

NOVA

Minimal Invasive System

Neat

simplified surgical technique

Optimal

change in between minimal invasive,
open, or percutaneous

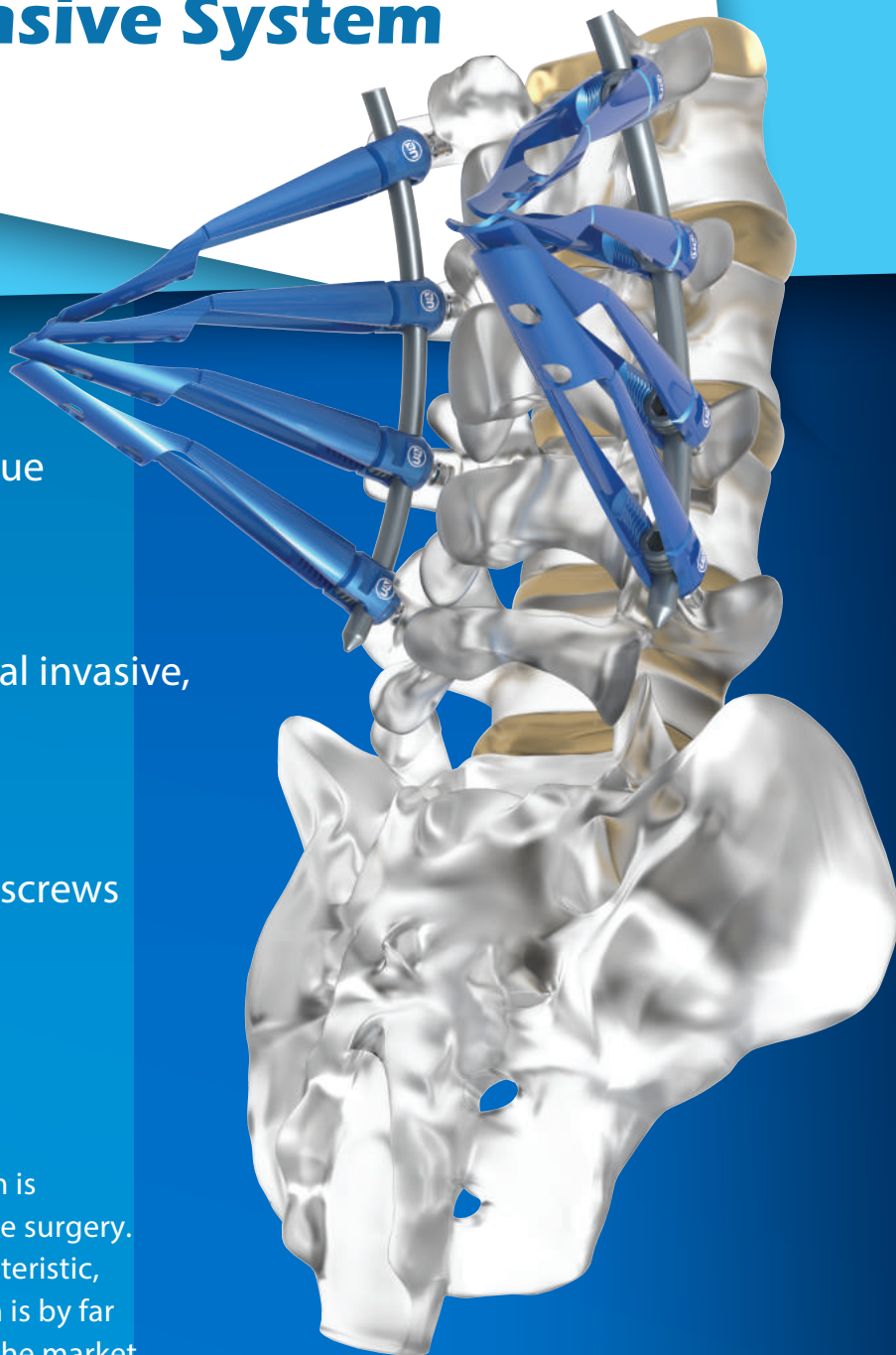
Variety

choice of different type of screws

Advance

smallest incision

The NOVA Minimal Invasive System is designed for minimal invasive spine surgery. With the special design and characteristic, the NOVA Minimal Invasive System is by far the most advanced MIS system in the market.



