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IES – new classification of hemorrhoids

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Abstract. IES – new classification of haemorrhoids. Various researchers and clinicians suggested different classifications of haemorrhoids, based on various clinical criteria of haemorrhoids. However, current classifications have a number of gaps and shortcomings, and a need of an optimization of the classification for practical use was emphasized by many authors. Aim: The aim of the study is to improve the diagnosis and surgical treatment of haemorrhoids. Material and methods: In the years 2014-2022, the results of surgical treatment in 150 patients with the diagnosis: chronic mixed (combined) haemorrhoids gr. III-IV were evaluated. Group I (LI) consisted of the patients treated by traditional classical surgery: closed and open hemorrhoidectomy (Milligan-Morgan, Whitehead, Fergusson, Parks, etc.) – 50 patients. Group II (LII) consisted of the patients treated by the combined method: traditional and minimally invasive (HAL/HAL-RAR) with excision of external hemorrhoidal nodules) – 50 patients, Group III (LIII) consisted of the patients treated by the minimally invasive HAL-RAR method – 50 patients. Results: The branches of the superior hemorrhoidal artery were most frequently detected at hours 1, 3, 5, 7, 9, 11. In all patients after performing the HAL-RAR (LIII) method, the pain syndrome was less pronounced compared to the combined and classic method and no opioids were required. The duration of hospitalization varied from 3 to 5 days. **Conclusions**: In our opinion, the classification of hemorrhoidal disease (HD) should meet certain criteria: be clear, easy to use in practice, and cover the most important clinical and anatomical features of the disease. In this paper we suggest a classification of HD which includes such features as: type and position of the haemorrhoids, severity of the disease (hemorrhage and/or thrombosis), pain syndrome, incontinence, stenosis, and tonus of the anal sphincter, presence and position of the skin tags, and recurrence after previous surgery. Keywords: classification, haemorrhoids, IES, Hal-Rar.

INTRODUCTION

Hemorrhoidal disease (HD) or hemorrhoids is an anorectal pathology which has been known since ancient times [1]. Various researchers and clinicians suggested different classifications of HD, based on various clinical criteria of hemorrhoids [2]. However, current classifications have a number of gaps and shortcomings, and a need of an optimization of the classification for practical use was emphasized by many authors [3 - 6].

The routinely used classification of HD is based on the criteria suggested by Goligher 1980 [7], and Banov et al., 1985 [8]. These criteria refer only to the internal type of hemorrhoids (located above the dentate line of the rectum). While in many cases HD presents clinically with both types: external and internal. In 2004 the Italian Society of Coloproctology suggested PATE 2000 Sorrento classification (slightly updated in 2006) [9, 10]. This classification refers only to common sites of hemorrhoids (3, 7, and 11 clock-face). However, a much greater variety in location of hemorrhoids

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was described [11]. Additionally, external hemorrhoids are not graded in PATE classification. Classification of HD from the International classification of the diseases X [12], in our opinion, is adequate for the public health management but is far from being useful in clinical routine. In less widespread use is a classification by Lunnis and Mann 2003 [13], which is based on the position of internal hemorrhoids and presence of prolapse.

We are confident that a successful treatment outcome in HD is directly related to a proper selection of the patients for the intervention, and, besides the grade of HD, this selection should cover various additional parameters (e. g. size of the hemorrhoids, presence of pain, previous interventions). The same opinion was expressed by various colleagues [4, 14]. We would also like to emphasize that an optimized classification of HD should take into consideration the technological advances in anorectal surgery made in the last decade, namely minimally invasive interventions became available. In our opinion, the classification of HD should meet certain criteria: be clear, easy to use in practice, and cover the most important clinical and anatomical features of the disease. In this paper we suggest a classification of HD which includes such features as: type and position of the hemorrhoids, severity of the disease (hemorrhage and/or thrombosis), pain syndrome, incontinence, stenosis, and tonus of the anal sphincter, presence and position of the skin tags, and recurrence after previous surgery.

MATERIAL AND METHODS

In the years 2014-2022 the results of surgical treatment in 150 patients with the diagnosis: chronic mixed (combined) hemorrhoids gr. III-IV were evaluated. Group I (LI) of patients treated by traditional classical surgery: closed and open hemorrhoidectomy (Milligan-Morgan, Whitehead, Fergusson, Parks, etc.) – 50 patients. In Group II (LII) and Group III (LIII), the minimally invasive surgical method of transanal ligation of the hemorrhoidal arteries with the use of ultrasound dopplerometry with mucopexy (HAL-RAR) was applied. Group II (LII) of patients treated by the combined method: traditional and minimally invasive (HAL/HAL-RAR) with excision of external hemorrhoidal nodules) – 50 patients, Group III (LIII) treated by the minimally invasive HAL-RAR method – 50 patients.

