Mayo Clinic patients. The symptomatic outcome was similar in both methods and both were similarly effective in both first and second degree haemorrhoids.

The commonest symptom in our patients was bleeding; however, pain was not uncommon. This, in keeping with other studies, contradicts traditional teaching that pain is rarely a feature of uncomplicated haemorrhoids. There was significantly more discomfort during and after rubber band ligation than infrared coagulation, despite the fact that all ligations were performed by a group of surgeons experienced in the technique. No bands had to be removed because of inappropriately low placement. We believe that the discomfort associated with correctly applied rubber bands has been underestimated: pain was the major deterrent to further treatment by this method in our study. We now find that patients adequately warned of the possibility of pain and given access to effective analgesia are less apprehensive and more compliant to subsequent treatment. Infrared coagulation has proved a much more acceptable method to our patients. The significantly shorter time lost from work after this treatment is also likely to influence patient compliance, apart from its undoubted economic importance. The speed with which infrared coagulation can be undertaken and the fact that a nurse does not need to be available to hold the proctoscope is an additional attraction.

Although our longest period of follow up is one year, we are reassured by a recent study[12] suggesting that if symptomatic improvement is evident at this interval it is likely to be maintained in the longer term.

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Prospective randomised comparison of photocoagulation and rubber band ligation in treatment of haemorrhoids

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Abstract

Two hundred and sixty eight patients with haemorrhoids were allocated at random to treatment by either photocoagulation (group 1, n=141) or rubber band ligation (group 2, n=127) and followed up for one year. There was no significant difference in the symptomatic outcome of treatment between the two groups at one, four, or 12 months, irrespective of whether first or second degree haemorrhoids were treated. Side effects of treatment (bleeding or severe pain) were significantly more common after rubber band ligation (n=11) than after photocoagulation (n=2; p<0·01). Further outpatient treatment, however, was required significantly more often after photocoagulation (n=23) than rubber band ligation (n=6) (p>0·02), and 19 patients (14 in group 1 and five in group 2; NS) subsequently had a haemorrhoidectomy. At one year 26 of 103 patients were dissatisfied after photocoagulation compared with 20 of 88 after rubber band ligation.

Photocoagulation is a safe and comfortable treatment which gives long term results that are as good as those of rubber band ligation. Complications are more common after rubber band ligation, but further treatment is required more commonly after photocoagulation.

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Introduction

There are many methods of treating haemorrhoids in the outpatient clinic. In a busy rectal clinic an important requirement is a method that is quick, easy to administer, non-invasive, takes up minimal nursing time, and is effective in the control of symptoms. Injection and rubber band treatment usually require an assistant; furthermore, rubber band ligation has been associated with rectal discomfort in at least one tenth of patients.[1] Infrared coagulation is a new procedure that produces an area of submucosal fibrosis.[2] When it is applied above the haemorrhoidal tissue it results in a reaction similar to that observed after injection or rubber band ligation. The small ulcer caused by band ligation and photocoagulation causes mucosal fixation and reduces the tendency to further prolapse.

We compared the outcome of photocoagulation with that of rubber band ligation in patients followed up for one year.

Patients and methods

A total of 268 consecutive patients seen in our rectal clinic with a diagnosis of haemorrhoids were entered into a trial to compare photocoagulation with rubber band ligation. Randomisation was determined by the hospital registration number (even = rubber band ligation; odd = photocoagulation). Thus 141 patients were assigned to treatment by photocoagulation (group 1) and 115 to treatment by rubber band ligation (group 2). Table I gives clinical details of the patients and of their classification into first, second, and third degree haemorrhoids.

Rubber band ligation was performed through a proctoscope with the patient in the left lateral position. Rubber bands were placed above the two principal haemorrhoidal sites as previously described.[1] It was always necessary to have an assistant to control the proctoscope during the application of rubber bands, as the surgeon has to use one hand to pull the mucosa and one to use the ligator. Apparatuses using suction for the singlehanded application of rubber bands are available—for example, Profligator—but we find them cumbersome.

Photocoagulation was also performed through a proctoscope with the patient in the left lateral position. An infrared photocoagulator (Infrarot Koagulator, MBB-AT Munich) with a variable timing device was used. The timing control was set between 1 and 1·5 seconds. Usually four areas above each of the three haemorrhoids were coagulated but the number depended on the size of the haemorrhoid. It was not necessary to have an assistant when using the photocoagulator as the proctoscope could be held in one hand and the probe applied with the other.

All patients were counselled regarding anal hygiene and advised to take a high roughage diet.

