

Latest Innovation in Surgical Management of HaemorrhoidsRama Kant^{1*}, Kushal Mital² and Kamal Gupta³¹Career Institute of Medical Sciences, Lucknow²Medical Director, Medicare Hospital, Thane, 400604, India³Director Karan Hospital, Jalandhar, India***Corresponding author:**

Dr. Rama Kant, Director cum Chief Executive Administrator Career Institute of Medical Sciences, C-2211, C-Block Crossing, Indira Nagar, Sitapur-Hardoi road, Ghaila Village, Lucknow 226 020, India, Phone No: +91 9415007299; Phone-fax: +91 522 2358230; Email: ramakantkgmc@rediffmail.com, ramakantkgmc@gmail.com, ramakant@ramakant.org

Submitted: 22 Feb 2019; **Accepted:** 01 Mar 2018; **Published:** 08 Mar 2019**Abstract**

Haemorrhoids are one of the commonest ano rectal problems. Numerous techniques of surgical treatment from old standard Milligan Morgan Haemorrhoidectomy to Non-invasive modalities including IRC, DGHAL RAR (Doppler guided haemorrhoidal arterial ligation and Recto anal repair), MIPH, Radiofrequency to Laser haemorrhoidoplasty. DGHAL was safest but involves substantial basic investment and per case recurring cost of Single use Doppler probes. Thus it was becoming unapproachable to lower middle class and poor patients. Rest other modalities also involve substantial investment and also per case expenditure. Over the experience of over 4,520 procedures by DGHAL equipment we describe same results by DIGITALLY GUIDED HAEMORRHOIDAL ARTERIAL LIGATION (DGHAL) evidenced by use of vascular Doppler confirming artery and stoppage of sound after ligation with hardly any expenditure. This was planned with special reference to Diabetic patients where excisional surgery or even RAR also needed more invasive approach, thus LASER Haemorrhoidoplasty was preferable.

Keywords: Haemorrhoids, Digitally Guided Haemorrhoidal Arterial Ligation (DGHAL RAR), Vascular Doppler, No Recurring cost

Introduction

Haemorrhoids are normal part of human ano rectums and consist of arterioles, venules, and arteriolar-venular communications supported by fibro muscular tissue "Nearly 50% people by 50 years onwards have already at least one episode or even more problems with piles and this incidence keeps on rising till age of 70 years, when it may reach as high as 85%" [1,2]. This is a true statement of a problem kept hidden due to false vanity and hesitation. It is truly a disease of life style and antiquity both, as on one hand mentioned by Hippocrates in 460 BC and on other there is high cry of modern life style to be blamed for its incidence. There are few diseases that are more chronicled in human history than symptomatic haemorrhoidal disease. References occur in ancient texts dating back to Babylonian, Egyptian, Greek, and Hebrew cultures. Included in many of these writings are multiple recommended treatment regimens such as anal dilatation, topical ointments, and the intimidating red-hot poker. Hippocrates in 460 BC wrote of haemorrhoids treatment similar to today's rubber band ligation procedure [2].

A Roman physician named Celcus (25 BC - AD 14) described the ligation and excision surgeries, as well as possible complications, IN A WAY Haemorrhoidal Arterial Ligation. Galen (AD 131 - 201) also promoted the use of severing the connection of the arteries to veins in order to reduce pain and avoid spreading gangrene. *Susruta Samhita*, between the fourth and fifth century AD, described treatment procedures comparable to those in the Hippocratic treatise,

but with advancement in surgical procedures and emphasis on wound cleanliness [2].

