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CASE REPORT

AVUSION FRACTURE INVOLVING THE BODY OF THE PATELLA

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ABSTRACT

A report on an unusual transverse fracture through the body of the patella in a 13 year old high jumper is presented. The clinic features and treatment of the more usual avulsion injury of the patella is discussed.

INTRODUCTION

Disruption of the extensor apparatus of the knee in children can occur after exceptional quadriceps contraction. The usual site of avulsion is at the lower pole of the patella (Blount, 1954; Peterson and Stener, 1976), the so called "sleeve fractures" (Houghton and Ackroyd, 1979). Avulsion of the tibial tuberosity has been reported (Holstein et al, 1964) and Belman and Neviaser, in 1973, were the first to describe avulsion fracture through the body of the patella in childhood. These avulsion injuries of the patella are usually associated with "take off" in high jumping (Beddow, Corkery and Shatwell, 1963). This paper reports a case of transverse fracture of the body of the patella occurring not at "take off" but during the time of straightening the knees in mid air whilst performing a Fosbury Flop style of high jump.

CASE HISTORY

The patient was a fit 13 year old schoolboy. He presented to our accident and emergency department with pain and swelling around his right knee. His history was that he was training for the high jump that afternoon when he had injured the knee. He had run up to the jump, and had pushed off with his left leg. He was attempting to jump using the Fosbury Flop technique. When he was in midair he was crossing the bar when he forcefully extended both knees in order to clear the jump. At this time he heard and felt a crack in his right knee, i.e. the "leading leg". There was no direct injury to the knee. After the jump he was able to stand and limp away with pain in the right knee.

On examination there was an effusion in the joint with tenderness over the patella and he was unable to actively extend his knee.

The radiographs (Figs. 1 and 2) show an undisplaced fracture through the body of the patella. There does not appear to be any abnormal curvature of the femoral condyles, which could have caused an abnormal fulcrum over which the fracture could have occurred. Unfortunately the curvature of the intercondylar notch does not show up on lateral radiographs.

Fig. 1

He was treated in a plaster cylinder for six weeks until the fracture united, and subsequently returned to normal sporting activities.

DISCUSSION

Acute injuries to the extensor mechanism of the knee in juveniles are rare, but avulsions of the lower pole of the patella can occur during sporting activities that require excessively forceful extension of the knee. Sports where this type of injury occurs are high jump, basketball, netball, hurdling and skateboarding (Houghton and Ackroyd, 1979; Suguira and Kaneko, 1972; Wilson, 1981). Bilateral cases have been described in basketball players (Tarsey, 1981; Hensal et al, 1983). The clinical history is diagnostic. The child is about to spring into the air when there is severe knee pain in the "push off" leg, the leg gives way, the child falls and is usually unable to walk. There is no direct trauma to the knee. On examination one finds a tense haemarthrosis with loss of normal active extension of the knee. The patella can often be felt to be high-riding with a palpable gap below. The radiographs show some degree of patella alta, and a small fragment of bone avulsed from the lower pole. The size of this fragment often belies the extent of the soft tissue tearing which can be extensive.

The treatment of these injuries is accurate reduction and surgical repair of the avulsed fragment. The application of a plaster cast with the knee in extension may not give satisfactory reduction of the fragments. Internal reconstruction by catgut suture (Beddows et al, 1963; Wilson, 1976) has been

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used but it is probably better to use a tension band cerclage wire technique (Weber et al, 1980).

The case reported in this paper is unusual for two reasons.

Firstly the mechanism of injury was not of excessive contraction of the quadriceps mechanism at the time of "take off" but the patient distinctly remembers feeling and hearing the patella fracture at the time he forcefully extended his knees during the clearance of the crosspole. This was not an injury of the "take off" leg. Secondly the fracture was through the mid portion of the patella, and not through the lower pole.

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BOOK REVIEW

Title: ACCIDENT AND EMERGENCY NURSING, 2nd EDITION
Author: David Bradley
Publishers: Bailliere Tindall, London, 1984. ISBN 0-7020-1048-0
Price: £7.95

This is a well intended and written second edition book, a rarity in good British Accident and Emergency (A & E) literature, compared to our American colleagues who are leaders in this field.

Most basic and some advanced aspects of A & E work are covered which are informative with numerous diagrams and photographs. Chapters include trauma, resuscitation, medical, eye, orthopaedic and obstetric emergencies, burns and poisoning. Additional helpful chapters cover paediatric problems, care of elderly and aggressive patient, emergency childbirth and flying squad. The emphasis on adapting nursing process is unlikely to be practical on short-stay patients — only more paper work will be created without real benefit.

A & E has long been regarded as a hotch-potch of variety and advanced first aid, but has rapidly gained momentum and recognition as a speciality in its own right and research is growing. This book loses credit in missing emphasis on triage, research, information on discharging patients and preventive care. No mention is made of verbal and non-verbal communication, especially with regard to ethnic minority patients.

Despite the short-falls, this book is a good basic foundation useful for learners, trained staff and practitioners of first aid. It is easily readable and has a direct approach. There is a good appendix, comprehensive index and chapter guides for further reading. Price is a little expensive at £7.95.

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