

Childhood myositis ossificans: early surgery can help

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Abstract

We treated a 12-year old girl who could not walk because of bilateral knee flexion deformities secondary to posttraumatic heterotopic bone with surgical excision. Surgery resulted in a substantial improvement of function.

Résumé

Nous avons traité une fille de 12 ans qui ne pouvait pas marcher à cause d'un flessum de genou bilatéral secondaire à des ossifications post-traumatiques. L'excision chirurgicale a conduit à une amélioration fonctionnelle substantielle.

Introduction

Myositis Ossificans is uncommon and most articles about the condition involve small numbers of patients or are case reports [1]. Although the optimum time for surgical excision of myositis ossificans in adults is established, this is yet unclear in children.

Case-Report

A 12-year-old girl was referred because of the inability to walk due to bilateral knee stiffness, and flexion deformities of the knees. One year prior to her referral she was involved in a motor vehicle accident and as a result sustained closed head injury, and closed fractures of the left femur and right humerus. The fractured femur was treated by open reduction and plating. As a result of the closed head injury she had suffered from dysphasia since the accident. On examination, she had a fixed flexion deformity of the right knee of 30 degrees while the left knee had range of movement between 30 degrees to 45 degrees flexion. She had bilateral wasting and weakness of the quadriceps. Examination of the neurological and peripheral arterial system of the lower limbs was normal. Radiographs showed heterotopic ossification extending from the proximal third of the femur to the level of and around the knee joint on the right (Figure 1) and around the site of the previously fractured femur on the left. Serum alkaline phosphatase was moderately raised at 180 U/L. Surgery to remove the heterotopic bone was advised and consent obtained. At operation we found heterotopic bone extending from a 4cm periosteal breach on the anterior aspect of the proximal third of the right femur (Figure 2) to the knee joint involving the capsule. The left femur was less involved. To excise heterotopic bone on the right femur, we had to enter the knee joint capsule (Figure 3) Chemical curettage of the raw periosteal breach on the anterior aspect of the proximal third of the right femur with 70% ethyl alcohol was performed before making V-Y quadriceps-plasty. On the left, heterotopic bone was excised and the plate removed. Histological examination of the excised bone showed peripheral mature lamellar bone with central woven bone in a zoning pattern. Postoperatively her right knee was immobilised and she was treated with oral Indomethacin 250mg three times a day for six weeks [8]. Her post-operative course was otherwise uneventful. At review, fourteen months after surgery, she was walking without any pain, with the aid of a walking frame. The range of active movement was 15 degrees through to 90 degrees on the right knee and 30 degrees through to 75 degrees on the left knee. Radiographs of the femora and knees showed no evidence of any recurrent ossification. Serum alkaline phosphatase was normal. She continues to receive physiotherapy.

Discussion

Myositis Ossificans or Heterotopic Ossification is the formation of bone in an abnormal place. It is uncommon in childhood and has been associated with traumatic brain injury, near-drowning, strangulation, cerebral haemorrhage, hydrocephalus, and spinal cord injury [6]. A significant risk factor for its development is the persistence of the vegetative state after brain injury lasting more than 30 days [3, 5, 6]. It has been reported to occur in up to 82% of patients with traumatic brain injury who undergo intramedullary femoral nailing as treatment of fractured femur [6]. Although the condition is known to spontaneously resolve through resorption of the bone [2, 4] excision of the heterotopic bone mass has been recommended especially in children when there is pain and restriction of joint movement, or when there is a threat of

deformity. Surgical excision of the heterotopic bone is recommended when the heterotopic bone has matured. However the parameters, which are held to indicate maturity of the heterotopic bone including radiography, serum alkaline phosphatase and radioisotope scintigraphy, are not always reliable [10, 12]. Although the optimum time at which surgical excision should be performed has been established in adults, the optimum time at which surgical excision should be performed is less clear in children [1, 2, 5, 8]. Many surgeons recommend a delay of 9 to 12 months after trauma before any surgery to allow heterotopic bone #maturation#. This period is extended to 18 months in the presence of head injury [5, 6]. We felt that bone maturity in children would be attained earlier. We believed that any further delay would compromise future restoration and function of the knee joints. Unarrested, atrophy of quadriceps and intra-articular encroachment by bone could cause secondary changes like capsular or ligamentous contracture, articular cartilage degeneration, growth arrest and ankylosis. Although the patient attained substantial improvement in knee joint mobility as a result of bone excision one year after the trauma, we are unable to unequivocally recommend early surgery on the strength of one case. However we believe that, when there is any prospect of the deterioration of joint function or the risk of permanent deformity, excision of heterotopic bone should be undertaken without delay.

