



# Quality of Life of Patients Before and After Hemorrhoid Surgery: A Single-Center Study in Vietnam

Nguyen Thi Thuy Anh <sup>1</sup>, Nguyen Ngoc Huynh Nhu <sup>1</sup>, Tran Ngoc Hong <sup>1</sup>, Pham Thi Ly <sup>1</sup>, Nguyen Thi Hong Huyen <sup>1</sup>, Doan Thi Minh <sup>1</sup>, Ho Tat Bang <sup>2,3,\*</sup>, Nguyen Trung Tin <sup>1</sup>

<sup>1</sup> Department of Proctology, University Medical Center HCMC, University of Medicine and Pharmacy at Ho Chi Minh City, Vietnam

<sup>2</sup> Department of Thoracic and Vascular, University Medical Center HCMC, University of Medicine and Pharmacy at Ho Chi Minh City, Vietnam

<sup>3</sup> Department of Health Organization and Management, Faculty of Public Health, University of Medicine and Pharmacy at Ho Chi Minh City, Vietnam

\*Corresponding author: University Medical Center HCMC, University of Medicine and Pharmacy at Ho Chi Minh City, No. 215 Hong Bang Street, Ward 11, District 5, Ho Chi Minh City, Vietnam. Email: bang.ht@umc.edu.vn

Received 2024 April 5; Revised 2024 May 12; Accepted 2024 May 27.

## Abstract

**Background:** Hemorrhoids are a prevalent condition that significantly impacts the quality of life (QoL) of affected patients. Despite their common occurrence, few studies have thoroughly investigated the changes in health-related QoL in patients undergoing hemorrhoid surgery, particularly in Vietnam.

**Objectives:** This study aims to assess and compare the mean quality of life (QoL) scores across various dimensions before and after hemorrhoid surgery, providing insights into the effectiveness of surgical interventions.

**Methods:** This before-and-after study was conducted on 246 patients at the University Medical Center HCMC, Vietnam, from February 2023 to February 2024. Participants were evaluated using the HEMO-FISS-QoL questionnaire before and eight weeks post-surgery. The Wilcoxon Signed Rank test was used to determine the association between the patients' quality of life (QoL) and the scores of each dimension before and after hemorrhoid surgery at eight weeks, with statistical significance set at  $P < 0.05$ .

**Results:** The study included 246 participants with a mean age of  $42.80 \pm 14.22$  years. The results indicated a significant enhancement in QoL post-surgery, with mean scores decreasing from  $42.37 \pm 12.74$  before surgery to  $23.54 \pm 2.19$  after surgery ( $P < 0.001$ ), reflecting considerable improvements across all measured dimensions.

**Conclusions:** The findings demonstrate a statistically significant improvement in both overall QoL and individual health dimensions following hemorrhoid surgery, confirming the procedure's effectiveness. This study contributes valuable data to the limited existing literature on the impact of hemorrhoid surgery on patient outcomes in Vietnam.

**Keywords:** Hemorrhoids, Quality of Life, Questionnaire, Surgery

## 1. Background

Hemorrhoids are a common condition in the anorectal region, yet determining their true incidence is challenging due to the nonspecific nature of symptoms and the sensitive location, which often leads to patient embarrassment and hesitation in seeking treatment (1-3). This delay in seeking care is particularly problematic because patients frequently only seek examination and treatment when the symptoms and complications begin to severely impact their daily activities and work (4-6). Hemorrhoid symptoms are often nonspecific, leading to wide variations in reported prevalence rates in the

absence of confirmatory anal examinations (1, 7). Globally, the incidence of hemorrhoidal disease ranges between 4.4% and 16.5% of the population (1, 2, 4), affecting both genders with an age range of 33 to 57 years (8).

In Vietnam, hemorrhoids are a significant health problem, accounting for 58.5% of anorectal diseases (9). A study in Ho Chi Minh City that included people over 50 years old showed a prevalence of 25.13% (10). In recent years, the University Medical Center Ho Chi Minh City (UMC HCMC) recorded about 35,000 cases of anorectal disease, with hemorrhoids accounting for more than half of these cases. Furthermore, UMC HCMC has

conducted more than 3,000 hemorrhoidectomy surgeries, with the stapled hemorrhoidectomy method being the choice for more than half of these cases. Although not life-threatening in nature, hemorrhoids significantly affect the patient's quality of life (11).

