Dynesys
A new spine philosophy

- Surgeons have treated over 35,000 patients successfully.
- After the first implantation in 1994, consecutive patient series have been documented by the neutralization group surgeons. This ongoing prospective multi-center study (n=3532) currently has a mean follow-up time of three years (range: 1–7 years) and includes 81 patients and will be extended with a follow-up of 5 years (range 2–10 years).

- It is particularly interesting that there is evidence supporting the idea that the Dynesys system may slow down the degenerative process (decrease of Modic type I changes a few months after the Dynesys system implantation).

- In order to demonstrate the high value the Dynesys system provides to many spine surgeons and their patients, further clinical studies are underway.

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Interventions: more than 35,000 surgeries
Follow-up: up to eleven years

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The non-fusion system for the spine is setting a new standard.
Non-fusion system for the spine

The Dynesys System from Zimmer GmbH is an alternative method of treatment for degenerative diseases of the lumbar spine.

In the natural course of spine degeneration, the functional tripod (sacrum and lumbar spine) goes through several stages of instability. The early stages being failure of the disc and peripherally around the disc. Followed by osteoarthritis of the facet joints, subsidence of the upper vertebra into the lower one and disc herniation. The end stage is a fused deformity. In the phase of degeneration where deformity is caused by disc herniation, that is between the disc and fused deformity, a dynamic stabilization of the degenerative segment provides distinct benefits. It may even slow down the degenerative process.

The concept of the Dynesys system is the segmental mobile stabilization: to control segmental motion; to stop pathological motion; to neutralize excessive forces; to protect the stabilization structures; to prevent progressive deformities; to maintain function. In other words, to substitute the lost physiological stabilizing restraints.

The Dynesys system is a safe and effective procedure to neutralize and prevent segmental insta
dility in early and advanced stages of the degenerative lumbar spine disease. In combination with a fusion procedure the Dynesys system allows a segmental fusion or non-
fusion treatment in the same patient, depending on the severity of the degenerative disease. The Dynesys system is one of the most versatile instrumentation systems available for the treatment of degenerative lumbar spine disease.

Dynesys

A new method in the treatment of the degenerative disc disease

- Recovery of the posterior disc height, facet joints, ligaments and articulations.
- Realignment of the articulating facets.
- Stabilization of the disc, facet joints and ligaments.
- Controlled range of motion by suppressing the discotic instability.
- No requirement to fuse, facet joints and disc stay intact.
- Load sharing between anatomy and device.

Dynesys Biomechanics: the support

- The individual parts, connections and the complete system were tested statically and dynamically.
- Fatigue tests over ten million cycles have shown the safety and effectiveness of the Dynesys system.
- The influence of the implant on spinal motion was studied using a spine simulator and Finite Element Modeling.
- These tests have shown that the Dynesys system can control an unstable segment closer to the characteristics of physiological conditions.
- In vivo measurements indicate that the Dynesys system helps patients regain their ability to control their motion patterns.

Dynesys Scientific experience

The system consists of screws made out of Protac® U10 (Ti-Al-Nb alloy), screws made from Sulene® Polycarbonate Urethane, and a cord, using Sulene PET (polyethylene-tetraphthalate).

With the development of polycarbonate urethanes, a new generation of polyurethanes became available, with excellent biostability. Sulene Polycarbonate has successfully passed all biocompatibility tests according to ISO 10993.

Polycarbonate urethane has been used for many years in the cardiovascular field for pacemaker leads, stents, catheters and more. It combines elastomeric properties with high tensile strength, good abrasion resistance and good biocompatibility.

Polyester has proven its long-term biostability and its good biocompatibility in over 50 years of successful vascular applications. Zimmer GmbH looks back on more than 10 years of experience in the manufacturing of Sulene PET cords.

The Protac U10 is a proprietary development of Zimmer GmbH. It was chosen for the screws because it is a well-established biocompatible material and has been used for more than 15 years in cementless hip and total spine implants.

1. In addition to the standard screws, the Dynesys system is also available with HA coated pedicle screws, Universal Spire

Computer Simulation

Finite Element Modeling (FEM)

Dynamic Stabilization

System for the spine

Stabilization shows a
controlled range of motion

Standard and HA coated pedicle screws

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