CARPAL BOSS: A COMMONLY OVERLOOKED DEFORMITY OF THE CARPUS *

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About five years ago, there came under the author's observation a patient presenting an unusual deformity of the wrist. The history follows:

CASE 1. The patient, a single woman, thirty years of age, was a trained nurse by occupation. Several months previous to examination, she had noticed on the posterior aspect of her right wrist a small, hard growth, apparently of bone, which had gradually been increasing in size. So far as she knew, there had been no antecedent injury. She complained of only two symptoms: The hand tired rather more easily than normally, and there was an occasional sensation as though an extensor tendon had caught over the tumor, and immediately slipped off with a definite jerk.

The general physical examination was negative. Upon inspection of the wrist, there was to be seen, upon the posterior aspect, a definite rounded tumor. This tumor, situated at the base of the third metacarpal bone, was firm in consistency, was painless upon pressure, and was apparently firmly attached to the underlying bone. The skin was freely movable above it. The tumor was approximately one centimeter in diameter, and was much more apparent with the hand in extreme palmar flexion (Fig. 1-A).

A lateral roentgenogram showed that the tumor was a definite outgrowth of bone posteriorly from the distal articular surface of the os capitatum of the wrist, and a similar outgrowth from the proximal articular surface of the third metacarpal; in other words, there seemed to be a fully developed posterior "lipping" of the articular surfaces of both bones, with complete preservation of the articulation itself (Fig. 1-B).

At that time the author was unfamiliar with the condition as a clinical entity, and he considered it an unusual osteo-arthritic manifestation, similar to the spur formation which is not infrequently seen at the metatarsophalangeal joint of the great toe. In view of the fact that the interference with tendon function was annoying, the patient desired treatment, and removal of the bone spurs was suggested. At operation, the condi-

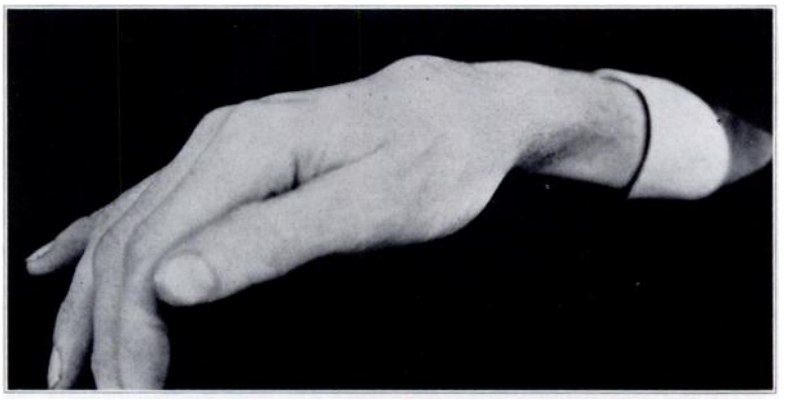

FIG. 1-A

External appearance of deformity with wrist in palmar flexion.

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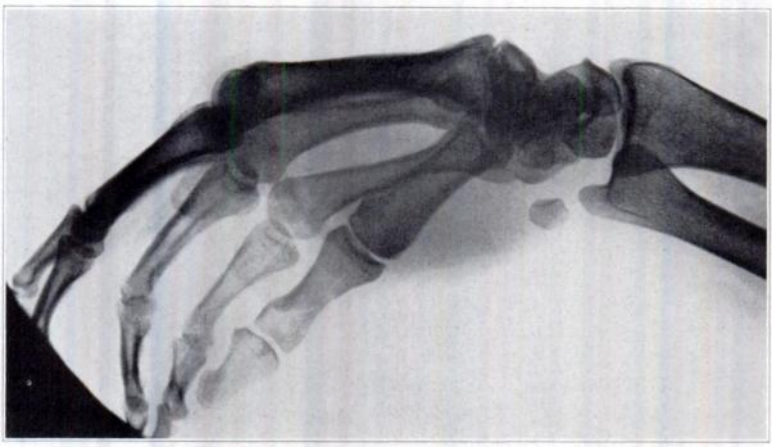

FIG. 1-B

Roentgenogram showing bone bosses at articulation of the third metacarpal and the capitate bone of the wrist.

tion was found to be as was shown in the roentgenograms. The spurs were removed, and the symptoms disappeared. Within a few months, the tumor had reappeared, and the roentgenogram revealed that the preoperative condition had recurred. However, there has been no recurrence of symptoms, and the tumor, having again attained its original dimensions, has since shown no tendency to increase in size.