The ReBorn Essence NOVA Minimal Invasive System is designed for the treatment in spinal diseases. The poly axial screws with long breakable blades are simplifying the mini-open spine surgery. The rods, for fusion of the spine, come with different lengths.

The NOVA Minimal Invasive System is made for spine stabilization prior to fusion at the anterior column of the vertebrae. After fused spine occurred, the implants are intended to be removed. Please refer to the use of indication stated in the manual of The ReBorn Essence NOVA Minimal Invasive System. The ReBorn Essence NOVA Minimal Invasive System is not intended to be used with other systems of pedicle screws.



Indication

The mini-open surgical approach is intended to treat lumbosacral with two small incisions. Autograft or allograft must be used in combination with the system. When the fusion is established, the implant is intended to be removed. From thoracic to sacrum, this system is designed to provide stabilization with immobilization for segments with diseases of deformities, chronic instabilities, degenerative disc diseases, spondylolisthesis, fracture, dislocation, scoliosis, hyperlordosis, hyperkyphosis, and failed previous fusion.

Accurate Alignment

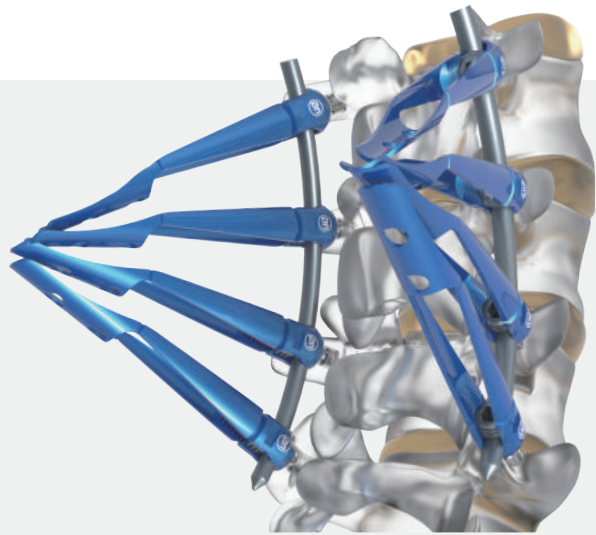
The pilot holes on the top of the blades can assist on screw alignment.

PM Switch

Change between percutaneous and mini-open operation technique at any time.

Minimal Incision

A 3.5 cm incision is sufficient for a three-level stabilization.



Contraindication

In the condition which is absence or compromise of significant stabilizing elements. Patients with severe osteoporosis, infection, metal allergy, severe metabolic bone disease, or any entity or condition that totally precludes the possibility of fusion. In addition, some of the lifestyles of the patients, will be affecting the stress on the implants and causing the failure of the implantation, such as their occupation, overweight, mental illness, alcoholism, or drug abuse.

Introduction

Minimal Invasive Systems are made for less invasive operation, which mainly focuses on reducing blood loss, tissue and ligament trauma, and hospital stays. The paraspinal posterior approach, known as The Wiltse Approach (Figure 1), to the lumbar spine is for spinal fusion, especially regarding lumbosacral spondylolisthesis treatment¹. The very first paraspinal approach was first described by Watkins in 1959². Then Wiltse³⁻⁵ described a modified trans-muscular paraspinal approach consisting of longitudinal separation of the sacrospinalis muscle between its multifidus and longissimus parts. From then on every company with the design of minimal invasive products are based on Wiltse's idea of approaching.

Reference :

- [1]. Anatomical Study of the paraspinal approach to the lumbar spine
Eur Spine J. 2005 May; 14(4): 366–371.
- [2]. Watkins J Bone Joint Surg Am. 1959; 41:388.
- [3]. Wiltse Clin Orthop. 1973;91:48.
- [4]. Wiltse Spine. 1988;13:696.
- [5]. Wiltse J Bone Joint Surg Am. 1968; 50:919.

