50 Years Ago in CORR

The Role of the Orthopaedic Surgeon in the Management of Cerebral Palsy

S. Ralph Terhune MD, Paul W. Shannon MD, Fred H. Devane MD, J. Carter Denton MD

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In 1890, Dr. Edward Bradford of Boston commented, “Spastic or cerebral paralysis in children has remained almost neglected by orthopedic surgical writers. This fact is the more surprising as the disease gives occasion to a marked awkwardness in gait, and to deformity second only to that following infantile paralysis. The explanation for this omission may be given by the fact that until recently the affection was but little understood.” [1]. Bradford’s clinical observations of the physical features and limitations of spastic cerebral palsy were detailed and accurate in today’s terms. “The neurologists,” he commented, “as a rule have not given their sanction to tenotomy in spastic paralysis and some emphatically oppose it. The objection which has been urged against the treatment by operation being that as the affection is not a contracture of the muscles, but a defect of the brain-centres, all that an operation could do would be to weaken the muscles without altering the central conditions. Although this objection is theoretically plausible against it can be urged recent practical experience. It has been abundantly proved that tenotomy does not injure the muscles, and it cannot be rightly be said to weaken the muscles.” Bradford described the use of Achilles tenotomy, hamstring release, adductor release, and the possibility of

tenotomy in the upper extremity. He also described, in detail, the consequences and precautions of overlengthening the Achilles tendon. He cautioned, “Where marked mental impairment exists little or no benefit is to be expected from operative treatment...”

By the 1930s, the orthopaedic literature contained many articles on the surgical treatment of “spastic paralysis” or “cerebral paralysis.” (The term, “cerebral palsy”, while mentioned as early as 1890 [3], appears not to have been commonly used until the 1950s. Campbell’s 18-page review of surgical treatments used the term, “spastic cerebral paralysis” [2].) In 1958, Terhune and colleagues [4] provided recommendations for the role of the orthopaedic surgeon in the treatment of cerebral palsy. They cited rather more pessimistic outcomes of orthopaedic surgery than Bradford. Evidently, there was still considerable controversy about the role of orthopaedic surgery. “Orthopaedic surgeons can blame themselves, at least in part, for the tendency during the past few years to depreciate the value of their services in the management of cerebral palsy. Some continue to be ‘rugged isolationists’ in so far as co-operation with management teams is concerned.” Terhune and his colleagues advocated working in a team “that includes a

pediatrician, a psychiatrist, a physiatrist, a speech therapist, specially trained school-teachers, a social worker, the child’s parents, when possible, and the orthopaedist.” Such a team approach was surely unusual at the time. “Orthopaedic surgery seldom deserves the center of the stage...” they continued. “If the orthopaedic surgeon wishes to give his best to the handling of the problem of cerebral palsy, he must be broadminded, tolerant and content to serve as a vial, and not a superimportant, part of the management team.” “The orthopaedist’s role should include the prevention of deformities and the development of useful function of the upper extremities and independent ambulation.” While most contemporary orthopaedists would disagree with many of the recommendations in his article, the role Dr Terhune and his colleagues outlined for the orthopaedic surgeon to prevent deformity, promoting useful function in the upper extremity and improving gait through surgery of the lower extremities, remains as true today as it did over 50 years ago. The orthopaedic surgeon has evolved into an important leadership role in the management team treating a child with cerebral palsy. The orthopaedist has led in many important areas of advancement such as: the treatment of spastic hip

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dislocation, the treatment of neuromuscular scoliosis, the development of classification schemes and outcome measures to better define the indications and outcomes of treatment, and the development of gait analysis. Accordingly, we have substantially advanced treatment and outcomes in the cerebral palsy patient over the past 50 years.

Richard A. Brand MD
Editor-in-Chief
*Clinical Orthopaedics
and Related Research*

Kirk W. Dabney MD
Department of Orthopaedics
Du Pont Hospital for Children
Wilmington, DE, USA

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Kirk W. Dabney MD