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## Surgical treatment of patients with hemorrhoids by using traditional and minimally invasive methods

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### Abstract

**Background:** Hemorrhoids are a common pathology of the ano-rectal region and their treatment remains relevant. New minimally invasive methods of surgical treatment of hemorrhoids have been developed recently. Transanal Doppler-Guided Hemorrhoidal Artery Ligation (DG-HAL) of internal hemorrhoids is an up-to-date minimally invasive surgical method of hemorrhoid treatment. In the Republic of Moldova, many patients seek medical help only in advanced stages with large prolapse. It is not always possible to resolve the problem with minimally invasive methods. In medical literature there is little elucidation of the simultaneous combination of the DG-HAL method with the excision of external hemorrhoidal nodes. In the Republic of Moldova this study is being carried out for the first time. The authors present the results of combined surgical treatment of patients with hemorrhoids. The combined method of surgical treatment of hemorrhoidal disease has been implemented in our country and the efficacy of the method for individual approach has been demonstrated.

**Material and methods:** The results of the surgical treatment of 15 patients with the diagnosis of chronic hemorrhoids III-IV grade were evaluated. Patients were treated with the combined surgical method (DG-HAL with excision of hypertrophied external hemorrhoids and / or skin tags).

**Results:** Postoperative pain after "visual analogue scale" ranged from 3 to 6. Postoperative hospitalization constituted from 1 to 6 days. The duration of the surgery during adoption of approach was 30-60 minutes, but in the years 2016-2017 it constitutes 25-40 minutes. Severe complications have not been detected.

**Conclusions:** The individual approach by combined surgical treatment of patients with hemorrhoidal disease improves treatment outcomes.

**Key words:** proctology, hemorrhoids, surgical treatment, artery ligation, desarterization.

### Introduction

Hemorrhoidal disease is one of the most common human diseases, and occupies the first place in the structure of coloproctological diseases. Taking in consideration the delicacy of the problem in most cases the patient seeks a doctor in advanced stages. According to World Health Organization, more than 70% of the world population is predisposed to hemorrhoidal disease. According to epidemiological studies, the prevalence of hemorrhoids in the United States is estimated at 4.4% or 8.5 million patients. In the structure of the ano-rectal diseases, hemorrhoidal disease is approximately 40%. One of three of these patients needs surgical treatment [1, 2, 3, 8, 9, 12].

The problem of treating hemorrhoidal disease remains relevant. In connection with scientific and technological progress, which is reflected in medicine, in recent years, new minimally invasive methods of surgical treatment of hemorrhoidal disease have been developed. Transanal Doppler-Guided Hemorrhoid Artery Ligation (DG-HAL) of Internal Hemorrhoids is a modern, minimally invasive method for the treatment of hemorrhoidal disease. However, in advanced stages of hemorrhoids, it is not always possible to solve the problem of pronounced prolapse of hemorrhoidal nodes with the help of minimally invasive surgical methods.

According to published medical literature regarding the postoperative period, in some patients who underwent only DG-HAL or Hemorrhoidal Artery Ligation with Recto-anal Repair (HAL-RAR) the problem of prolapse of hemorrhoids and the presence of skin tags remained unsolved. Patients

complained of residual prolapse and the presence of "skin tags", causing discomfort. In order to avoid a two-stage surgical correction of hemorrhoidal disease, we consider it expedient to have an individual approach to surgical intervention.

In this regard, the authors share the results of their experience of combined surgical treatment of patients with hemorrhoidal disease.

### Material and methods

All 15 surgeries were performed with the second-generation A.M.I. HAL-Doppler II device (fig. 1). Proctoscope with the doppler ultrasound transducer (RAR Flexi Probe) sends signals to the A.M.I. HAL-Doppler II device, where the pulsating waves transform into the sound signal that is displayed on the monitor through a graphical representation (curve) corresponding to the pulse of the branches of the upper hemorrhoidal artery. During surgery, its branches are detected, where proximal to the dentate line the transanal ligation procedure of the arteries is performed (DG-HAL). Mucopexy (lifting) of the mucosa and prolapsed hemorrhoidal nodes have not been performed in this group of patients. All the surgeries were performed under spinal anesthesia, which allowed relaxation of the anal sphincter. For the ligation of hemorrhoidal arteries, the surgical sutures 2-0, with 5/8 needle from the device manufacturer (Austria) was used. During the period from 2014 to 2017, 15 combined surgeries were performed at the Department of Surgery No. 5 in the treatment of patients with internal hem-

orrhoids grade III-IV combined with external hemorrhoids and/or skin tags. The first stage of the operation consisted in carrying out transanal doppler-guided artery ligation of the branches of the upper hemorrhoidal artery (DG-HAL). The second stage of the operation consisted in the excision of external hemorrhoids, depending on the individual characteristics of the patient.



