

RESEARCH ARTICLES

THE RESULTS OF HIGH-FIBRE DIET WITH OR WITHOUT INJECTION SCLEROTHERAPY IN THE TREATMENT OF FIRST DEGREE INTERNAL HEMORRHOIDS

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SUMMARY :

Purpose: In this study, the short-term results of a standardized high-fibre diet with or without injection sclerotherapy (SCT) for 1° hemorrhoids are retrospectively evaluated and compared in a random, non-selected Turkish patient group. **Methods:** Thirty-seven adult patients with 1° hemorrhoids, whose follow-up periods exceeded 6 months (range 6-14 months), are reported. Group 1 (n=20) received a high-fibre diet, necessitating the daily intake of 20-25 g non-starch polysaccharides and continued during the follow-up. Group 2 (n=17) was treated by SCT, supplemented by high-fibre diet for the first 2 months. Both symptomatic and anoscopic (degree of anitis) healing criteria were evaluated. **Results:** Four weeks after the initiation of the diet, 91.9% of the patients (34/37) developed soft bulky stools and relatively regular bowel habits. During a follow-up period of 6-14 months, the success rate of high-fibre diet in the treatment of 1° internal hemorrhoids was 45% (9/20). In the high-fibre diet + SCT group, the initial response to treatment was not satisfactory in 2 patients, and 1 patient developed recurrence, resulting in a success rate of 82.4% (14/17) ($p < 0.05$). **Conclusion:** The results of this study indicate that the fixation method SCT performed on an outpatient basis is safe and effective in the treatment of 1° hemorrhoids. High-fibre diet and regular bowel habits appear to be useful adjuncts to this treatment modality although they are solely inadequate for satisfactory healing in over half of the patients.

Key Words: Hemorrhoids, Sclerosing Solutions, Dietary Fiber.

INTRODUCTION

Hemorrhoidal disease is currently believed to be due to distal displacement and structural distortion of anal cushions, which are physiologic structures with an important role in defecation and continence (1, 2). According to some Western population statistics, the prevalence may be around 37% with an equal frequency in men and women (3, 4). Anatomic studies have revealed that anchoring and supporting subepithelial tissue deteriorates

with aging, and this phenomenon ultimately produces venous distention, inflammation, erosion, bleeding, and/or thrombosis (5). Regarding the more common form of internal hemorrhoids, the most frequent symptom is the passing of bright red blood at stool. Discomfort, pruritus, soiling, pain, and/or protrusion may also be encountered, especially in advanced or complicated cases. Internal hemorrhoids are traditionally classified (graded) into four categories according to the amount of prolapse

present. Although not directly correlated to the severity of signs or symptoms, this grading system does reflect the extent of the underlying connective tissue disorder and fragmentation of the subepithelial fibroelastic stroma (6, 2). First degree (1°) internal hemorrhoids (or grade 1) project into the lumen but do not prolapse. Proctoscopic 'anitis', which correlates with enlarged lamina propria capillaries with or without inflammation, causes the occurrence of typical hemorrhoidal bleeding (7, 2). Especially young men with a tight anal canal can have severe discomfort and severe bleeding with the minimal visible abnormality of 1° internal hemorrhoids (8).

More than 80% of hemorrhoidal symptoms can usually be controlled by non-excisional techniques (9, 10). The most common interventions are fixation methods, such as sclerotherapy (SCT) or rubber band ligation (RBL), which depend upon inflammation and subsequent scarring, causing attachment to underlying muscle. The success of treatment depends on the extent of fixation that is created. Although this extent of fixation almost never reaches that of surgical hemorrhoidectomy, most of the alternative fixation methods can be carried out in an office setting without anesthesia. These modalities are also associated with fewer complications and pain, compared with hemorrhoidectomy (11, 12). On the other hand, the effect of dietary measures as a primary treatment modality or as an adjuvant setting is not well defined. 'Normalization' of colonic transit was reported in patients with hemorrhoids with bran preparations and high-fibre diet (13). In accordance, high-fibre diet was reported to reduce bleeding and pain in patients with hemorrhoids (14). Despite Burkitt's assertion that the low incidence of hemorrhoidal disease in rural societies is related to high fibre intake (15), this relationship is scientifically controversial (16, 17).