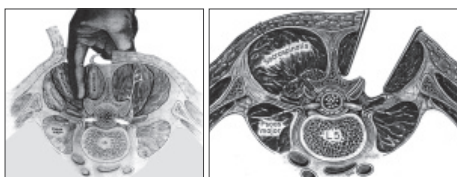
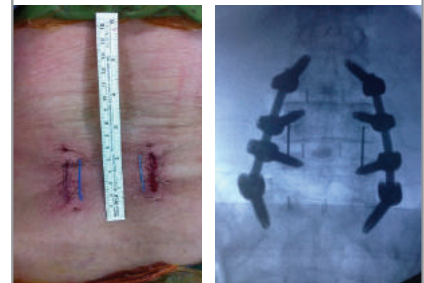
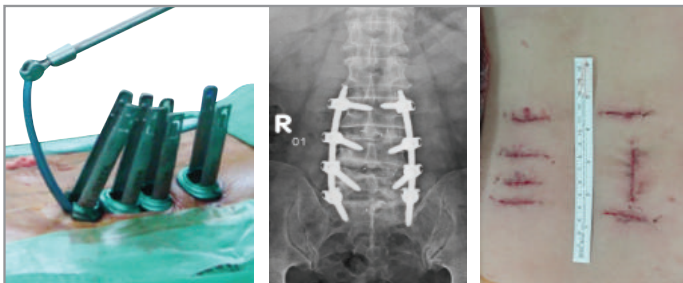
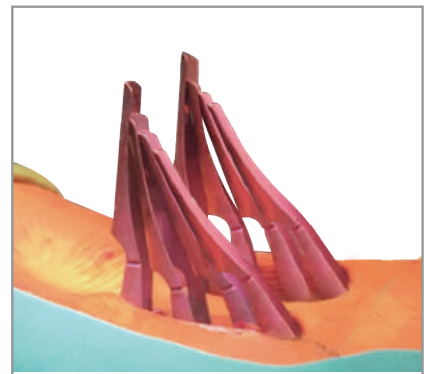


Figure 1

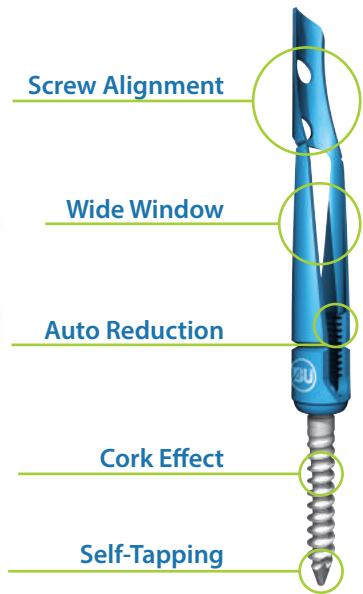




- The half pipe design is focusing on having smaller incisions at lumbosacral area. The ideal MIS technique, one screw per incision, left patients with multiple wounds, which is similar to the picture shown on the left side. With NOVA Minimal Invasive Systems, surgeons will be able to decrease the number of incisions, and have every process needed in the meaning of decompression at only 1 incision per each side.