Fig. 1. A.M.I. HAL-Doppler II device.

### Results

In the postoperative period, all patients had a significant reduction or lack of symptoms of hemorrhoidal disease (bleeding from the rectum, itching, discomfort, etc.). None of the patients had prolapse of hemorrhoids. During surgical interventions, significantly less bleeding was observed during excision of external hemorrhoids and skin tags, because this was preceded by transanal ligation of the branches of the upper hemorrhoidal artery under the control of ultrasound dopplerometry. In 1 year the outcomes were analyzed in 10 patients out of 15, in 6 months – in 3 patients, and in 3 months – in 2 patients. Postoperative pain after “visual analogue scale” ranged from 3 to 6. The average length of stay in the hospital after the surgery in patients who underwent combined treatment was 1-6 days. The duration of the surgery (min) during adoption of approach was 30-60 minutes, and in the years 2016-2017 it constitutes 25-40 minutes. In this category of patients there were no complications in the late postoperative period registered.

### Discussions

There is a big amount of literature data and scientific articles describing the results of various mini-invasive and traditional methods of surgical treatment of hemorrhoidal disease. Recently, experience and analysis of the results of treatment of patients with the help of transanal dopplerometry are being accumulated [7, 8, 9, 10, 11, 12, 13, 14]. Lately, there are publications with comparative results of HAL-RAR with other methods [15, 16, 17, 18, 19, 20, 21]. However, there is practically no data on the combination of mini-invasive methods with the traditional methods of surgery during one surgical intervention [22].

A search was made for the results of combined surgical treatment of hemorrhoids in the scientific medical bases of

PubMed and Web of Science. We were especially interested in combining the HAL-RAR method with traditional ones, because in the advanced stages it was not always possible to solve the problem of pronounced prolapse using only the minimally invasive method. The results of the search for the first 30 articles on key words (hemorrhoids, HAL RAR, hemorrhoidal artery ligation, recto anal repair, DG-HAL, THD, dearterialization, doppler, simultaneous, combined, surgical, treatment) and their combinations were analyzed,

The combined approach in the surgical treatment of this category of patients has good results in treating the symptoms of hemorrhoidal disease (rectal bleeding, prolapse of hemorrhoids, itching, discomfort, etc.). In our opinion, the risks of serious postoperative complications, more typical for classical traumatic operations (stricture, incontinence, dysuric disorders, bleeding, purulent-inflammatory complications, etc.) are reduced. Also, the duration of surgical excision of external hemorrhoids was shortened. In our opinion, this is due to a decrease in blood flow to the hemorrhoids after DG-HAL. Taking into account the effect on the vascular component, the use of this method is considered pathogenetically justified. Undoubtedly, to achieve good results, an individual, differentiated approach to conservative and surgical treatment of hemorrhoidal disease is fundamental. In case the patient has an internal symptomatic hemorrhoids II-III degree (according to Goligher) DG-HAL or HAL-RAR are carried out. If the patients who suffer from internal hemorrhoids of III-IV degree to perform HAL-RAR, they may possibly need additional surgical correction of massive prolapse. In case the patient is diagnosed with combined hemorrhoids with pronounced prolapse (internal hemorrhoids of III-IV degree in combination with external hemorrhoids, and the presence or absence of “skin tags”), we consider it optimal to perform combined surgical intervention (DG-HAL with excision of external hemorrhoidal nodes +/- “skin tags”).

The pain syndrome in all 15 patients was less pronounced compared with classical methods, but higher than when performing exclusively DG-HAL or HAL-RAR without tissue excision. Postoperative pain syndrome after using the combined method varied depending on the volume of excision of external hemorrhoidal nodes and skin tags, and was individually assessed according to the VAS and effectively controlled.

