

Squatting for the Prevention of Haemorrhoids?

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Abstract

One proposed way to prevent and cure haemorrhoids is to squat for defecation. The evidence for this approach is ambiguous. Even if further studies showed advantages for squatting, existing social habits and toilet technology would be significant barriers to taking it up. This example illustrates the emphasis of medical research on treatments rather than prevention and the impact of social factors on medical priorities.

Introduction

Haemorrhoids are an extremely common problem, especially in western countries, where surveys suggest that as much as half of the population over 40 years of age may suffer some form of mild to severe discomfort from them. The problem is not new: haemorrhoids have been reported for thousands of years. Considering the widespread pain and suffering as well as medical expense involved, it is surprising that there has been so little research into methods of preventing haemorrhoids.

This paper sets out to examine whether squatting, a 'natural' method of bowel evacuation, can assist in preventing, alleviating or curing haemorrhoids. Our aim is not to endorse or reject squatting, but to survey both medical arguments and social factors, including western toilet technology. This case illustrates how nonmedical factors may influence medical research and health policy. Influences of this sort are well known; this case offers the added interest that the issues involved—defecation, constipation, the anus—are not as freely discussed as many other health problems.

We begin by outlining standard information on haemorrhoids and on conventional methods of treatment. Then we present the arguments for squatting before turning to some of the social issues involved in the technology for defecation.

Haemorrhoids

A haemorrhoid occurs when a vein in the anus or lower rectum bulges out beyond its normal location. The swollen pouch of blood is commonly called a

haemorrhoid or pile (Leibach and Cerda: 1991; Schrock: 1978, pp 1876-1879).

The anal canal, as defined by surgeons, is about 3 cm long. Above this is the rectum. The bottom 2 cm of the anal canal is relatively dry and sensitive to touch, whereas the top 1 cm is moist and insensitive. The transition between these two areas is called the pectinate line. The anal canal is surrounded by muscles that are fed with blood by arteries and drained by a series of veins, called the haemorrhoidal veins. When veins above the pectinate line dilate abnormally, they are called internal haemorrhoids. Dilated veins from below the pectinate line are called external haemorrhoids.

Internal haemorrhoids are classified into four degrees.

- First-degree haemorrhoids do not protrude and cannot be felt with a digital examination.

- Second-degree haemorrhoids protrude but can return to the normal location by themselves.

- Third-degree haemorrhoids protrude and have to be pushed back to normal location.

- Fourth-degree haemorrhoids cannot be put back into normal location.

Many people have haemorrhoids but do not realize it since they produce no symptoms. The most common problems are bleeding and prolapse; less common are itching and pain. Haemorrhoids typically cause problems during and after defecation. The passage of faeces may cause bleeding which can be noticed in toilet water or tissue. A prolapsed haemorrhoid can be noticed as a swollen glob of flesh in the anus; in more severe cases it may protrude out of the anus. Sometimes it can be returned by hand, but after repeated prolapse this may become impossible. Sometimes a haemorrhoid undergoes rupture or thrombosis (blood clot) along with extensive prolapse. This may lead as well to spasm of the anal sphincter and intense pain.

Haemorrhoids can occur at any age but are normally thought to be more common as people become older, affecting a quarter or half of the adult population. Men and women are equally susceptible.

At a simple level, haemorrhoids develop because blood pressure in anorectal veins becomes too large for the walls to resist. Surprisingly, there is disagreement about why this occurs. The most common explanation is to blame hydrostatic pressure, namely the pressure from the blood under the force of gravity. The anorectal veins, and the veins above them in the gastrointestinal tract, do not have any valves, which means that pressure in the veins can build up and possibly push through the walls at the weakest point. This is the same problem that occurs with varicose veins in the legs, for example, and haemorrhoids are commonly called varicose veins of the anus (though this is misleading in some respects). According to this explanation, straining during defecation, brought on by constipation or holding one's breath, is a primary factor in causing haemorrhoids. Pressure in the haemorrhoidal veins can also be increased by high blood pressure, heavy lifting and pregnancy.

A second explanation is that pressure from the arteries in the anorectal region is transmitted to the veins through links between these two parts of the circulatory system. Other evidence to support this view is that the blood from haemorrhoids is bright red, characteristic of arterial bleeding. A study by Johanson and Sonnenberg (1994) found that there was no connection between constipation and haemorrhoids and instead found a link with diarrhoea. They suggest that chronic contraction of the anal sphincter to avoid diarrhoea may be the source of the problem.