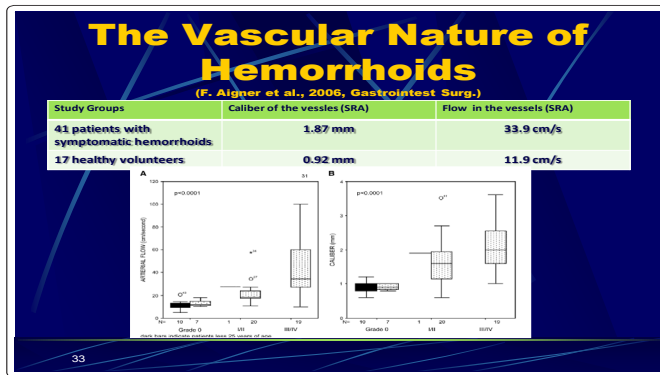
Today's Ferguson and Milligan-Morgan procedures are considered a modification of the Salmon's techniques. The diathermy haemorrhoidectomy by Alexander Williams, rubber band ligation by Barron, and DGHAL RAR by Morinaga 1995 and the stapled haemorrhoidectomy by Longo were three additional developments in the late 20th century. The gender disparity may not be true as large number of female patients keep avoiding consulting in general outdoors specially to male surgeons. But it is commoner in females especially during pregnancy.

Now there are several options in management of piles. Sclerotherapy, Rubber banding, cryosurgery, haemorrhoidolysis, and atomization, IRC, DGHAL with RAR (Recto anal repair), LASER Haemorrhoidoplasty, and Open surgical Haemorrhoidectomy and Stapler haemorrhoidectomy are the common ones. Open operative procedure requires General or spinal anaesthesia and caused lot of pain and morbidity. Because of pain, time taken to heal and dressings required, people are afraid of consulting a surgeon and go to quakes who claim to treat this problem without surgery.

Bleeding in haemorrhoids is bright red and is usually after the defecation but sometimes may be with the act also. While till now it was thought to be a purely venous disease, yet it was associated with bright red bleeding. Now the answer for this paradox has been found. There are arterio- venous communications interspersed with tissues in a non-rectal area and these start sliding while straining in constipation and thus venous drainage becomes poor while arterial

circulation keeps pumping blood normally. Therefore, arterial supply becomes relatively higher and arterial ligation appears as a logical recent development. Normally only three arterial branches have been described but when detected through Doppler probe, the number is from 12-15 in our country. The superior rectal artery did not course in exactly defined positions of the rectal mucosa [3-11]. The middle rectal artery is missing on both sides in 20.6 % of 39 dissected cases [3-5].

In fact, the distribution patterns of the SRA (bipartition in 82%, trifurcation in 12%) widely vary, just as the entering points of its branches into the rectal muscle layer. Thus the position of the rectal arteries is not predictable and all these branches are end arteries, so their ligation will be effective in controlling the bleeding and also Haemorrhoids. Aigner et al., 2004 reported in their study that the superior rectal artery had three times the calibre compared to healthy volunteers and blood flow was also nearly three times higher in patients of symptomatic haemorrhoids [5]. Their study provides strong evidence that the arterial blood supply is of relevance in the development of haemorrhoidal cushions. Vascular dilatation and increased blood flow suggest that there might exist an increased arterial inflow rather than a venous stasis or outflow problem in the development of haemorrhoids. Thus evidence based detection of these branches by Doppler and their ligation becomes justified.



This was invented by Dr. Kazumasa Morinaga in 1995 and was approved by the FDA in the same year; this is the latest most innovative technology being carried out in the world: Japan, Australia, USA, Europe, Africa, and now have spread to almost whole Asia [9]. This is emerging as minimal invasive procedure of choice in Haemorrhoids all over world [13-16]. The Haemorrhoidal Artery Ligation Operation (HALO) is a new operation designed to eradicate piles without the need for cutting. As such, it is relatively pain free, and most patients are back to work after 24-48 hours with only a minimum of discomfort, which if there is any, is no more than a mild a throbbing in the rectum. The basis of the operation is to restore the haemorrhoids back to their anatomical position and occlude the blood supply to the vascular cushions forming the haemorrhoids, resulting in them shrinking. But now we have made an innovation by which Doppler machine is not required as the arteries can easily be palpated digitally and for this evidence can be also acquired by confirming this with Vascular hand-held Doppler and absence of sound can be reconfirmed by the same Doppler after ligation. This is drastically cheaper option with no expensive equipment and also no recurring high charges on single use Doppler probes. We have done this in 76 cases in last two years. Comparison was made with similar consecutive cases done by Conventional Doppler equipment and Doppler Single and multiple use probes in

