

CARPAL GANGLION WITH ULNAR NERVE COMPRESSION

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Seddon (1952) reviewed the literature on local causes of paralysis of the hand muscles with particular reference to the ulnar nerve. He demonstrated that the deep branch of the nerve may be compressed by a carpal ganglion in those patients in whom the hypothenar muscles are not paralysed.

This paper is concerned with twelve cases of carpal ganglion causing ulnar nerve compression. In six there were changes in sensibility in addition to the motor paralysis, and in three of these there was wasting or weakness of the hypothenar muscles as well. In two of the remainder wasting or weakness of the hypothenar muscles without change in sensibility was observed. Unlike Seddon's cases, therefore, the compression must have been applied to the nerve higher up, either before its division or at the point of division, and the operation findings confirmed that this was so in all but one patient. In only two of the cases with sensory disturbance is it clear from the records that this affected only the palmar surface of the fingers, thus placing the site of compression distal to the origin of the dorsal branch.

The twelve cases are summarised in Table I. Four are from my own practice and for the other eight I am indebted to Mr H. J. Seddon and Mr R. G. Pulvertaft. Case 4 is described in detail and the operation findings provide an explanation for the changes in sensibility.

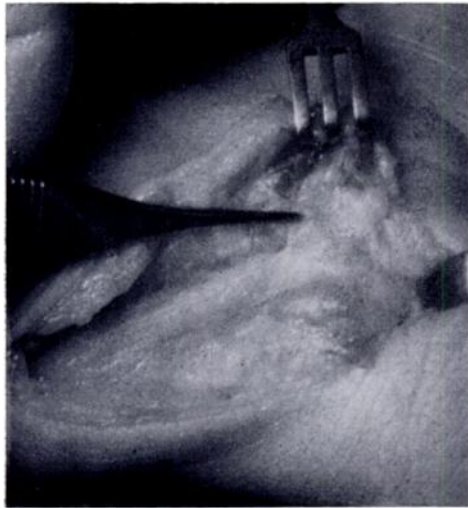


FIG. 1
Case 4—A large ganglion which has compressed the nerve before its division.

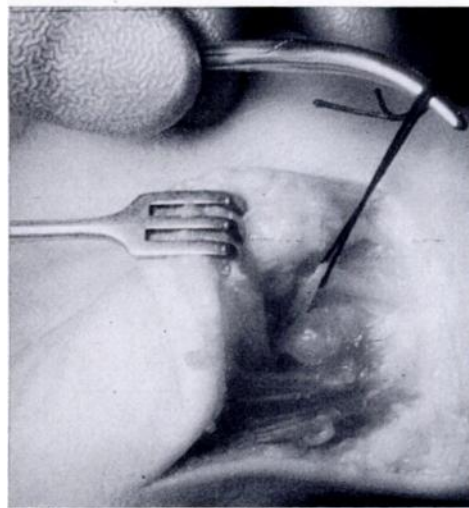


FIG. 2
Case 3—A small ganglion projecting distally. The motor branch has been retracted by a loop of silk.

CASE REPORT

Case 4—A woman of forty-two complained of clumsiness of the left hand, in consequence of which she was always dropping things. Her ring finger felt numb and the wrist ached. The duration of the symptoms was only four weeks, but she sought advice early probably because her mother had died from motor neurone disease. On examination there was wasting of the interossei but no paralysis of any of the other intrinsic muscles. Froment's sign was positive and pin prick was felt less sharply along the palmar surface of the ulnar side of the ring finger than elsewhere in the ulnar nerve distribution. Pressure over the ulnar nerve at the hook of the hamate caused tingling. The long flexor muscles were unaffected; there was no evidence of a cervical rib, and the nervous system was otherwise normal.