A third explanation is that the primary cause of haemorrhoids is repeated irritation and inflammation of the anal mucosa, eventually weakening the veins and leading to the familiar set of problems. The assaults on the mucosa may be due to constipation, diarrhoea or other factors (Wissmer: 1963).

There could, of course, be multiple causes of haemorrhoids. The many factors possibly linked to them include (Hyams and Philpot: 1970; Smith: 1977):

- heredity (such as weak vein walls and peculiarities in anatomy)

Haemorrhoids

- pregnancy
- high blood pressure
- straining for defecation (causing haemorrhoidal blood pressure to increase)
 - holding one's breath while straining for defecation (causing haemorrhoidal blood pressure to increase)
 - inflammation and infection
 - rough dry faeces (which might cause abrasions, and require more straining)
 - diet (affecting vein wall strength, hardness of faeces and resistance to inflammation)
 - exercise

The literature appears to lack any mention of the impact of anal intercourse on the development of haemorrhoids. Lubowski (personal communication) suggests that, if anything, it would be beneficial, since it would require relaxing the anorectal musculature, the opposite of straining. Presumably the same would apply to medical procedures such as endoscopy. Again, the literature on haemorrhoids seems to contain no mention of this possibility.

The process of defecation plays a key role in the development of most haemorrhoids. Physiologically, defecation is a complex process, involving both involuntary and voluntary features (Duthie: 1975; Duthie and Bartolo: 1992; Phillips and Devroede: 1979, pp 280-281). As material enters the rectum, nerves are stimulated, but the brain can ignore the signal. The brain's normal control over defecation is usually a product of social conditioning and personal habits, including eating, exercise and a daily pattern of defecation.

There is a wide variation in human patterns of defecation. Most people have bowel movements between two or three times per day and two or three times per week. One way of defining constipation is having fewer than three bowel movements per week. The eating of large amounts of roughage leads to large, soft faeces, reducing constipation and requiring less straining for excretion.

Dealing with haemorrhoids

Methods of dealing with haemorrhoids can be divided roughly into three overlapping categories: medical treatment, amelioration and prevention/cure. Medical treatment is a last resort, usually to deal with third or

fourth degree haemorrhoids (Liebach and Cerda: 1991). The basic strategy is to destroy or remove some tissue, allowing the remaining tissue to heal over the injury. This can be achieved in many ways (Dennison, Wherry, and Morris: 1988; Smith: 1987; Thomson et al.: 1992). A common technique is rubber-band ligation: a rubber band is tightly wound around the haemorrhoid and left until the tissue dies and drops off. The same effect can be achieved by injection of chemicals (injection sclerotherapy), freezing (cryotherapy), burning (infrared photocoagulation), use of lasers and surgical removal. Surgery, called haemorrhoidectomy, is usually a last resort; techniques such as rubber-band ligation can be handled on an outpatient basis without anesthetics and hence are increasingly preferred. Whatever the method, there is some risk from complications.

Patients who come to doctors with severe pain or bleeding often expect medical intervention (Leff: 1987, p 100), while doctors who deal with advanced cases feel there is little option. The shortcoming with medical treatments, aside from cost and possible complications, is that haemorrhoids may recur if the causative factors are not dealt with.

What we call ameliorative approaches are methods of reducing the pain and discomfort of haemorrhoids, which may also allow them to heal. Daily warm sitz baths and topical anesthetic creams can ease the pain. Constipation often aggravates haemorrhoids, both through straining and the defecation of hard dry stools, so any method to soften stools can reduce pain and bleeding. High-fibre diets and drinking plenty of fluids are commonly recommended. Doctors usually recommend ameliorative approaches to patients, and in the case of first and second degree haemorrhoids this may be enough to obviate the need for medical intervention.

Most of the articles in the medical literature deal with medical treatment and, to a lesser extent, with ameliorative methods such as fibre in the diet. There is little discussion of any method for prevention or cure. The most common recommendation for prevention would be to obtain adequate fibre in the diet and to avoid straining for defecation. But this is far from a guarantee of no haemorrhoids.

Wissmer (1963) reported that oral administration of trioxethylrutin, a

variant of the nutrient rutin, was successful in curing a majority of cases of haemorrhoids. He also noted that ceasing the use of the compound led to a recurrence of haemorrhoids. Wissmer drew on a considerable body of French scientific literature. However, his dramatic claims have received little attention, at least in English-language publications. Thorp and Hughes (1970) carried out a double-blind trial and found that a placebo worked as well as the rutin-based compound trihydroxyethylrutin. This result was contested by the manager of the company selling the compound (Sykes: 1971), who criticized the limited duration of the trial and noted that half of the patients had been taking the compound before the trial. Arullani and Cappello (1994, p 562) refer to studies showing the value of nutrients to improve the tone of veins.

