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FRACTURE OF THE FIBULAR SESAMOID OF THE HALLUX

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INTRODUCTION

Fractures of the sesamoids are quite uncommon, but when they occur, they are usually caused by direct violence, such as a fall from a height (Brown, 1980). The tibial sesamoid is more often injured, owing to its position under the head of the first metatarsal bone. The following case report describes a crush like fracture of the fibular sesamoid in a female jogger, possibly produced by repeated microtraumas.

CASE REPORT

The patient, a 23 year old woman, presented in our casualty department because of increasing pain in the left forefoot for 14 days. There was no history of any traumas to the forefoot, but the patient was a keen jogger with a daily performance between 5 and 10 km.

Clinically, she was found to have tenderness on the distal part of the first metatarsal bone, increased during dorsiflexion of the hallux. A radiograph showed fracture of the fibular sesamoid (Fig. 1).

The treatment consisted of compression bandaging and non-weightbearing for 2 weeks.

At 6 weeks she had resumed to her former activity without discomfort. X-ray demonstrated rich callus-formation (Fig. 2).

DISCUSSION

Reports on fractures of the sesamoid bones of the hallux were recently reviewed by Brown (1980). He drew attention to the difficulties in making the diagnosis from the X-rays, especially confusing congenital bi- and tripartite sesamoids with fracture. Hubay (1949) considered callus formation necessary to establish the diagnosis. Zinman et al (1981) pointed out the radiological differences between the bipartite sesamoids, having a smooth dividing line, and the fractured sesamoids, having a jagged and irregular dividing line. Moreover, supplemental radiographs, such as axial projections may be of value in establishing the diagnosis (Throckmorton and Gudas, 1978; DuVries, 1959).

The onset of symptoms after a sesamoid fracture is usually sudden, but in the case we report the initial pain was slight and increasing gradually. Repeated microtraumas as a cause of sesamoid fracture has been previously reported in athletes by Helal (1981). He described 3 types of injury: avulsion fracture, crush fracture and dehiscence in a bipartite sesamoid. In the 29 fractures recorded, only 2 involved the fibular sesamoid. Possibly, osteochondritis as described by several authors (Claustre and Simon, 1978; Ilfeld and Rosen, 1972) is often preceded by unrecognised sesamoid fractures (Helal, 1981).

With the increasing interest in jogging the possibility

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of sesamoid fracture should be borne in mind in patients with pain in the forefoot, even if there is no relevant trauma.

The treatment consists of compression bandaging and

non-weightbearing for 2-3 weeks, eventually a below-knee cast for 3 weeks (Zinman et al, 1981).

Untreated fractures may give long-lasting inconvenience and even necessitate extirpation (DuVries, 1959).

Fig. 1: X-ray of the left forefoot, showing fracture of the fibular sesamoid.

Fig. 2: X-ray at 6 weeks, showing callus formation.

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BOOK REVIEW

Title: KINESIOLOGY
Authors: Cooper, Adrian and Glasgow
Publishers: Year Book Medical for C. V. Mosby
Price: £13.50

"The teacher, rehabilitator, researcher and student of human movement will find this work to be a balanced blend of theory and application, thus providing a basic and holistic approach to the study of kinesiology (Biomechanics)". Thus do the authors preface this attractive and extensive text which is liberally punctuated by line drawings, photographs and graphic illustration. The result is perhaps just a little less than might be expected.

There are two major portions of text. "Moving in a gravitational world" deals with mechanical and anatomic considerations, muscle-bone, lever systems, innervation. "Analysing and improving performance" presents detailed notes on the application of theory to a very comprehensive series of activities including walking, running, jumping, throwing, striking, kicking, gliding, aquatic and airborne activities, fencing, 'and activities of daily living'.

An inevitable dilemma in the oft-cited 'holistic' approach is determining the relative weight to be accorded each element of the argument. In this case one has to say that the extent of anatomical and physiological detail provided is limited and probably inadequate to all but the most superficial study. On the other hand mechanical concepts are devoted much space primarily as a result of cataloguing so many examples of specific sports applications. It is a tribute to the style and the attractive presentation that a favourable impression results when one considers the risk of such repetition presentation.

A serious limitation in the appreciation of 'real' as opposed to 'model' biomechanical analysis is the failure to acknowledge the role of inertial forces in all realistic dynamic situations. The animal body is a complex heterogeneous geometric figure with the power to generate intrinsic forces which vary the relative position in space of its component parts thus altering with time the positions of centres of gravity and inertia as well as the dimensions of moment arms, radii of gyration, etc. Admittedly none of us have entirely adequate means of characterising these quantities but the present text runs a serious risk of encouraging students with limited mechanical understanding to believe that the simplistic models conventionally employed can be unquestionably accepted as *adequate* expressions of reality. It is highly unlikely that this is always the case and the inclusion of a cautionary statement here and there would be reasonable.

The authors use the terms "kinesiology" and "biomechanics" synonymously. It is a matter of definition but most contemporary bioengineers would consider that the mechanical properties of tissue components (e.g. bones, ligaments, tendons, cartilage, etc.) contribute fundamentally to any adequate biomechanical review of a body system. The essential characteristic of collagenous tissues which determines their mechanical properties (and therefore function) is their viscoelastic nature. Time-dependent phenomena, stress-relaxation and hysteresis get no mention in text, glossary or index.

The introductory chapter 'Tools for assessment, improvement and prediction of movement' is commendable in intent. The presentation is stimulating but what is provided is more a brief description of the principles involved and is adequate as a statement on how to set up, employ and evaluate the methods.

Most of the criticism that can be levelled at this book is a result of taking its title and prefacial 'blurb' at face value. Given the extent of current developments in the application of biomechanical principles to contemporary problems in medicine surgery, rehabilitation, quite apart from recreational and sports science, it would really be more realistic to consider it as 'a student's introduction to kinesiology' which would simultaneously forestall almost all the criticism and lead to unequivocal and unreserved recommendation.

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