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DUPUYTREN'S DISEASE OCCURRING AFTER A SURGICAL INJURY TO THE HAND

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We report three clinical cases in which Dupuytren's disease was triggered by surgical trauma. All patients developed the contracture between 3 weeks and 3 months after operation for unrelated pathology of the hand. They had significant swelling of the hand postoperatively, preventing full mobilization. They did not have a strong diathesis for the disease. Since the appearance of the contracture, they have not developed the disease in the contralateral hand or anywhere else in the body. In one case, a similar operation on the contralateral hand has not provoked onset of the disease.

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It has been reported that a specific single episode of injury to the hand can be followed by the appearance or aggravation of Dupuytren's contracture (Clarkson, 1961; Hueston, 1962). This association is considered to be distinct from any possible relationship between Dupuytren's contracture, occupation or manual labour, which is still a subject of controversy (Mikkelsen, 1978; Early, 1962).

Despite the fact that a number of cases of Dupuytren's disease have been reported after a single injury or its complications (Plewes, 1956; Clarkson, 1961; Hueston, 1962; Stewart et al, 1985), there are no reports on onset of this condition after surgical trauma, such as operations on the hand for unrelated pathology.

We present three cases in which the precipitating factor was surgical trauma.

CASE REPORTS

Case 1

A fit 58-year-old right-handed store supervisor was referred to our Unit for Dupuytren's contracture of his dominant hand.

On examination, he showed metacarpophalangeal joint flexion contractures of 45° and 30° in the ring and middle fingers respectively caused by pretendinous cords and nodules. There was also involvement of the palmar aponeurosis of the first web (Fig 1).

Five years earlier he had undergone release for stenosing tenovaginitis of his right middle and ring fingers. At that time, no clinical signs of Dupuytren's contracture had been noted by the physician and the patient had not complained of any lumps or callosity affecting his hands. The operation had been uncomplicated, and the patient had returned home the same day with a light bandage. Over the next few days, the operated hand had become moderately swollen and the patient had noticed an increasing stiffness of the finger joints and some difficulty in mobilizing the fingers. Three weeks after surgery, despite physiotherapy, the local oedema was still significant, preventing normal mobilization of the fingers.

Four weeks postoperatively, the patient noticed a nodule in the palm, distal to the distal palmar crease and the surgical scar, in the axis of the ring finger ray. A pretendinous cord developed at both extremities of this nodule, proximally in the palm and distally along the finger flexor surface. The same process subsequently involved the middle finger. We investigated a number of factors in order to assess a possible high diathesis for

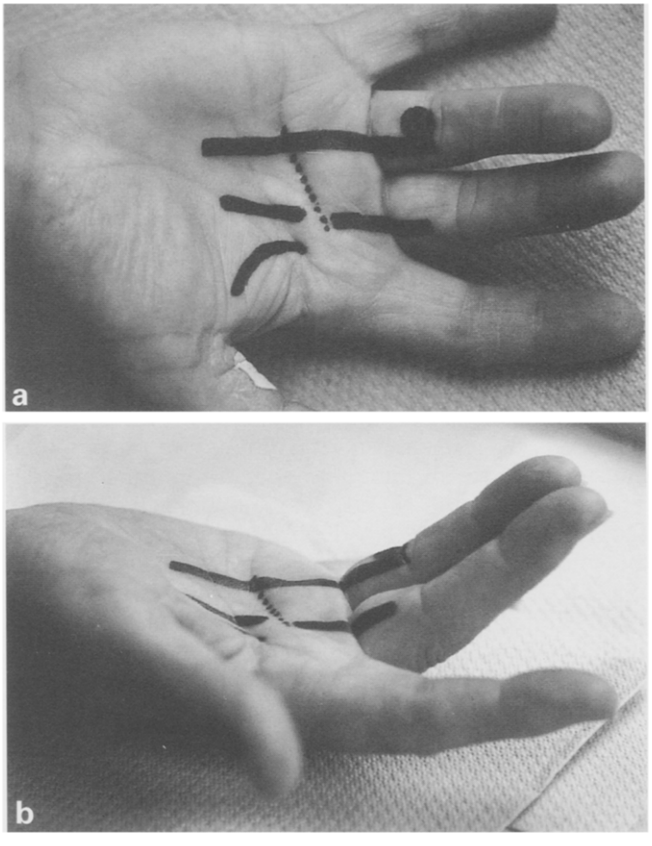

Fig 1 Case 1. Dupuytren's contracture involving the first web, the middle finger (30° flexion contracture at the MCPJ) and the ring finger (45° flexion contracture at the MCPJ and a nodule over the PIPJ) after trigger finger release of the middle and ring fingers (dotted line). (a) Palmar view. (b) Lateral view.