Some discussions in the "alternative health" literature refer to nutritional approaches to haemorrhoids. For example, Gerras et al. (1976, pp 948-951) summarize Wissmer's findings and also cite other work on the benefits of bioflavonoids which are found in certain berries, citrus fruit and buckwheat. They also mention an individual's observation that eating onions prevents bleeding after bowel movements, and suggest the use of ointment with vitamins A, D and E for the relief of pain from haemorrhoids.

Here we look in some detail at another proposed method for prevention and cure of haemorrhoids: squatting for defecation.

Squatting for defecation

In recent decades it has become commonplace for medical researchers to investigate the possible adverse health effects of changes in lifestyle associated with industrial (or post-industrial) society, compared to gatherer-hunter society. For example, it is commonly believed that eating sugary foods increases the risk of tooth decay, getting insufficient physical exercise is linked to a greater risk of heart disease, and-relevant to our topic-that getting inadequate roughage in the diet is linked to various diseases. In each case, arguably, human physiology was adapted to patterns of life common over hundreds of thousands of years which

Haemorrhoids

involved vigorous exercise and eating of unprocessed foods and hence is susceptible to a sudden change in behavior for which it is not adapted.

One of the changes brought about by western industrialization has been the posture for defecation. The traditional posture was squatting, and this remains the method used by most of the world's population. It is only in the past hundred years or so that use of the pedestal toilet has become common in Europe, North America and a few other places. By analogy with the consequences of a dramatic change in diet and exercise, it might be expected that sitting rather than squatting could be a source of health problems. According to Kira (1976, p 115) – who lists a number of illustrative sources – “Virtually every physician and physiologist who has ever troubled to write on the subject agrees that there is a natural and physiologically sound posture that encourages the defecation process,” namely squatting. Yet there has been remarkably little medical investigation into this topic.

In a normal standing or sitting posture, there is a significant angle, called the anorectal angle, between the rectum, where faeces are stored, and the anal canal. There is some disagreement about whether this angle plays any role in continence or provides any obstacle to defecation (see Duthie and Bartolo (1992, p. 90) for the case against). In a classic paper, Tagart (1966) measured the anorectal angle in various postures, finding that the angle is partially straightened out when squatting. He argued that squatting thereby reduced the pressure required for defecation and recommended a hips-flexed position for defecation to help treat constipation and prevent haemorrhoids.

This conclusion remained largely unremarked and unresearched until studied by Sikirov in the 1980s. Sikirov (1987) advised 20 patients who suffered from haemorrhoids to change their toilet habits in two ways: to wait until the urge to defecate was strong and to defecate in the squatting position. Of the 20 patients, 18 reported within a few days to a few months a significant reduction or complete absence of symptoms. The two who showed no improvement had previously had surgical treatments for haemorrhoids. Follow-up examinations,

12 and 30 months later, revealed no recurrence of haemorrhoids.

One of the arguments Sikirov (1989) uses in favor of squatting is the overall time and the number of straining episodes required for defecation. In a test performed on 30 volunteers his results show that the overall time spent on defecation in the squatting position was 1 minute as compared to 4-15 minutes in the sitting posture. The number of episodes of straining whilst squatting was 1-2 as compared with 4-7 when sitting. Sikirov cited Tagart's findings that the squatting posture permits the straightening of the anorectal angle thus allowing the outlet to open freely for the smooth evacuation of faeces, and for the minimum of pressure to be applied through straining.

To speak of squatting as a possible cure for haemorrhoids is really to say that it prevents continual aggravation and injury due to excessive straining in the sitting position. When this ongoing insult to the body is moderated or removed, natural healing processes can occur less hindered.

In a test of and challenge to Sikirov's claims, Lam et al. (1993), by making measurements of the descent of the pelvic floor, concluded that squatting compared with sitting made no difference to the amount of straining required. However, a close examination of the studies by Tagart (1966), Sikirov (1987) and Lam et al. (1993) – see appendix – shows divergences in purpose and method. Our conclusion is that the question of the efficacy of squatting as a way of preventing or curing haemorrhoids remains to be resolved.