A few months later, a second patient was seen, with a condition similar in every respect to the first one, so far as physical and roentgenographic examinations disclosed.

CASE 2. A male laborer, thirty-five years of age, had a tumor which had gradually developed, following a moderate blow on the posterior aspect of the wrist, two or three months previous to consultation. Symptoms were almost entirely absent, although the patient stated that after a hard day at work, the wrist occasionally ached, and that the wrist and hand seemed to tire more readily than formerly. In view of the experience with the first case, surgical removal of the bone tumor was advised against, because a recurrence appeared to be a likely possibility. The patient, however, was insistent that removal be tried. This was done, but within a comparatively short time, complete recurrence had taken place. This was a compensation case, and it was closed by the payment of a nominal sum for possible permanent disability.

Since then, four additional patients have come under observation. Of these four, one was a stenographer, one was a laborer, and two were housewives.

The stenographer complained of the usual mild symptoms of occasional aching and easy fatigability of the wrist.

In the case of the laborer, the finding was an incidental one in the course of a general physical examination. So far as he knew, the tumor of the wrist had been present for several years, and had given him no trouble of any kind; therefore he had not sought treatment.

One of the housewives presented herself because of a large bursa

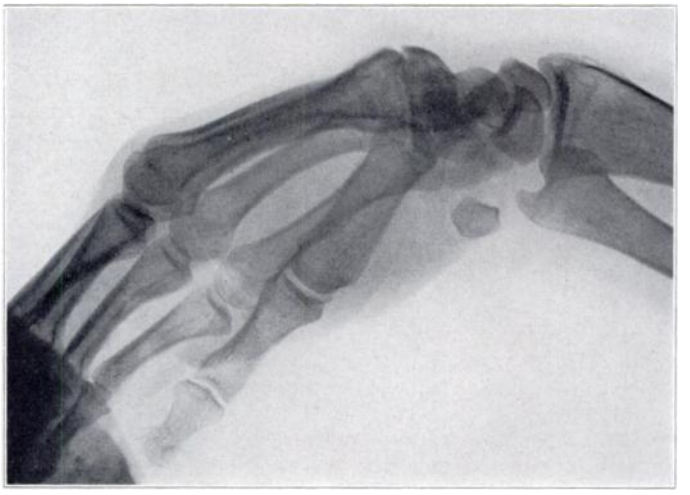

FIG. 2

Roentgenogram showing outline of bursa which had developed over the deformity.

which had developed over the bone tumor, the latter being discovered when a roentgenogram of the wrist was made (Fig. 2). Removal of the bursa was suggested, but she did not return for treatment.

The last patient, a housewife, came to examination because of the tumor, associated with the usual mild subjective symptoms. She, likewise, did not return, probably because no assurance of success in treatment could be given.

Investigation of the literature revealed the fact that the condition which has just been described constitutes a definite clinical entity, but one which, so far as the author is able to determine, has been described only in the French medical literature, under the name of "*carpe bossu*", a term which may be literally translated as "bossy wrist" or "carpal boss", using the word "boss" in the sense of a protuberance of bone. No reference to it could be found after a careful search through a number of standard works on orthopaedic surgery and roentgenographic diagnosis, nor could any references to it, other than the articles noted below, be found in the Quarterly Cumulative Index or Quarterly Cumulative Index Medicus from 1920 to the present time.

So far as the author has been able to find, the first case was reported by Fiolle in 1931. Several other articles on the subject followed this first publication, and additional cases were reported by Fiolle and Ailland, Mouchet, Fiolle and Coudray, Chavannaz, Roederer and Charry, Imbert, and Menegaux, the last-named author reporting two cases.

The total number of cases reported in the articles above mentioned is nine; the author's six cases bring the total on record to fifteen. However, the author believes that the condition is much more common than these figures would indicate.

The physical and roentgenographic findings are typical, and are well presented by the cases here shown.

As a rule, symptoms are slight or absent, and the condition, aside from the cosmetic defect, is apparently of little moment. However, as in one or two of the author's cases, and in the two cases reported by Menegaux, mild disability may occasionally be present.

