

Re: Feng L, Do P, Aiona M, Feng J, Pierce R, Sussman M (2012) Comparison of hamstring lengthening with hamstring lengthening plus transfer for the treatment of flexed knee gait in ambulatory patients with cerebral palsy. *J Child Orthop* 6:229–235

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We read with interest the paper by Feng et al., “Comparison of hamstring lengthening with hamstring lengthening plus transfer for the treatment of flexed knee gait in ambulatory patients with cerebral palsy”.

Dr. Eggers, in 1952, transferred all the hamstrings to the femur, but the procedure caused recurvatum and/or stiff knee gait. Dr. James Gage transferred the semitendinosus to the adductor tubercle in selected patients with flexed knee gait. He taught Selber the procedure but advised caution because it restricted hip flexion in terminal swing and step length in some patients with mild involvement. Selber brought the procedure to the Royal Children’s Hospital in 2001. Awareness of the different levels of physical activity by the Gross Motor Function Classification System (GMFCS) and the different “surgical doses” required for each level constitutes the main difference between early and current indication of semitendinosus transfer by us, with the results reported by Ma et al. [1].

Personal communication from Gage to Selber summarizes the history of his technique: “With respect to the semitendinosus transfer, I got to thinking about the Egger’s transfer and wondering if he perhaps had the right idea, but was unaware of the function of the rectus in opposing the

hamstrings and, in addition, was a bit too much of an enthusiast with respect to the number of hamstrings transferred. About that time, I was a visiting professor for George Rab in Sacramento. As you know, he is a computer and math whizz, so I told him about my idea and we modelled it that weekend to try to get an idea as to how it might affect hip and knee function. It looked good on paper, so I started doing the transfer. Unfortunately, I began by making two drill holes in the posterior cortex of the femur, passing the semitendinosus tendon through the holes, and then sewing the tendon back on itself. However, it quickly became apparent that the transfer was limiting step length. The tight semitendinosus brought the foot down early and limited swing. Therefore, I started looking for a softer insertion point. I thought of the gastrocnemius heads, but they were way too flimsy, so I settled instead on the adductor longus insertion. In the end, I stopped using the transfer because even with that insertion point, it still limited step length, particularly in the higher functioning kids.”

In Portland, semitendinosus and gracilis were transferred and the biceps femoris was lengthened in most children. We suggest that this may have contributed to the increase in anterior pelvic tilt. We believe that semitendinosus transfer alone is a very “powerful dose” to augment knee extension in stance at GMFCS II–IV. In patients where semitendinosus transfer is not enough to extend the knees fully in stance, weakening the remaining hamstrings will lead to anterior pelvic tilt. Growth manipulation or distal femoral extension osteotomy are our preferred methods.

More studies will be required on this most challenging problem.

Conflict of interest None.

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