A clinical and proctological review was carried out one, four, and 12 months after treatment. Patients who did not attend for review were given a second appointment; if they still failed to attend they were sent a questionnaire. The clinical results were classified as: excellent if the patient was entirely asymptomatic and required no further treatment, better if the patient had no symptoms at review but had required a second session, same if the patient remained symptomatic and required further treatment, and worse if symptoms persisted or if haemorrhoidectomy had been necessary.

TABLE I—*Clinical details of patients treated for haemorrhoids by photocoagulation (group 1) or by rubber band ligation (group 2)*

	No			Mean age (years)	No (%) having previous treatment	Diagnoses (No (%) of cases)		
	M	F	Total			First degree	Second	Third
Group 1	74	67	141	44 (16–83)	49 (35)	36 (26)	104 (74)	1
Group 2	75	52	127	48 (22–75)	55 (53)	24 (19)	91 (72)	12 (9)

Results

The patients with first and second degree haemorrhoids were well matched for age, sex, and previous treatment (table I) and the numbers with first and second degree piles were similar. Only 13 patients had third degree haemorrhoids, and because of the uneven distribution of patients in this group (one in group 1, 12 in group 2) they were excluded from further analysis.

Table II shows the major presenting symptoms in patients with first and second degree haemorrhoids. Symptoms were similar in the two treatment groups. Bleeding was the most common symptom, affecting 116 of the 140 patients in group 1 and 91 of the 115 in group 2. A total of 151 patients had prolapse at presentation: all had second degree haemorrhoids (87 of group 1 and 64 of group 2).

Three patients were also excluded during the study when other diagnoses were recognised (rectal endometriosis (group 1); proctitis (group 2) and descending perineum syndrome (group 2)). During the 12 month follow up, 29 patients underwent some further form of outpatient treatment for haemorrhoids (23 in group 1 and six in group 2; $p < 0.02$). In addition, 19 patients (14 in group 1 and five in group 2; NS) required a haemorrhoidectomy.

Table III shows the numbers of patients available for assessment at one, four, and 12 months. At 12 months a total of 58 patients had been lost to follow up. At one month there was no difference between the groups in the numbers achieving an "excellent" result, irrespective of whether the patient had first degree haemorrhoids (17 of 34 in group 1, 11 of 20 in group 2) or second degree haemorrhoids (47 of 96 in group 1, 38 of 84 in group 2). At four months, patients with first degree haemorrhoids appeared to fare better if treated by photocoagulation (excellent: 10 of 25 in group 1, four of 16 in group 2) but more patients with second degree haemorrhoids were classified as excellent after rubber band ligation (37 of 79 *v* 37 of 90 in group 1). At 12 months, however, there was no significant difference in the symptomatic response to treatment between the two treatment groups.

Photocoagulation was associated with significantly fewer side effects ($p < 0.01$) than rubber band ligation, though the number of patients developing side effects was small. Six patients (all group 2) had to consult their general practitioner because of severe pain, and seven (five in group 2, two in group 1) had an episode of secondary haemorrhage within 14 days of treatment: one patient required hospital admission.

TABLE II—*Major presenting symptoms of patients with first and second degree haemorrhoids*

	Discomfort	Bleeding	Discharge	Irritation	Prolapse
Group 1:					
First degree (n = 36)	9	27	2	8	0
Second degree (n = 104)	42	89	8	32	87
Total (n = 140)	51	116	10	40	87
Group 2:					
First degree (n = 24)	7	17	1	4	0
Second degree (n = 91)	36	74	7	26	64
Total (n = 115)	43	91	8	30	64

TABLE III—*Results of treatment in patients with first and second degree haemorrhoids at one, four, and 12 months*

	One month		Four months		12 months	
	Group 1 (n = 140)	Group 2 (n = 115)	Group 1 (n = 125)	Group 2 (n = 103)	Group 1 (n = 103)	Group 2 (n = 88)
First degree:						
Excellent	17	11	10	4	8	6
Better	10	7	9	8	7	6
Same or worse	7	2	6	4	7	5
Total	34	20	25	16	22	17
Second degree:						
Excellent	47	38	37	37	26	27
Better	35	35	39	29	23	20
Same or worse	14	11	14	13	19	15
Total	96	84	90	79	68	62
Failed to attend follow up	9	10	10	8	13	8
Excluded	1	1				1
Total	10	11	10	8	13	9
Patients not followed up further:						
Underwent further outpatient treatment*	3		6	5	13	1
Underwent haemorrhoidectomy	2	1	6	2	6	2
Total	5	1	12	7	19	3

*Group 1 = 23, group 2 = 6; $p < 0.02$.