The etiology is unknown, and no cases are reported which would lead to the belief that it may be a congenital condition. Fiolle believes that it may be a syndrome analogous to the lesions of the Mouchet-Köhler type. The opinion has been expressed that the exostoses may be the result of an early fracture. The author is unable to find any evidence, either in the reported cases or in his own, which would lend support to either of these views. Mouchet interprets it as a sequel of a sprain. Tavernier, quoted by Fiolle and Ailland, asks if it may not be an effort deformity, resulting from an occupation requiring repeated pressure from below upwards on the index and middle fingers, thus tending to force the metacarpals on the wrist bones. Menegaux feels that it is entirely possible that the condition may have a traumatic origin. The genesis from trauma is explained as follows: The initial traumatism gives rise to a slight carpometacarpal sprain, with rupture or slight tearing of the dorsal ligament between the capitate bone and the third metacarpal. Then, little by little, a constantly repeated movement of the fingers, by pulling or pressing upon the already slightly traumatized region, will give rise to an ossifying reaction beneath the affected ligament. There will thus be produced the slow formation of the carpal and metacarpal bosses, which will naturally not attract attention until they have become somewhat definitely developed.

Obviously, all of these assigned causes are speculative, and the condition has not been sufficiently studied to prove or disprove any of them. The fact that the deformity always occurs in the same location, and always presents the same roentgenographic appearance, would indicate that some etiological factor is present which is common to all; *a priori*, it would appear extremely likely that this common factor might be an occupational one. However, when the occupations in the reported cases are studied, the question is not answered. Three cases occurred in manual laborers, in one of whom the condition was bilateral; one in a trained nurse, two in stenographers, one in a seamstress, two in housewives, one in a wood carver, and two in surgeons. In three cases, the occupations were not given. Certainly, these occupations would seem to have nothing in common, unless it be the frequently repeated finer movements of the fingers, and this would not apply to manual labor. Furthermore, if such a cause were really active in the production of the condition, the deformity should be found very frequently in typists, in piano players, and in musicians playing other instruments. That the cause which originally produced it in the first case seen by the author probably remained active, is shown by the fact that the exostoses promptly recurred after removal.

A brief report of these cases was presented at a recent orthopaedic meeting *. During the discussion which followed, it was brought out that several of the surgeons present had seen one or two cases; for this reason, it is felt that the condition occurs more frequently than a study of the literature would indicate.

In connection with the question of treatment, one surgeon expressed the opinion that the condition represented an osteo-arthritis of the affected joint, and that removal would be entirely successful and not followed by recurrence if the wrist were immobilized in plaster for a few weeks following operation. Immobilization following operation is an interesting suggestion and worthy of trial. The author did not use it with the two patients upon whom he operated, and it is not mentioned in any of the reported cases. The suggestion that the condition may be an osteo-arthritic manifestation is open to considerable doubt. At operation, these bone bosses do not resemble osteophytes or lipping of the articular margin in any way, but seem to be an actual overgrowth of normal bone in the affected area. No histological studies of the removed bone have been made.

Further, in connection with the operative treatment, Lambert, of Chicago, stated that he had seen one case, also in a trained nurse. The bosses were removed by operation, and promptly recurred; they were removed a second time, and recurrence again took place. The condition at present remains as it was previous to the first operation.

Two considerations prompted the preparation of this report. In the first place, the disease is of interest from an academic standpoint. It is apparently a sharply defined clinical entity, and probably more common than a search of the literature would indicate. Even though it is a comparatively trivial affection, orthopaedic surgeons should have it in mind and be able to recognize it when it presents itself, if only for the purpose of differential diagnosis.

In the second place, and probably of more importance from a practical standpoint, is the fact that disability claims may arise following industrial accidents, as in one of the author's patients. In the published cases, and in his own limited experience, there is nothing to indicate that the condition follows a single trauma of the affected region. On the contrary, it appears to be a gradual development. If a single trauma were the etiological factor, it would seem that the disease would be frequently seen by traumatic surgeons, because contusions of the hands and sprains of the wrist are extremely common, but apparently such is not the case. In the one case seen by the author, in which there was a history of trauma, he is not at all sure that the boss was not present preceding the alleged trauma. Therefore, when such claims are made, the history should be investigated with extreme care.

Apparently these patients should not be operated upon.

* Clinical Orthopaedic Society, Milwaukee, Wisconsin, October 15, 1940.

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