

## TREATMENT OF LUMBAR SPINE INSTABILITY

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**INTRODUCTION:** spinal instability can be blocked at its first stages or even reversed by an early diagnosis followed by a suitable therapy.

### PATHOGENESIS

- ➔ LIGAMENTS LAXITY
- ➔ RETICULAR FORMATION INVOLUTION
- ➔ TRAUMATIC
- ➔ PHYSIQUE CONSTITUTION: LONGILINEAL (*LEPTOSOMA*)
- ➔ FEMALE SEX ("SACRUM SOCLE"+++).



"sacrum socle"

### SYMPTOMATOLOGIC TRIAD OF THE LUMBAR SPINE INSTABILITY:

- UNCOMPLICATED INSTABILITY :**
- ➔ WHICH IMPROVES WITH THE MOVEMENT ("LEGAMENTOUS" PAIN),
- ➔ STIFFNESS IN THE MORNING,
- ➔ RECURRENT LUMBAR SPINE BLOCK

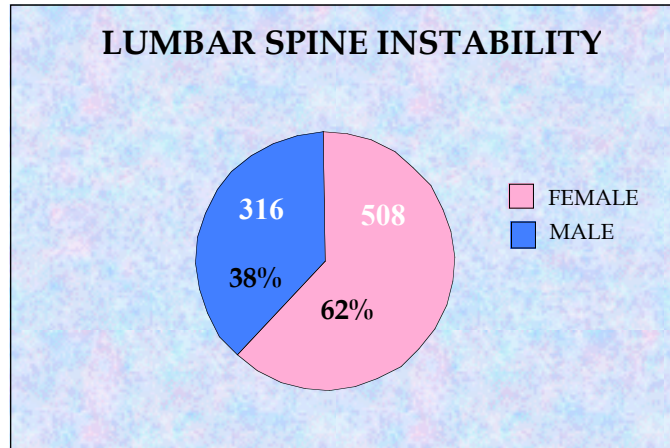
- COMPLICATED INSTABILITY:**
- ➔ CHRONIC BACKACHE
- ➔ MONO OR BILATERAL SCIATICA (DEGENERATIVE DISCOPATHY)
- ➔ SPINAL CLAUDICATION

FROM A BIOMECHANICAL POINT OF VIEW,  
A REDUCTION IN THE LORDOSIS CURVE  
IS EQUIVALENT  
TO A FLEXED RACHIS  
WITH AN INCREASE OF THE VERTEBRAL BODY OVERLOADING  
AND  
A "DEEP STRETCH" ON THE POSTERIOR FACET JOINT AND CAPSULAR STRUCTURES.

**THE THERAPY** should lead to

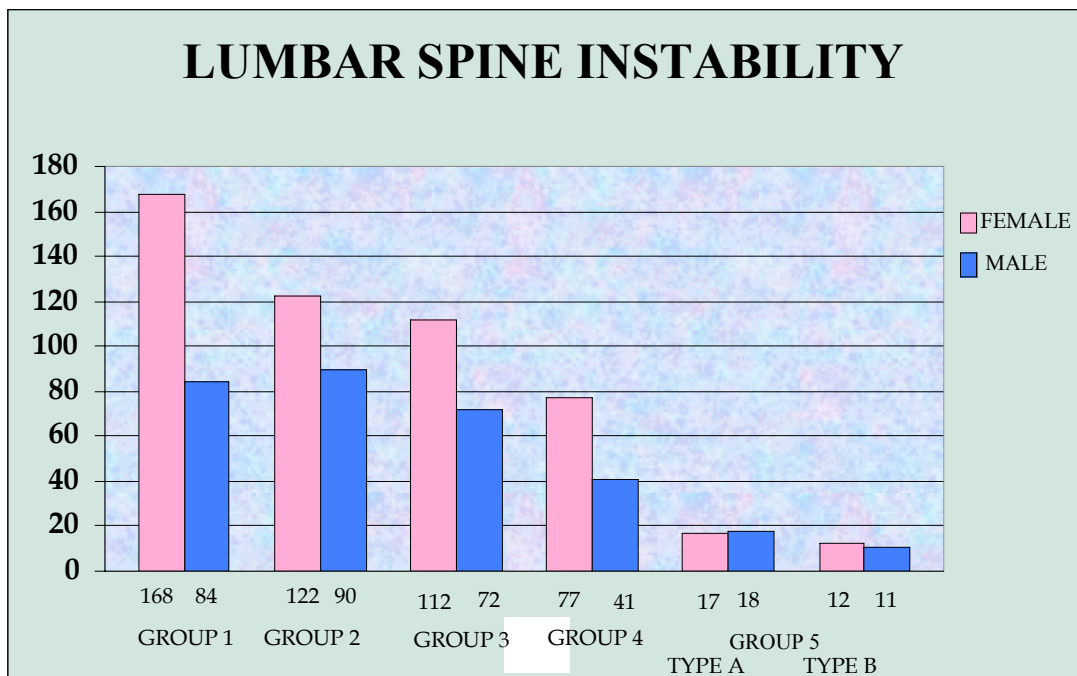
- ➔ a complete reorganization of the postural muscle system to prevent the "fluage" of flexible and bone structures
- ➔ a full rehabilitation of sensorial apparatus
- ➔ a recovery of the intero - extero - proprioceptors of the autonomic nervous systems.

