

# ON THE EFFECT OF LAMINECTOMY ON BACK PAIN IN SPONDYLOLISTHESIS

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In 1955 *Gill, Manning & White* (1) described a new surgical method for the treatment of spondylolisthesis. According to this method the loose arch of the olisthetic vertebra is extirpated, *i.e.* laminectomy. In their series of 14 cases the operation produced a very good effect on the back and sciatic pains in 13 (92.8 %) cases, and 6 (42.8 %) patients were symptom-free after the operation. Though some investigations have since confirmed the beneficial effect of the operation on the sciatic pain, the effect on the back pain in spondylolisthesis varies from one series to another. Thus in *Gill's* material the back pain disappeared in 11 (78.5 %) of 14 patients operated upon. *King et al.* (2) also found laminectomy to have a favourable effect on the back pain, while *Laurent* (3) found the operation to have no effect at all on the back pain in any of his 26 patients treated by this method.

*Gill et al.* originally applied the method to eliminate the root symptoms which they found to be due to compression of the nerve roots by the tissue of the pseudarthrosis. But they soon realized that the operation also had an excellent effect on the back pain. They could not explain why the operation gave such a relief of the back pain even though they often found that operation revealed an irritation of the dural sac either because of pressure by an abnormally movable part of the arch or by adhesions between the arch and/or the ligamentum flavum and the dura.

During 1955-1959 a total of 24 patients with spondylolisthesis have been submitted to laminectomy by the method of *Gill et al.* at the Department of Orthopaedics, University Hospital, Lund. The patients had both back pain and sciatic pain, though the clinical picture was usually dominated by one type or the other. Of these patients 22 were refractory to conservative treatment and 2 preferred surgical treatment without

preceding conservative therapy. In an attempt to assess the effect of the operation, particularly on the back pain, these patients were reviewed. The review included careful inquiry concerning the site, nature, intensity, duration and frequency of the back pain. Furthermore, the pains have been placed in relation to occupation, occupational posture, etc. On examination of the back notes were made of the configuration of the spine, mobility of the spine and the occurrence of any tenderness, contractures or wasting of the muscles. The review also included a simple neurological examination for any weakness of the abdominal, patellar, achilles and plantar reflexes, the occurrence of paresis in the gluteal, thigh, calf and toe muscles and the occurrence of any muscle atrophy and impaired sensibility.

Of the above mentioned 24 patients, 1 could not be traced and 2 were found to have a prolapse of the intervertebral disc, for which they were operated upon. These 3 cases were therefore not included in the present analysis. Of the remaining 21 patients, 14 were males and 7 females. The patients' ages ranged from 29 to 64, and 12 of them were below 50 (Table 1).

TABLE 1  
*Patient material.*

Age in years at time of op.	Males	Females	Total
20-29	0	1	1
30-39	2	2	4
40-49	6	1	7
50-59	4	2	6
60-69	2	1	3
Total	14	7	21

The interval between the operation and the review was 7 months to 4½ years. In 13 cases it was more than 3 years. In 15 (71.4%) cases the spondylolisthesis was situated in the fifth lumbar vertebra and in 6 (28.6%) cases in the fourth lumbar vertebra. No conservatively treated series was collected for comparison.

The patients were classified according to the results of the operation into three groups. Group I consisted of those who had become completely symptom-free, group II of those who reported improvement, and group III of those who reported that they felt no better or perhaps even worse after the operation. Only those patients who reported that they

had no back pain at all and who could manage their work without trouble and without a corsette were assigned to group I. Patients who reported that they felt better were assigned to group II.

TABLE 2  
*Results of operation.*

Group	Males	Females	Total	%
I	5	0	5	23.8
II	5	3	8	38.1
III	3+1	4	8	38.1
Total	14	7	21	100.0

The operation has given complete relief in 5 (23.8 %) of the patients, all males. 2 of them were unskilled labourers doing heavy work. It is difficult to explain why the operation did not produce such good results among the females. As an example of what good results the operation can produce, it may be mentioned that 1 of the patients, an unskilled labourer born in 1919, who had had disabling back pain for 6 months, became completely symptom-free soon after the operation. Of the remaining patients 8 (38.1 %; 5 males and 3 females) reported a marked improvement after the operation. 4 (3 males and 1 female) of these 8 do not need a corsette, while 4 (2 males and 2 females) sometimes or always wear a corsette. The operation produced no improvement in 7, who must always wear a corsette, and 1 patient reported that he felt even worse after the operation. Examination of the 5 symptom-free patients revealed a normal spine except for a slight flattening of the lumbar lordosis and a certain stiffness of the lumbar spine in association with stooping.

