5% (2) of patients experienced more pain than expected while in the ward, 26.3% (15) described the pain as expected, 24.6% (14) experienced less pain, and 45.6% (26) reported no pain during their hospital stay. This differs from the variable "pain after discharge," which yielded the following results: 17.5% (10) of patients reported no pain, 26.3% (15) experienced less pain than expected, 43.9% (25) experienced the pain they anticipated, and 12.3% (7) reported more pain than expected.

Finally, the information provided to patients at discharge was evaluated. Among all patients, 84.2% (48) of respondents stated they had all the information they needed, while the remaining 15.8% (9) indicated that they lacked some information. However, when asked if they would know how to contact the service in case of an emergency, 40% (22) of patients reported that they would not have known how to do so.

Next, the results of the VasculQol-6 questionnaire are described. Of the 57 patients who were given the questionnaire, 19% (11) did not respond, possibly because it was the last section of the evaluation. However, the patients who did respond completed all six items. This variable, which follows a non-normal distribution, presents a median score of 15 (IQR 13.0; 18.0).

The care quality process indicators are summarized in which includes the definition of each variable, its observed value, and the standard as percentages. Among these, the success rate did not reach 100% due to the detection of residual varicose veins in 3 patients.

(5.3%) during the first follow-up visit. The cancellation rate fell short of the standard as 3 patients (5.3%) were not operated on due to positive COVID PCR tests. The preoperative recommendations rate was 0% because informational brochures were not distributed at the time of the study. The checklist rate was 96.5% (55) and was deficient due to its absence in the records of two individuals.

## Discussion

The variables were divided into three groups to facilitate discussion: satisfaction, perceived quality of life (VasculQol-6), and care quality. Additionally, the satisfaction category was subdivided into the following areas: pain, information, trust in healthcare professionals, access and organization of healthcare services, and facility comfort and cleanliness.

### Satisfaction

Satisfaction is a complex and subjective variable influenced by different factors. It is defined as the evaluation of the care received by the user (Pascoe, 1983) and is affected both by the initial expectations of patients and by outcomes, with a demonstrated association between higher patient satisfaction and positive clinical results [7].

In our sample, overall satisfaction among outpatient surgery (OS) users treated for lower limb chronic venous disease (LL-CVD) was high. This is evident when analyzing the variable "evaluation of the Angiology and Vascular Surgery Service," where 94.4% of patients gave a score higher than 7 points (scale 1-10). Similarly, 91.1% of patients rated the variable "would you recommend the service to family members?" above 7 points.

### Pain

In our study, three variables were differentiated: immediate postoperative pain, postoperative pain in the ward, and postoperative pain after discharge.

Postoperative pain is a determining factor in patient satisfaction after OS. In fact, higher satisfaction has been associated with effective postoperative pain management [8]. However, it should be noted that the presence of postoperative pain does not necessarily indicate dissatisfaction with its management [9].

Regarding immediate pain, 26.3% (15) of patients reported experiencing pain upon waking, suggesting the need to evaluate the use of local anesthetics at wound sites, as not all surgeons use them. When analyzing pain in the ward, only 3.5% (2) of patients expressed dissatisfaction with pain management (more pain than expected), suggesting that the analgesic protocol used is effective and could be standardized. Similarly, only a small percentage, 12.3% (7), of patients

experienced more pain than anticipated at home, which could be addressed by improving the postoperative care information provided at discharge, emphasizing when and how to use prescribed analgesics [10].

Regarding the importance attributed to pain relief, 73.7% of patients rated it above 7 points (scale 1-10), falling below the importance attributed to professional treatment and adequate information throughout the process.

### Information

This category includes eight variables encompassing information provided to patients and their associated expectations.

The quality and quantity of information provided to patients is another decisive factor in perceived satisfaction. The diversity of opinions regarding the appropriate amount of information (more or less detailed) can make meeting patient expectations challenging for professionals. Adequate preoperative and postoperative information has been associated with greater perceived satisfaction [11-13].

When evaluating the variable "value of being informed about the care received," the desire for information expressed by patients in other studies becomes evident [14,15].

A total of 70.2% of patients rated the information they received about the treatment above 7 points (scale 1-10). Additionally, 66.7% of patients received explanatory drawings. Furthermore, 91.2% of respondents rated the variable "value of treatment information" above 7 points, consistent with other studies [16]. This gap could be reduced by providing an informational brochure during the preoperative consultation.

82.5% of patients stated that the information they received was consistent with their hospital stay, demonstrating the quality of the information provided. The importance patients attributed to information and their experience reached similar values, once again evidencing the impact of information on perceived patient satisfaction.

When patients described their experience in the operating room, none defined it as "worse than expected." Instead, 49.1% rated it as "as expected," and 50.9% rated it as "better than expected." This highlights the influence of information on patient satisfaction and how patient expectations were appropriately managed-another critical factor in perceived satisfaction [17].

Postoperative information revealed that 84.2% of patients stated they had all the information they needed, but only 60% answered affirmatively to the question, "Would you know how to contact the medical team in case of an emergency?" This discrepancy could be attributed to the phrasing of the question rather than a lack of information. It is suggested to rephrase the question as, "Would you know where to go in case of an emergency?"

### Trust in Healthcare Professionals

This group includes five variables related to knowledge and the importance of knowing the names of physicians and nurses, as well as the quality of care received by patients. It was the most frequently mentioned category in open-ended responses as "what they liked most."

Our study revealed a significant difference between the number of patients who knew their physician's name versus their nurse's name. This is consistent with the higher score attributed to the variable "value assigned to knowing the physician's name" compared to "value assigned to knowing the nurse's name."