Regarding treatment outcomes, assessments now frequently include evaluations of quality of life. Post-surgery quality of life typically drops by 10% immediately following the procedure but sees a rapid improvement of 60% within a week and reaches 80% within a month, highlighting the dynamic nature of recovery and the critical need for ongoing monitoring (12). However, in Vietnam, there is a remarkable lack of focused studies on the quality of life before and after hemorrhoid surgery, leading to this study's critical research question: How does surgical intervention for hemorrhoids affect the quality of life and specific health dimensions of patients in Vietnam, both immediately and over the weeks following surgery?

## 2. Objectives

This study aims to fill the existing research gap by providing comprehensive data on the impacts of hemorrhoid surgery on patients' quality of life. This information will inform medical professionals and aid in planning for post-treatment support, thereby improving patient outcomes in a context where such considerations are often overlooked in medical research and practice.

## 3. Methods

### 3.1. Study Settings and Design

A before-and-after study was conducted in the Proctology Department at the University Medical Center Ho Chi Minh City (UMC HCMC), Vietnam, from February 2023 to February 2024. This design aimed to evaluate the direct effects of hemorrhoid surgery on patient quality of life by comparing pre- and post-operative outcomes within the same subjects.

### 3.2. Participants, Sample Size and Sampling

Eligibility criteria included individuals aged 18 years and older presenting with hemorrhoids as their chief complaint. Participants could be newly diagnosed or have a prior diagnosis but must not have received any invasive treatments within six months prior to study enrollment to ensure no recent interventions influenced the outcomes. The study excluded patients with mental illness, cognitive disorders, or aphasia

affecting communication abilities, those who had undergone other surgical procedures within the last six months, were pregnant, or declined to participate. This was to ensure a homogeneous study population reflective of typical clinical outcomes for hemorrhoid surgery.

The sample size was calculated using a formula to estimate a mean with  $\sigma = 13.11$  as the standard deviation of the quality of life score of hemorrhoid patients according to a pilot study,  $d = 1.73$ , and  $Z(1-\alpha/2) = 1.96$ . The calculated sample size was  $n = 246$ . Consecutive sampling was used to select all hemorrhoid patients who met the sampling criteria during the study period.

### 3.3. Data Collection and Tools

Study participants were interviewed face-to-face using the HEMO-FISS-QoL (HF-QoL) questionnaire, which assesses the hemorrhoid-specific quality of life (QoL) of patients. The HF-QoL scores correlated well with those of the SF-12 and PGWBI ( $P < 0.001$ ), indicating strong validity. Cronbach's coefficients ( $> 0.7$ ) reflected good internal reliability across the different dimensions (13). A pilot study conducted on 30 patients before hemorrhoid surgery at the Proctology Department at UMC HCMC showed that the questionnaire's reliability, as measured by Cronbach's Alpha, was 0.92 overall. The consistency coefficients for each component were as follows: Physical disorder (0.90), psychology (0.77), defecation (0.88), and sexuality (0.86).

The questionnaire was administered by interviewers in the patient's room before surgery and re-administered eight weeks post-surgery during the follow-up examination at the Clinic of the Proctology Department. If a patient did not attend the follow-up examination at the time of sample collection, the researcher contacted and interviewed the patient using the HF-QoL questionnaire via phone call. Data were collected through face-to-face interviews and by reviewing patient medical records.

Information collected included patient characteristics such as age, gender, ethnicity, education level, occupation, marital status, residence, religion, monthly income, comorbidities, surgical method, previous treatment of hemorrhoids, and duration of the disease (see Appendix In Supplementary File).

The HF-QoL questionnaire assesses the patient's quality of life (QoL) using 23 items across four domains: Physical disorders (11 items), psychology (7 items), defecation (3 items), and sexuality (2 items). Responses are given on a 5-point Likert scale: 1 = never, 2 = rarely, 3 = regularly, 4 = very often, and 5 = always. If fewer than

50% of the items are missing, scores are calculated for each dimension (items marked as "not applicable" are not considered missing data). If 50% or more of the items in a dimension are missing, a score cannot be calculated for that dimension.

For calculable scores (when fewer than 50% of items are missing), the score for each dimension is the sum of the scores for all answers in that dimension. Specific rules apply for calculating the score if there are any missing data:

(1) First rule: If a dimension contains items with scores ranging from 1 to 5 ("never" to "always"), the "not applicable" items and missing data are replaced with the mean score of the patient-completed items with scores ranging from 1 to 5 in the same dimension (13).

