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Reviewer point of view on the treatment of fixed thoracolumbar kyphosis in immature achondroplastic patient

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Sir,
In achondroplastic patients the natural history and surgical treatment of spinal stenosis and thoracolumbar kyphosis are notorious for their high rate of neurologic complication [4, 5, 6, 8].

The authors have chosen with success a modern way of correcting this very challenging spinal deformity by a way of posterior spinal column shortening.

Classically, some authors would recommend a simple decompression with posterior instrumentation for fear of neurologic complication [8, 9]; however, if the stenosis is associated with kyphosis, simple laminectomy may expose to further instability and kyphosis [10]. This is the reason why other authors would perform an anterior disc excision, followed by a posterior decompression and instrumentation [7].

One of the major disadvantages of this latter approach is that by doing the disc excision first in the presence of a very narrow canal, the anterior spinal manipulation along with the edema induced by the surgery may be harmful to the already compromised spinal cord. By doing an anterior spinal release first, followed by posterior surgery, the cord may even end up being lengthened and further compromised.

Bradford and Tribus reported initially in 1997 the concept of spinal column resection for complex and

rigid spinal deformities. By doing a two-stage front and back spinal resection they could address rigid coronal decompensation [1]. More recently Suk et al. has popularized the concept of posterior spinal resection for all kinds of spinal deformities [11]. In the meantime pedicle subtraction osteotomies have become popular for the treatment of flat-back deformities and associated syndromes [2, 3].

In the paper published the authors report on a two-level posterior column resection done according to the Thomasen technique; however it is not clear in their description if they removed also the disc of this two-level resection or if they performed a two-adjacent-segments pedicle subtraction osteotomy. It is not possible to judge on the post-operative X-rays that were provided the type of posterior osteotomy that was achieved.

Nevertheless, the correction is very impressive and we congratulate the authors for that.

I agree that the use of pedicle screws is the safest fixation in these spinal deformities with narrow canal. I would like to emphasize a few concerns relevant to this case. The issue of spinal stenosis must always be considered in these patients. In this specific case, looking at the MRI the stenosis seems to originate at T10 down to L2. In these patients a myelo-CT scan is often more appropriate to judge the extent of the

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stenosis rather than a sole MRI that may overestimate some stenotic levels.

In the case presented the decompressive laminectomy necessary to perform the posterior column resection was carried out only at the level of T12 and L1. This is in my mind insufficient to carry out a safe two-level posterior column resection and did not address the stenoses at T10–T11 and T11–T12.

Finally, the other issue of concern is the lack of anterior support or fusion as there is a persisting small angular kyphosis even though the follow-up is 2 years. Even with segmental pedicle instrumentation we have observed failure of constructs well after 2 years. A complementary anterior fusion would have been necessary, in my mind.

Overall, we congratulate the author for this very nice result and their innovative way of treatment. Posterior column resection may effectively prove to be safer than the ante-

rior and posterior sequence. I would, however, recommend that posterior decompression extend to all the stenotic levels as seen on a CT myelogram. Should the posterior spinal resection involve two contiguous vertebrae or be staggered with one or two segments left intact will need to be determined.

A complementary anterior fusion for stability and longevity purposes may be necessary for the long term.

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