Legends



Figure 1: Anteroposterior radiograph of the right Femur revealing extensive ossification reaching the Knee Joint.

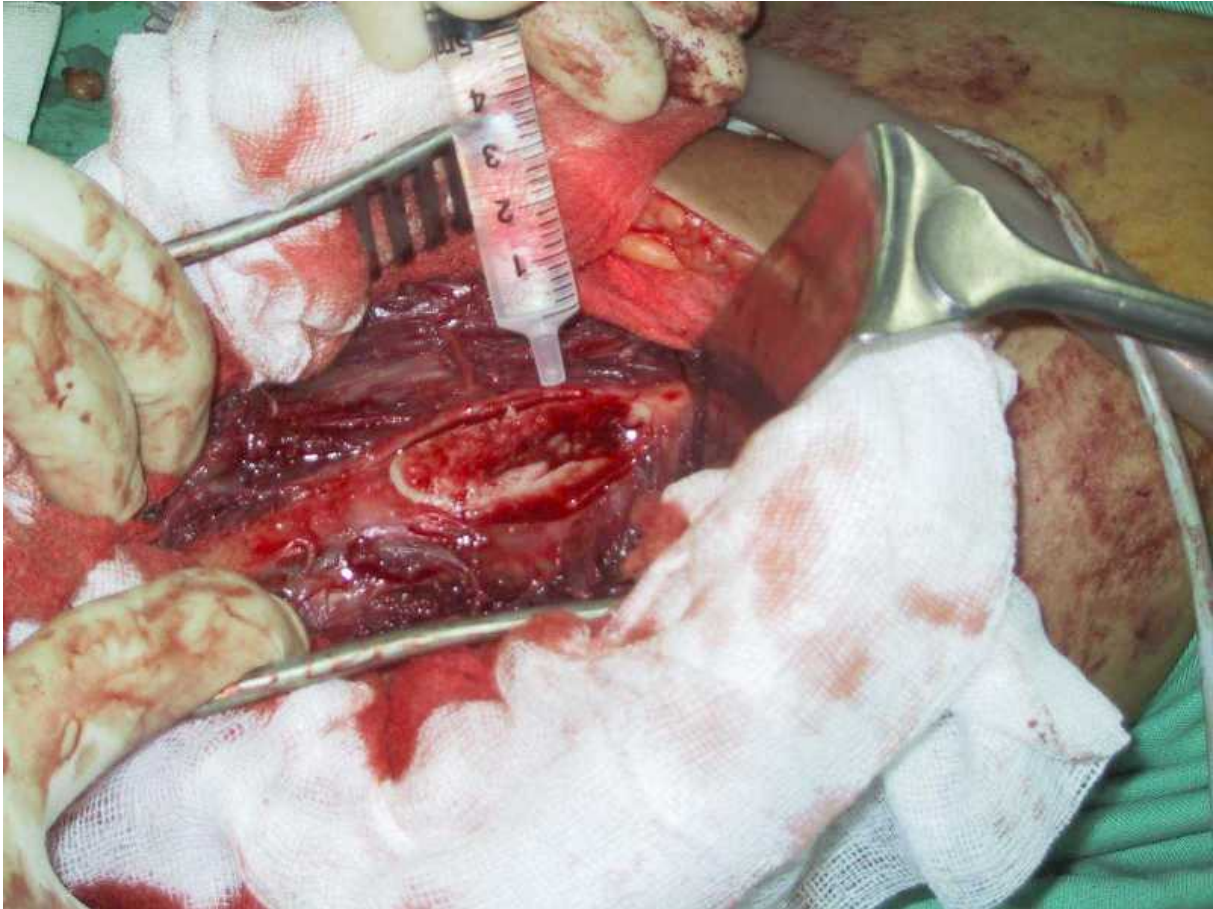


Figure 2: Neo-ossification originated from an oval periosteal breach in the proximal Femur, which was subsequently treated with 70% alcohol.

