

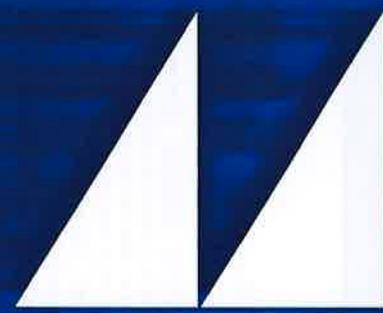
SMS[®]

SHORT MEDACTA STEM

→
M. Tancupis
Bečiūnaitis
Stribas



→
L. A. Bečiūnaitis
& šlovėnaitis
Laklo implantų
paviršius



Brochure

Joint

Spine

Sports Med

→
G. Nėščė



11

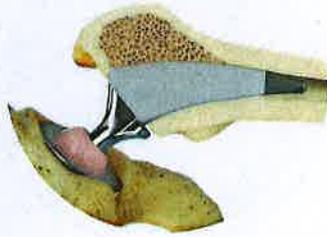
A. J. Thompson mechanism stems

SMS: SHORT MEDACTA STEM

Optimal reconstruction of the individual anatomy and biomechanics of each patient is a crucial part in THA. The **SMS femoral stem** has been designed to meet today's THA challenges in a growing patient population.^[1] SMS is a **bone-preserving short metaphyseal-fitting cementless femoral stem**, available in both **collarless** and **collared** versions.

The stem is designed to achieve a more **physiological proximal load transfer** and restore the **individual anatomy** of the patient.^[2] The SMS's design has been determined and validated based on the analysis of anthropometric data of hundreds of 3D femoral models collected in the **MyBody database**.^[3]

As part of the **P-Family Hip System**, together with AMISem-P and QUADRA-P, SMS represents a **valuable solution** for patients with good bone quality, especially young and active patients with **Dorr A and B+** femurs. **SMS's reduced length design** and **distinctive curvature** allow this stem to be the optimal choice for all MIS procedures, such as the **AMIS approach**.



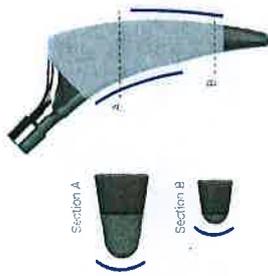
MATERIAL
SMS is made of **Ti-6Al-7Nb Alloy** (ISO 5832-11) and is sandblasted along its length, producing a surface roughness between 2.5 and 6 µm. Subsequently, a 300 µm layer of **MectaGrip**, pure Titanium deposited via Plasma Spray (PS) technology, and an 80 µm outer coating of **hydroxyapatite** (H-A) are applied on the shaft, except for the polished distal tip.

A. J. Padungtan tibial in niche kic part to along a

ANATOMICAL CURVATURE

The distinctive **anatomical curvature** in the frontal and transverse planes has been conceived to allow for an optimal stem fit along the calcar arch, enhance load transfer laterally, and potentially reduce the risk of perioperative fracture.

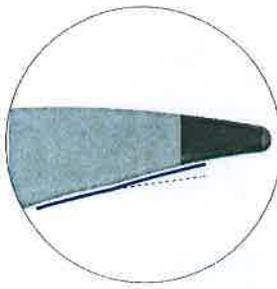
The SMS's **anatomical calcar curvature** in the frontal plane is proven by the **successful clinical experience** of the AMISem and QUADRA femoral stem design.



OPTIMIZED DISTAL SHAPE

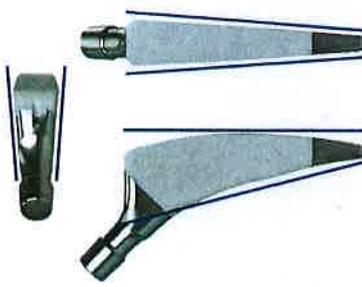
The distal curvature of the stem changes with a **medially-relieved distal geometry**, while keeping a **continuous lateral curvature**.

SMS's reduced distal geometry and shortened length allow for **easy insertion**, regardless of the surgical approach, **prevent distal fixation** and **minimize the risk of thigh pain**.



