50 Years Ago in CORR

The Management of Idiopathic Scoliosis

John H. Moe MD CORR 1957;9:169–184

The treatment of spinal deformities was described in antiquity. According to Bick [3], “Deformities of the spinal column were intensively studied, and although several cardinal errors were made, based on certain discrepancies in the anatomic knowledge of that time, it was in this field that Hippocratic orthopedics attained its highest

genius.” Numerous devices, from traction beds (Venel, 1788 [3]) to braces (Levacher, 1764 [3]) were described between those times and modern. A wide variety of braces were

Fig. 11 C. S., age 13 yr., 1 mo. Right idiopathic curve T-5 to T-12, 55° standing. T-5 and T-12 are rotated neutrally. Iliac apophyses not visible. Fusion area was T-4 to L-1. Maximal correction to 30°. Final correction 3 years after fusion 35°. Fusion of only the measured curve T-5 to T-12 would have given equally good results, but extending the fusion area did no harm. (Reprinted with permission from Moe JH. The management of idiopathic scoliosis. *Clin Orthop Relat Res.* 1957;9:169–184.)

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available by the 1930s [4], many of which included features of more contemporary braces. Studying specimens from the Guy's Hospital Museum, Lane [12] recognized the occurrence of spontaneous fusion in deformed spines. A few decades later, Hibbs described a technique of surgical fusion in tuberculosis in 1911 [9] and began using the technique for scoliosis in 1914 [10] using local bone for graft. In his followup study published in 1924 Hibbs noted all surviving patients maintained the correction of the deformity. Albee independently described surgical fusion of the spine in 1911, using strut grafts from the tibia [1, 2]. Campbell suggested both these techniques were problematic: that of Albee because the straight tibial strut graft did not fit the curved spines and that of Hibbs because the laminae and articular facets on the concave side of major deformities were difficult to expose [4]. Rather, Campbell used multiple thin flexible grafts from the tibia. Harrington, in 1962, reported the next major advance: the use of metal implants to temporarily maintain correction while the fusion was healing [8]. In the subsequent decades many authors described various types of fusion supplemented by instrumentation [5, 7, 16–18].

Contemporary fusion methods and instrumentation were not available to Moe in 1957 when he described the

patterns of scoliosis and the important variations in surgical techniques based on the pattern [13]. The patterns, he recognized, determined the likelihood and type of progression and the length of the fusion. Pseudarthrosis at the graft, an inadequately long fusion site, and inadequate postoperative protection (casting, bracing) were, he concluded, the most common causes of failure to maintain the fusion. Moe's studies were not long term, and he could not have known whether the surgical correction was maintained. In fact, he stated after three years followup, "...extending the fusion area did no harm" (Fig. 11). Subsequent studies have, however, shown fusion and instrumentation maintains correction, but many patients develop degenerative changes, particularly adjacent to the fusion, and many will have some degree of back pain [6, 11, 14, 15]. Whether or not the severity and intensity of the pain is worse than that in the general population is a matter of some debate. Most surgeons now believe the length of the fusion relates to the likelihood of adjacent degeneration and that while the extent of the fusion must be sufficient to prevent progression, it should not be unnecessarily extended so as to reduce the risk of degeneration.

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