

### “Only fixation”: Can it be the single remedy for all?

It is always a delight to go through the articles of your esteemed journal, especially the editorials and other thought provoking articles by Professor Atul Goel. The essence of Professor Goel's philosophy of work lies in amalgamation of simple but profound intellect with ease of act. Many of his revolutionary techniques have enhanced the field of neurosurgery on numerous occasions. In his recent very illuminating article, he has re-applied his long-coveted “philosophy of fixation,” initially meant for spinal degenerative pathologies, based on the pathological origin of this type of malady. A maestro in his field, innovator of many techniques that make patients back to happy life, Professor Goel, has set his own unique standard and style. This time he advocated and applied that to rationalize the same philosophy for the treatment of disc diseases in his recent editorial entitled “Prolapsed, herniated, or extruded intervertebral disc-treatment by only stabilization.”<sup>[1]</sup>

He has been promoting this “only fixation” philosophy for about a decade from now for many spinal degenerative disease entities such as cervical spondylosis and spinal canal stenosis and even for cervical disc prolapse.<sup>[2-6]</sup> We greeted the “only fixation” philosophy for cervical spondylotic myelopathy earlier. However, there were some reservations and queries regarding that idea.<sup>[7]</sup> However, as a virtuoso of this art, he not only paced forward quite efficiently with his beliefs but also has demonstrated good results as well. Nonetheless, we have some observations regarding that.

Decision-making in choice of methods, whether surgical or conservative, for disc disease is quite variable and is largely patient–clinician understanding dependent. Surgical treatment options are many nowadays. Newer techniques are being developed with the intention of giving the patients' maximum assistance with minimum pain, hospital stay, and economic burden ensuring the quality of life to the utmost. However, there has not been any procedure developed yet that can be taken as the ultimate standard one. Conventionally, the least controversial and the most practiced one is the resection of the prolapsed disc to decompress the jeopardized nerve root which affords quick and long-term relief. Whatever the procedure is, following discectomy, there always remains the threat to have immediate and delayed

postoperative complications. To minimize the complications and to maximize the benefits to the patients, endeavors go on to develop new techniques. Moreover, Professor Goel is a relentless voyager on this path of innovations.

Patients with disc prolapse may have backache, neckache, or muscular pain following degenerative changes in different structures of the spine resulting from repeated microtrauma. In prolapse, patients generally experience radiculopathy mostly because of compression on the abutting nerve roots. Radiculopathy is more intense in cases of herniated or extruded discs, especially if the extruded piece is trapped inside the neural foramen to irritate the nerve root with every minimal movement. Professor Goel's idea to fix may help by waning the repeated irritation of the nerve roots from repeated movement. However, the offending agent, the protruded or the extruded disc itself, is practically not addressed. His procedure is sure to mitigate the pain initially to some extent in selective cases, but there is always the possibility of having new pain later from a new pathology, the degenerative changes at the adjacent segments.

In general, the common etiologies of spondylotic myelopathy, other than disc prolapse, are attributed to aging process, wear and tear, excessive motion, and repetitive microtrauma. Multiple static and dynamic mechanical and ischemic factors subsequent to posterior bulge of the degenerated disc lead to a series of events resulting in reduction of intervertebral disc height and narrowing of spinal canal and neural foramen. Reports of spontaneous regression of prolapsed lumbar intervertebral disc are being recognized increasingly with the advancement of radiological diagnostic tools. Whether cervical, dorsal, or lumbar, the proposed theories of natural regression of the disc are dehydration, retraction of the disc to the hernia in the annulus fibrosis, enzymatic catabolism, and phagocytosis.<sup>[1,8-10]</sup> Hence, there is always a good possibility of regression of the prolapsed, herniated, or even the extruded disc at any level of the spine spontaneously, and this may be augmented by fixation as the key etiological factor, microtrauma, is restrained totally.