TRIPLE TAPERED DESIGN

Triple tapered design with a **trapezoidal cross-section** provides axial and rotational stability, and a high fit & fill in the metaphysis, enabling proximal transfer of force.^[4,5,6,7]



OPTIMIZED METAPHYSEAL FITTING

The **MectaGrip coating** enhances proximal fit at the metaphyseal level, and creates a stronger bone-implant interface, allowing for an **improved load transfer**.^[4,8,9,10,11]

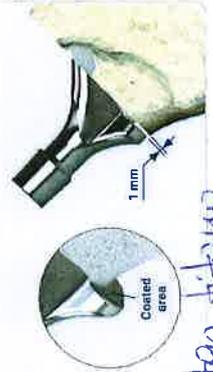
Professor William Walsh's animal study demonstrates how a surface treated with MectaGrip coating can achieve a stronger bone-implant interface compared to a surface treated with hydroxyapatite only.^[8]



1.3. Tapered stem to wigging distal, so tapered stem as stem from metaphyseal level

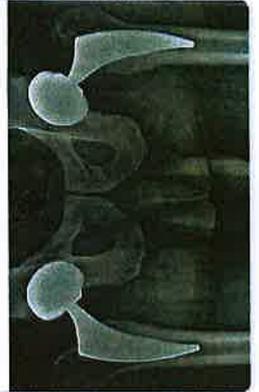
COLLAR OPTION

The collar is designed to be positioned at a **1 mm distance** from the **medial calcar**. In this condition, **load transfers** through the triple taper body of the stem and the **biomechanical behavior** are **identical** to a **collarless stem**. In the case of implant subsidence, the collar comes in contact with the calcar bone, thus contributing to axial and rotational stability of the stem.



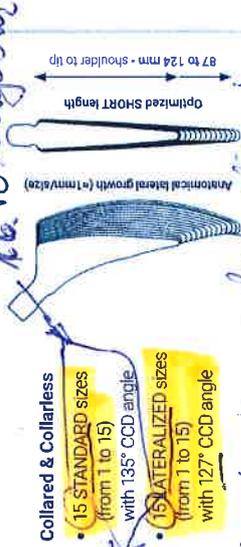
BONE PRESERVING

The SMS's **shortened stem length** and **reduced distal geometry** allow for **preservation** of more **bone tissue distally** than a traditional primary stem, while ensuring an **efficient restoration of the joint biomechanics** and leaving more options for any potential future revision surgery.



EXTENSIVE SIZE RANGE

The SMS's **comprehensive product range** and **anatomically progressive head center growth** ($\approx 1\text{mm}/\text{size}$) help to obtain an **efficient restoration of the joint biomechanics** in a wide patient population.^[12] **Vertical offset** does **not change** when adding lateral offset for each implant size; therefore, the **leg length** is **not affected** when changing from standard to lateralized sizes.



Standard stem in lateralization, the more 14 degrees keep 137° CCD

Dr. Tiuko MIS operations

AMIS FRIENDLY DESIGN

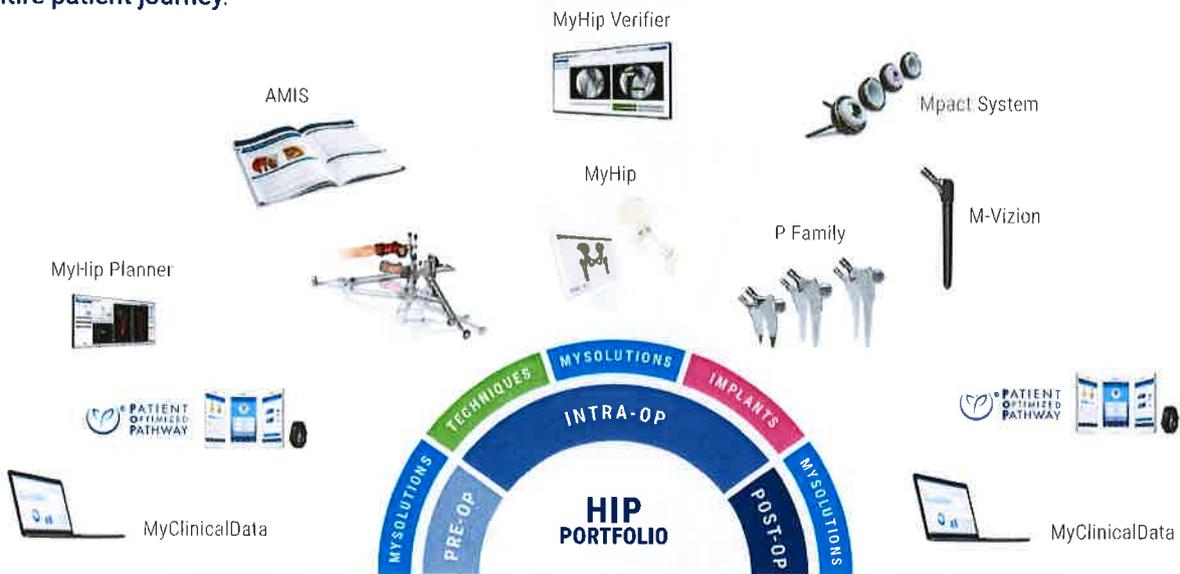
The SMS's **reduced length design** and **distinctive curvature** allow this stem to be the optimal choice for all **MIS procedures**.