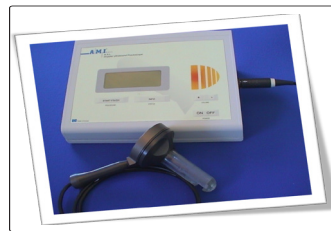
by randomization. Every alternate case was done by one of these two techniques. We are publishing our data and other details for the first time. We still label this procedure as DGHAL (Digitally Guided Haemorrhoidal Arterial Ligation).

Procedure-Doppler guided haemorrhoidal arterial ligation

The preoperative clearance is as usual. There were no excluding criteria except patients consent not available, patient unfit for Surgery or unsure diagnosis and grade 1 Haemorrhoids. DGHAL and RAR done under local or regional anaesthesia in lithotomy under regional anaesthesia (Saddle) or General anaesthesia after nothing orally for last six hours and an enema in same morning. A short course of antibiotic for both aerobic and anaerobic may be advised. For grades II only, ligation will be required done under 2% Xylocaine jelly and 5% xylocaine ointment application and the patient can be discharged same day. In Haemorrhoids grade III and IV anaesthesia is required and patient should stay overnight and be discharged next morning.

Equipment

The instruments required viz: Doppler machine with display graph and inbuilt printer and HAL Proctoscope



Doppler Equipment and HAL Proctoscope



other instruments

Experimental Section

Digitally Guided Haemorrhoidal Arterial Ligation- Our Technique

Patient is in lithotomy position and lubricated proctoscope is inserted and location of internal haemorrhoids is noted. The pile mass is pulled down by holding it with Babcock forceps and digitally the arterial pulsation is felt at its base. Now a miniature Doppler ultrasound device, **hand held vascular Doppler probe**, is inserted after lubrication in the anal canal and rectum, and easily audible arterial sound is heard and confirmed by all team members, 2-3 cm above the dentate line. The vessel is ligated, and again vascular probe is kept at the base and absence of arterial sound confirmed by the same team. Usually we start starting at 12 O clock position first clockwise and then anti clockwise and ligate all significant arterial branches. As soon as blood vessels are tied off, the Doppler sound of artery disappears and the haemorrhoid shrinks immediately and then over the subsequent days and weeks. Usually about 4-9 branches are ligated with 2/0 Vicryl on 5/8th circle needle with taper end. Now we check with the genuine Doppler machine for any leftover arterial branch.

Prolapsing and grade 3 & 4 haemorrhoids need Recto anal repair (RAR). This is done by equipment called RAR equipment. This is inserted in the rectum and is focussed on the site of prolapsing haemorrhoid and then first suture is taken and ligated deeper to fix it to deeper tissue and then sutures are continued below stopping just above dentate line and last suture is taken after removal of the RAR scope. The suture once tightened will pull the haemorrhoid

mass up and ensure its fixation, leading to mucopexy and thus an almost a normal looking anal opening is left at the end of procedure.

Just a small pack with 2% jelly is left to be removed 3hours later. A urinary catheter is passed as the patient after saddle anaesthesia will not be allowed to sit and may have retention urine. The catheter will be removed next morning. Because the stitches are placed in the lower rectum where there are virtually no sensory nerves the procedure is relatively pain-free, and most patients are back to work after 24-48 hours with only a minimum of discomfort, which if there is any, is no more than a mild a throbbing in the rectum.

Post operatively only dietetic restrictions, laxative, short course of antibiotics and local xylocaine 2% jelly application is advised. No Sitz bath is recommended routinely.



