PERSONALIZED MIS SOLUTIONS
The MySpine MC Experience
Redefining better in orthopaedics and spine surgery

“Our vision to improve the care and well-being of orthopaedic and spine surgery patients around the world stems from both experience and passion.

Our surgical innovations and surgeon education programs focus on getting patients back to their healthy, active lifestyles, without forgetting both the environmental and societal impacts of the products we create.”

Francesco Siccardi
CEO
With the patient in mind, our innovations are designed to become part of their life experience.
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Innovation is of paramount importance at Medacta

It is the foundation of all our projects and the basis of our growth strategy today and tomorrow. Personalized solutions, the primary focus of our innovation, are based on three pillars: a complete and profound knowledge of human nature, the use of cutting-edge technologies such as 3D printing, and continuous investments in long-term R&D and in medical education, collaborating with surgeons and universities worldwide.

Innovation is expressed in the originality of our minimally invasive and personalized surgical techniques and our internationally patented implants, devices and surgery execution tools.
From **Minimally Invasive Surgery** to **Personalized Medicine** and beyond
Swiss company. Your global partner

Medacta’s mission is to transform the patient experience by advancing surgical approaches, implants and instruments through responsible innovation and meticulous design in joint replacement, spine surgery and sports medicine. Medacta is a unique company in its field, as it is the only one founded by a patient. It follows the experience of the Founder Alberto Siccardi, whose own journey as a patient convinced him of the importance of pioneering a new approach to joint replacement.

Established in 1999, Medacta has leveraged its orthopedic expertise and comprehensive understanding of the human body to develop the “MySolutions” technology, which offers surgeons personalized pre-operative planning and implant placement methodologies by creating advanced personalized kinematic models and 3D planning tools.

Since 2009 a team of engineers has collaborated with international surgeons to develop innovative solutions for the treatment of various spine pathologies. The MySpine platform, along with MC-Midline Cortical guides, is a 3D printed patient matched solution that, together with the M.U.S.T. Screw System, the MectaLIF Ti-coating family of interbody fusion devices, creates a harmonized and complete system, meeting surgeon needs and patient care expectations.
M.O.R.E. INSTITUTE WAS FOUNDED

MEDACTA INTERNATIONAL WAS FOUNDED

NEW HEADQUARTERS IN CASTEL SAN PIETRO

1st IMPLANT IN USA

STRATEGIC DECISION TO ENTER SPINE MARKET

STRATEGIC DECISION TO ENTER SPORTS MED MARKET

NEW PLANT IN RANCATE AND STABIO LOGISTIC CENTER

Bieffe Biochimici Firenze was founded by Dr. Francesco Siccardi Sr.

Acquisition by Baxter of Bieffe Medital

20th MEDACTA ANNIVERSARY

2019
MySpine MC
Personalized MIS solution

MySpine is Medacta’s patient-specific navigation platform that provides pre-operative planning and intra-operative navigation, and integrates a comprehensive product portfolio of patient-matched technologies. MySpine was born out of Medacta’s commitment to three core philosophies:

MEDICAL EDUCATION

PATIENT WELL-BEING

HEALTHCARE SUSTAINABILITY

MySpine embodies these core philosophies by providing spine surgeons with patient-specific anatomical insights through its suite of pre-operative planning functionality, a safer surgery by helping reduce radiation exposure and incision size, and an affordable navigation platform with zero capital investment or restrictive purchasing agreements.
Medacta’s MySpine MC Wins MedTech Breakthrough Award for Orthopaedics and Surgical Innovation as “Best Healthcare Navigation/Robotics Solution”
Thanks to this accurate tool the surgeon can optimize screws parameters, entry points and trajectories\cite{14}, potentially avoiding intraoperative complications for the patient, such as pedicle fractures and neurovascular injuries\cite{14,16}. 

3D Preoperative Planning
Personalized by the surgeon... for the Patient
Personalized Technique

MySpine MC entry points and trajectories are customized through pre-op trajectory management to enable the use of longer screws and larger diameters vs. free hand CBT, and are comparable to the conventional technique.

3D PRE-OPERATIVE PLAN

The final pedicle screw position reflects the pre-operative plan
Minimally invasive

Posterior lumbar fusion is driven in a minimally invasive, muscle sparing way, allowing:

- Enhanced muscle preservation\(^\text{[17]}\)
- Reduced blood loss\(^\text{[17]}\)

Compared with traditional open technique.