Both the instruments and implants have been specifically designed to **reduce the risk of damaging soft tissues** when using the MIS techniques, especially the **AMIS approach**.



PERSONALIZED SOLUTIONS IN HIP REPLACEMENT

The SMS is part of the **P-Family Hip System**, which is the core of the **Medacta Hip Implants portfolio**. The Medacta offering embraces a **Personalized Medicine Vision** with a comprehensive platform for a personalized care experience with a **Holistic Approach**. **Innovative implants, surgical technique** and **technologies** bring value throughout the **entire patient journey**.



REFERENCES

[1] Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR). Hip, Knee & Shoulder Arthroplasty Annual Report 2020, AOA, Adelaide. [2] J. Eijkenboom, P. Tomaszewski, D. Janssen, N. Verdonchot. Short Medacta Stem Pre-clinical assessment of bone remodeling and in growth potential - a finite element analysis. [3] Data on file: Medacta. [4] Moreau P. Cementless HA coated Quadra stem - 7 Years Clinical Outcomes. M.O.R.E. Journal, 2012 Jan; 2:3-6. [5] Zweymüller K. 20 years of Zweymüller cement free hip endoprosthesis. Jatro Orthopädie 1999 Dez; 5:2-7. [6] Heidelberg Lab-Report. Orthopädische Universitätsklinik Heidelberg, 2008. Data on file: Medacta. [7] Löhr JF, Schütz U, Drobny T, Munzinger U. Revision Arthroplasty with the SLR-Revision Shaft. 20 years of Zweymüller hip endoprosthesis, 4th Vienna Symposium. Zweymüller K (ed) - Bern; Göttingen; Toronto; Seattle: Huber, 2002. [8] Prof. W.R. Walsh. Evaluation of implant fixation in an ovine model. Data on file: Medacta. [9] Hardy DCR, Delince PE. Aspects Radiologiques de l'Arthroplastie Fémorale Revue d'Hydroxyapatite et correspondance Histologiques Acta Orthop Belg. 1993; 59(1):229-334. [10] Hardy DCR, Fraysinnet P, Delince PE. Projection d'Hydroxyapatite sur Prothèses Articulaires : Progrès ou Illusion ? Acta Orthop Belg. 1993; 59(1):98-103. [11] Fraysinnet P, Hardy D, Conte P, Delince P, Guilhem A, Bonel G. Histological analysis of the bone-prosthesis interface after implantation in humans of prostheses coated with hydroxyapatite. [12] Piriou P, Bugyan H, Casalonga D, Lizée E, Trojani C, Versier G. Can hip anatomy be reconstructed with femoral components having only one neck morphology? A study on 466 hips. J Arthroplasty. 2013 Aug;28(7):1185-91.

* The CT and MRI scans contained in the "MyBody" database are anonymous and do not permit in any way the identification of patients. Medacta recognizes the importance of personal data protection and considers that preserving the confidentiality of personal data is one of the main objectives of its activity, in compliance with any applicable privacy law and regulation.

All trademarks are property of their respective owners and are registered at least in Switzerland. This document is not intended for the US market. Please verify approval of the devices described in this document with your local Medacta representative.