Notes were also made of the effect of the operation on the sciatic pain. It was found that the operation has given complete relief of the pain in 11 (52.4 %) patients, partial relief in 6 (28.5 %) and no relief in 4 (19.1 %). Before operation 11 patients had abnormal neurological findings. At the review 6 of these patients had a normalized neurology, 1 showed an improvement, 2 the same picture as before the operation and 2 patients a slight progression of the abnormal neurological findings.

Summarizing, the review shows that the operation has cured the back pain in 5 cases and given considerable relief in 8. The results are not so good as those in *Gill's* series, but excellent compared with those

reported by *Laurent*. If spondylolisthesis does not respond to conservative treatment, laminectomy should be offered. If the operation fails to produce the desired results, operative fusion is indicated.

TABLE 3  
*Results of operation placed in relation to the ages of the patients.*

Age in years at time of operation	Males			Females		
	Group I	Group II	Group III	Group I	Group II	Group III
20-29	0	0	0	0	1	0
30-39	2	0	0	0	0	2
40-49	2	3	1	0	1	0
50-59	1	1	2	0	1	1
60-69	0	1	1*	0	0	1
Total	5	5	4	0	3	4

\* = worse after operation.

#### SUMMARY

Twenty-one of a total of twenty-four patients who underwent laminectomy ad modum *Gill et al.* in 1955-1959 at the Department of Orthopaedics, University Hospital, Lund, were reviewed 1-4 years later. The operation was followed by complete relief of the back pain in 5, by partial relief in 8 and by no relief in 7. 1 patient felt worse after operation.

Patients with spondylolisthetic back pain refractory to conservative treatment should be offered laminectomy. If this operation fails to produce the desired results, operative fusion is indicated.

#### RESUME

21 malades sur 24 chez lesquels a été pratiquée la laminectomie d'après la méthode *Gill* dans les années 1955-59 à la Clinique Orthopédique de l'Hôpital de l'Université de Lund, ont été réexaminés 1 à 4 ans plus tard. A la suite de l'opération, le malade a été complètement soulagé des douleurs du dos dans 5 cas, partiellement dans 8 et pas du tout dans 7. Un malade se sentait moins bien qu'avant l'opération.

Il convient d'offrir la laminectomie aux malades ayant des douleurs spondylolisthétiques du dos réfractaires au traitement conservateur. Si cette opération ne donne pas le résultat souhaité, la fusion opératoire est alors indiqués.

## ZUSAMMENFASSUNG

Einundzwanzig aus einer Gesamtzahl von vierundzwanzig Patienten, die einer Laminektomie nach der Methode von Gill et al. in den Jahren 1955–1959 an der orthopädischen Abteilung des Universitätskrankenhauses in Lund unterzogen worden waren, wurden 1–4 Jahre später nachuntersucht. Die Operation war in 5 Fällen von einem vollständigen Verschwinden der Rückenschmerzen, in 8 Fällen von einem teilweisen Aufhören und in 7 Fällen von keinerlei Erleichterung gefolgt. 1 Patient fühlte sich schlechter nach der Operation.

Patienten mit spondylolisthetischen Rückenschmerzen, die auf konservative Behandlung nicht ansprechen, sollte die Laminektomie angeraten werden. Wenn diese Operation nicht zu den gewünschten Ergebnissen führt, dann ist die Fusion angezeigt.

## REFERENCES

1. *Gill, C. G. et al.*: Surgical Treatment of Spondylolisthesis without Spine Fusion. *J. Bone & Joint Surg.* 37 A, 493, 1955.
2. *King, A. B. et al.*: Another Approach to the Treatment of Spondylolisthesis and Spondyloschisis. *Clinical Orthopaedics*, Number 10, Lippincott, Philadelphia 1957.
3. *Laurent, L. E.*: Spondylolisthesis. A Study of 53 Cases Treated by Spine Fusion and 32 Cases Treated by Laminectomy. *Acta Orthop. Scandinav.*, Supplement No. XXXV, 1958.