As a result of combining traditional methods of excision of external hemorrhoidal nodes and skin tags with HAL, the following advantages were obtained: 1. Minimal intraoperative hemorrhage, that has contributed to reducing the time required to perform that excision, 2. For all patients, the problem of anal prolapse and hemorrhoidal disease has been solved.

### Conclusions

1. Combined surgical treatment of hemorrhoidal disease is quite effective.
2. Method is pathogenetically grounded, more radical in

comparison with modern minimally invasive methods and less traumatic than classical surgical methods.

3. We believe that this method of combined hemorrhoidal treatment can be recommended for this category of patients.

### References

- Vorobiev G.I., Sheligin Yu. A., Blagodarnii L.A. Gemorroy. [Hemorrhoids], Mitra-Press, 2002, 191 p.
- Rivkin V.L., Dultsev Yu.V., Capuller L.L. Gemorroy i drugiye zabol-evaniya zadneprokhodnogo kanala. Hemorrhoids and other diseases of the anal canal [Hemorrhoids and other diseases of the anal canal] Medicine, 1994,239 p].
- Fedorov V.D., Dultsev Yu.V. Proctology. Medicine, 1984, 379 p.
- James W. Fleshman, Bruce G. Wolff. American Society of Colon and Rectal Surgeons: The Ascrs Textbook of Colon And Rectal Surgery. Springer Science & Business Media, 2007, 156-158.
- J.F. Johanson, A. Sonnenberg .The prevalence of hemorrhoids and chronic constipation / An epidemiologic study. Gastroenterology; 1990, 98(2): 380-6
- Steven D. Wexner, Neil Stollman. Diseases of the Colon, CRC Press, USA, 2009, p .264; 2016. p. 676.
- Ratto C, Parello A, Veronese E, Cudazzo E, D'Agostino E, Pagano C, Cavazzoni E, Brugnano L, Litta F. Doppler-guided transanal hemorrhoidal dearterialization for hemorrhoids: results from a multicentre trial. Colorectal Dis. 2015 Jan;17(1):O10-9. doi: 10.1111/codi.12779.
- Hoyuela C, Carvajal F, Juvany M, Troyano D, Trias M, Martrat A, Ardid J, Obiols J. HAL-RAR (Doppler guided hemorrhoid artery ligation with recto-anal repair) is a safe and effective procedure for hemorrhoids. Results of a prospective study after two-year follow-up. Int J Surg. 2016 Apr;28:39-44. doi: 10.1016/j.ijso.2016.02.030. Epub 2016 Feb 10.
- Scheyer M1, Antonietti E, Rollinger G, Lancee S, Pokorny H. Hemorrhoidal artery ligation (HAL) and rectoanal repair (RAR): retrospective analysis of 408 patients in a single center. Tech Coloproctol. 2015 Jan;19(1):5-9. doi: 10.1007/s10151-014-1246-5. Epub 2014 Nov 19.
- Zagriadskii EA. Transanal Doppler-guided desarterization with mucopexy (HAL-RAR) for the treatment of hemorrhoids stage III-IV. Khirurgiia (Mosk). 2013;(4):59-64.
- Roka S, Gold D, Walega P, Lancee S, Zagriadsky E, Testa A, Kukreja AN, Salat A. DG-RAR for the treatment of symptomatic grade III and grade IV hemorrhoids: a 12-month multi-centre, prospective observational study. Eur Surg. 2013 Feb;45(1):26-30. Epub 2013 Feb 9.
- Jeong WJ, Cho SW, Noh KT, Chung SS. One Year Follow-up Result of Doppler-guided Hemorrhoidal Artery Ligation and Recto-Anal Repair in 97 Consecutive Patients. J Korean Soc Coloproctol. 2011 Dec;27(6):298-302. doi: 10.3393/jksc.2011.27.6.298. Epub 2011 Dec 31.
- Faucheron JLI, Poncet G, Voirin D, Badic B, Gangner Y. Doppler-guided hemorrhoidal artery ligation and rectoanal repair (HAL-RAR) for the treatment of grade IV hemorrhoids: long-term results in 100 consecutive patients. Dis Colon Rectum. 2011 Feb;54(2):226-31. doi: 10.1007/DCR.0b013e318201d31c.