(2) Second rule: If a dimension has zero items scored from 1 to 5 (i.e., only "not applicable" items or both "not applicable" and missing items), the dimension score is substituted with the mean score of the study population for that dimension (13).

Therefore, a score is calculated for each dimension provided fewer than 50% of the items are missing ("not applicable" answers are counted as not missing). The score for each dimension is the sum of the items scored in that dimension. The overall QoL score is calculated if the scores of the four dimensions can be calculated independently (the overall score is not calculated if one dimension score is missing). The overall QoL score is the sum of the scores of all the answers. A lower QoL score reflects a higher QoL.

### 3.4. Statistical Analysis

The research data were entered using Excel software and analyzed using IBM SPSS Statistics for Windows, Version 26.0. We used frequency and percentage to describe participants' characteristics and mean and standard deviation to describe the age, duration of the disease, and outcome variables. The Wilcoxon rank sum test was used to determine the association between the patient's QoL and each dimension's score after hemorrhoid surgery. Statistical significance was set at  $P < 0.05$ .

## 4. Results

There were a total of 255 hemorrhoid patients. However, four did not meet the inclusion criteria due to reasons such as accompanying gallbladder surgery or being underage, and five patients refused to participate. Consequently, the study results are based on 246 patients who completed the study.

### 4.1. Characteristics of Study Participants

As shown in Table 1, the study participants had a mean age of  $42.80 \pm 14.22$  years, ranging from 19 to 93 years. The most represented age group was 30 to 39 years, accounting for 29.3% of the participants. A majority of the participants were female (54.9%), about 10% more than the male participants, and 96.7% were of the Kinh ethnic group. Nearly 50% of the participants had attained an intermediate level of education or higher, including college, university, and postgraduate degrees. The participants had diverse occupational backgrounds, with the largest group being 'Other'—including housewives, retirees, and freelancers—comprising 30.1%, followed by officers at approximately 5%. Most participants were married or living with a spouse or partner, representing more than two-thirds of the total. Additionally, about two-thirds resided in urban areas. Over 50% of the participants reported having no religious affiliation, and the most common income bracket was 6 - 10 million VND, representing 33.3% of participants, with the lowest income group (21 - 25 million VND) accounting for 4.9%.

**Table 1.** The Characteristics of Research Subjects (n = 246)

Characteristics	No. (%)
<b>Gender</b>	
Male	111 (45.1)
Female	135 (54.9)
<b>Ethnicity</b>	
Kinh	238 (96.7)
Others	8 (3.3)
<b>Education level</b>	
Under-primary	0 (0)
Primary	17 (6.9)
Junior high school	49 (19.9)
High school	63 (25.6)
Professional intermediate/college/university/postgraduate	117 (47.6)
<b>Occupation</b>	
Pupils/students	7 (2.8)
Healthcare workers	8 (3.3)
Officers	61 (24.8)
Workers/farmers	45 (18.3)
Business/commerce	51 (20.7)
Others	74 (30.1)
<b>Marital status</b>	
Single	54 (22.0)
Married/living with a spouse or partner	181 (73.6)
Separated/divorced/widowed	11 (4.5)
<b>Residence</b>	
Urban	163 (66.3)
Rural	83 (33.7)

Characteristics	No. (%)
<b>Monthly income, (million VND)</b>	
≤ 5	55 (22.4)
6 - 10	82 (33.3)
11 - 15	34 (13.8)
16 - 20	35 (14.2)
21 - 25	12 (4.9)
> 25	28 (11.4)
<b>Age, (y)</b>	
Mean ± SD	42,80 ± 14,22
Maximum-minimum value	19 - 93
18 - 29	49 (19.9)
30 - 39	72 (29.3)
40 - 49	47 (19.1)
50 - 59	38 (15.4)
≥ 60	40 (16.3)
<b>Religion</b>	
No religion	145 (58.9)
Buddhism	63 (25.6)
Others	38 (15.4)
<b>Comorbidities</b>	
No	177 (72.0)
Hypertension	39 (15.9)
Diabetes	9 (3.7)
Hypertension and diabetes	7 (2.8)
Others	28 (11.4)
<b>Surgical method</b>	
Stapled hemorrhoidopexy	84 (34.1)
Hemorrhoidectomy	162 (65.9)
<b>Previous treatment of hemorrhoids</b>	
No	137 (55.7)
Yes	109 (44.3)
<b>Duration of disease, (y)</b>	
Mean ± SD	7.24 ± 8.24
Maximum-minimum value	< 1 - 51
≤ 1	69 (28.0)
2 - 5	73 (29.7)
6 - 10	55 (22.4)
> 10	49 (19.9)