Goel fixes the spine in many ways – from pedicle screw to articular screws. Whatever the method is, the goal is to fix

the affected spinal segment and give relief of the symptoms, in which he has already achieved befitting success that he has published many a times.<sup>[2,3,5,11]</sup> Fixation for disc disease is not a very new theory. Mixer advocated fusion following lumbar discectomy as early as in 1937. He advocated for some form of fusion as any laminectomy, which was the trend for removal of disc at that time, must further weaken a spine already weakened by the rupture of the disc.<sup>[12]</sup> Moreover, in cases of a small proportion of herniations that are located in the foraminal or extraforaminal zones, may require facet resection to adequately decompress the neural elements, which jeopardies the spine further. Particularly, in these circumstances, patients are indicated for a lumbar fusion to handle the destabilizing facet resection.<sup>[13]</sup> Although Mixer and others mentioned only about lumbar disc, this possibly is equally applicable to the other regions of the spine as well. This supports the philosophy of Goel as he is telling about instability and telescoping of the involved spinal segment and his procedure is expected to do better as he is not breaching the integrity of the spinal column, keeping the natural elements intact. This is a unique idea to strengthen the column further while fixing the specific spinal segment maintaining its integrity.

The telescoping theory that Goel is postulating is very much feasible in chronic cases. In chronic patients of disc pathology, changes lead to severe canal stenosis or neural foraminal narrowing, and radiculopathy ensues. These patients of backache or neckache with or without radiation, other than acute disc-related pathologies, are expected to be relieved of the symptoms by fixation as the proposition of the telescoping theory appears quite logical. The reversal of the degenerative process takes long time, as much as it is for the degenerative changes to develop by wear and tear from repeated microtrauma. At the time of presentation, when the ailment is only disc related, whether prolapsed, herniated, or extruded, most of the symptoms are acute. Hence, in cases of acute disc disease, this “only fixation” theory does not seem to be very rational, especially where the target of surgery is to remove the offending agent to have immediate pain relief, particularly of the radiating pain. Although we feel, with fixation, the intervertebral disc height is increased to some extent, it is very unlikely to give complete relief immediately as the part of the disc compressing the nerve root is not addressed in a straight-cut way. Hence, in acute cases, symptom relief from disc disease solely by “only fixation” is highly dubious to be achieved instantaneously, which, on the other hand, is usually achieved dramatically by discectomy. Therefore, Goel’s procedure can be a good option for the cases when that is not an acute condition with acute neurological deficits warranting urgent relief of compression of the nerve roots. Although defying all odds,

he has also shown immediate relief in cases of cervical disc prolapse with reversal of herniation. However, those were in cases of single-level “contained” herniated disc and in cases of discs causing myelopathy.<sup>[5,6]</sup>

If it works in the cervical region, it is supposed to work in the lumbar region as well and his theory is supposed to stand. However, the question remains whether his procedure works similarly in cases of extruded or sequestered discs causing radiculopathy rather than myelopathy. We feel, this can be an option, particularly in cases of dorsal disc prolapse causing myelopathy. With conventional methods of disc removal at the dorsal region, the chance of cord manipulation and compromise is more than the cervical or lumbar region as the spinal canal is narrower, the cord is much less mobile, and the nerve roots are shorter. Moreover, this is particularly more effective in the dorsal region as the disc prolapse here is rarely an acute one. His theory of fixation might help in another way that reversal of symptoms in cases of contained discs, which he has demonstrated, can be because of the reversal of disc herniation by the “push” of the intact stretched and taught posterior longitudinal ligament (PLL) rendered by fixation, moving the disc back to its normal abode. This can be applicable even if that is acute but contained and subligamentous, but the cases of extruded or sequestered ones that are extraligamentous to PLL remain debatable to give instant relief. Fixation might also help in ensuring the prevention of further prolapse by minimizing the chance of movement and microtrauma. At the same time, fixation brings the problem of having new degenerative changes at the adjacent segments, jeopardizing those.