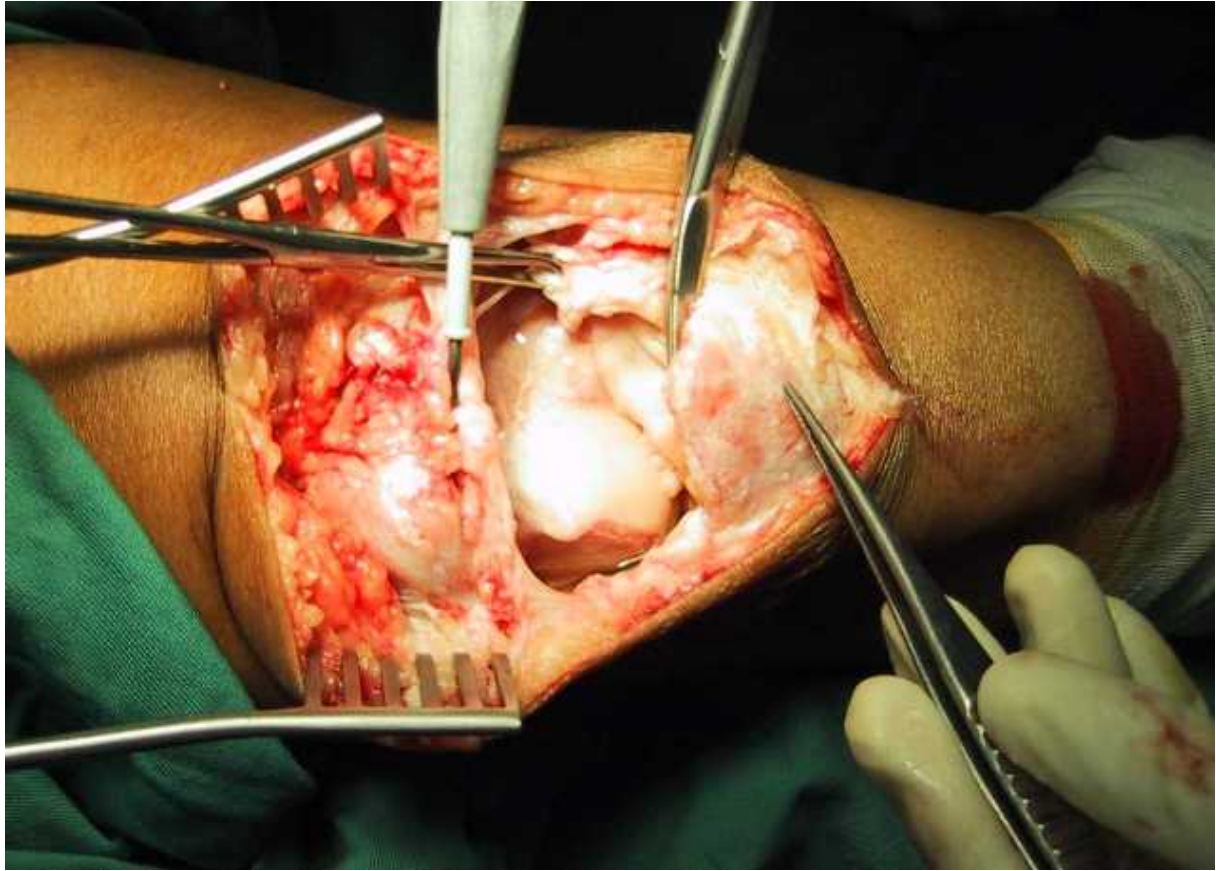


Figure 3: Intra-articular bone is indicated at the tip of the Electrocautery Probe and on the curved dissecting scissors, the former case incorporated into the Capsule and the latter wrapped around the Femoral Condyles

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