- Infantino A, Altomare DF, Bottini C, Bonanno M, Mancini S, Yalti T, Giamundo P, Hoch J, El Gaddal A, Pagano C. Prospective randomized multicentre study comparing stapler haemorrhoidopexy with Doppler-guided transanal haemorrhoid dearterialization for third-degree haemorrhoids. Colorectal Dis. 2012 Feb;14(2):205-11. doi: 10.1111/j.1463-1318.2011.02628.x.
- Trenti L, Biondo S, Galvez A, Bravo A, Cabrera J, Kreisler E. Distal Doppler-guided transanal hemorrhoidal dearterialization with mucopexy versus conventional hemorrhoidectomy for grade III and IV hemorrhoids: postoperative morbidity and long-term outcomes. Tech Coloproctol. 2017 May;21(5):337-344. doi: 10.1007/s10151-017-1620-1. Epub 2017 Apr 27.
- Demir H, Karaman K, Ercan M, Kocer HB, Celebi F. Comparison of two procedures for symptomatic hemorrhoidal disease: Ligation under Vision and Ferguson Hemorrhoidectomy - a retrospective cohort study. Pak J Med Sci. 2017 Jan-Feb;33(1):90-95. doi: 10.12669/pjms.331.11266.
- Brown S, Tiernan J, Biggs K, Hind D, Shephard N, Bradburn M, Wailoo A, Alshreef A, Swaby L, Watson A, Radley S, Jones O, Skaife P, Agarwal A, Giordano P, Lamah M, Cartmell M, Davies J, Faiz O, Nugent K, Clarke A, MacDonald A, Conaghan P, Ziprin P, Makhija R. The HubBLE Trial: haemorrhoidal artery ligation (HAL) versus rubber band ligation (RBL) for symptomatic second- and third-degree haemorrhoids: a multicentre randomized controlled trial and health-economic evaluation. Health Technol Assess. 2016 Nov;20(88):1-150.
- Xu L, Chen H, Lin G, Ge Q, Qi H, He X. Transanal hemorrhoidal dearterialization with mucopexy versus open hemorrhoidectomy in the treatment of hemorrhoids: a meta-analysis of randomized control trials. Tech Coloproctol. 2016 Dec;20(12):825-833. Epub 2016 Nov 25.
- Leardi S, Pessia B, Mascio M, Piccione F, Schietroma M, Pietroletti R. Doppler-Guided Transanal Hemorrhoidal Dearterialization (DG-THD) Versus Stapled Hemorrhoidopexy (SH) in the Treatment of Third-Degree Hemorrhoids: Clinical Results at Short and Long-Term Follow-Up. J Gastrointest Surg. 2016 Nov;20(11):1886-1890.
- Lehur PA, Didnée AS, Faucheron JL, Meurette G, Zerbib P, Siproudhis L, Vinson-Bonnet B, Dubois A, Casa C, Hardouin JB, Durand-Zaleski I. Cost-effectiveness of New Surgical Treatments for Hemorrhoidal Disease: A Multicentre Randomized Controlled Trial Comparing Transanal Doppler-guided Hemorrhoidal Artery Ligation With Mucopexy and Circular Stapled Hemorrhoidopexy. Ann Surg. 2016 Nov;264(5):710-716.
- Brown SR, Tiernan JB, Watson AJ, Biggs K, Shephard N, Wailoo AJ, Bradburn M, Alshreef A, Hind D. Haemorrhoidal artery ligation versus rubber band ligation for the management of symptomatic second-degree and third-degree haemorrhoids (HubBLE): a multicentre, open-label, randomized controlled trial. Lancet. 2016 Jul 23;388(10042):356-64. doi: 10.1016/S0140-6736(16)30584-0. Epub 2016 May 25.
- Bour A.V., Gugava V.Z., Kozhokaru C.L. The method of combined treatment of hemorrhoid disease (transanal doppler-guided hemorrhoidal artery ligation of internal hemorrhoids, excision of prolapsing nodules). Science and world. 2016. No 11 (39). Vol. II., Volgograd, 2016.