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CASE REPORT

Early surgical anterior release for congenital and isolated elbow contracture in flexion: A case report of a 16-month-old child

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Summary Isolated congenital elbow contracture is a rare upper-extremity disorder and there are few data about management of this condition. Authors report their experience after aggressive management of children with isolated congenital elbow contracture in flexion. Because of total absence of range of motion (ROM) improvement despites physical therapy (ROM 90—120°) and bone deformity, an anterior surgical release of the elbow was performed through an extensive lateral approach, at sixteen months of age. After surgery, this child was treated by three casts at maximal gained extension followed by sequential Turnbuckles splints. After five years of follow-up, the result was excellent with ROM 5—135°, normal function and absence of growth disturbance. The limiting factor of this protocol was excessive traction in elbow extension on the neurovascular structures, especially the radial nerve. This treatment represents an aggressive management with multiple general anaesthesia, but was found to be a valid option.

Introduction

Congenital elbow contracture is a rare upper-extremity disorder. Arthrogryposis is the main etiology of congenital elbow stiffness. It can represent a severe disability and surgical treatment is often used to treat extension contracture but rarely used for flexion contracture [1]. The timing for arthrogryposis elbow surgery is still controversial [2,3]. The results of surgical release in elbow joint contracture in children are mainly reported for traumatic stiffness [4—8]. To our knowledge, there are no data about management of isolated congenital elbow contracture in flexion. This study reports the result of aggressive management of a child with isolated congenital elbow contracture in flexion treated by early surgical anterior release and repeat casting series.

Case report

Hani was the third boy of the family; he was born after a normal delivery. There was no history of trauma or

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Figure 1 X-ray lateral views before surgery. A: 12 days after birth. B, C: at 8 months of age; note the incurvation variation according to different obliquity of the lateral view. D: arthrography just before surgery (16 months of age) showing absence of anterior capsular recessus.

infection. No family pathologic history was related but the parents have a between blood relation (cousin). They noticed a painless contracture ten days after Hani's birth by tears during left elbow mobilisation. The boy presented a severe restriction in extension of the left elbow with a range of motion (ROM) of 0—90—120° but normal range of pronosupination (0—0—170°). Radiographs showed a distal diaphyso-metaphyseal incurvation but no congenital proximal radio-ulnar synostosis, no heterotopic calcifications, and no radial head dislocation were detected (Fig. 1).

Because of failure of physical therapy and splinting, the baby was referenced in our institution at 8 months old (Fig. 2). Others articulations were normal, no muscular disease was detected, and no hypotony or hyperlaxity were found. Genetic assessment did not conduct to any diagnosis or arthrogryposis syndrom.

Figure 2 Spontaneous attitude at time of refer in our institution for left congenital isolated elbow contracture with limited range of motion (ROM) to 0—90—120°.

Magnetic resonance imaging (MRI) was performed and detected a congenital hypoplasic anterior articular capsule with normality of joint surfaces and of epiphyseal structures and the presence of olecrania fossa (Fig. 3). EMG exploration of triceps did not relate abnormality of contraction.

An elbow examination and an arthrography were performed under general anaesthesia. It showed no amelioration of the ROM after muscular decontraction by manual mobilisation, no incongruity of the joint surface between the humerus and the ulna. An absence of anterior articular capsular recessus was confirmed (Fig. 1D).

Because of total absence of ROM improvement despites physical therapy, and bone deformity on X-rays, an anterior surgical release of the elbow was performed at sixteen months of age.

A lateral approach along the lateral supracondylar ridge of the humerus was used under general anaesthesia without tourniquet. The brachioradialis and the extensor carpi radialis longus were mobilised off the humerus allowing exposure of the anterior capsule. No clear anterior articular capsule was identified and strong fibrous adherences were noticed on chondroepiphysis. All adhesions were extensively released with extraperiosted approach and the dissection was carried out as far as the medial side of the joint. Z musculo-tendinous lengthening of the brachialis and the biceps brachialis were also performed.

The anterior release was limited by neurovascular anterior structures (radial nerve and vascular humeral bundle), and the residual deficit of extension was 45° at the end of the procedure. No other approach and no posterior release were associated.

After surgery, this child was treated by three casts in maximal extension gained, made every ten days under general anaesthesia to increase the ROM and to stretch neurovascular bundle. Tolerance of this postoperative treatment was excellent particularly for neurological structures. After series of cast (1 month after surgery), the deficit of extension was reduced to 15°. Turnbuckles splints (one for extension, one for flexion) were subsequently used in