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Dupuytren's disease. No associated epilepsy or diabetes were noted, and the patient denied any intake of alcohol. Deposits of similar tissue elsewhere, i.e. "knuckle pads", Ledderhose or Peyronie's disease, were not noted. The family history was negative with the possible exception of one of his brothers, who had developed a mild, non-progressive contracture at the age of 55 years, not requiring surgical treatment. The patient was a fourth generation Northern Italian. He was offered surgical treatment but he decided to delay the operation.

One year after his initial presentation to us, the patient returned with severe blocking stenosing tenovaginitis of his left middle finger, which was released. No swelling or stiffness of the hand or fingers complicated the postoperative recovery period, and the patient regained full use of his hand within 2 weeks. At 12 months follow-up there was no evidence of Dupuytren's disease appearance in this hand. The contralateral hand showed further progression of the flexion contracture.

Case 2

A 48-year-old registered nurse was referred to our Unit for management of Dupuytren's disease of her right hand 12 months after ipsilateral open carpal tunnel decompression.

She reported that a few hours after the carpal tunnel release operation her hand had become very painful and had swollen considerably. Over the next few days, the pain subsided but local oedema prevented her from progressive mobilization of the hand and fingers. Within 4 weeks, the swelling and weakness of her hand were severe enough to interfere greatly with her daily activities. As she started to regain hand function and strength, approximately 3 months post-operatively, she noted a lump on the palm of the hand, which was not present before the operation. Over a period of 2 months, other nodules appeared in the palm of the hand. Examination revealed a Dupuytren's nodule in the first web and pretendinous cords and nodules along the third, fourth and fifth rays, with minimal finger contracture (Fig 2). The contralateral hand was completely free of Dupuytren's disease. No deposits of tissue were noted anywhere else in the body. The patient was not diabetic, nor had an history of epilepsy. Her grandfather had been affected by bilateral Dupuytren's disease. She was born in Australia from a family of Scottish origin.

Her condition was not considered severe enough to justify surgical treatment, and she has been advised to undergo regular consultations to monitor the progression of the disease.

Case 3

A 45-year-old cook was referred to our Unit for Dupuytren's contracture of her dominant right hand.

On examination, she showed a metacarpophalangeal joint flexion contracture of 30° in the ring and little fingers, due to two separate pretendinous cords.

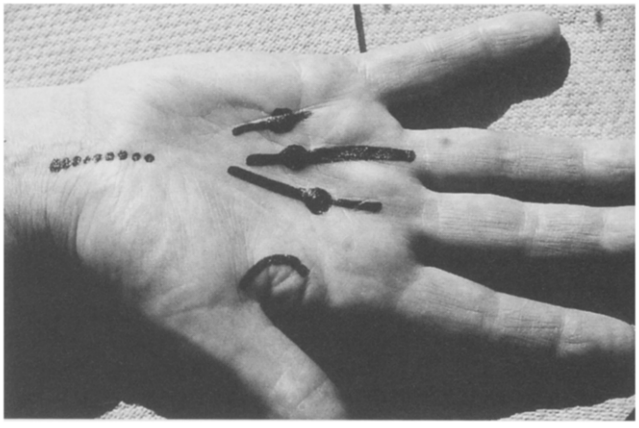

Fig 2 Case 2. Pretendinous cords and nodules along the third, fourth and fifth rays, with minimal finger contracture. An additional cord is present in the first web space. The dotted line marks the carpal tunnel release incision.