The etiopathogenesis of hemorrhoids, which has been poorly defined, might well differ among population groups, as well as the results of treatment modalities. In this study, the short-term results of a standardized high-fibre diet with or without injection sclerotherapy (SCT) for 1° hemorrhoids are retrospectively evaluated and compared in a random, non-selected Turkish patient group treated at our Proctology Unit.

PATIENTS AND METHODS

Patient selection and study design : Thirty-seven adult patients with 1° hemorrhoids, whose follow-up periods exceeded 6 months (range 6-14 months), are reported. In all patients, symptoms attributable to hemorrhoids had existed for longer than one month. Only those patients who had 1° hemorrhoids were chosen (Fig. 1). Some intermediate cases of grade 1-2 hemorrhoids were also included, while patients with significant 2° or additional 3° or 4° hemorrhoids were excluded. Other exclusion criteria were concurrent fistula or chronic anal fissure, inflammatory bowel disease, diabetes or other metabolic/endocrine disorders, alcoholism, drug abuse, abnormal sexual habits, previous anorectal surgery, or previous treatment of the hemorrhoidal disease with any method other than diet modification and/or topical agents. After 1° hemorrhoids were diagnosed by anoscopy, the patient was placed on a standard high-fibre diet (details below). Complete blood count, blood sugar, liver and renal functions were tested, and rectosigmoidoscopy was eventually added to the work-up of all patients.

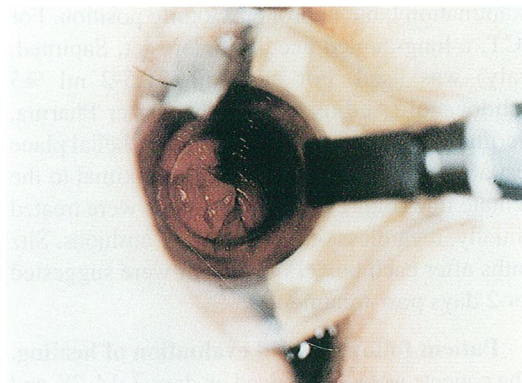


Fig. 1 : 1° hemorrhoid with typical signs of inflammation – edema and hyperemia (mild-severe anitis).

One week after this initial orientation interview, patient compliance was reassured, and one of the following treatments was conducted (day 0):

Group 1 (n=20) ... high-fibre diet

Group 2 (n=17) ... high-fibre diet + SCT

High-fibre diet. A diet form, prepared by the diet unit, was explained and given to all patients. This diet necessitated daily intake of two dishes of cooked vegetable food, two dishes of green salad, three unpeeled fruits such as apple, 6-8 slices of wholegrain bread, and two spoonfuls of unprocessed bran admixed with yogurt or milk. Thus, the intake of non-starch polysaccharides (NSP) was aimed to exceed 20-25 g/day (18, 19). Frequent alcohol intake and the regular heavy consumption of spices were also prohibited. Strict obedience was not pursued after the second month in the SCT group, but the patients were informed about the importance of fibre in healthy nutrition and encouraged to consume fruit, vegetables, and wholegrain bread. The diet group continued to use unprocessed bran during the follow-up period.

Furthermore, encouragement was given to correct other general causes of constipation and unhealthy defecation habits, such as ignoring the need to pass stools, irregular meals, poor toilet facilities, spending a long time in the lavatory, straining, and lack of exercise. To aid their memory, we gave our patients a printed list of instructions about the high-fibre diet and defecation habits.

Injection sclerotherapy (SCT). Following a cleansing enema (BT enema, Yenişehir Lab. Ankara), the patient was placed on the proctologic examination table in prone jackknife position. For SCT, a long-angled needle (Sclero-jet, Sapimed, Italy) was used. For each pile, 1.5-2 ml %3 polidocanol (Aethoxysclerol, Kreussler Pharma, Germany) was injected into the subepithelial plane just above the center of the veins, proximal to the dentate line (Fig. 2). All hemorrhoids were treated initially, regardless of the number of cushions. Sitz baths after each bowel movement were suggested for 2 days post-treatment.