**MATERIALS AND METHODS:** the study is based on a five year analysis and follow up of 824 patients : 508 female and 316 male, aged between 12 and 74.



The diagnosis was based on the data derived from traditional semiotics and using a stereometer®, a podobaroscope® and a computerized baroscopic footboard. Other data were obtained with radiographic exams (conventional x-ray of the spine, dynamic x-ray in lateral bending and in flex-extension, CTscan and MRI).

Patients were divided into 5 groups depending on radiological and clinical data:



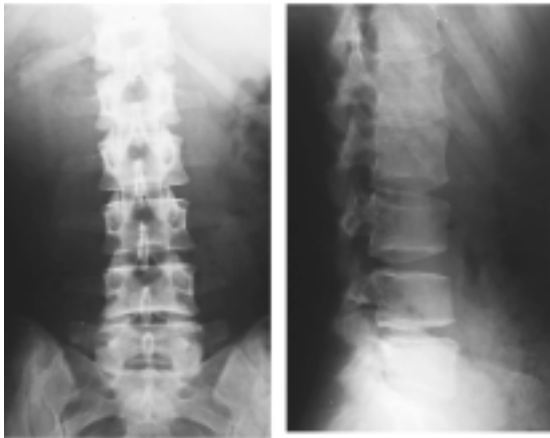
GROUPS	CLINICAL DATA	RADIOLOGICAL DATA	NOTES (THERAPY)
Group 1 252 patients: 168 F - 84 M	Painful stiffness in the morning easily improved by movement ("legamentous" pain).	No radiological sign: preservation of back wall alignment and lumbar lordosis	The muscle has a normal histology. Regular physical activity is possible, no drugs.
Group 2 212 patients: 122F-90M	Stiffness induced longer pain; onset of "mechanical" pain, first episodes of brief back blocking.	Preservation of the posterior wall alignment but tendential straightening of the lumbar lordosis curve.	The multifidus and intervertebral muscles lose their tonic property of "active ligaments" necessary for backbone stability. First intervention of kinetic muscles. Eventually use of SpineMaker®
Group 3 184 patients: 112F-72M	Frequent back blocking, continuous rigidity all day long and in the second part of the night; onset of first "legamentous", mechanical or dural radicular pain	Loss of back wall alignment, straightening of lumbar lordosis, initial increase of the vertebral body overloading with bulging disk	The deep multifidus fibers of type I are substituted by fibers of type II. The patient cannot carry on normal daily working activity without a corset, drug use almost every day.
Group 4 118 patients: 77F-41M	Burning and disabling causalgic lumbar pain. Recurrent episodes of radicular pain. Necessary use of corset, paroxysmal (often bilateral) neurogenic claudication.	Vertebral somatic and disc overloading, degenerative sliding of one single space, hypertrophy of intervertebral joints. Stenosis of lateral recessus with or without slipped disk.	Indication: tray to avoid surgical treatment. In case of paroxysmal claudication, suggest decompression and arthrodesis, eventually with lordosis-inducing osteotomy
Group 5 58 patients: Type A: 35 patients: 17F-18M Type B: 23 patients : 12F-11M	<u>Type A</u> : thanks to our therapeutic protocol, progressive favourable evolution towards stabilisation with disappearance of neurological and pain symptoms. <u>Type B</u> : chronic, often lumbar, crural and sciatica pain with palsy. Claudication and progressive walking capacity reduction to a few meters.	Degenerative back sliding (more frequent D <sub>12</sub> -L <sub>3</sub> ) or front sliding (L <sub>3</sub> -S <sub>1</sub> ). Degenerative scoliosis with lateral or rotatory dislocation. Dynamic or arthrosic stenosis of the lumbar medullary canal.	<u>Type A</u> : Proprioceptive treatment and extero- and proprioceptive insoles Bourdiol. <u>Type B</u> : Laminectomy of one or more segments with lumbar canal recalibration, with barely sparing the posterior facet joints, with or without arthrodesis.