Vascular Doppler used in our technique

DGHAL- our technique (Digitally Guided Haemorrhoidal Arterial Ligation) is done without costly DGHAL equipment. Half circle proctoscope is inserted and the piles masses are pulled out one by one after passing dry gauze piece and one by one base of the piles mass pulled out is palpated with the finger, we confirm the pulsating artery by Hand Held Doppler (Vascular Doppler probe), recording done and the arterial ligation is done by 2/0 Vicryl on 5/8th circle needle with taper end. Now the artery is again palpated and ligation is reconfirmed by Hand Held Doppler by absence of pulsation and also arterial sound. All these patients were confirmed by original DGHAL Machine. The data is recorded.

Results and Discussion

This study was conducted from Duration of study February 2017-31 January 2019

DGHAL by Doppler Machine 42 (14 Diabetic)
 DGHAL by digitally guided with vascular Doppler 42 (14 Diabetic)
 Checked by DGHAL MACHINE CORRECT: 42 CASES

No branches were left by digital palpation confirmed by Vascular Doppler. It is evident that all arterial branches were correctly ligated without any DGHAL Machine and no recurring cost by Vascular Doppler leading to drastically economic benefit to patients and the hospital. This option is spreading like wildfire amongst surgical community.

Post-operative complications

We had comparable minor complications in both of these procedure, Bleeding, urinary retention, re-prolapse and swelling of external haemorrhoids were included among complications. In a systematic review of 17 studies with a total of 1996 patients, a subset of 6 studies with a follow up of 1 year or more (850 patients treated by the procedure) reported bleeding, pain on defaecation, and

prolapse in 10% (49/507), 9% (18/206) and 11% (46/427) of patients respectively. A subset of 9 studies with a follow -up of less than 1 year (855 patients treated by the procedure) reported bleeding and prolapse in 6% (40/638) and 8% (50/638) of patients respectively. The proportion of patients with preoperative bleeding, pain and prolapse ranged from 45% to 100%, 12% to 83% and 12% to 100% respectively [8.9]. Reports show low complication rates and lower postoperative pain. Bleeding, urinary retention, re-prolapse and swelling of external haemorrhoids were included among complications. These are easily managed by conservative approach.

Recurrence

No haemorrhoid surgery can guarantee recurrence free results. Each procedure has its own average recurrences. DGHAL is associated with recurrence 6-13%. Haemorrhoids can and does come back- for 10% to 14% of people having haemorrhoid surgery, haemorrhoids will return in the first 12 months. This is partly because haemorrhoids are often a life style factor involving poor diet, little exercise, too much alcohol, too much coffee, not enough water, too much of sitting, avoiding or postponing passing stools, sedentary life style and anal sex.

Results

Pain, hospital stay, time to first bowel movement, complete functional recovery, complications and recurrence were also significantly shorter for the DGHAL our technique as well as older technique. DGHAL is most effective for second- or third-degree hemorrhoids. Notably, new DGHAL is a safe, effective and highly economic method and may offer an important alternative to operative hemorrhoidectomy and is minimal invasive, with no risk of postoperative stool incontinence, minimal postoperative pain, and early return of patients to their normal activities and lower recurrence as compared to stapler haemorrhoidopexy. Patient satisfaction is higher in DGHAL patients.

In the follow-up examination 12 months after RAR procedure, there were (25%) of minor residual hemorrhoidal prolapse, while only (5%) reported residual symptoms (painful defecation and itching).

Conclusion

A new innovative technique is described to perform Haemorrhoidal arterial ligation against existing costlier DGHAL equipment and recurring expense of single use HAL Probe BY Digitally palpated & guided haemorrhoidal arterial palpation evidenced by a very economic hand-held vascular Doppler probe. Compared to existing DGHAL equipment we found no difference and thus it is safe, economic and effective procedure. There is hardly any difference in minor complications in both, but the cost containment is fully in favor of the new approach. This could be still more a choice in Diabetic for sake of cost and safety.

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