Social Factors

Even if squatting for defecation was accepted as having health benefits, it would be no simple matter to promote this alternative. Anal functions are largely taboo topics in western societies, at least in the modern era. (For the evolution of “civilized habits” see Elias (1978).) Certainly there is little public discussion of the issue, and patients and even medical personnel may be hesitant to discuss topics such as anal incontinence. In recent decades sexual issues have been discussed more openly, but sexual practices involving the anus have remained largely taboo topics, only being discussed as a result of the AIDS epidemic. A comparison with AIDS is apt: problems such as haemorrhoids, anal incontinence and even bowel cancer

do not command enough public concern to break through the reticence about the anal area.

A second major problem with the recommendation to squat for defecation is that the pedestal toilet is well and truly entrenched in most western societies. Various alternatives have been proposed (Kira: 1976) but have received little favor. As well as the enormous and expensive infrastructure of existing toilets, people's habits are deeply ingrained. Children, for whom squatting comes naturally, are taught to sit for defecation through the use of potties and toilet inserts. To squat for defecation is to be different and most people prefer to conform.

Yet another problem is that after a lifetime of sitting for defecation, some people's leg and hip muscles are not well adapted for squatting. This is especially important for the elderly. With no need to squat, some people lose muscle tone and find it less easy to squat, and thus the pedestal toilet and difficulty in squatting reinforce each other. On the other hand, many young and middle-aged people retain good muscle tone and have no problem squatting.

Short of adoption of a squat toilet, there are a number of intermediate measures. Sikirov and Wal Bowles, an Australian advocate of squatting, have independently developed devices that fit on or around pedestal toilets, allowing squatting. However, these may not be convenient for all people; anything that fits around a pedestal toilet is too wide for young children. Another option is to squat on the edges of existing toilets, as done by many people used to squatting who immigrate to countries with pedestal toilets. However, squatting on pedestal toilets is tricky and can be dangerous.

Perhaps the simplest procedure is that recommended by Tagart (1966), namely bending over while sitting on the toilet. This achieves the required angle between the torso and legs though lacking the full effect of squatting on leg muscles. But Sikirov (personal communication) believes only full squatting has an advantage over any sitting posture. Further study is required to address this point.

Conclusions

A study of the claim that squatting for defecation can prevent or cure haemorrhoids provides a useful window into priorities for medical activity. By reading the medical literature or talking

Haemorrhoids

Appendix

The relationship between squatting for defecation and haemorrhoids is treated by Tagart (1966), Sikirov (1987) and Lam et al. (1993). These studies are all very different in what they examine and how, and they draw very different conclusions about the efficacy of squatting—see Table 1. We looked at the papers to see if the claims made for or against squatting could be justified on the basis of the arguments presented.

The purpose of Tagart's study was to determine if squatting made defecation easier. He used ten volunteers with apparently normal anal function and took x-ray photographs while they were defecating. This revealed two factors associated with the easier passage of stool while squatting: the increase of the anorectal angle—causing an 'unkinking' of the anorectal canal—and the forward and downward movement of the puborectal sling. (Duthie and Bartolo

to doctors, it is apparent that far more effort is devoted to alleviating or treating haemorrhoids after they develop than is devoted to investigation of proposals about how they might be prevented. This is consistent with the well-recognized priority in medical research on treatment compared to prevention, and on procedures requiring advanced training and sophisticated technology rather than a simple technique that anyone can do, like squatting.

Looking more closely at the studies of squatting and haemorrhoids, we argue that the issue has not been resolved in spite of an apparent refutation in the literature. As in many areas, no single study can provide a definitive finding: even the most convincing evidence and arguments can be scrutinized and deconstructed. We conclude that squatting deserves considerably more attention before it is rejected as an option.

But why has squatting for defecation received so little attention so far? One plausible explanation is that it does not

fit the medical model of high-tech intervention. Adopting squatting does not require the professional involvement of doctors, nor does it provide any advantage to other powerful interests such as the pharmaceutical industry. This might be enough to marginalize squatting, but there is the important additional dimension of toilet technology and habits. The vast infrastructure of pedestal toilets in the west, combined with ingrained habits and a reticence to discuss issues associated with the anus, all weigh against the promotion of squatting.

Yet there are some possible bases for change. Innovative designers have developed creative alternatives to the usual toilets (Kira: 1976). It is possible that visitors from countries where squatting is standard, such as Japan, may push for squat toilets, at the same time that pedestal toilets make inroads into these same countries. Finally, if the squatting option demonstrates its effectiveness, then people will push for changes.

Table 1.

