

Refractory condylomata acuminata: a controlled clinical trial of carbon dioxide laser versus conventional surgical treatment

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SUMMARY Uncontrolled trials indicate that treatment of condylomata acuminata with the carbon dioxide laser is effective and probably superior to conventional surgical treatment. We performed a controlled study of refractory condylomata acuminata to clarify whether this is the case.

In this randomised trial 21 patients were treated with the carbon dioxide laser and 22 by conventional surgery after having been treated with podophyllin for an average of 33 and 35 weeks respectively. Five and seven patients respectively had previously required additional treatment, such as an operation.

The treatment schedule was equally effective for both groups of patients. No difference between the two groups was seen in numbers of recurrences, postoperative pain, healing time, and rate of scar formation ($p > 0.1-0.2$). Treatment of recalcitrant condylomata acuminata with the carbon dioxide laser did not offer any advantages over traditional surgery, including electrocautery.

Introduction

Condyloma acuminatum can be an extraordinarily troublesome and difficult condition to treat. The prevalence of warts is increasing, and in the United States they are now the fourth most common reason for women to seek treatment at venereal diseases clinics.¹

Condylomata acuminata are usually treated by topical applications of podophyllin. Culp and Kaplin found that this treatment cured all patients with condylomata.² Later reports have shown a lower cure rate of 21-64%,³ which accords with current clinical experience. Many alternative methods of treatment, including local application of colchicine, acetic acid, and 5-fluoro-uracil cream have been used to obtain a higher cure rate. Surgical extirpation, electrocautery, and cryotherapy have been used to treat recurrent condylomata. Since 1977 several uncontrolled studies on the use of carbon dioxide lasers in treating condylomata acuminata have been published with encouraging results.⁴⁻¹¹

Carbon dioxide laser surgery has been praised for higher efficiency, faster healing, less scar formation, and less postoperative inconvenience and pain. A controlled clinical trial on this subject has not yet been published. The aim of this randomised study was to compare carbon dioxide laser treatment of recalcitrant condylomata, which are resistant to treatment with podophyllin, with conventional surgical treatment including electrocautery. The variables evaluated were frequency of recurrence, healing time, scar formation, and postoperative pain.

Patients and methods

The patients studied had all been treated for recalcitrant condylomata acuminata from April 1981 to April 1982. Included in the investigation were patients who had been treated six or more times with podophyllin over a period of at least six weeks without total cure. Other sexually transmitted infections were treated before patients were included in the study. Pregnant women, patients with contraindications to general anaesthesia, or those who had condylomata of the Buschke-Löwenstein type were excluded.

After giving informed consent the patients were

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allocated to treatment either with carbon dioxide laser or by conventional operations. Before the start of treatment and two weeks, one month, and six months after treatment gynaecological examination and anoscopy were undertaken. If condylomata were seen at the first follow up, the initial treatment was repeated. We recommended the use of condoms after treatment; if the patient's sexual partner had condylomata these were also treated.

Pain scores were registered on a visual analogue scale on days 1, 7, and 14 after treatment. This method seems to be the most sensitive for measuring pain.¹² Healing time was reported by the patients, and scar formation was registered visually.

The biological effects of the carbon dioxide laser are well described.¹³ A Sharplan 733 carbon dioxide laser equipped with a Zeiss-colposcope was used. We used continuous wave with an effect of 5-20 W and a laser beam with a spot diameter of 0.7 mm. The patients who underwent conventional surgery were treated by excision or electrocautery, or a combination of these methods.

Results

Of the 50 consecutive patients who participated in the study, 43 were followed up for six months. Twenty one (12 men, nine women, median age 27) were treated with carbon dioxide laser, and 22 (16 men, six women, with median age 25) were treated by conventional surgery. There was no appreciable difference between the groups regarding the location and number of condylomata at the start of treatment.

Before admission to hospital the patients had been treated once weekly with podophyllin with a median treatment time of 33 (range 8-115) weeks in those treated by laser and 35 (range 7-100) weeks in those treated by conventional surgery. Five treated by laser

and seven treated by conventional surgery had earlier received other treatments such as an operation or 5-fluoro-uracil cream, or both. Seven of the patients treated by laser and nine of those treated by conventional surgery were treated twice.