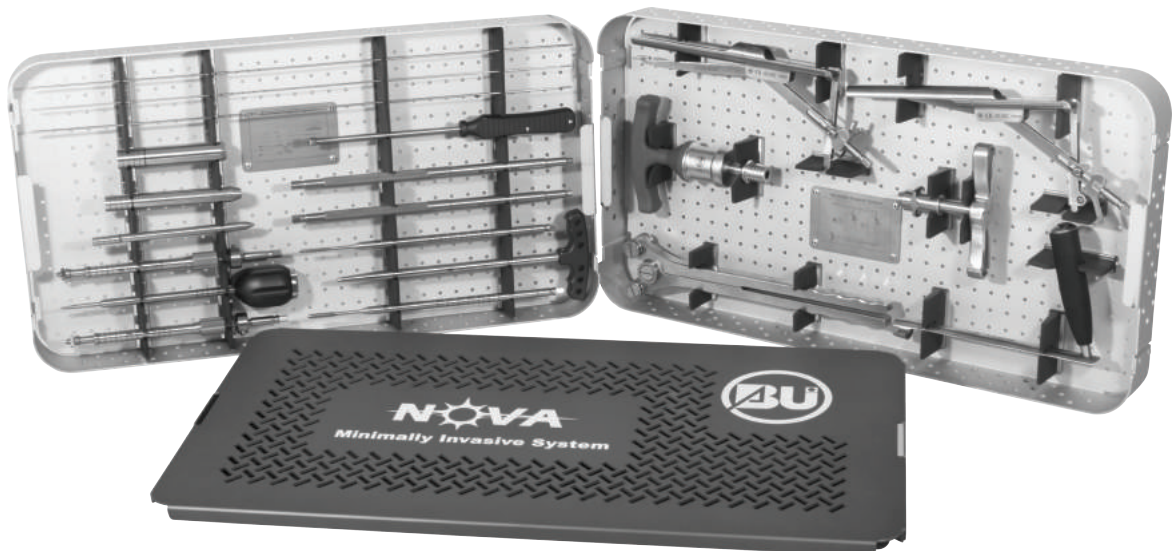
- NOVA System is reducing the incisions and giving surgeons a better in situ view with mini-open style approach. The picture shown on the above, with a smaller incision, NOVA System is still capable of implanting the same amount of screws and cages.
- Rod insertion is always an issue when it is percutaneously. Companies provide muscle dilator for clearing the passway in between the tubes. As of NOVA System, this is not an issue due to the mini-open approach. The wide window gives users a great vision of the passway during the process of rod insertion. This system is capable of switching between percutaneous and mini-open method during the surgery.



Design Rationale

- One-piece implant design reduces the surgery time by eliminating the installation of the sleeves. Decreases the chance of infection due to less contact with reused tools.
- Reduction ready, maximum up to grade 2 spondylolisthesis of reduction capability.
- Wide window for visibility and rod insertion.
- Self-tapping and self-drilling are made for faster implantation.
- Cork effects with the assist of cannulated screws, give users a better and secure surgical experience.

ReBorn Essence NOVA Spinal Fixation System



Poly Axial Screw

REF	Dia. (mm)	Length (mm)
663-4530Y	4.5	30
663-4535Y	4.5	35
663-4540Y	4.5	40
663-4545Y	4.5	45
663-4550Y	4.5	50
663-5030Y	5	30
663-5035Y	5	35
663-5040Y	5	40
663-5045Y	5	45
663-5050Y	5	50
663-5530Y	5.5	30
663-5535Y	5.5	35
663-5540Y	5.5	40
663-5545Y	5.5	45
663-5550Y	5.5	50
663-6030Y	6	30
663-6035Y	6	35
663-6040Y	6	40
663-6045Y	6	45
663-6050Y	6	50
663-6240Y	6.25	40
663-6245Y	6.25	45
663-6250Y	6.25	50
663-6530Y	6.5	30
663-6535Y	6.5	35
663-6540Y	6.5	40
663-6545Y	6.5	45
663-6550Y	6.5	50
663-6555Y	6.5	55
663-6560Y	6.5	60
663-7030Y	7	30
663-7035Y	7	35
663-7040Y	7	40
663-7045Y	7	45
663-7050Y	7	50
663-7055Y	7	55
663-7060Y	7	60
663-7530Y	7.5	30

REF	Dia. (mm)	Length (mm)
663-7535Y	7.5	35
663-7540Y	7.5	40
663-7545Y	7.5	45
663-7550Y	7.5	50
663-7555Y	7.5	55
663-7560Y	7.5	60
663-8030Y	8	30
663-8035Y	8	35
663-8040Y	8	40
663-8045Y	8	45
663-8050Y	8	50
663-8055Y	8	55
663-8060Y	8	60

Pre-bent Rod

REF	Dia. (mm)	Length (mm)	REF	Dia. (mm)	Length (mm)
320-5504C	5.5	40	320-5512C	5.5	120
320-5505C	5.5	50	320-5513C	5.5	130
320-5506C	5.5	60	320-5515C	5.5	150
320-5507C	5.5	70	320-5517C	5.5	170
320-5508C	5.5	80	320-5519C	5.5	190
320-5509C	5.5	90	320-5521C	5.5	210
320-5510C	5.5	100	320-5523C	5.5	230
320-5511C	5.5	110	320-5525C	5.5	250