Patient follow-up and evaluation of healing. The patients were reexamined on days 7, 14, 28, and then on a 2-monthly basis. The symptoms were noted on follow-up visits as *i*) no relief or worsening (bad), *ii*) partial relief of symptoms – minor complaints (better), or *iii*) significant relief or lack of any symptoms. Patients with more than one symptom were asked to evaluate them globally. In addition to the symptoms, the degree of proctitis-anitis on and around the hemorrhoids were evaluated by the same blinded investigators as: *i*) an actively or easily bleeding hemorrhoid with



Fig. 2 : Injection sclerotherapy applied to the patient in Fig. 1. 1.5-2 ml %3 polidocanol was injected into the subepithelial plane just above the center of the veins, proximal to the dentate line.

overt signs of inflammation and edema (severe anitis); *ii*) a rather inactive grade I hemorrhoid without overt inflammatory findings (mild anitis); or *iii*) no signs of hemorrhoid or a pink, healthy mucosa without any signs of inflammation (complete healing). For patients with more than one hemorrhoidal pack, the worst lesion determined the outcome.

In this respect, the observation of complete healing plus declaration of significant relief or lack of any symptoms by the patient were considered as

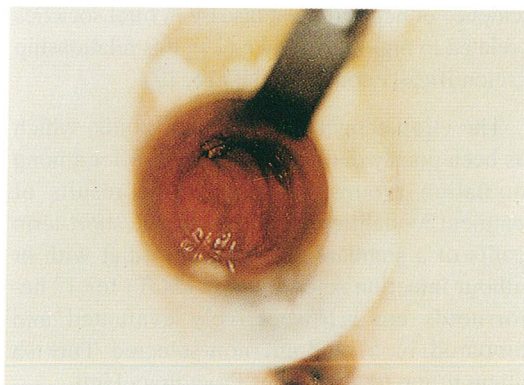


Fig. 3 : Anoscopic view of the same patient two months after treatment (SCT + diet) with perfect fixation and no signs of inflammation.

successful treatment (Fig. 3) while all other combinations were regarded as failed cases (early failure or recurrence).

The lack of complete symptomatic and objective healing response on the 28th day after SCT or after the beginning of the diet (day 0) was regarded as early failure and longer follow-up was not planned. Failure four weeks after the treatments and recurrences, as well as inability to gain regular bowel habits with the diet, necessitated further diagnostic work-up and treatment (data not discussed). Repeated interventions of SCT were not intended.

RESULTS

The presenting symptoms of the patients are documented in table 1. The predominating symptom was rectal bleeding provoked by defecation in 35 patients (94.6%). Twenty patients (20/37, 54.1%) described irregular bowel habits and/or the frequent passage of hard stool. All the

Table 1 : The presenting symptoms of the 37 patients with 10 hemorrhoids

Presenting symptom	no. of patients (%)
rectal bleeding	35 (94.6 %)
anal discomfort	11 (29.7 %)
tenesmus	8 (21.6 %)
anal pruritus	5 (13.5 %)
anal pain	4 (10.8 %)

patients included had mild or severe anitis.

Four weeks after the initiation of the diet, 91.9% of the patients (34/37) developed soft bulky stools and relatively regular bowel habits. The healing response to the high-fibre diet and other conservative measures was quite variable. Out of the 20 patients included in this group, 6 patients did not respond initially (4 symptomatic; 2 had only mild anitis in spite of symptomatic relief) and 5 developed recurrences (4 symptomatic) 2-7 months after the initiation of the diet. Therefore, during a follow-up period of 6-14 months, the success rate of high-fibre diet in the treatment of 10 internal hemorrhoids was 45% (9/20). Seven of the failed cases were eventually included in the SCT group.