TABLE I
CLINICAL DETAILS OF THE TWELVE PATIENTS

Case number	Sex	Age (years)	Length of history	Symptoms	Signs	Operative findings	Recovery
1	F	70	7 months	Clumsiness of hand. Pain in hypothenar eminence radiating up forearm	Clawing and blunting to pin-prick ring and little fingers. Interossei wasted.	Ganglion found pressing forwards on point of division of nerve	Improved in two months. Full recovery in twelve months
2	F	47	2 months	Weakness of hand which ached at night	Interossei wasted. No sensory disturbance. Tender over pisiform bone	Pea-sized ganglion found and removed	Clawing gone in two months. Full recovery in five months
3	F	30	10 weeks	Weakness of hand. Pain playing piano and when at work	Interossei wasted. No sensory changes. Tender over hamate	Ganglion 1 × 0.5 cm. compressed the motor branch only	Full recovery in ten months
4	F	42	4 weeks	Clumsiness of hand. Wrist ached. Ring finger numb with paraesthesia	Weakness and wasting of interossei. Sensory changes palmar surface of ring finger. Pressure over hamate caused tingling	Ganglion 1.5 × 1 centimetres removed. It compressed the whole nerve at its point of division	Much improved in three months. Intrinsic weakness still detectable. Skin sensibility normal
5	F	46	3 months	Paraesthesia in ring and little fingers. Hand clumsy. Noticed wasting	Clawing of ring and little fingers. Intrinsic wasted. Diminished sensibility, half ring and little fingers	Ganglion found compressing ulnar nerve before its division	Full recovery in nine months
6	F	57	A few weeks	Pain in hypothenar eminence. Noticed a lump. Grip weak	Lump felt. Weakness of interossei. Froment's sign positive	Ganglion arising from hamate-lunate joint pressing forward on nerve and its branches	Full recovery in eleven months
7	F	59	4 weeks	Weakness of grip and paraesthesia	Clawing of ring and little fingers. Intrinsic muscles weak. Slight wasting. Froment's sign positive. Diminished sensibility in ulnar distribution	Pea-sized ganglion found protruding forwards from carpus and pressing on the deep surface of the nerve before its division	Full recovery in five months

Operation findings—A ganglion, 1.5 × 1 centimetres in size was found beneath the point of division of the ulnar nerve into its deep motor branch and its superficial, mainly sensory branch, displacing it forwards. This explained the changes in cutaneous sensibility (Fig. 1). It was obvious that the motor branch, as it passed around the ganglion to enter the hypothenar muscles, bore the brunt of the compression. The ganglion appeared to arise from the joint between the hamate and triquetrum.

DISCUSSION

Ten women and two men were affected. Two patients gave a history of injury. Only one (Case 3), a weaver who had to grip a shuttle for many hours a day, had repeated pressure applied to the palm. The findings at operation in this case are shown in Figure 2.

With the possible exception of Cases 8 and 12, the formation of the ganglion did not result from sudden trauma. Except in Cases 2, 3 and 12 the ganglions were in the same position, in that they compressed the division of the ulnar nerve or the nerve just proximal to this point by enlarging forwards. If the ganglion enlarges distally (Fig. 2) it can compress only the deep branch of the nerve. Such was the position of the ganglion in Cases 2 and 3, in neither of

TABLE I—*continued*
CLINICAL DETAILS OF THE TWELVE PATIENTS

Case number	Sex	Age (years)	Length of history	Symptoms	Signs	Operative findings	Recovery
8	M	30	8 weeks	Fell on to hand. Pain in hypothenar eminence. Noticed clawing of ring and little fingers.	Wasting of interossei and of hypothenar muscles. Change in sensibility in ulnar supplied area	Superficial sensory branch and motor branches stretched over ganglion arising distal to pisiform bone. Haemorrhage in ganglion	Much improved in three months
9	M	38	11 months	Loss of sensibility noticed first. Later weakness; later pain in whole forearm	Paralysis of hypothenar muscles. Wasting of intrinsic with clawing of ring and little fingers. Loss of light touch anterior surface of little finger. Loss of pin prick half ring and little fingers	Large ganglion arising from triquetro-lunate joint which compressed the whole nerve as it passed the pisiform bone	Slight permanent weakness of hand ten years later
10	F	48	8 months	Weakness of hand. Transitory pain. Difficulty in playing piano	Wasting and paralysis all ulnar intrinsic muscles, but not hypothenar muscles. Fullness lateral and distal to pisiform bone	Large ganglion found protruding from the joint distal to the triquetrum and stretching the two divisions of the ulnar nerve	Good recovery in three months
11	F	32	5 months	Weakness in hand. Pain in hand three months earlier	Complete paralysis of hypothenar and interosseous muscles. Tender over pisiform bone	Large ganglion pressing forward on the division of the ulnar nerve	Full recovery in eight months
12	F	61	5 months	Had fallen on to hand one month before she noticed weakness of grip and wasting	Hypothenar paresis and hypothenar wasting. Other ulnar intrinsic muscles paralysed	Small ganglion found compressing the deep branch	Full recovery in seven months

which was there any alteration in cutaneous sensibility or change in the hypothenar muscles. In the patients with a change in sensibility, with or without hypothenar muscle involvement, it was found at operation that the ganglion had grown in a palmar direction thus compressing the nerve or the nerve and its branches.

The most likely explanation of the difference in direction of the growth of the ganglion is that the forward growing ganglions arise in the triquetro-hamate joint (or other intercarpal joints lying in a similar plane), whereas the distal growing ganglions arise in the triquetro-pisiform joint and enlarge in the plane of this joint.

I am grateful to Mr R. G. Pulvertaft and Mr H. J. Seddon for their kindness in providing details of their cases.

REFERENCE

SEDDON, H. J. (1952): Carpal Ganglion as a Cause of Paralysis of the Deep Branch of the Ulnar Nerve. *Journal of Bone and Joint Surgery*, **34-B**, 386.