Comparison of the purpose, patients, methods and results in three key studies of the relationship between haemorrhoids and squatting for defecation.

	Tagart (1966)	Sikirov (1987)	Lam et al. (1993)
Purpose	To study the angle between the rectum and anal canal to determine if defecation is easier when squatting compared to sitting	To determine the effect on haemorrhoids of the diminution of straining during defecation	To compare the descent of the pelvic floor during defecation straining in the sitting and squatting positions
Patients	10 volunteers with, so far as was known, normal anal function	20 male and female patients who had haemorrhoids	52 patients referred to an anorectal physiology unit
Methods	X-rays of the rectum containing radiopaque fluid in a flexible tube were taken with the hips in the erect, 90-degree flexed and fully flexed positions. The sitting and fully flexed positions were also x-rayed when the subject was straining.	Patients underwent a proctoscopy at the beginning of the trial. Patients were asked to defecate in the squatting position and only in response to a strong urge. The proctoscopy was repeated after 1 year.	The position of the perineum was measured with respect to the plane of the ischial tuberosities at rest and during maximal defecation straining using a perineometer. The measurements were made at a single visit with the patient in the left lateral, sitting and squatting positions.
Results	Two factors affect the change in anorectal angle: relaxation and passive stretching of the puborectal sling (which allows the perineum to descend), and flexion of the hips which pulls the anal canal forward.	18 of the 20 patients reported their symptoms were alleviated. No abnormal haemorrhoidal swellings were noted during the year of the study, nor were any relapses noted for the year and a half following it.	There was no significant difference between the measurements of perineal descent for the sitting and squatting positions.

Haemorrhoids

(1992, p. 94) ascribe the greater ease of defecation while squatting not to 'unkinking' but to a better alignment of expulsive forces.) Tagart then concluded that squatting, or leaning far forward while sitting, would be useful in the conservative and prophylactic treatment of haemorrhoids. In order to make such recommendations, he had to assume that straining is a key factor in causing haemorrhoids.

Tagart's photographs reveal what is happening over a very short period of time. Except for those haemorrhoids which develop rapidly during pregnancy (which may well be the result of hormonal changes) it is generally felt that susceptibility develops over a long period of time. It seems reasonable to conclude that squatting may make defecation easier for healthy people. But is it reasonable to conclude that squatting would prevent or alleviate a condition which takes some time to develop when the connection between straining and haemorrhoids has not been firmly established?

Unlike Tagart, Sikirov (1987) used patients who have haemorrhoids in order to demonstrate that waiting for a strong urge and then squatting to defecate will reduce or remove the symptoms suffered. Each patient was given a proctoscopic examination at the beginning of the study and again after twelve months. The paper finishes with a recommendation that people should return to squatting and defecation only in response to an urge because "excessive straining perpetuates hemorrhoidal disease." This study addresses the issue of long term conclusions being drawn from short term results, but it introduces other, more subtle problems into the design. It does not try to eliminate problems that may occur as the result of incorrect diagnosis, inaccurate reporting of results by patients or inaccurate recording of results by experimenters.

By contrast, Johanson and Sonnenberg (1994) felt it necessary to use anosopic examinations in their case-control study of haemorrhoids. They believed that "Detection bias could have been introduced if the diagnosis of hemorrhoids was based solely on proctoscopic examination, because hemorrhoids may become visible if patients strain hard enough during

proctoscopy." They concluded that "diarrhea but not constipation may represent a risk factor for the development of hemorrhoids." Still others have voiced doubts about the patient's self-diagnosis of diarrhoea (Leigh and Turnberg: 1982; Read et al.: 1979) saying that it may actually be incontinence.

Lam et al. (1993) studied 52 patients referred to the Ano-rectal Physiology Unit at St. George Hospital in Sydney. They say that incontinence results from "a stretch-induced injury to the pelvic nerves due to chronic straining at stool and difficult childbirth." Abnormal perineal descent on defecation straining is highly correlated with the amount of pudendal nerve damage. If squatting is helpful in reducing pelvic floor descent then it may be helpful in treating people with constipation or other pelvic floor problems.

Lam et al. considered that by measuring perineal descent in both the sitting and squatting positions, they could determine whether squatting would be useful to their patients. They found that there was no significant difference between the descent in the two positions and concluded that "squatting during defecation would not help in preventing or reversing pelvic nerve damage" in "those patients with obstructed defecation." However, for patients without abnormal perineal descent, no conclusions about the effect of squatting can be drawn from the evidence presented in this study.

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