Intraoperative with the help of the HAL-RAR device under the control of ultrasound dopplerometry, the branches of the superior hemorrhoidal artery were detected and the procedure of transanal ligation of the arteries proximal to the dentate line (HAL) was performed. Atraumatic suture was used to ligate the hemorrhoidal arteries 2-0, pin 5/8. The quality of the ligation of the arteries was confirmed ultrasonographically by the disappearance or diminution of their pulsation - HAL (Hemorrhoidal Artery Ligation). If necessary, mucopexy – RAR (rectoanal repair) was performed with "lifting" of the mucosa and prolapsed hemorrhoidal nodules. Also, if necessary, hypertrophied external hemorrhoidal nodules and anal skin tags were excised.

RESULTS

During surgery, in the patient in the lithotomy position, from 4 to 6 arteries were detected. The branches of the superior hemorrhoidal artery were most frequently detected at hours 1, 3, 5, 7, 9, 11. It contradicts the data of the literature and the majority of classifications, about the arrangement of the main vascular hemorrhoidal plexuses at 3, 7, 11 hours. Case wise, the pulsation of the arteries was determined at 2, 8, 10 o'clock. In all patients after performing the HAL-RAR (LIII) method, the pain syndrome was less pronounced compared to the combined and classic method and no opioids were required. The duration of hospitalization varied from 3 to 5 days. In cases of dysuria, patients were catheterized with a Foley catheter for 24 hours after surgery. In one patient from (LII) group with complicated hemostasis during the surgery after 1-week haemorrhage occurred, which required re-hospitalization and final hemostasis during the re-intervention. In 4 (8%) patients from L III, the postoperative period was complicated by the occurrence of anal thrombosis at an external hemorrhoidal node, which were resolved conservatively. Excision of skin tags and residual hemorrhoidal tissue was performed under local anaesthesia in 14 patients from LIII

group 4-12 months after HAL-RAR. We believe that these patients could have avoided repeated surgical intervention if they had initially been correctly diagnosed using the IES classification. Combining the mini-invasive HAL-RAR method with the traditional one during the first surgery would allow that.

The analysis of the evolution of hemorrhoidal disease in the respective groups of patients demonstrated some shortcomings (inconveniences) of the existing classifications, where, in our opinion, various clinical signs of haemorrhoids are insufficiently described. As a result, there was a need to come up with the proposal of developing a new classification of hemorrhoidal disease with the wider inclusion of some important clinical criteria of hemorrhoidal disease.

DESCRIPTION OF THE CLASSIFICATION

The classification is based on internal (I), external (E) and supplementary (S) criteria: IES. The criteria in the formula are encoded using capital letters, and grades, position of haemorrhoids and other factors are encoded using the subscript numbers to these letters. Thus, the disease is classified according to a formula, which consists of three blocks, separated by slash: I/E/S. The detailed description of each block is provided in the text below.

Types

Two types of hemorrhoids are known: internal and external [15]. Internal haemorrhoids are located above the dentate line of the rectum; they are covered of insensate columnar-glandular epithelium. Internal hemorrhoids are referred to an internal criterion with a capital "I". External hemorrhoids are located below the dentate line of the rectum; they are covered with sensate squamous epithelium. External hemorrhoids are referred to an external criterion with a capital "E". It is mandatory to describe both internal and external findings in the diagnosis.

Grades

Both internal and external hemorrhoids have 3 grades, described in Table 1. Absence of hemorrhoids is shown with "0". Grades are shown with Roman numbers from I to III as subscript to the letter, which indicates the type. Examples: II/E0/ (internal hemorrhoids grade I, absence of external hemorrhoids), IIII/EII/ (internal hemorrhoids grade III, external hemorrhoids grade II).

Table 1. Grades of hemorrhoids, incontinence and stenosis

Type and grades	Internal, grades based on prolapse from the anal canal	External, grades based on size of hemorrhoids	Incontinence (N)	Stenosis (S)
0	no prolapse is identified on inspection	no hemorrhoids are identified on inspection	absence of incontinence (not shown in the formula)	absence of stenosis (not shown in the formula)
I	hemorrhoids protrude outside anal canal but reduce spontaneously	diameter <0.5 cm	incontinence of gases	evident stricture, moderate pain on rectal examination
II	hemorrhoids protrude outside anal canal and require manual reduction	diameter 0.5 cm – 1,0 cm	incontinence of fluid stool	severe stricture, severe pain on examination
III	hemorrhoids are irreducibly prolapsed	diameter > 1,0 cm	incontinence of solid stool	rectal examination is not possible to perform due to stricture and pain

Position

Position is shown according to clock-face, when the patient is in lithotomy position. Arabic numbers from 1 to 12 are used to indicate position as subscript to the letter, which indicates the type; position is separated from the grade by the dash. Examples: II-3,7,11/E0/ (internal hemorrhoids grade I, located on positions 3, 7, 11, absence of external hemorrhoids), IIII-5,7/EII-5,10,11 / (internal hemorrhoids grade III, located on positions 5,7, external hemorrhoids grade II, located on positions 5, 10, 11).

