

# The theory of the five horses

Michele Conti

## INTRODUCTION

The low back pain is very common in our time. The main cause is the lifestyle [1–4]:

We are always sitting, we do not have time for our fitness, the stress is very high. The result is change of our postural condition with degeneration of the backs muscles, degeneration of the lumbar disc because the greater load is in sitting position and bending forward, exactly like in our office.

In the last 20 years, the spine surgery is changed, in the past the neurosurgeons treated only the discus hernia and vertebral stenosis. The first with the microdiscectomy in according with Caspar technique, the second with the laminectomy.

The results have been not so good. The main reason was the misunderstanding of the stability concept and the growing arthrosis as effect of the instability.

The vertebral fixation in degenerative lumbar disease with pedicle screws and rods is increasing in most part of the spine surgery centers.

## MATERIAL AND METHODS

We treated 234 patients in four years (2011–2014) for the lumbar stenosis. We divide in three groups for the difference surgical treatment. The median age is 64.5 years old, 125 patients are female and 109 was male. The median follow-up is 2.8 years.

All patients are operated with neurological sign of radiculopathy increased in loading or claudicatio spinalis.

Michele Conti

**Affiliations:** Chief of Spine Surgery, Clinical Hospital “Ped-erzoli” Peschiera del Garda and Clinical Hospital “Madonna della Salute” Porto Viro; Italy.

**Corresponding Author:** Michele Conti, Rovereto, Trento, Italy, 38068; Ph:00393385297213; Email: micheleconti@hotmail.com

Received: 21 July 2015

Published: 31 December 2015

The first group (112 patients) had the lumbar stenosis at level L4-L5 with the other level without significant degenerative signs .

The second group (97 patients) had the lumbar stenosis at 2 levels L3-L4 and L4-L5.

The third group (25 patients) had a discus hernia L4-L5 with Modic sign type II.

The treatment were different, in the first group we performed laminoartrectomy L4 and pedicle screws and rods fixation L4-L5.

In the second group we performed laminoartrectomy L3-L4 and pedicle screws and rods fixation L3-L4-L5.

In the third group, we performed a discectomy, pedicle screws and semy-rigid rods fixation L4-L5 (Figure 1).

The follow-up is analyzed accordingly with Table 1:

- A. neurological improvement, recovery of the neurological deficit, remission of claudicatio spinalis
- B. completely remission of the legs pain
- C. low back pain remission

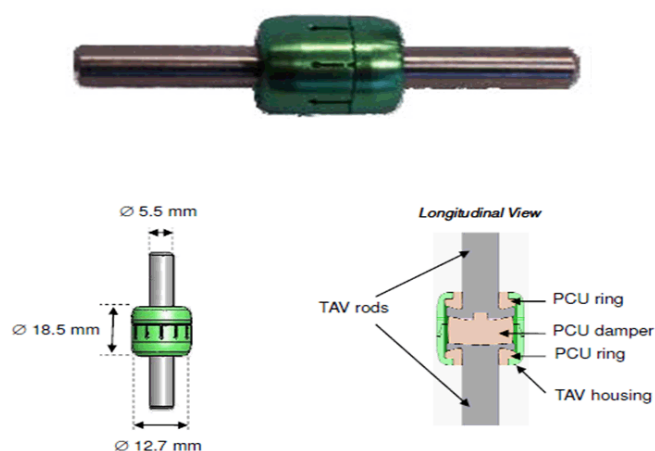


Figure 1: Semi-rigid rods: The rods middle part is a device with ability to move for 6-7 degree in three- dimensional space. The device used : TDX posterior dynamic stabilization of Orthofix.

## RESULTS

The results are summarized in Table 1:

The first group is composed of patients with lumbar stenosis at single level, the result demonstrated good results for neurological deficit, improvement of the legs pain, not so good for the low back pain.

The second group is composed of patients with lumbar stenosis at 2 levels, the result demonstrated not so good results than the first group with a satisfactions patient of 59.8% versus 78.3%.

The third group is composed of patients with discus hernia and Modic sign type 2, the results have been very good for the neurological improvement and low back pain.

The patients of the third group are operated with semi-rigid system to avoid the higher stress at the closer levels. The outcome is very good but the cases number is still not significant.

## DISCUSSION

The results showed a good outcome for neurological deficit and remission of the radicular symptomatology is avoided with screws and rods fixation. The results for low back pain are good only when the level operated is one. With this clinical study we demonstrated the theory of the “five horses”.

The lumbar spine is like a chariot pulled from five horses (the lumbar discs); when one horse work less, the chariot go well if other horses supply the strength. When we fix every disc with radiological alteration, we destroy the balance of the spine: high tension of spine ligaments [5], stress of joints facets, high work load on the not operated disc [6–8], surgical damage of the lumbar muscle.

For this reason is common today the minimally invasive lumbar surgery [8] with percutaneous approach to one lumbar level, discectomy with lateral approach (TLIF: transforaminal lumbar interbody fusion) [9].

The limit of the minimally invasive surgery is the higher incidences of nerve root injury, dural tears, increased intraoperative times, blood loss and re-operation [10].

The open surgery is more safe for the nerves and permit to perform the intertransverse arthrodesis with

bone autologous. The advantage of the minimally invasive surgery is without doubt the preservation of the muscles integrity [11].

The patients of the third group are operated with semi-rigid system to avoid the higher stress at the closer levels . This topic is today much debated [12].

## CONCLUSION

The theory of five horses is the result of our own clinical experience, supported by international biography; the best surgical result for degenerative lumbar spine disease is to operate one single level to resolve the neurological problem and respect the benign natural history of spine aging.

**Keywords:** Back pain, Caspar technique, Discus hernia, Lumbar disc, Lumbar stenosis, Modic sign, Rods fixation, Vertebral stenosis

### How to cite this article

Conti M. The theory of the five horses. Edorium J Surg 2015;2:26–28.

Article ID: 100009S05MC2015

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doi:10.5348/S05-2015-9-ED-7

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### Author Contributions

Michele Conti – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

### Guarantor

The corresponding author is the guarantor of submission.

### Conflict of Interest

Authors declare no conflict of interest.

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Table 1: The results of our study

Group	Neuroogical Improvement	Remission of Legs Pain	Low Back Pain Remission	Good Result
A	90/112	102/112	71/112	78,30%
B	82/97	67/97	25/97	59,80%
C	25/25	24/25	22/25	94,60%

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