Table 1 also revealed that over two-thirds of the study participants did not have comorbidities. Among those with comorbidities, hypertension was the most common (15.9%), followed by other diseases (11.4%) and diabetes (3.7%). Additionally, a small percentage of subjects had both hypertension and diabetes (2.8%). Regarding surgical procedures, two-thirds of the surgeries performed were hemorrhoidectomies, and one-third were stapled hemorrhoidopexies. Of the 246 patients undergoing surgery, two-thirds had only the hemorrhoid surgery without any accompanying procedures. One-third of the patients underwent additional procedures, with treatments for skin tags

being the most common (17.9%), followed by polypectomy (12.6%) and surgery to treat anal fissures (9.8%). Among these, 30.5% of the patients had one additional surgery, and 4.9% had two. The median duration of the disease was four years (quartile interval 1-10 years), with durations ranging from less than one year to a maximum of 51 years. The largest duration group, two to five years, comprised 28.7% of the patients, followed by one year or less at 28.0%, and more than ten years at 19.9%. Notably, 55.7% of the study subjects had not received previous treatment for hemorrhoids.

#### 4.2. Health-related Quality of Life Scores

There was a statistically significant improvement in the patients' mean Quality of Life (QoL) scores, which decreased from  $42.37 \pm 12.74$  before surgery to  $23.54 \pm 2.19$  eight weeks after surgery. The improvements in QoL dimensions were particularly notable post-surgery, especially in the defecation dimension, which saw the most significant reduction. The smallest change was observed in the sexuality dimension. The differences were statistically significant with a P-value of  $< 0.001$ , as detailed in Table 2.

**Table 2.** The Patient's QoL Before and After Hemorrhoid Surgery Eight Weeks Using HF-QoL Questionnaire (n = 246)<sup>a</sup>

The Average QoL Score	Before Surgery	After Surgery Eight Weeks	P-Value
<b>Physical disorders</b>	19.34 ± 7.43	11.06 ± 0.89	< 0.001 b
<b>Psychology</b>	11.58 ± 3.86	7.06 ± 0.65	< 0.001 b
<b>Defecation</b>	8.61 ± 3.05	3.42 ± 0.92	< 0.001 b
<b>Sexuality</b>	2.85 ± 1.20	2.00 ± 0.13	< 0.001 b
<b>HF-QoL</b>	42.37 ± 12.74	23.54 ± 2.19	< 0.001 b

<sup>a</sup> Values are expressed as Mean ± SD.

<sup>b</sup> Wilcoxon Signed Rank test.

## 5. Discussion

This study was conducted at the University Medical Center Ho Chi Minh City (UMC), a tertiary university hospital, to assess the quality of life of patients with hemorrhoids before and after surgery. It included 246 subjects with a mean age of  $42.80 \pm 14.22$  years, ranging from 19 to 93 years old. This age range is comparable to those reported in other studies, such as  $45.4 \pm 13.4$  years in Ho Chi Minh City, Vietnam (14),  $44.1 \pm 3.2$  years in Saudi Arabia (15), and  $44.3 \pm 13.71$  years in India (16), with

China reporting a slightly younger range of 40 - 42 years (17). In contrast, other studies noted older age groups, including  $46 \pm 24$  years in Nghe An, Vietnam (18), 48 years in Italy (19), and 55 years in Sweden (20). Additional studies by Abramowitz et al. ( $46.2 \pm 13.9$  years) (13), Ayari et al. ( $46.8 \pm 10.9$  years) (21), and others in Italy ( $53.1 \pm 15.9$  years) (22) and Sri Lanka ( $47.7 \pm 14.3$  years) (23) also noted older age groups. These findings suggest a trend of younger hemorrhoid patients compared to the largest epidemiological study from 1990, which documented ages ranging from 45 to 65 years (4). This change may indicate a shift in either the onset age or detection rates of hemorrhoids, fitting within the age range noted in recent systematic reviews: 33 to 57 years old (8), 34.7 to 47.0 years old (24), and 33.7 to 49.0 years old (25).