In the high-fibre diet + SCT group, the initial response to treatment was not satisfactory in 2 patients, and 1 patient developed recurrence, resulting in a success rate of 82.4% (14/17). Of the total of 2 initially failed cases, 1 patient had significant relief of his symptoms, although failure was determined according to objective healing criteria (severe inflammation). No notable complications developed. No patient complained of pain, and the only occasional side effect was a mild transient bleeding following the injection(s). The difference in success rate between the two groups was significant ($p < 0.05$ -Yates corrected chi-square). The age and sex distribution of the groups, as well as the number of hemorrhoids

Table 2 : The patient characteristics and treatment results.

	high-fibre diet	diet + SCT
total no. of patients treated	20	17
age	23-71 (median 38)	23-54 (median 35)
female/male	8/12	7/10
patients with 1 significant		
hemorrhoidal cushion*	5	3
patients with 2 hemorrhoidal cushions	8	8
“ “ 3 or more “ “	7	6
success rate **	45.0 %	82.4 %

SCT: injection sclerotherapy

* also defines the number of injections performed in the SCT group

** follow-up period of 6-14 months

$p < 0.05$ (the success rate is significantly different between the two modalities)

treated and results, are shown in table 2.

DISCUSSION

The short-term results of this study indicate that injection sclerotherapy supplemented by high-fibre diet is satisfactorily effective in the outpatient treatment of 1° internal hemorrhoids. During a follow-up period of 6-14 months, more than 80% of the patients were disease-free, confirmed by anoscopic control. An important feature of this study is that the treatment outcome was not based on symptoms only, but also on objective healing criteria. If only symptomatic criteria were taken into account, the success rates of both treatment modalities would be higher. Also for initial clarity of the subject and discussion, repeated interventions of SCT were not included, and the results of a single injection of each hemorrhoid were reported. Therefore, we cannot deny that repeated interventions in initially non-responding or recurrent cases would result in higher success rates. Although further recurrences may occur in a longer term, good symptomatic relief and healing were provided by this method without considerable complications. The patient group included in this study does not necessarily represent the Turkish population or those who live in or around Ankara. They were probably above the average socioeconomic level because only those who could cooperate with the diet and follow-up visits were included. Still, we believe that the results obtained provide a well-documented example for this country, and these are, at least to some extent, applicable to other random population groups in Turkey.

The rationale of mucosal fixation by SCT in hemorrhoidal disease is an attempt to abolish or diminish the laxity of the mucosa and subepithelial layer of the lower rectum and anal canal. Especially in patients with hemorrhoids, the subepithelial layer with the vascular cushions is loosely adherent to the underlying circular muscle coat and may easily be prolapsed into the lower anal canal (8). The mucosa and submucosal vascular cushions can be fixed to the underlying muscular coat by creating submucosal fibrosis or full-thickness ulceration, by way of fixation methods such as SCT or RBL. This kind of therapy should be targeted at fixing the hemorrhoidal convolutes above the dentate line by injecting the sclerosing agent into the base between the hemorrhoids and the adjacent muscular layer, and not into the center to achieve reduction in size

(20). This approach does not lead to destruction of the hemorrhoids with possible impairment of their physiologic function, but it results in the desired fixation. In conclusion, sclerotherapy of hemorrhoids should not be aimed at shrinking, but fixing them. This principle applies to all fixation methods. Where injury to the internal anal sphincters is not possible, reduction in anal pressures and incontinence of the sphincters would not be expected in the SCT technique (11, 21). In addition to being performed on an outpatient basis, fixation methods such as SCT are also associated with fewer complications and pain, compared with hemorrhoidectomy (11, 12). The results of SCT in the literature are rather scarce and controversial. Khoury and coworkers reported a success rate of 89.9% in patients with 1° or 2° hemorrhoids, which was maintained for 12 months after injection (22). In another prospective randomised study of injection sclerotherapy, the early cure rates for bleeding hemorrhoids were 84% (23). On the contrary, another study demonstrated no significant symptomatic difference between patients treated by SCT or bulk laxatives alone (24). Using the above-mentioned technique supplemented by high-fibre diet and with a careful follow-up, our results were encouraging.