Tools

Cannulated Awl 3 in 1
405-0502



5mm Hex Screw Driver
409-0829



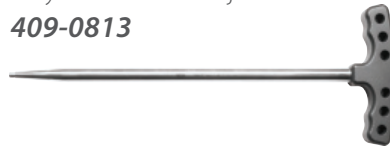
Compression Device
405-0903



1.5mm Guide Pin
409-3115



Ploy Axial Screw Adjustable Driver
409-0813



Distraction Device
405-0902



Cannulated 4.5mm / 5.5mm Tap
405-0545A **405-0555A**



Dilator Sleeves
405-0302



Torque Wrench
406-0107



Cannulated Ploy Axial Screw Driver
409-0836



Anti-Rotator
409-3004



T-Handle
405-0101



Semi-automatic Rod Holder
405-0901



Straight Ratchet Handle
406-0103

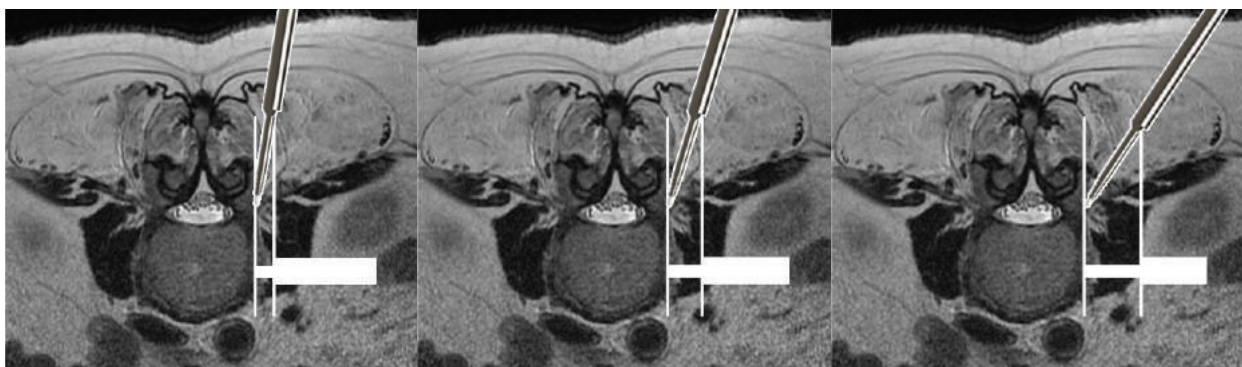


Rod Bender
406-1201



Unique Tool 3 in 1 Awl

- The unique 3 in 1 tool is made with specific functions to ease out the operation need in finding the pedicles. The function of (A), 5mm in length, is a replaceable tip connecting to the cap, and it works as an awl in traditional pedicle instrument. The function of (B), 10mm in length, is a tapping thread for penetrating through the pedicle, which works as a tap in the traditional pedicle instrument. And the function of (C), the entire design of the tip which is 40 mm in length, works as a probe in the traditional instrument.
- The combination of the three characteristics give users a whole new experience on targeting pedicles with a safer and more accurate approach. As of the picture shown below, surgeons are able to identify the pedicle accurately with this special tool.