The benefits for the patient are:

- Supradjacent facet preservation\(^\text{[1,17]}\)
- Lower adjacent segment disease\(^\text{[2]}\)
- Faster discharge\(^\text{[16]}\)
- Less pain\(^\text{[17]}\)
- Fast patient recovery\(^\text{[16,17]}\)

Compared with traditional open technique.
Personalized around the patient

Following the pre-op trajectory a 3D patient matched guide is designed to match the patient’s anatomy. This navigated tool provides accurate intra-operative guidance for safe screw positioning\(^ {[14]} \) potentially reducing the need of fluoroscopy\(^ {[15]} \).

A personalized surgical instrument to match patient’s anatomy
Accurate technology

The final screw positioning reflects the trajectories planned by the surgeon pre-operatively[14].

With Low radiation dose

- Patients are exposed to a low dose pre-op CT scan, resulting in radiation exposure lower than a single full spine x-ray
- Pre-operative planning potentially nullifies the need for intra-operative checks, with dramatic reduction of irradiation[16]
- Cumulative dose is potentially reduced vs. navigation assisted technique

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Comparison of conventional and competitors technique irradiation vs. MySpine:

- **Positional Accuracy:** ~0.6 MM Deviation
- **Angular Accuracy:** ~1.5° Deviation

MySpine is Safe for both OR Staff and Patients!

Average annual US background radiation [3.1]

4 times less than conventional techniques
Excellent Clinical Outcome

99.5% Safe Pedicle Screw Positioning

-24% Hospital Stay

-69% Reduced Screw Loosening Rate

-83% Strong Anteroposterior Spondylolisthesis Correction Slip

+35% Significant Increase in Pull-Out Resistance

-18% Blood Loss During Surgery

Better Muscular preservation

Uncompromised Fusion Rate

Less Residual Low Back Pain after Surgery
1. IMAGE ACQUISITION
Low Dose CT scan to deliver 3D reconstruction of individual vertebral anatomy

2. 3D PRE-OP PLAN MANAGEMENT
The surgeon defines effective implant parameters: screw diameter, length and trajectory

3. 3D PRINTING MYSPINE MC
3D patient matched Jigs are sent to the hospital

4. MYSPINE MC MIS SURGERY
Surgery with dedicated MySpine MC system
Medical Education

The M.O.R.E. Institute offers effective and continuous education to surgeons, with an aim to improve patient outcomes and surgical proficiency. Close collaboration between Experts and the M.O.R.E. Institute has resulted in the on-going development and evolution of the Educational programme.

The M.O.R.E. Institute was founded on, and encourages the concept of, sharing experiences across the international medical community. It has become a unique and global education platform, tailored to the individual’s needs.

The surgeon is never alone when discovering new technologies

MORE.MEDACTA.COM
By attending a Learning Centre

DEEPEN
the scientific knowledge of the Approach

PRACTICE
the technique during assisted cadaver workshops

By visiting a Reference Centre

EXPLORE
Medacta Products/Services

EVALUATE
Surgical Technique

EXPERIENCE
a network of Experts, with mentoring of initial cases

EVOLVE
with the M.O.R.E. continuous education program

By taking advantage of Proctoring
By meeting with Experts

SHARE
your experience, improve your technique and widen patient selection

4

5

MASTER
the MySpine MC Surgical Technique and Medacta Products

By dedicated podium and Scientific Activities

EXPECT MORE
with an Education Path tailored to your needs
Multiple implants choice

A comprehensive screws and cages portfolio to work in harmony with the patient matched platform.

**M.U.S.T.**

Multiple choices of cannulated and solid screws to accommodate:
- Degenerative and deformity cases
- Primary and revision cases
- High degree reduction

The range of diameters covers the thoracolumbar, sacral and sacro-iliac fixation needs.

**MECTALIF**

**MectaLIF Oblique**
MectaLIF Oblique cage that, with a 3D lordosis is capable to deliver stable vertebral support and potentially reduced risk of subsidence

**MectaLIF Transforaminal**
MectaLIF Transforaminal banana cage with a large contact area and a controllable system with a precise delivery

**MectaLIF Posterior**
Thanks to the MectaLIF Posterior cage capable to accommodate stable support with a broaden area of intervertebral contact

**Flexibility during the surgery**
Enhanced Bone Contact

Next generation plasma sprayed Titanium with proven clinical results.