Severity

Hemorrhage and/or thrombosis of the pile indicate an acute form of HD. These acute signs may be determined in either internal or external hemorrhoids. Acute signs are written on

the first place in the formula after capital "A" as follows: "AH" for hemorrhage, "AT" for thrombosis. Position of the pile with hemorrhage and/or thrombosis is shown with Arabic numbers according to clock-face, as subscript to "AH" and/or "AT". Examples: AH3II-3,7/E0/ (acute internal hemorrhoids with hemorrhage at position 3, internal hemorrhoids grade I located on positions 3, 7/ absence of external hemorrhoids), AT5EII-5,10,11/ IIII-5,7/ (acute external hemorrhoids thrombosis at 5, external hemorrhoids grade II located on positions 5, 10, 11/ internal hemorrhoids grade III, located on positions 5,7,).

When no signs of acute hemorrhoids are identified, the HD is considered chronic. In this case, no additional marking is used in the formula, internal criteria are described first.

Supplementary criteria

Supplementary criteria refer to six additional clinical findings: pain (encoded with "P"), incontinence ("N"), stenosis of the anus ("S"), muscle tone of the anal sphincter ("T"), skin tags ("K"), and recurrence of hemorrhoids after previous surgery ("R").

Pain is evaluated according to the visual analogue scale. The level of pain is shown in the formula with Roman numbers as subscript to "P". The scale ranges from minimal pain (PI) to maximal pain (PX). Absence of pain is not shown in the formula.

Grades of incontinence and stenosis are shown in the formula with Roman numbers as subscript, respectively to "N" and "S".

Hypotonic anal sphincter is shown with Arabic number "I" as subscript to "T", hypertonic sphincter – with "II". Normal muscle tone of the sphincter is not shown in the formula.

Skin tag is a skin formation which remains after the healing of hemorrhoids. Absence of skin tags is not shown in the formula. Position of skin tags is shown with Arabic numbers according to clock-face, as subscript to "K"

Recurrence after previous surgery is shown with Roman numbers as subscript to "R". Examples: RI – one previous surgical treatment of hemorrhoids. Absence of previous surgical intervention due to HD is not shown in the formula.

Examples of diagnosis

1) Hemorrhoidal disease AT3IIII-3,7,11/ EI-2,8/PVIII – thrombosis of the internal hemorrhoids at position 3, internal hemorrhoids of the III grade on positions 3, 7, 11 / external hemorrhoids of the I grade at positions 2 and 8 / pain syndrome grade VIII (VAS).

2) Hemorrhoidal disease AH3EII-3,5/ I0/PIIRI – bleeding from the external hemorrhoids at position 3, external hemorrhoids of the II grade at positions 3 and 5 / internal hemorrhoids absent / pain syndrome grade II (VAS), recurrence after one surgical treatment.

3) Hemorrhoidal disease IIII-3,7/E0/SII - internal hemorrhoids of the III grade at positions 3, 7, and 11 / external hemorrhoids absent / stenosis of the anus II grade.

4) Hemorrhoidal disease II-3,9,11/EII-3,9/ K2NIIRII - internal hemorrhoids of the I grade at positions 3, 9, and 11 / external hemorrhoids of the II grade at positions 3, 9 / skin tags at position 2, incontinence of the II grade, recurrence after 2 surgical treatments.

Tool for assessment

We suggested a tool for a fast assessment according to IES classification, example of the filled-out form is given in the supplement 1.

CONCLUSIONS AND DISCUSSIONS

The IES classification may contribute to faster and more proper selection of the treatment. For instance, according to our opinion, shared by some colleagues [11], HAL-RAR is a good method of treatment of internal hemorrhoids, but not of the treatment of advanced external hemorrhoids.

We consider, that IES classification has a number of strengths: a) it describes both internal and external types of hemorrhoids; b) both types of the hemorrhoids have three grades, which makes it easier to memorize; c) supplementary criteria are included; d) the exact position of hemorrhoids (hemorrhage and/or thrombosis) is shown; e) the diagnosis is written as a formula, which is concise and easier to use in clinical routine and research (selection and processing of certain clinical features).

However, to date, no perfect classification of HD was suggested, and IES classification also has some limitations. We

focused only on HD, thus the IES classification does not cover other anorectal pathology, frequently associated with / or caused by hemorrhoids (e. g. anal fissures, polyps, anal condyloma, coccygeal cyst, rectocele etc.). However, these and other certain criteria may be subsequently added to the supplementary section of the IES classification.

The authors look forward to suggestions and feedback from the colleagues regarding IES classification.

The choice of an adequate surgical method of treatment, depending on the various IES classification criteria, has significantly reduced the number of complications, recurrences of symptoms of a disease (relapses) and improved the postsurgical prognosis.

CONFLICT OF INTEREST AND FUNDING

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