QUADRA SYSTEM

A COMPLETE RANGE OF STRAIGHT STEMS

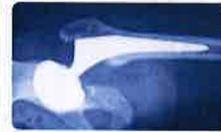
QUADRA SYSTEM: MORE THAN 10 YEARS OF SUCCESS

With a clinical history starting in 2000 and thousands of stems implanted every year worldwide, Quadra System stems have proved to be a reliable solution for hip arthroplasty. In a clinical study by Belgian University, a 100% survival rate at 5 years was reported for 109 patients, considering aseptic loosening as the endpoint.

- Complete range of straight stems
- Effective stability thanks to the triple tapered design
- Wide ranges of sizes
- Reliable, compact and precise instrumentation



PRODUCT RANGE



QUADRA-S & QUADRA-H
 ■ 11 STANDARD sizes with 13.5° neck-stem angle
 ■ 5mm shorter neck sizes are available for both STANDARD and LATERALISED versions

QUADRA-C

■ 6 STANDARD sizes with 13.5° neck-stem angle

QUADRA-R

■ 10 sizes with 127° neck-stem angle

CEMENTLESS LONG STEM

Quadra-R is a cementless straight long stem for revision purposes or periprosthetic fractures.



QUADRA-R

Based on the Quadra-H, Quadra-R provides the stem with a longer and larger distal flange for greater distal stability in the femoral cavity. It shares most of the characteristics of the cementless options. Quadra-R is available with a dedicated instrumentation tray.

MATERIALS & FINISHES

Quadra-S and Quadra-H are made in a nickel-titanium alloy. Titanium is a biocompatible material ideal for direct interaction with the bone.

Quadra-C is made of high nitrogen stainless steel providing the ideal stiffness for a cemented solution.

Quadra-S Surface - The surface has a controlled roughness between 4µm and 7µm thanks to a specific sandblasting treatment on the shaft which allows outstanding osteointegration.



Quadra-H and Quadra-R Surface - The surface has an 80 µm thick HA coating applied after sandblasting. The HA coating has chemical characteristics similar to those of human bone. When the HA coating is embedded in the bone, leading to long-term fixation.

Quadra-C Surface - Mirror polished surface for correct interaction with the cement mantle.

CONCEPT

SHAPE

■ Based on experience with straight, rectangular cementless stems

DESIGN

■ Triple taper with hexagonal cross section providing good axial and rotational stability with optimal engaging to the bone

NECK

■ Different offsets to reproduce patient joint geometry including standard, lateralised and short neck options
 ■ Mirror polished rounded neck to minimise wear
 ■ Suitable for Double Mobility cups

TAPER

■ Micro-filled
 ■ 12/14 EDUCCONE 15942 30°
 ■ Shortened to increase ROM

PROXIMAL FEMUR

■ Close contact between the stem and the cortical bone thanks to the opened shape and high direction biopores
 ■ Coat stability
 ■ Natural load transfer
 ■ Minimised stressshielding risk, preserving healthy bone
 ■ Non-bulky lateral shoulder (des) for MIS approaches

MACROSTRUCTURES

■ Horizontal and vertical macrostructures increase contact surface area by 10-15%
 ■ The proximal horizontal macrostructures increase axial stability
 ■ The vertical distal macrostructures increase rotational stability

DIAPHYSIS

■ Squared shape for an adequate primary diaphyseal fit
 ■ Enhanced rotational stability

DISTAL TIP

■ Double tapered distal tip reduces the risk of stress hook in the diaphysis

QUADRA SYSTEM: COMPLETE RANGE OF STRAIGHT STEMS



8. IMPLANT NOMENCLATURE

SMS

10.1

STANDARD	SIZE	LATERALIZED
01.36.056	1 long	01.36.076
01.36.057	2 long	01.36.077
01.36.041	1	01.36.061
01.36.042	2	01.36.062
01.36.043	3	01.36.063
01.36.044	4	01.36.064
01.36.045	5	01.36.065
01.36.046	6	01.36.066
01.36.047	7	01.36.067
01.36.048	8	01.36.068
01.36.049	9	01.36.069
01.36.050	10	01.36.070
01.36.051	11	01.36.071
01.36.052	12	01.36.072
01.36.053	13	01.36.073
01.36.054 ¹	14	01.36.074 ¹
01.36.055 ¹	15	01.36.075 ¹

¹On demand