Our study revealed a majority of female participants, accounting for 54.9%, about 10% higher than males. This aligns with trends seen in an Italian study, which reported 58.3% female participants (22). However, contrasts exist in other studies where males predominated (14, 18-20, 23). Systematic reviews reflect variable gender distributions, indicating that gender does not significantly impact the quality of life in hemorrhoid sufferers (24, 25). Regarding occupational characteristics, 30.1% of our participants were housewives, retirees, and freelancers, with a significant portion being housewives, likely due to risk factors associated with pregnancy and less active lifestyles (26). Office workers also showed a higher incidence of hemorrhoids, attributed to prolonged sedentary periods (26).

Demographically, over 95% of participants identified as Kinh and more than 50% were non-religious, with the majority being married or living with a partner and possessing at least high school education—attributes reflecting urban demographics in Vietnam (27). The study also noted that most participants resided in urban areas and had incomes exceeding the 2022 national average, which supports the profile of patients who can afford care at a higher-cost facility like UMC HCMC (28).

The majority of subjects did not have significant comorbidities, with hypertension being the most common, reflecting the prevalence of non-communicable diseases among nearly 30% of the Vietnamese population (29). Surgical preferences in our study favored hemorrhoidectomy over stapled hemorrhoidopexy, a deviation from recent trends possibly due to temporary shortages in medical supplies. Patients had an average disease duration of  $7.24 \pm 8.24$  years, with most not having received prior treatments, differing from findings in other studies and

highlighting variability in patient histories and treatment approaches (13, 30).

This study revealed significant improvements in quality of life (QoL) following hemorrhoid surgery, as evidenced by decreased overall HF-QoL scores from  $42.37 \pm 12.74$  before surgery to  $23.54 \pm 2.19$  after surgery, marking a statistically significant enhancement in physical, psychological, defecation, and sexual health dimensions (Table 3). These findings are similar to Ayari et al.'s study, which documented considerable improvements in QoL post-rubber band ligation of hemorrhoids (21), and contrast with Giua's findings, where sucralfate ointment application led to substantial QoL benefits (22). The variations in QoL outcomes among these studies likely stem from differences in sample sizes, methodologies, and cultural settings.

Furthermore, the research parallels studies that employ other QoL assessment tools, showcasing consistent QoL improvements post-hemorrhoid treatment. Notably, Rørvik's cross-sectional and cohort analysis using multiple QoL scales, including SF-12, SF-36, EuroQoL 5-dimensions 5-levels, and Short Health Scale for hemorrhoidal disease, revealed significant QoL enhancements, similar to the findings from Martinsons's randomized trial comparing conventional hemorrhoidectomy and stapled hemorrhoidopexy (31, 32). Erdogdu's research further corroborates these results, with significant post-surgical improvements in physical health scores assessed by SF-36 (33). Garg's observational study using the WHOQOL-BREF highlighted improvements in physical and psychological well-being one month post-stapled hemorrhoidopexy, though social domains showed minimal change (16).

While primarily set in an urban medical center, this study successfully provided robust insights into the effectiveness of hemorrhoid treatments. It benefited from a comprehensive quality of life assessment and a substantial sample size, ensuring the reliability of the findings. One of the notable strengths of this research is that it is one of the few studies of its kind in Vietnam, a developing country where such detailed health data are often scarce. This study contributes valuable knowledge to the medical community, both locally and globally, by highlighting specific demographic and socioeconomic factors that influence treatment outcomes.

However, the study faces certain limitations, including its focus on an urban population, which might not accurately represent the rural or lower-income groups in Vietnam. The setting in a single group of patients at a single center further limits the generalizability of the findings across different

**Table 3.** The Patient's QOL Scores Before and After Treatment

Interview Time	This Research			Ayari et al. 2020 (21)			Giua et al. 2021 (22)	
	Before Surgery	After Surgery Eight Weeks	P-Value	Before Procedure	After Procedure	P-Value	Mean Change from Baseline in Score	P-Value
Physical disorders	19.34	11.06	< 0.001	32.40	17.40	< 0.001	-15.90	< 0.001
Psychology	11.58	7.06	< 0.001	19.68	10.63	0.001	-8.72	< 0.001
Defecation	8.61	3.42	< 0.001	11.22	5.63	< 0.001	-5.25	< 0.001
Sexuality	2.85	2.00	< 0.001	4.96	2.96	0.02	-2.52	< 0.001
Overall HF-QoL	42.37	23.54	< 0.001	68.32	36.63	< 0.001	-32.58	< 0.001

geographic and cultural settings within the country. Future research should include more diverse geographic settings and population groups to better understand the broader applicability of the findings across Vietnam.

