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Leg amputation and contralateral limb fracture treated by external fixation, clinical studies

A. Ould Ouali
Hôpital militaire universitaire spécialisée, BP 83, 16000 Stouaouli, Alger, Algeria
E-mail address: malou2007_ab@yahoo.fr.

Keywords: Amputation; Fracture; External fixation; Prosthesis

Introduction. – The handling of a leg amputation secondary to a ballistic trauma is never standardized. Associated to a fracture of a contralateral limb, it hinders the functional prognosis.

Materials and methods. – Our study concerns 18 patients with leg amputation associated with a fracture of the contralateral limb by ballistic trauma, taken in charge by MPR. The exclusion criteria: Patients with complications of amputation stump, the fracture and associated lesions. All of our patients are male; the average age is 23.5 years (19–32 years). The fractures of the contralateral limb: eight leg fractures and one of the femur were treated with dynamic external fixation (Group 1), six leg fractures and three of the femur treated with rigid external fixation (Group 2).

Results. – Walking with tibial prosthesis was obtained at the 90th day (70–170 days) for the patients of Group 1, the functional assessment is satisfactory. While it was obtained at the 135th day (110–310 days) for the patients of Group 2, after consolidation of the fracture. The functional assessment is medium, characterized by lameness in walking due to the stiffness of articulations above and/or underlying the fracture in four cases, and/or to the difficulty of fitting a sclerosis stump in three cases.

Discussion. – The implementation of the dynamic external fixation allowed the weight bearing and the early walking before the consolidation of the fracture. It thus prevents the installation of trophic disorders of the amputation stump, the articulation stiffness of the fractured contralateral limb.

Conclusion. – The handling of these patients depends on an accurate lesion assessment, with a functional strategy combining the skills of the orthopedic surgeon and the PMR doctor.

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Dynamic orthosis with low load prolonged stretch: Best tolerance and efficacy — application in cerebral palsy knee flexum contracture

I. Heymann
CMPRE, BP 2, 54630 Flavigny-sur-Moselle, France
E-mail address: isabelle.heymann@ugecamne.fr.

Keywords: Dynamic orthosis; Cerebral palsy; Tolerance; Static orthosis; Knee contracture; Spasticity

Background. – Night time static positioning braces are recommended in the treatment of knee flexion contractures in cerebral palsy patients, but often not tolerated and quickly abandoned.

Aim. – To compare the efficacy and the tolerance of static orthoses (ratchet KAFO) with dynamic orthoses (ULTRAFLEX KAFO) in the treatment of the knee flexion contracture in children with cerebral palsy.

Subjects and methods. – This randomized, prospective, single center study included 30 children with cerebral palsy (age 11.2 years ± 4.2, 14 ambulant), presenting unilateral or bilateral knee flexion contracture greater or equal to 10° (in total: 48 legs, 24 dynamic and 24 static orthoses).

The whole study was done without the use of botulinum toxin or serial casting. Main assessment criteria: goniometric measurement of knee extension. Secondary criteria: measurement of the popliteal angle, dorsiflexion of the ankle with knee extended, hamstrings and triceps surae spasticity level, orthoses' tolerance and compliance.

Measurements were performed by the same physiotherapist for consistency at 1, 3, 6 and 8 months. The test of Student, adjusted with the method of Tukey (α = α/6) was used to compare groups at 6 and 8 months, with regard to inclusion.

Results. – Superior efficacy of the dynamic orthosis (both for ambulant and non-ambulant):

- for reduction of knee flexion contracture at 6 month (9.3° vs 2.8°; P < 0.001), at 8 month (12.5° vs 3.5°; P < 0.0001);
- for reduction of gastrocnemius contracture (P = 0.0003) and reduction of the gastrocnemius spasticity (P = 0.0003);
- reduced hamstrings spasticity (P = 0.0262);
- ortheses tolerance (P = 0.009).

Discussion. – The results of this study represent the first prospective comparative effectiveness evidence showing the superiority of dynamic versus static KAFO orthoses. Thus these orthoses should be a first line conservative intervention for dynamic and static hamstring and gastrocnemius contractures in children with cerebral palsy.

Further reading

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