The table shows cure rates, which were 43% after laser treatment and 36% after conventional surgery ($p > 0.2$). The median time of recurrence in those treated by laser was 11.5 (range 6-33) weeks, and in those treated by conventional surgery it was 11 (range 6-45) weeks. Using Fisher's exact test no significant difference ($p > 0.20$) could be shown. The real effect of the laser treatment was calculated to be between -22% and 36% at the 95% significance level. Warts recurred in the area originally treated in all patients except one. There was no difference between the patients with and without recurrences when they were compared in relation to the duration of earlier treatment.

At the final follow up, scar formation was seen in 28% of those treated by laser as opposed to 9% of those treated by conventional surgery; the difference was not significant ($p > 0.2$, Fisher's exact test). The postoperative pain scores were given at the end of the study by dividing the pain scale into 20, with 1 corresponding to no pain at all and 20 to the worst conceivable pain.¹² On days 1, 7, and 14 after treatment the median scores were 2, 1, and 1 in those treated by laser, and 4, 1, and 1 in those treated by conventional surgery. The median healing times were 2½ (range 1-5) weeks in those treated by laser and 2¼ (range 1-3) weeks in those treated by conventional surgery. These differences were not significant ($p > 0.1$, Mann-Whitney rank sum test).

Discussion

Condylomata acuminata are sexually transmitted, the incubation period being 1-8 months.¹⁴ The incidence of condylomata acuminata is increasing; during 1971-8 in England an increase from 29.8/100 000 to 50.3/100 000 people was registered.¹⁴ Condylomata acuminata are caused by human papillomavirus, which is potentially oncogenic.¹⁴ There seems to be increasing certainty that laryngeal papillomata in children may be caused by the same virus, as most children with laryngeal papillomatosis are born to mothers with genital condylomata acuminata.¹⁴ Roy *et al* found that the most common subclinical infection of the genitalia of women was with human papillomavirus.¹⁵ Condyloma acuminatum is therefore a condition that ought to be treated aggressively.

None of the traditional treatments has shown a clear advantage. Hage and Larsen obtained a 21-64% cure rate with podophyllin.³ It has not been possible

TABLE Effect of carbon dioxide laser or surgical treatment on acuminata condylomata according to anatomical distribution of the lesions

Location of lesions	No cured/No treated (% cured) by:	
	Laser	Operation
Women		
Urethra	0/0	0/0
Vulva	7/9 (78)	3/3 (100)
Vagina and cervix	2/2 (100)	2/2 (100)
Skin of perineum	3/6 (50)	4/6 (67)
Anus and perianal area	5/6 (83)	3/5 (60)
Men		
Urethra	1/1 (100)	1/1 (100)
Glans penis	6/6 (100)	5/8 (63)
Shaft of penis	1/6 (17)	6/8 (75)
Anus and perianal area	3/5 (60)	5/9 (56)
Total (n = 43)	9/21 (43)	8/22 (36)

to find reports on the recurrence rate after conventional surgical treatment.

Since laser treatment was introduced in medicine in the late 1960s it has become increasingly widely available and is now used in many specialties. The laser beam seals all blood vessels with a diameter of less than 0.5 mm and all nerve endings. Laser treatment should therefore give less bleeding and pain than conventional surgery. The carbon dioxide laser permits superficial treatment, which results in less scar formation.⁶ Several non-controlled trials have shown excellent results in treating condylomata acuminata with carbon dioxide lasers, with cure rates of 52-100% during an observation time varying from two to 34 months.⁴⁻¹¹ The high efficacy might be explained partly by the fact that laser evaporation eliminates virus particles.⁷

In the trial reported here, in which the patients were randomised to treatment with either carbon dioxide laser or conventional surgery, we were not able to show similar high cure rates (table). The patients in this study were characterised by recalcitrant and, in several cases, widespread condylomata that had been treated with podophyllin without total cure for an average of eight months. We found no difference between the two groups regarding numbers of recurrences, postoperative scar formation, healing time, or postoperative pain, and we could not show any relation between the duration of earlier treatment, the numbers or locations of condylomata, and their tendency to recur.

Thus in our limited number of patients the carbon dioxide laser treatment did not show any advantage

over conventional surgery (including electrocautery) in treating condylomata acuminata.

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