### 5.1. Conclusions

The findings from this study confirm the efficacy of hemorrhoid surgery in improving quality of life across multiple dimensions. These outcomes not only highlight the physical benefits of the treatment but also emphasize the psychological and social improvements, which are crucial for comprehensive patient care. Future research should aim to address the noted limitations by including a more diverse population and implementing culturally adapted assessment tools. Additionally, exploring long-term outcomes and the sustainability of treatment effects will be vital in optimizing hemorrhoid management strategies.

### Acknowledgements

We thank the University Medical Center directors, dean of the Department of Proctology, the author of the original instrument Dr. Laurent Abramowitz and specially to patients who took part in this research.

### Supplementary Material

Supplementary material(s) is available [here](#) [To read supplementary materials, please refer to the journal website and open PDF/HTML].

### Footnotes

**Authors' Contribution:** NNTA, NTT conceived and designed the study, supervised the data collection, performed the data analysis, interpretation of the

results, drafted the manuscript. NTT designed the study, performed the data analysis, drafted the manuscript. HTB, NNHN, TNH, PTL, NTHH and DTM participated in designing the study, data analysis, and data interpretation, and editing the manuscript. All authors read and approved the final manuscript.

**Conflict of Interests Statement:** The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**Data Availability:** The dataset presented in the study is available on request from the corresponding author during submission or after publication.

**Ethical Approval:** Ethical approval for the study was obtained from the Ethics Committee in Biomedical Research - UMC HCMC No. 137/GCN-HDDD on the first of February 2023. Participants were provided the study information and voluntarily participated, signed a consent form to participate. The information collected from the patient is confidential and used for study purposes only. Whether they agreed to participate in the study or did not affect their own treatment at the hospital.

**Funding/Support:** The authors received no financial support for the research, authorship, and/or publication of this article.

**Informed Consent:** Participants were provided with the study information and voluntarily participated and signed a consent form to participate.

### References

- Abramowitz L, Benabderrahmane M, Pospait D, Philip J, Laouenan C. The prevalence of proctological symptoms amongst patients who see general practitioners in France. *Eur J Gen Pract.* 2014;**20**(4):301-6. [PubMed ID: 24702041]. [PubMed Central ID: PMC4438346]. <https://doi.org/10.3109/13814788.2014.899578>.
- Tournu G, Abramowitz L, Couffignal C, Juguet F, Senejoux A, Berger S, et al. Prevalence of anal symptoms in general practice: a prospective study. *BMC Fam Pract.* 2017;**18**(1):78. [PubMed ID: 28774265]. [PubMed Central ID: PMC5543599]. <https://doi.org/10.1186/s12875-017-0649-6>.