Discussion

We have compared the outcome of treatment with photocoagulation with that of treatment with rubber band ligation in patients followed up for one year. We did not feel it was ethical to use a control (untreated) group even though we acknowledge that the symptoms from haemorrhoids fluctuate and a proportion of untreated individuals are likely to be asymptomatic at a year.

We felt obliged to provide outpatient treatment for all our patients as most had been given some form of treatment from their general practitioner before referral to our rectal clinic. There was no significant difference in the symptomatic response to treatment between the groups, and at 12 months the larger second degree piles did not seem to do any better when treated by rubber band ligation than by photocoagulation. The total number of patients developing side effects was small, but was more significant in those receiving rubber band ligation.

Photocoagulation is undoubtedly a useful form of treatment for first and second degree piles. Side effects are few and usually all three haemorrhoidal swellings may be treated at the first attendance. One further advantage is that a nurse or assistant is not needed during treatment.

Usually only two sites may be treated with ease by band ligation, though others have advocated placing three bands at the first outpatient attendance.[3] Despite this, repeated treatment was needed significantly less frequently after band ligation than photocoagulation. Since the long term results of photocoagulation do not differ from rubber band ligation we believe that photocoagulation can be used as primary non-invasive treatment for all new patients with first or second degree haemorrhoids reserving rubber band ligation for patients who have recurrent symptoms after their initial treatment.

We believe that advice concerning a high fibre diet, prevention of straining,[4] and perianal hygiene are important factors in reducing recurrent symptoms. These aspects of treatment were mentioned to all our patients.

Agents for photocoagulator in the United Kingdom are: Chilworth Medicals Ltd, 31 Dorking Road, Chilworth, Guildford, Surrey.

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Correlation of persistently high serum amyloid A protein and C-reactive protein concentrations with rapid progression of secondary amyloidosis

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Abstract

The importance of serum amyloid A protein in the progression of renal failure was studied over three years in 28 patients with secondary (amyloid A type) amyloidosis predominantly due to rheumatoid arthritis. Creatinine clearance, the amount of protein in the urine, and serum amyloid A and C-reactive protein concentrations were determined regularly. Linear regression analysis showed a close correlation between the change in creatinine clearance each year and both serum amyloid A concentrations (20 patients: $r = -0.83$, $p < 0.001$) and C-reactive protein concentrations (28 patients: $r = -0.80$, $p < 0.001$). The correlation between serum amyloid A and C-reactive protein concentrations was also significant (317 parallel measurements: $r = 0.81$, $p < 0.001$).

These findings suggest that monitoring serum amyloid A or C-reactive protein concentrations is valuable in assessing the prognosis in secondary amyloidosis and that therapeutic measures that lower serum amyloid A concentrations may reduce the formation of amyloid.

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Introduction

The amyloid substance in secondary amyloidosis (amyloid A protein) is believed to be formed from serum amyloid A protein, an acute phase protein.[1-3] High serum amyloid A concentrations have been reported in conditions associated with secondary amyloidosis[4-6] and are considered to be a prerequisite for the formation of amyloid.[7] On the basis of this hypothesis it may be assumed that the availability of serum amyloid A protein, the probable substrate, influences the rate of formation of amyloid A protein; some evidence of this has been reported.[8] We studied the role of serum amyloid A concentrations in secondary amyloidosis by undertaking a three year prospective study of 28 patients with this disease; this is the first long term study to have been carried out.

Patients and methods

We studied 28 patients (20 women, eight men; mean age 52·5 years) with secondary renal amyloidosis proved by biopsy. The underlying disease was rheumatoid arthritis in 24 patients, juvenile chronic polyarthritis in two, ankylosing spondylitis in one, and bronchiectasis in one. At the start of the study the mean time since diagnosis of amyloidosis was 1·6 years.

Twenty-two patients had some degree of renal failure (creatinine clearance under 100 ml/min); the mean creatinine clearance in all the patients was 60·5 ml/min at the beginning and 30·1 ml/min at the end of the study. The mean duration of follow up was 21·6 months (range 12-37 months) and the mean interval between check ups 1·7 months. Renal function was tested, proteinuria measured, and serum acute phase protein concentrations determined on each occasion. A complete series of serum amyloid A concentrations was obtained in 20 cases and of C-reactive protein concentrations in all 28 cases (determination of serum amyloid A concentration was not available during the first