

Lateral band rupture of little finger as consequence of karate injury

S Mukhopadhyay, C Carpenter, A Iorwerth

Citation

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Abstract

A 17year old girl karate player sustained an injury to the little finger of her dominant hand presented six months post-injury with pain and incomplete extension of the PIP joint. After trial of physiotherapy surgical intervention was undertaken. A lateral band prolapse and central slip attenuation was detected and direct central slip repair (Elliot) was performed. Three months post-operatively, range of movement of the PIP joint was not encouraging. This case illustrates the occurrence of such injury in sports like karate and the need for early diagnosis and treatment to prevent long-term morbidity. To our knowledge no previous case of lateral band rupture has been reported as consequence of karate injury.

INTRODUCTION

Injuries to the lateral band involving the PIP joint from contact sports are not uncommon. However, subtle ligamentous injuries with minimal and less disturbing symptoms are still often overlooked. Long-term a stage 3 boutonniere deformity may result if a lateral band subluxation is missed. The mainstay of treatment of such injuries is to maintain a supple PIP joint with hand therapy, failure of which may require surgical intervention.

CASE REPORT

A 17 year old right hand dominant student presented with six month old injury to left little finger while blocking a kick. She was discharged from local accident and emergency as no bony injury was seen in plain radiograph.

She continued to have problems with pain and an inability to extend the distal phalanx of the little finger. She was referred for a second opinion from A&E.

On examination there was no detectable deformity. She had some tenderness over the extensor surface with full and active movements at the MCPJ. She had some weakness of extension at the PIPJ although the central slip appeared to be intact. She had no power on extension of the DIPJ.

An ultrasound demonstrated an extensor tendon which was “crumpled”(Figure 1a) distal to the MCPJ in keeping with a rupture. The extensor tendon over the middle and terminal phalanx was correctly sited (Figure 1b) .

Figure 1

Figure 1a

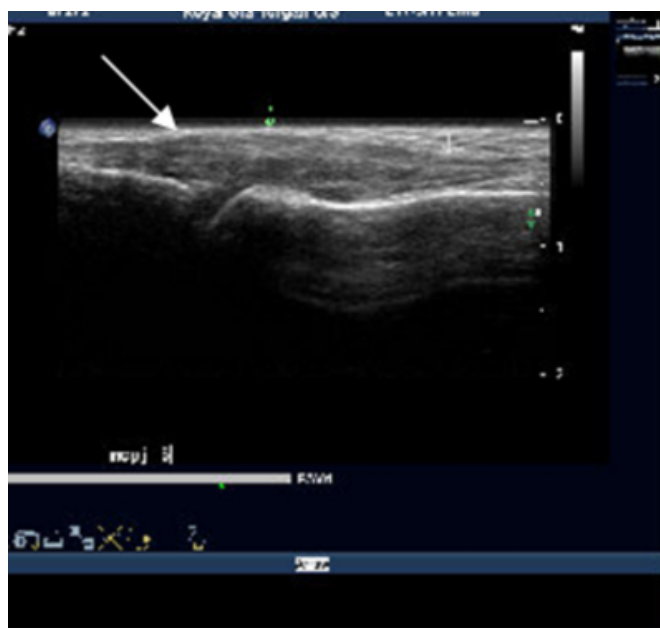
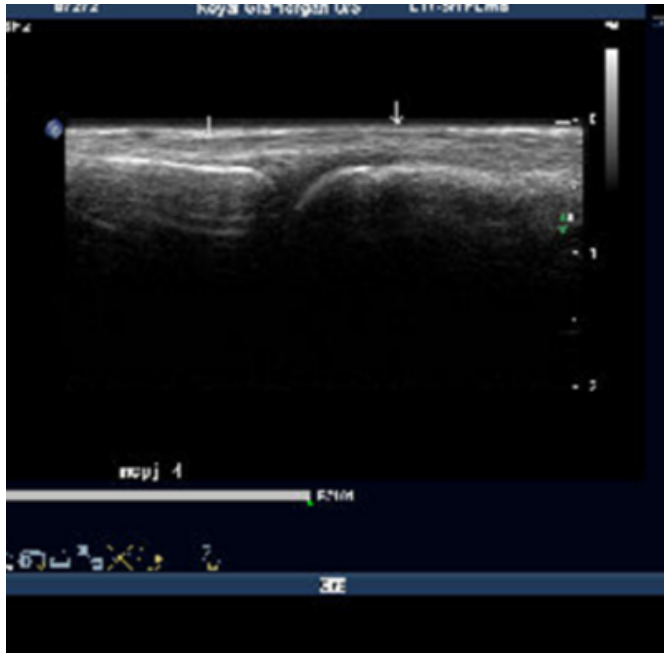