3. Chuong LCH, Ngau TTH. *Hemorrhoids*. Ha Noi: Medicine; 2021. p. 421-39.
4. Johanson JF, Sonnenberg A. The prevalence of hemorrhoids and chronic constipation. An epidemiologic study. *Gastroenterology*. 1990;**98**(2):380-6. [PubMed ID: 2295392]. [https://doi.org/10.1016/0016-5085\(90\)90828-o](https://doi.org/10.1016/0016-5085(90)90828-o).
5. Loder PB, Kamm MA, Nicholls RJ, Phillips RK. Haemorrhoids: pathology, pathophysiology and aetiology. *Br J Surg*. 1994;**81**(7):946-54. [PubMed ID: 7922085]. <https://doi.org/10.1002/bjs.1800810707>.
6. Megari K. Quality of Life in Chronic Disease Patients. *Health Psychol Res*. 2013;**1**(3). e27. [PubMed ID: 26973912]. [PubMed Central ID: PMC4768563]. <https://doi.org/10.4081/hpr.2013.e27>.
7. Siproudhis L, Pigot F, Godeberge P, Damon H, Soudan D, Bigard MA. Defecation disorders: a French population survey. *Dis Colon Rectum*. 2006;**49**(2):219-27. [PubMed ID: 16362804]. <https://doi.org/10.1007/s10350-005-0249-8>.
8. Rorvik HD, Campos AH, Styr K, Ilum L, McKinstry GK, Brandstrup B, et al. Minimal Open Hemorrhoidectomy Versus Transanal Hemorrhoidal Dearterialization: The Effect on Symptoms: An Open-Label Randomized Controlled Trial. *Dis Colon Rectum*. 2020;**63**(5):655-67. [PubMed ID: 31996581]. <https://doi.org/10.1097/DCR.0000000000001588>.
9. Hai MB. [Assessment of the results of post-operative care for hemorrhoidal patients in the surgical department of Hue University Hospital]. *J Med*. 2012;**16**(4). Vietnamese.
10. Hoa TT, Tan VAE. [Survey on some epidemiological and clinical characteristics of hemorrhoids in people over 50 years old in Ho Chi Minh City]. *J Med*. 2006;**14**(1):35-46. Vietnamese.
11. Hoi ND. *Hemorrhoids*. *Proctology*. J Med; 2002.
12. Czarzasty W, Kruszewski WJ, Zielinski J, Niznik M. A one-year follow-up of the quality of life after stapled hemorrhoidopexy. *Pol Przegl Chir*. 2011;**83**(4):204-11. [PubMed ID: 22166359]. <https://doi.org/10.2478/v10035-011-0031-7>.
13. Abramowitz L, Bouchard D, Siproudhis L, Trompette M, Pillant H, Bord C, et al. Psychometric properties of a questionnaire (HEMO-FISS-QoL) to evaluate the burden associated with haemorrhoidal disease and anal fissures. *Colorectal Dis*. 2019;**21**(1):48-58. [PubMed ID: 30171745]. [PubMed Central ID: PMC7379620]. <https://doi.org/10.1111/codi.14393>.
14. Tin NT. [Ligation hemorrhoid lift for treatment of mixed and circumferential hemorrhoids]. *J Med Ho Chi Minh City*. 2006:56-9. Vietnamese.
15. Shalaby R, Desoky A. Randomized clinical trial of stapled versus Milligan-Morgan hemorrhoidectomy. *Br J Surg*. 2001;**88**(8):1049-53. [PubMed ID: 11488788]. <https://doi.org/10.1046/j.0007-1323.2001.01830.x>.
16. Garg PK, Kumar G, Jain BK, Mohanty D. Quality of life after stapled hemorrhoidopexy: a prospective observational study. *Biomed Res Int*. 2013;**2013**:903271. [PubMed ID: 24058916]. [PubMed Central ID: PMC3766567]. <https://doi.org/10.1155/2013/903271>.
17. Lin HC, He QL, Shao WJ, Chen XL, Peng H, Xie SK, et al. Partial Stapled Hemorrhoidopexy Versus Circumferential Stapled Hemorrhoidopexy for Grade III to IV Prolapsing Hemorrhoids: A Randomized, Noninferiority Trial. *Dis Colon Rectum*. 2019;**62**(2):223-33. [PubMed ID: 30489326]. [PubMed Central ID: PMC6365260]. <https://doi.org/10.1097/DCR.0000000000001261>.
18. Huong NV. [Assessment of treatment outcomes hemorrhoids with the Longo technique]. *J Practical Med*. 2014:15-8. Vietnamese.
19. Behboo R, Zanella S, Ruffolo C, Vafai M, Marino F, Scarpa M. Stapled haemorrhoidopexy: extent of tissue excision and clinical implications in the early postoperative period. *Colorectal Dis*. 2011;**13**(6):697-702. [PubMed ID: 20184633]. <https://doi.org/10.1111/j.1463-1318.2010.02247.x>.