He stresses that the instability is mostly an anticipated pathology based on clinical finding and experience, rather than a demonstrable one by radiology. He emphasizes and relies more on per-operative finding of instability than on radiological evidence. It is often possible to demonstrate the instability radiologically in computerized tomography (CT), but that is seldom conclusive, whereas the conventional dynamic radiographs frequently fail to identify the pathology that he is philosophizing. However, the instability of the craniovertebral junction can be and has been demonstrated well by dynamic CT.<sup>[14]</sup> Dynamic CT can possibly demonstrate instability in other regions of the spine as well. His immense clinical knowledge, gathered over the years from his vast experience, has led to his understanding of this pathology so well. However, failure to identify the instability by conventional radiographs might be minimized to make it more evidence based by dynamic CT scan of the joints of interest.

We always appreciate the philosophy of Professor Goel concerning different strategies of management of spinal problems in versatile ways, highlighting the same philosophy

of fixation. We believe that he will go on giving more and more to the neurosurgical arena for many years to come. His philosophy is a great one no doubt, but we would expect more studies with greater number of patients and longer follow-ups to see long-term outcome for firmly establishing his prodigious philosophy.

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#### REFERENCES

- Goel A. Prolapsed, herniated, or extruded intervertebral disc-treatment by only stabilization. *J Craniovertebr Junction Spine* 2018;9:133-4.
- Goel A. Only fixation for cervical spondylosis: Report of early results with a preliminary experience with 6 cases. *J Craniovertebr Junction Spine* 2013;4:64-8.
- Goel A. Only fixation for lumbar canal stenosis: Report of an experience with seven cases. *J Craniovertebr Junction Spine* 2014;5:15-9.
- Goel A. 'Only fixation' as rationale treatment for spinal canal stenosis. *J Craniovertebr Junction Spine* 2011;2:55-6.
- Goel A, Dharurkar P, Shah A, Gore S, More S, Ranjan S. Only spinal fixation as treatment of prolapsed cervical intervertebral disc in patients presenting with myelopathy. *J Craniovertebr Junction Spine* 2017;8:305-10.
- Goel A, Shah A, Patni N, Ramdasi R. Immediate postoperative reversal of disc herniation following facet distraction-fixation surgery: Report of 4 cases. *World Neurosurg* 2016;94:339-44.
- Rahman A. "Only fixation:" simple act, but mammoth stride toward great aspiration in managing cervical spondylotic myelopathy. *J Craniovertebr Junction Spine* 2015;6:137-9.
- Çitişli V, İbrahimoğlu M. Spontaneous remission of a big subligamentous extruded disc herniation: Case report and review of the literature. *Korean J Spine* 2015;12:19-21.
- Orief T, Orz Y, Attia W, Almusrea K. Spontaneous resorption of sequestered intervertebral disc herniation. *World Neurosurg* 2012;77:146-52.
- Yang X, Zhang Q, Hao X, Guo X, Wang L. Spontaneous regression of herniated lumbar discs: Report of one illustrative case and review of the literature. *Clin Neurol Neurosurg* 2016;143:86-9.
- Goel A. Facet distraction spacers for treatment of degenerative disease of the spine: Rationale and an alternative hypothesis of spinal degeneration. *J Craniovertebr Junction Spine* 2010;1:65-6.
- Mixter WJ. Rupture of the lumbar intervertebral disk: An etiologic factor for so-called "sciatic" pain. *Ann Surg* 1937;106:777-87.
- Owens RK 2<sup>nd</sup>, Carreon LY, Bisson EF, Bydon M, Potts EA, Glassman SD. Back pain improves significantly following discectomy for lumbar disc herniation. *Spine J* 2018;18:1632-6.
- da Silva OT, Ghizoni E, Tedeschi H, Joaquim AF. Role of dynamic computed tomography scans in patients with congenital craniovertebral junction malformations. *World J Orthop* 2017;8:271-7.

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