Twelve months earlier her general practitioner had removed a tiny piece of glass from the palm of her hand, just proximal to the distal palmar crease, along the fifth metacarpal ray. According to the patient, the foreign body had been excised with great difficulty, through a 2 cm long incision. The postoperative period had been particularly painful and the patient had noticed a persisting swelling and stiffness of the fingers. As she started to regain hand function, 4 weeks postoperatively, she noticed the appearance of cords along the fourth and fifth rays, with an increasing tendency for flexion contracture of the metacarpophalangeal joints.

The patient showed very mild diathesis for Dupuytren's disease. In particular, deposits of similar tissue were not noted elsewhere, and the family history was negative. She was advised to monitor the progression of the disease, and to seek surgical treatment if the flexion contracture increased. Twelve months later she underwent a formal fasciectomy of the fourth and fifth ray, with multiple Z-plasties, in another hospital. She was free from recurrence 2 years postoperatively.

DISCUSSION

The first report linking a specific injury of the hand to the development of fibrous contraction is Dupuytren's original description of the disease that bears his name in 1831. Two of his three patients developed this condition after a clear history of a single injury to the palm of their hands. One gave a history of injury while assisting his staff lift a heavy wine cask. Initial pain was then followed by progressive flexion of the ulnar two digits. The other had a piece of wood embedded in his palm 2 years before development of the disease (Hueston, 1987). Other authors have since reported that a single episode of injury, either closed, as in

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Dupuytren's first patient, or open, as in his third patient, has been followed within weeks or months by the appearance or aggravation of Dupuytren's contracture (Plewes, 1956; Clarkson, 1961; Hueston, 1962; Hueston, 1968; Stewart et al, 1985).

As surgery constitutes a severe local injury, it might initiate new activity of hyperplastic tissue or aggravate pre-existing disease in the postoperative weeks or months. It may then be suggested that in predisposed people surgery could prompt the appearance of the disease de novo or facilitate recurrence within a short period. This seems especially true in patients who experience a period of clinical vasomotor disturbance postoperatively, with swelling and stiffness of the fingers for a month or more (Hueston, 1968).

Our three patients developed Dupuytren's contracture between 3 weeks and 3 months postoperatively. In all cases, a relevant feature of the postoperative period was significant swelling of the hand, preventing full mobilization. This is in accordance with other reports, showing increase in Dupuytren's contracture in chronically swollen hands from many causes (Plewes, 1956; Hueston and Seyfer, 1991).

As Dupuytren's disease is inherited as an autosomal dominant with a degree of activity that depends on the penetrance of the inherited trait, some individuals will develop Dupuytren's contracture according to some predisposing bodily conditions (diathesis). These conditions have been clearly identified as racial origin (Brouet, 1986), family history (Ling, 1983), age of onset (Hueston and Seyfer, 1991), associated diabetes, epilepsy or alcoholism (Lund, 1941) and evidence of deposits of similar tissue elsewhere (Hueston, 1985).

The three cases presented here did not have a strong diathesis for the disease. This suggests that in the absence of a precipitating factor, in this case an operation, the contracture may not have occurred for many more years, if at all. The unilaterality of the condition, the rapid onset of the contracture and the absence of deposits elsewhere in the body supports this hypothesis.

Interestingly, our first patient subsequently had the same type of surgery (trigger finger release) on the contralateral hand but did not develop any contracture. He had no postoperative swelling, and mobilized his hand quite quickly. So it can be suggested that in individuals with mild diathesis, a surgical injury in itself would not be sufficient to precipitate Dupuytren's disease without additional factors, such as swelling, stiffness, or prolonged inactivity.

McFarlane and Shum (1990) stated that to qualify for consideration of an association between a single injury and the onset of Dupuytren's disease, the individual should be younger than the usual age of onset (less than 40 years old), be free of epilepsy or diabetes, have unilateral disease and no ectopic deposits. Our three patients fit these guidelines except for their ages. Nevertheless, we believe that age is not a critical factor, as an injury could trigger a pathological response even late in life, especially in predisposed patients. This is particularly true of hard-working manual labourers who cease using their hands to maximum capacity either temporarily, or permanently at the time of retirement (Hueston, 1960; 1962).

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