Minor Angulation

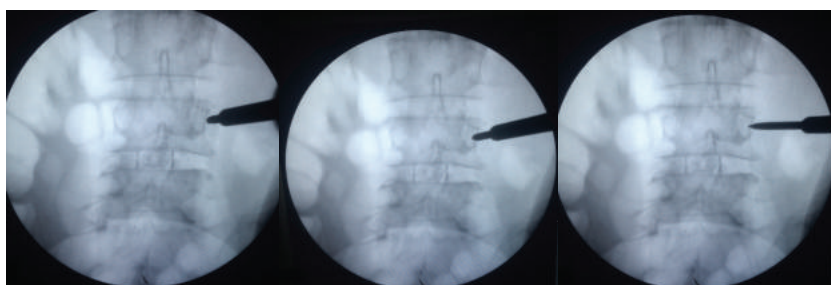
Reflecting shadow is too small

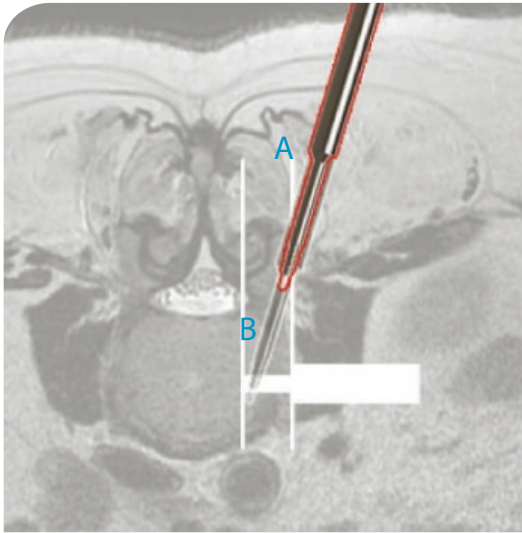
Perfect Angulation

Reflecting shadow is on target

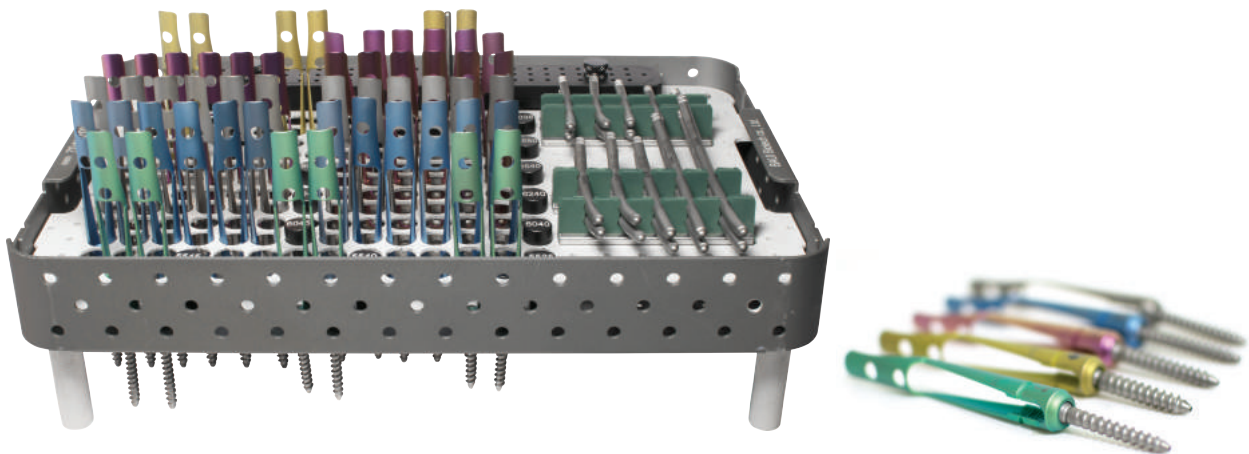
Wide Angulation

Reflecting shadow is too far





With the perfect angulation, NOVA Minimal Invasive System applies only anterior and posterior view of the C-Arm to start the first penetrating of the awl. The red outer box (A) shows the first position of the perfect angulation with 3 in 1 Awl, and (B) is the final position. The 3 in 1 Awl with the stopper will stop at the conjunction of transverse process and the facet joint. The 40mm in length is just good enough for passing 1/2 of the vertebrae.



Conclusion

ReBorn Essence NOVA Minimal Invasive System is the most advanced MIS system on the market. With the unique tools and the optimal approach, users are able to treat most of the spinal diseases with this system, which provides a better lifestyle and appearance for the patient.

Medical surgeries are now becoming minimal invasive in all area. Percutaneous, endoscope, DaVinci Robotic Arms, and all sorts of other ways to accomplish the meaning of smaller incision and less invasive surgery. In spine, we took one little step ahead, even if it is only 1% better.