**TOPOGRAPHY**

TiPEEK cages are plasma sprayed coated devices with a unique roughness and a 3D complex topography.

- Rough Layer$^{[c,d]}$
- Hydrophilic Surface$^{[d]}$
- Low Inflammatory Response$^{[b]}$

**FUSION RATE**

High level fusion rate: ~90% at 3 months post-operative$^{[a]}$.

![Chart showing fusion rates](chart.png)

**Flexibility during the surgery**

- 20%
- 40%
- 60%
- 80%
- 100%

- 3 months
- 12 months

- Peek
- TiPeek
- Peek
- TiPeek

References:

- Olivares-Navarrete et al. Osteoblast maturation and new bone formation in response to titanium implant surface features are reduced with age. J Bone Miner Res. 2012; 27(8): 1773-1783
Modular Design offers Freedom of Choice

Versatile solution provides freedom of choice in a personalized platform.

MECTALIF ANTERIOR

Flush
No anterior profile construct for minimal impact.

Hybrid
Greater cranial stability with a caudal flush profile provide a solution for L5-S1 implantation.

Long
Greater stability in extension and torsion with a 4 hole design.

L5-S1
Greater stability in extension and torsion. 3 holes design provides flexibility with respect to the iliac artery bifurcation.

Flexibility during the surgery
A **Unique** Synergy

MySpine & MectaLIF Anterior, a unique synergy for effective sagittal imbalance restoration.

- Proper *sagittal* and *coronal alignment* thanks to hyperlordotic cages in combination with posterior correction
- Recovery of the Spino *Pelvic harmony*
- Ideal *circumferential approach* in combination with MySpine MC Minimally invasive surgery
- *Decreased complications* than traditional pedicle subtraction osteotomies (PSO)

![Diagram of lumbar lordosis distribution](image)

**IDEAL DISTRIBUTION OF LUMBAR LORDOSIS[4]**

- **L1**: 3%
- **L2**: 12%
- **L3**: 18%
- **L4**: 27%
- **L5**: 40%
- **S1**: 27%

**M.U.S.T. PEDICLE SCREWS COMBINED WITH MECTALIF ANTERIOR**

*Courtesy of Dr. Matthew Tait, Macquarie University Hospital, Sydney*
Surgeon Testimonies

“Now I go into the operating room with a much more unique understanding of the patient that I’m about to operate on because I feel like I literally looked at their spine and turned it around and understood it in a way that helps me, when I’m there in the operating room.”

(Dr. Jeffrey Henn, MD)

“I feel that with 3D planning there are some definite benefits. It is possible that blood loss, operative time, neurologic injury, vascular injury and possibly even infections can be reduced, if you have paid attention to the anatomy pre-operatively.”

(Dr. Brian Nielsen, MD)

“The one I actually like the best … is pre-operative planning. That is the future … You can plan it in advance. Very impressive technology.”

(Dr. Rick Hynes, MD)
Medacta was founded with the philosophy of creating medical devices that facilitate healthcare sustainability. This is the reason why sustainability is a fundamental pillar of our way of doing business, in environmental, economic and social terms. This philosophy translates into guidelines and internal regulations that guide our daily decisions and actions.

MySpine embodies this philosophy while providing a comprehensive navigation system with the following advantages over competitive systems:

- No capital investment is required
- No recurring maintenance fee is required
- Low per-case disposable cost
- Viability in out-patient / surgery center environments

2019 AWARD
Medacta’s MySpine MC Wins MedTech Breakthrough Award for Orthopaedics and Surgical Innovation as “Best Healthcare Navigation/Robotics Solution”
A comprehensive range of patient specific, pedicle screw placement guides allows for a personalized treatment depending on the patient pathology and the surgical approach. The system supports the surgeon pre and intra operatively for post op patient benefit.

Multiple Surgical Options for different indications.
A unique platform to treat thoracolumbosacral segments in conventional technique.

MIS solution for cortical bone screw fixation.
REFERENCES

15. Matsukawa K. et al., Cortical pedicle screw trajectory technique using 3D printed patient-specific-guide, M.O.R.E. Journal, September 2018
17. Marengo N. et al., Cortical Bone Trajectory Screws in Posterior Lumbar Interbody Fusion: Minimally Invasive Surgery for Maximal Muscle Sparing—A Prospective Comparative Study with the Traditional Open Technique, Clinical Study, February 2018