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Forearm nonunion caused by hyperparathyroidism with 7 years follow up: A case report



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ABSTRACT

INTRODUCTION: We report a patient who developed nonunion of both bones of the forearm associated with hyperparathyroidism (HPT).

PRESENTATION OF CASE: The patient was a 71-year-old female who previously fell and hit her left hand on the ground. At 2 years after injury the patient visited our hospital, since she became aware of instability of the left forearm without an inducer due to nonunion of the radioulnar diaphysis. The patient was surgically treated to acquire forearm support. Surgery for nonunion was applied only to the ulna. To acquire an elbow joint flexion angle, an about 30° angle was added to the false joint region. At one year after surgery, blood testing suggested HPT, however, the parathyroid mass was not excised following the current guidelines for management of HPT. At 7 years after surgery, the elbow range of motion, VAS and the Q-DASH score were improved. Weight-bearing by the forearm became possible, and the patient can perform pronation and supination at the radial nonunion.

DISCUSSION: We learned from this case that it is necessary to immediately perform close examination to identify the presence or absence of primary disease causing insufficiency fracture, such as HPT. For treatment of nonunion of the 2 forearm bones in this elderly female, osteosynthesis of the ulna alone achieved sufficient osteal support without osteosynthesis of the radius, and the postoperative course was favorable.

CONCLUSION: We presented here a rare case of nonunion of both bones of the forearm associated with HPT.

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1. Introduction

Hyperparathyroidism (HPT) is caused by persistent excess secretion of parathyroid hormone (PTH) by the parathyroid [1]. PTH acts to maintain the serum calcium level. In primary HPT, a mass develops in the parathyroid and causes supersecretion of PTH. Bone resorption is enhanced, and the disease may be discovered with fracture and nonunion [2]. Secondary HPT is induced by enhanced bone metabolic turnover [3], and many cases caused by renal dysfunction-associated electrolyte imbalance were reported. HPT was not discovered until nonunion or morbid fracture occurs in many cases, i.e., it is diagnosed at a stage without hypercalcemia-induced clinical symptoms [1].

On the other hand, it is very rare that nonunion of the radius and ulna simultaneously develop in the forearm. When forearm

diaphyseal fracture is not appropriately treated, functional disorders of forearm support and the wrist and elbow joints may develop, and anatomical reduction serves as an important treatment index [4]. However, treatment of nonunion of the 2 forearm bones is difficult and there is no unified viewpoint. We encountered a patient in whom nonunion of the 2 forearm bones was treated with surgery for nonunion of only the ulna and achieved a favorable course. This work has been reported in line with the SCARE criteria [5].

2. Presentation of case

The patient was a 71-year-old female who fell and hit her left hand on the ground and was injured. She became aware of pain in the left forearm, visited a bone setter's office (without physician's license) and received treatment with massage. At 2 years after injury, she visited our hospital hoping for improvement of the support of the forearm. On the first examination, the range of motion of the elbow was 120° in flexion, –10° in extension, 60°

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Fig. 1. Preoperative ranges of motion of the elbow. A: The range of motion of the left elbow was 100° for flexion at the first visit to our hospital. B: The range of motion of the left elbow was -10° for extension at the first visit to our hospital. C: When the patient's shoulder was elevated, she could not hold it up against her own arm weight and therefore her forearm had a curvature due to her own arm weight at the site of pseudarthrosis.



Fig. 2. Preoperative radiographs. A: The radiographic frontal view of forearm and elbow at the first visit to our hospital. B: The radiographic lateral view of forearm and elbow at the first visit to our hospital.

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