Digital mucous cysts are common solitary pseudocysts that often occur on the dorsum of the digit between the distal interphalangeal joint and the proximal nail fold. The lesions are sometimes painful and they present as circumscribed, semi-translucent and compressible, flesh-coloured nodules, which produce a clear viscous fluid. Some tumours are connected with the joint space and the cysts arise supposedly from the capsule of an arthritic joint (1, 2). The histopathology of mucous cysts is similar to that of ganglions or synovial cysts. As the wall of the cyst has no cellular lining, it is described as a pseudocyst (3).

The treatment of choice has been simple excision or radical excision followed by skin grafting (1, 2, 4). However, as a consequence of surgical excision, scar formation and irreversible deformation of the nail can occur. Furthermore, recurrences after surgical treatment are common (5). Local injection of either hyaluronidase or diluted glucocorticoid suspension, repeated incisions and drainage, multiple punctures, electrocoagulation, use of phenol as a chemocauter and freezing with carbon dioxide or radiation therapy have been described as treatment alternatives (6, 7).

We report here on six patients diagnosed with a digital mucous cyst, who were treated by carbon dioxide laser vaporization.

**Table I. Clinical data of the patients with mucous cysts**

| Patient number | Sex/Age (years) | Location and size of the cyst | Duration of disease | Associated nail deformity | Previous therapy and outcome | Outcome and follow-up after CO2 laser |
|----------------|----------------|-------------------------------|--------------------|--------------------------|------------------------------|--------------------------------------|
| 1              | F/61           | D I, left hand, 7 mm          | 3 months           | None                     | No previous therapy          | CR up to 2 years after CO2 laser     |
| 2              | M/63           | D III, right hand, 7 mm       | 7 months           | Grooving of the nail     | Several incisions, followed by prompt recurrence | CR up to 1 year after CO2 laser     |
| 3              | F/73           | D II, right hand, 6 mm        | 2 weeks            | None                     | No previous therapy          | CR up to 4 years after CO2 laser     |
| 4              | F/57           | D IV, left hand, 5 mm         | 2 years            | Grooving of the nail     | Two excisions, followed by prompt recurrence and infection | CR up to 1 year after CO2 laser     |
| 5              | F/67           | D II, left hand, 7 mm         | 1 year             | None                     | No previous therapy          | Recurrence 11 months after CO2 laser |
| 6              | F/58           | D IV, right hand, 8 mm        | 1 year             | None                     | Electrodesiccation, intralesional corticosteroids, followed by prompt recurrence | Recurrence 3 weeks after CO2 laser   |
was cleansed with hydrogen peroxide (H$_2$O$_2$) to assess the residual cystic space. Vaporization was continued until no evidence of residual cyst was found. Except for local anaesthesia, patients reported no pain or discomfort during or after laser treatment. The clinical data are shown in Table I.

**RESULTS**

The results are shown in Table I. Four patients experienced complete remission of the lesions within a follow-up period of between 1 and 4 years. No complications or side-effects of the therapy occurred. Scarring at the site of laser vaporization was only minimal. In two patients with a preoperative grooving of the nail, the nail deformity resolved after successful laser treatment of the cyst. In patient number 4, a second mucous cyst appeared on the other hand 11 months after laser therapy, which was also treated by CO$_2$ laser vaporization. In patients 5 and 6, the lesions recurred 3 weeks and 11 months after CO$_2$ laser therapy. These patients were referred to a hand surgeon for radical excision of the cyst.

**DISCUSSION**

After warts, mucous cysts are the most common ungual tumours. The cysts occur predominantly in patients aged between 40 and 70 years, approximately 70% of the patients being women (6). The lesions are often associated with cosmetic disfigurement, fingernail deformities, discomfort or pain (1). No treatment modality for mucous cysts, with the possible exception of arthrodesis, can ensure that the lesion will not recur (6). In case of simple excision the recurrence rate is 25% or higher (3, 6, 8), and 36% of the lesions reappear after aspiration or decapping with instillation of local corticosteroids (6). The potential risks of surgical treatment are persistent swelling and pain, decreased range of motion, infection and persistent nail deformity acquired postoperatively (5).

One report in the literature describes the successful treatment of mucous cysts by CO$_2$ laser vaporization, suggesting that this treatment modality is an effective and practical tool in the management of digital mucoid cysts (9). In our series of six patients, recurrence of the mucous cyst was observed in two patients. Since all mucous cysts were located above the germinal matrix of the nail, careful laser therapy was necessary in order to avoid permanent nail deformities. More aggressive laser therapy would probably have avoided recurrence of the lesion, but enhanced the risk of side-effects.

Treatment of mucous cysts with a CO$_2$ laser is a technique which is easy and fast to perform, and the risk of infection is low. In contrast, surgery has to be performed by a skilled hand surgeon, and asepsis and blood-stasis are necessary. The cystic lesion can be precisely vaporized by the laser, while preserving the surrounding normal tissue and nail matrix. However, as reported for most other techniques applied for mucous cysts, recurrence of the lesion can occur after treatment. Nevertheless, a radical excision followed by skin grafting could be restricted to cases where CO$_2$ laser vaporization has failed.

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**Fig. 1.** (A) Preoperative view, showing a mucous cyst of the distal interphalangeal joint with resultant longitudinal groove in the nail plate of a 63-year-old man. (B) Intraoperative view after vaporization of the cyst with the carbon dioxide laser under local anaesthesia and (C) postoperative appearance 4 months after therapy.