The reader should recall that other mucosal fixation methods, such as infrared photocoagulation, are also available for the treatment of 1° hemorrhoids, but beyond the scope of this study. Regarding SCT, other sclerosing agents, such as phenol or quinine-urea are also widely used (8). RBL, on the other hand, is not perfectly applicable to 1° hemorrhoids, mainly because the degree of subepithelial laxity is, by definition, insufficient to be sucked and trapped into the rubber ring (unlike 2° or 3° hemorrhoids) (1).

The effect of diet and bowel habits in the pathogenesis and treatment of hemorrhoids is a matter of considerable debate. In 1978, Webster and coworkers found no significant difference in the incidence of hemorrhoidal symptoms in the patients on ispaghula husk and those on placebo (25). Keighley et al. also suggested that mucosal fixation methods are significantly more effective than dietary measures and should be the first choice of treatment (26). In their review of the etiology of hemorrhoids, Loder and coworkers emphasized that hemorrhoids are not generally associated with

constipation, and they may actually be the cause of constipation, instead of the result (2). Nevertheless, straining at stool may be important, and prolonged sitting with a relaxed perineum and unsupported anal cushions may be a potential cause of hemorrhoids (27, 17, 2). 'Normalization' of colonic transit was reported in patients with hemorrhoids with bran preparations and high-fibre diet (13). In accordance, high-fibre diet was reported to reduce bleeding and pain in patients with hemorrhoids (14). In order to avoid confounding factors due to incomparable diets and bowel habits, the daily intake of NSP was standardized in our patient groups, and the bowel habits were monitored during the follow-up. Furthermore, encouragement was given to correct other general causes of constipation, such as ignoring the need to pass stools, irregular meals, poor toilet facilities, and lack of exercise. The diet was constituted such that it was cheap, easy to follow, and rich in NSP. NSPs are the major component of dietary fibre which reaches the colon and demonstrates the physiologic effects of fibre, namely decreased transit time, increased water retention, and the resultant formation of wet, bulky stools (18, 19). The amount of NSP provided with the diet used in this study quite high and theoretically sufficient to increase colonic movement and stool weight, although these definitive parameters were not investigated (18, 19, 28). In accordance, 91.9% of the patients (34/37) developed soft bulky stools and relatively regular bowel habits soon after the initiation of the diet, while this was the case in 45.9% before diet. According to our results, although the success rate of high-fiber diet + relative normalisation of bowel habits, by itself, appears to be unsatisfactory (45%), it is worthwhile to note that about half of the patients in our series were cured and more (12/20) became asymptomatic without any invasive interventions. Taking into account the ease and safety of SCT (and other fixation methods), we still do not think that it is practical to insist solely on dietary measures. However, high-fibre diet and the related bowel discipline, at the very least, do appear to possess a role in the treatment of 10 hemorrhoids, and they should be used as important adjuncts to successful treatment with mucosal fixation. We lack a group of patients treated by only SCT and without dietary recommendations, mainly because the majority of our patients have unhealthy diet or bowel habits, and we find it inappropriate and

unethical in a proctology unit not to teach them, just to create control groups.

Our short-term results suggest that the mucosal fixation method of SCT may be effective in the treatment of 1° hemorrhoids in our general population groups, as well. It is easy to perform as an outpatient procedure and free from notable complications. Still, good patient evaluation and follow-up are needed. High-fibre diet and regular bowel habits appear to be useful adjuncts to this treatment modality although they are solely inadequate alone for satisfactory healing in more than half of the patients with 1° hemorrhoids.

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REFERENCES

1. Corman ML. Hemorrhoids. In. Corman ML (ed): Colon and Rectal Surgery. 2nd ed. Philadelphia: J B Lippincot; 1989. p. 49-105.
2. Loder PB, Karoto MA, Nicholls RJ, Philips RKS. Haemorrhoids; pathology; pathophysiology and aetiology. Br J Surg 1994; 81 : 946-954.
3. Gazet JC, Redding W, Rickett JWS. The prevalence of haemorrhoids. Pro R Soc Med 1970; 63 : 78-80.
4. Haas PA, Haas GP, Smaltz S, Fox TA. Prevalence of haemorrhoids. Dis Colon Rectum 1983; 26: 435-439.
5. Haas PA, Fox TA, Haas GP. The pathogenesis of hemorrhoids. Dis Colon Rectum 1984; 27 : 442-450.