Figure 2

Figure 1b



Four months later she underwent formal exploration under anaesthesia. The PIP joint

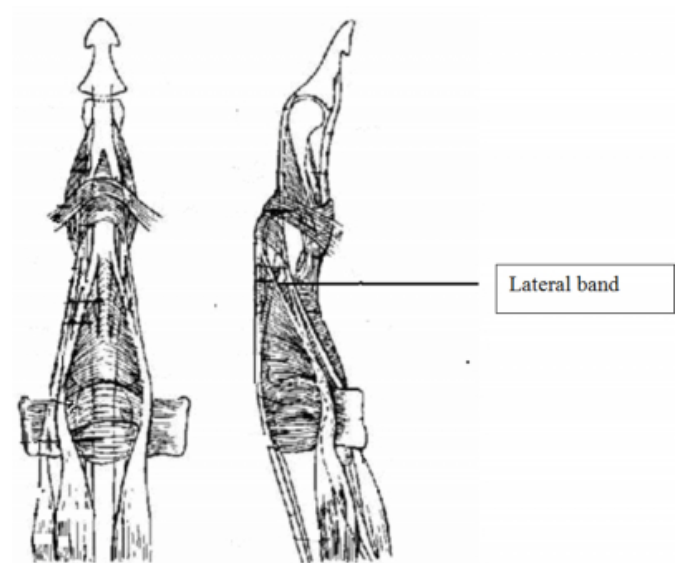
was exposed via a dorsolateral incision. The lateral bands were noted to be slipped volar wards and the PIPJ had buttonholed between them. The central slip was attached but stretched. The lateral bands were repaired directly and the repair augmented with a 1.25mm k-wire.

Physiotherapy was commenced after removing the wire at one month postoperatively. Three months postoperatively she has limitation of flexion 60° of MCPJ , PIPJ and DIPJ.

DISCUSSION

Figure 3

Figure 3



The basic pathomechanics of the injury is attenuation of the central tendon slip over the PIPJ(Figure 3). This was due to a closed avulsion from her initial high velocity injury and prolapse of the lateral band volar to the PIPJ axis. Along with the central slip, the dorsal transverse retinacular fibres were also attenuated which led to the prolapse of the lateral band. In acute stage certain patients are still able to extend their PIPJ until the lateral bands can no longer pass dorsal to the PIPJ motion axis.

As time elapses in untreated injuries, the central slip and dorsal transverse retinacular fibres continue to lengthen, the volar transverse retinacular fibres tighten and the lateral bands become relatively fixed volar to the PIPJ axis. A fixed Boutonniere deformity can occur as the lateral bands shorten, the oblique retinacular ligaments thicken and shorten and secondary joint changes occur as this 'self-accelerating' deformity progresses.

After a trial of conservative therapy with assisted PIPJ extension, which aim to stretch the volar structures with a combination of active and static splints for many months such as in this case should surgery be considered [4] by an upper limb surgeon.

Mason [1] described direct primary repair of the central tendon in the acute injury. This has been extrapolated to the chronic state by Kilgore and Graham [2] and later by Elliot [3]. Kilgore and Graham advocated a Y-V type advancement, whereas Elliot simply resected the redundant attenuated central tendon followed by a direct repair. It is imperative to

realize that this procedure can only be done if there is no restraint to full passive PIPJ extension. Even a carefully performed operative technique may not surpass the fibroblastic response of the extensor paratenon and the repair site stretches if attention is not paid to postoperative splinting and supervised hand therapy regime.

LEARNING POINT

High velocity injuries like blocking a karate kick may rupture a tense lateral band without any obvious bony injury. The extent of the injury may be initially missed but in the

long term may lead to stage 3 boutonniere deformity and secondary degenerative joint change. As consequence deterioration in hand function leads to significant morbidity.

References

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Author Information

S. Mukhopadhyay, MRCS, LAS (ST2 level)

Department of Orthopaedics, Royal Glamorgan Hospital

C. Carpenter, MRCS

SpR, Trauma and Orthopaedics, Department of Orthopaedics, Royal Glamorgan Hospital

A. Iorwerth, FRCS Orth

Consultant Orthopaedic surgeon, Department of Orthopaedics, Royal Glamorgan Hospital