20. Gerjy R, Derwinger K, Lindhoff-Larson A, Nystrom PO. Long-term results of stapled haemorrhoidopexy in a prospective single centre study of 153 patients with 1-6 years' follow-up. *Colorectal Dis*. 2012;**14**(4):490-6. [PubMed ID: 22053787]. <https://doi.org/10.1111/j.1463-1318.2011.02872.x>.
21. Ayari M, Ennaifer R, Nsibi S, Bouchabou B, Nejma HB. Quality of life before and after endoscopic ligation of hemorrhoids: Application of the burden h emo/fiss qol score. *J Endoscopy*. 2020;**52**(S 01):ePP46.
22. Giua C, Minerba L, Piras A, Floris N, Romano F, Sifac G. The effect of sucralfate-containing ointment on quality of life in people with symptoms associated with haemorrhoidal disease and its complications: the results of the EMOcare survey. *Acta Biomed*. 2021;**92**(1). e2021029. [PubMed ID: 33683221]. [PubMed Central ID: PMC7975930]. <https://doi.org/10.23750/abm.v92i1.11309>.
23. Keong SYJ, Tan HK, Lamawansa MD, Allen JC, Low ZL, Ostbye T. Improvement in quality of life among Sri Lankan patients with haemorrhoids after invasive treatment: a longitudinal observational study. *BJS Open*. 2021;**5**(2). [PubMed ID: 33960376]. [PubMed Central ID: PMC8088290]. <https://doi.org/10.1093/bjsopen/zrab014>.
24. Tan VZZ, Peck EW, Sivarajah SS, Tan WJ, Ho LML, Ng JL, et al. Systematic review and meta-analysis of postoperative pain and symptoms control following laser haemorrhoidoplasty versus Milligan-Morgan haemorrhoidectomy for symptomatic haemorrhoids: a new standard. *Int J Colorectal Dis*. 2022;**37**(8):1759-71. [PubMed ID: 35906356]. [PubMed Central ID: PMC9388431]. <https://doi.org/10.1007/s00384-022-04225-4>.
25. Wee IJY, Koo CH, Seow-En I, Ng YJR, Lin W, Tan EJK. Laser hemorrhoidoplasty versus conventional hemorrhoidectomy for grade II/III hemorrhoids: a systematic review and meta-analysis. *Ann Coloproctol*. 2023;**39**(1):3-10. [PubMed ID: 36593573]. [PubMed Central ID: PMC10009065]. <https://doi.org/10.3393/ac.2022.00598.0085>.
26. Yang HK. *Hemorrhoids*. 2014.
27. Committee CPAHCS. [Results of the general population and housing census at 0:00 on the first of April]. *Statistical publisher*. 2019. Vietnamese.
28. General Statistics Office. [Press release on the Results of the 2022 Residential Living Standards Survey]. *Ministry of Planning and Investment*. 2023. Vietnamese.
29. Ministry of Health. [More attention needs to be paid to the management of non-communicable diseases and mental health disorders at the grassroots health level]. Ministry of Health Portal; 2022. Vietnamese. Available from: <https://apps.crossref.org/SimpleTextQuery>.
30. Brown SR, Tiernan JP, Watson AJM, Biggs K, Shephard N, Wailoo AJ, et al. Haemorrhoidal artery ligation versus rubber band ligation for the management of symptomatic second-degree and third-degree haemorrhoids (HubBLE): a multicentre, open-label, randomised controlled trial. *Lancet*. 2016;**388**(10042):356-64. [PubMed ID: 27236344]. [PubMed Central ID: PMC4956910]. [https://doi.org/10.1016/S0140-6736\(16\)30584-0](https://doi.org/10.1016/S0140-6736(16)30584-0).
31. Rorvik HD, Davidsen M, Gierloff MC, Brandstrup B, Olaison G. Quality of life in patients with hemorrhoidal disease. *Surg Open Sci*. 2023;**12**:22-8. [PubMed ID: 36876020]. [PubMed Central ID: PMC9978033]. <https://doi.org/10.1016/j.sopen.2023.02.004>.
32. Martinsons A, Narbutis Z, Bruneniekis I, Pavars M, Lebedkovs S, Gardovskis J. A comparison of quality of life and postoperative results from combined PPH and conventional haemorrhoidectomy in different cases of haemorrhoidal disease. *Colorectal Dis*. 2007;**9**(5):423-9. [PubMed ID: 17504339]. <https://doi.org/10.1111/j.1463-1318.2006.01169.x>.
33. Erdogdu A, Sipahioğlu NT, Erginoz E, Apaydin B, Sipahioğlu F. Quality of life after stapler hemorrhoidectomy evaluated by SF-36 questionnaire. *Ulus Cerrahi Derg*. 2013;**29**(2):59-62. [PubMed ID: 25931847]. [PubMed Central ID: PMC4379839]. <https://doi.org/10.5152/UCD.2013.37>.