6. Smith LE. Hemorrhoids: A review of current techniques and management. *Gastroenterol Clin North Am* 1987; 16:79-91.
7. Thomson WHF. The nature of haemorrhoids. *Br J Surg* 1975; 62 : 542-552.
8. Williams NS. Haemorrhoidal disease. In: Keighley MRB and Williams NS (eds): *Surgery of the Anus, Rectum and Colon*. Philadelphia: W B Saunders; 1993. p. 295-363.
9. Polglase AL. Haemorrhoids: a clinical update. *MJA* 1997; 167: 85-88.
10. Eisenstat T, Selvati EP, Rubin RJ. The outpatient management of acute hemorrhoidal disease. *Dis Colon Rectum* 1979; 22: 315-317.
11. MacRae HM, McLeod RS. Comparison of hemorrhoidal treatments: a meta-analysis. *Can J Surg* 1997; 40:14-17.
12. Stahl TJ. Office management of common anorectal problems. *Postgraduate Med* 1992; 92: 141-154.
13. Andersson H, Ryba W, Stener I, Stenquist B. Colonic transit after fibre supplementation in patients with haemorrhoids. *Hum Nutr Appl Nutr* 1985; 39 : 101-107.
14. Moesgaard F, Nielsen ML, Hansen JB, Knudsen JT. High-fiber diet reduces bleeding and pain in patients with hemorrhoids: a double-blind trial of Vi-Siblin. *Dis Colon Rectum* 1982; 25 : 454-456.
15. Burkitt DP. Varicose veins, deep vein thrombosis, and haemorrhoids: epidemiology and suggested etiology. *BMJ* 1972; ii:556-561.
16. Johanson JF, Sonnenberg A. Temporal changes in the occurrence of haemorrhoids in the United States and England. *Dis Colon Rectum* 1991; 34: 585-591.
17. Read NW, Sun WM. Haemorrhoids, constipation, and hypertensive anal cushions. *Lancet* 1989; i:610.
18. Englyst HN, Cummings JH. Non-starch polysaccharides (dietary fibre) and resistant starch. *Adv Exp Med Biol* 1990; 270 : 205-225.
19. Englyst HN, Quigley ME, Hudson GJ. Definition and measurement of dietary fibre. *Eur J Clin Nutr* 1995; 49 (Suppl 3):S48-S62.
20. Bruhl W. Diagnosis and therapy of hemorrhoids. New knowledge in sclerotherapy. *Fortschr Med* 1993; 111:39-42.
21. Bayer I, Myslovaty B, Picovsky BM. Rubber band ligation of hemorrhoids. Convenient and economic treatment. *J Clin Gastroenterol* 1996; 23 : 50-52.
22. Khoury GA, Lake SP, Lewis MCA, Lewis AAM. A randomised trial to compare single with multiple phenol injection treatment for haemorrhoids. *Br J Surg* 1985; 72 : 741-742.
23. Varma JS, Chung SC, Li AK. Prospective randomised comparison of current coagulation and injection sclerotherapy for the outpatient treatment of haemorrhoids. *Int J Colorectal Dis* 1991; 6 : 42-45.
24. Senapati A, Nicholls RJ. A randomised trial to compare the results of injection sclerotherapy with a bulk laxative alone in the treatment of bleeding haemorrhoids. *Int J Colorectal Dis* 1988; 3:124-126.
25. Webster DJT, Gough DCS, Craven JL. The use of bulky evacuant in patients with haemorrhoids. *Br J Surg* 1978; 65 : 291-293.
26. Keighley MR, Buchmann P, Minervini S, Arabi Y, Alexander-Williams J. Prospective trials of minor surgical procedures and high-fibre diet for haemorrhoids. *Br Med J* 1979; 2: 967-969.
27. Graham-Stewart CW. What causes hemorrhoids? A new theory of etiology. *Dis Colon Rectum* 1963; 6 : 333-344.
28. Cummings JH. Constipation, dietary fibre and the control of large bowel function. *Postgrad Med J* 1984; 60 : 811-819.