The behavior and interpersonal skills of healthcare professionals are crucial in determining patient satisfaction. A large-scale study concluded that interpersonal skills of physicians and nurses are one of the main predictors of patient satisfaction following a surgical intervention [18]. The results of our study are similar, as evidenced by the three highest-rated variables: "appropriate treatment," "nursing care," and "value of nursing care."

## Access and Organization of Healthcare Services

This group includes variables related to the difficulty of accessing consultations, the preoperative study, patient waiting times, and admission duration. This group received the most criticism in the open-ended question, "What did you like the least?", primarily due to the various waiting times experienced on the day of the intervention. Regarding the preoperative study, 98.2% of patients found it was not difficult to complete. Conducting a thorough preoperative study not only allows for the detection of individual patient risks and ensures the safety of the intervention but also provides patients with an opportunity to express their doubts and expectations.

When analyzing waiting times, four categories were distinguished: time spent waiting for registration, time spent waiting for the preoperative consultation, time spent waiting for admission on the day of the intervention, and time spent waiting after being admitted to the hospital room.

A minority of patients (20.9%) reported waiting 30 minutes or more to register for the service before their first consultation. However, many patients indicated they did not understand the question. Therefore, it is suggested to modify this item in the questionnaire, merging it with waiting time for the consultation, which was assessed dichotomously in the questionnaire with excellent results.

Regarding waiting time for admission, this variable scored worse than the previous one, with 20.8% of respondents rating it negatively. This issue could be resolved by defining arrival and waiting times at the center more precisely. A similar issue was observed with the waiting time after patients were admitted to their rooms, which 25% of patients rated as "more than 60 minutes" [19].

For the variable "adequate admission time," the results are consistent with those of the study conducted by Picola et al. [20]. The high importance assigned to admission time may be justified by the rapid development and acceptance of outpatient interventions in the last decade.

## Facility Comfort and Cleanliness

When analyzing individual items from the patient survey, certain variables were observed whose modification does not depend on the Angiology and Vascular Surgery Service.

One such variable is "food quality," the worst-rated item, with only 42.9% of patients giving it a score above 7 (scale 1-10). Additionally, it was the item with the most missing data, with 63% (36) of respondents not answering the question, often specifying in open comments that they did not receive food or beverages. Since this is

an outpatient procedure, many patients are not present during meal times. Similarly, the variable "value of food quality" scored similarly, with 56.5% of patients rating it above 7 points (scale 1-10). This indicates that "food quality" is the worst-rated variable but also the one patients assign the least importance to. These variables had the highest number of missing responses (36 and 34, respectively), limiting their validity.

Regarding facility quality, both room comfort and cleanliness were assessed. The variable "room comfort" was rated above 7 points (scale 1-10) by 67.9% of respondents. When examining the variable "value of room comfort," the cumulative percentage scoring above 7 was 66%. In open-ended questions, several patients mentioned that room quality was the least favorable aspect of their experience, describing the rooms as small with very limited windows. The relatively high score for the variable "room comfort" may be attributed to the short duration of patients' stay in the room. While there is room for improvement, these results are positive, with 81.3% of respondents determining that the room was adequate.

The variable "room cleanliness" received the highest score within this group, with 81.8% of respondents giving it a score above 7, and it was also the variable patients assigned the most importance to, with 88.7% scoring it above 7.

## Perceived quality of life: VASCUQOL-6

Although the VascuQol-6 questionnaire is a valid tool for assessing patients' perceived quality of life, in our study it was administered only postoperatively. A preoperative questionnaire would have allowed an evaluation of the disease's impact on quality of life, while a postoperative questionnaire would assess the surgery's effect on it. Since the questionnaire was not administered preoperatively, it is not possible to determine whether there was a significant improvement in scores following the intervention.'

Therefore, it is recommended to administer the questionnaire before the intervention and two months afterward to determine whether the surgery improves quality of life."

## Care Quality

Among the care quality variables evaluated during the study, several stand out:

**Emergency department visitation rate:** This included only patients who visited the hospital within the first 24 hours post-surgery, resulting in only one recorded case. However, two additional patients visited the emergency department later. Although these visits were minor, extending the observation period from 24 hours to one month would be beneficial.

- **Cancellation rate (5.3%):** This did not meet the standard due to the epidemiological situation, as three patients tested positive for COVID-19 PCR prior to the intervention.
- **Success rate (94.7%):** Similar results have been reported by other authors for various techniques [21,22].
- **Preoperative recommendations:** At the time of the study, there was no printed material available to provide preoperative recommendations to patients. However, Johnson et al. demonstrated greater satisfaction when patients received printed information during the preoperative process (Johnson et al., 1999), supporting its use.



## Limitations and Future Recommendations

This study has several limitations, including a small sample size, limited duration, and the absence of a defined optimal timing for administering the questionnaire. Additionally, demographic variables such as sex and age, which were collected independently, could not be analysed for their potential influence on satisfaction or perceived quality of life. However, previous studies suggest that these variables do not significantly affect satisfaction and quality [21,22].

Education level, another unmodifiable variable, has shown ambivalent results in previous research and was not evaluated in our study.

This work provides a foundation for modifying the varicose vein treatment protocol to address weaker points in the care process. After implementing these measures, repeating the study would help assess the impact of these changes.

## Conclusion

In our series, patient satisfaction and care quality remained high, although there are individual variables that can be improved through specific measures.

The best-rated aspect was the care provided by the staff, while the worst-rated aspect was the food quality or, alternatively, waiting times. For patients, the most important factors were the care and information they received, surpassing even the management of pain.

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