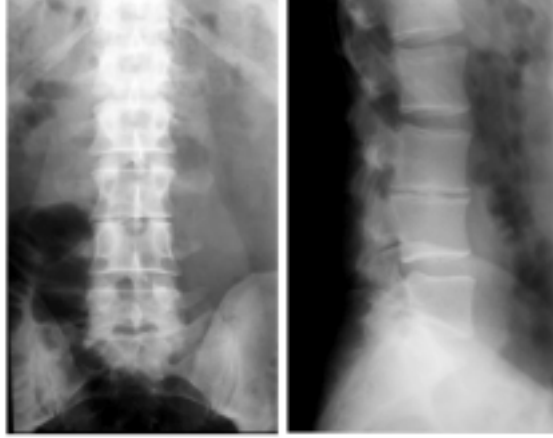
Group 1



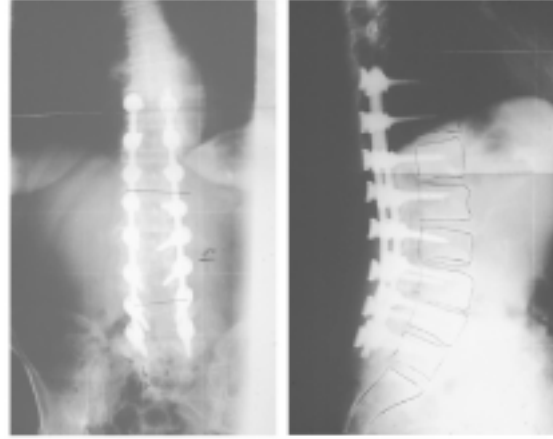
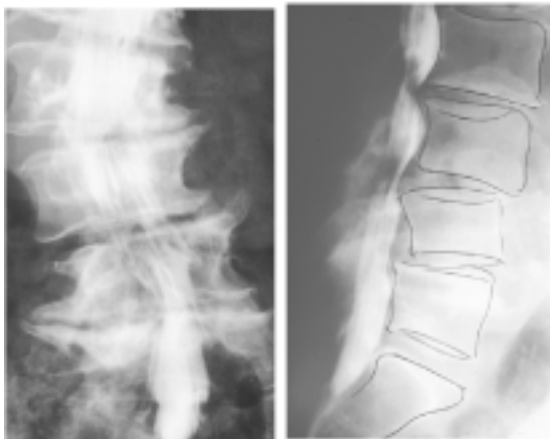
Group 2



Group 3



Group 4



Group 5 - Myelography: stenosis. Before and after operative  
(decompression and arthrodesis with lordosis-inducing osteotomy).

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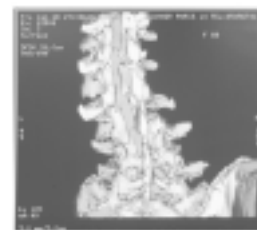
**OBJECTIVE:** Spine stabilization up to the 4<sup>th</sup> degree can be achieved through an appropriate proprioceptive re-education with a series of exercises on erector spine muscles. Every patient followed a rehabilitation protocol consisting of :

1. recovery of intervertebral joint mobility by manipulation with the “miotensiva” technique and “neocerebellare” re-education of the synergetic, agonist and antagonist muscles of the deep part of the multifidus spine (*m. transversospinalis*), aimed to the recovery of fibrae tonic of type I and the subcortical control;
2. proprioceptive re-education of the feet;
3. rebalancing and stabilization of postural muscular chains with the DÆDALUS® and with the “SEMELLES A BOULE®”;
4. static and dynamic correction with neurological extero- and proprioceptive orthopedic devices (Bourdiol-Bortolin’s concept).

Each patient underwent a daily treatment in sittings varying according to pain and clinical situation and was followed by three medical examinations on a weekly, fortnightly and monthly basis, then every six-eight months.

#### RESULTS:

- ➔ 95% of patients in first and second group experienced satisfactory results.
- ➔ 88% of patients in third group had good results and failures were due to abandoning of the therapy and/or need to use other therapies (3% underwent surgery).
- ➔ 83% of patients in fourth group obtained good results, 12% experienced only moderate results and needed to use an orthopedic corset. 5% were proposed to surgical treatment.
- ➔ Patients of type A in fifth group experienced a progressive stabilization, while patients in type B underwent the following treatments:
  1. laminectomy and canal enlargement, with or without discectomy (11 cases),
  2. laminectomy and arthrodesis with or without discectomy (6 cases),
  3. laminectomy, arthrodesis and lordosis-inducing osteotomy (3 cases),
  4. continuous re-education and use of the orthopedic corset in case of medical contraindications to surgery (3 cases).



**CONCLUSIONS :** lumbar spinal instability is a very widespread pathology and the early diagnosis and suitable treatment can definitively and satisfactorily solve this pathology. Our therapeutic approach showed its validity and its ability and to trigger lasting and a fairly good physical recovery. The Bourdiol-Bortolin’s neuroanatomic concept reduces drugs assumption and medical expenses.

G. Bortolin –R. Carniel: Treatment of lumbar spine Instability: ECSS 2000 Jyväskylä

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