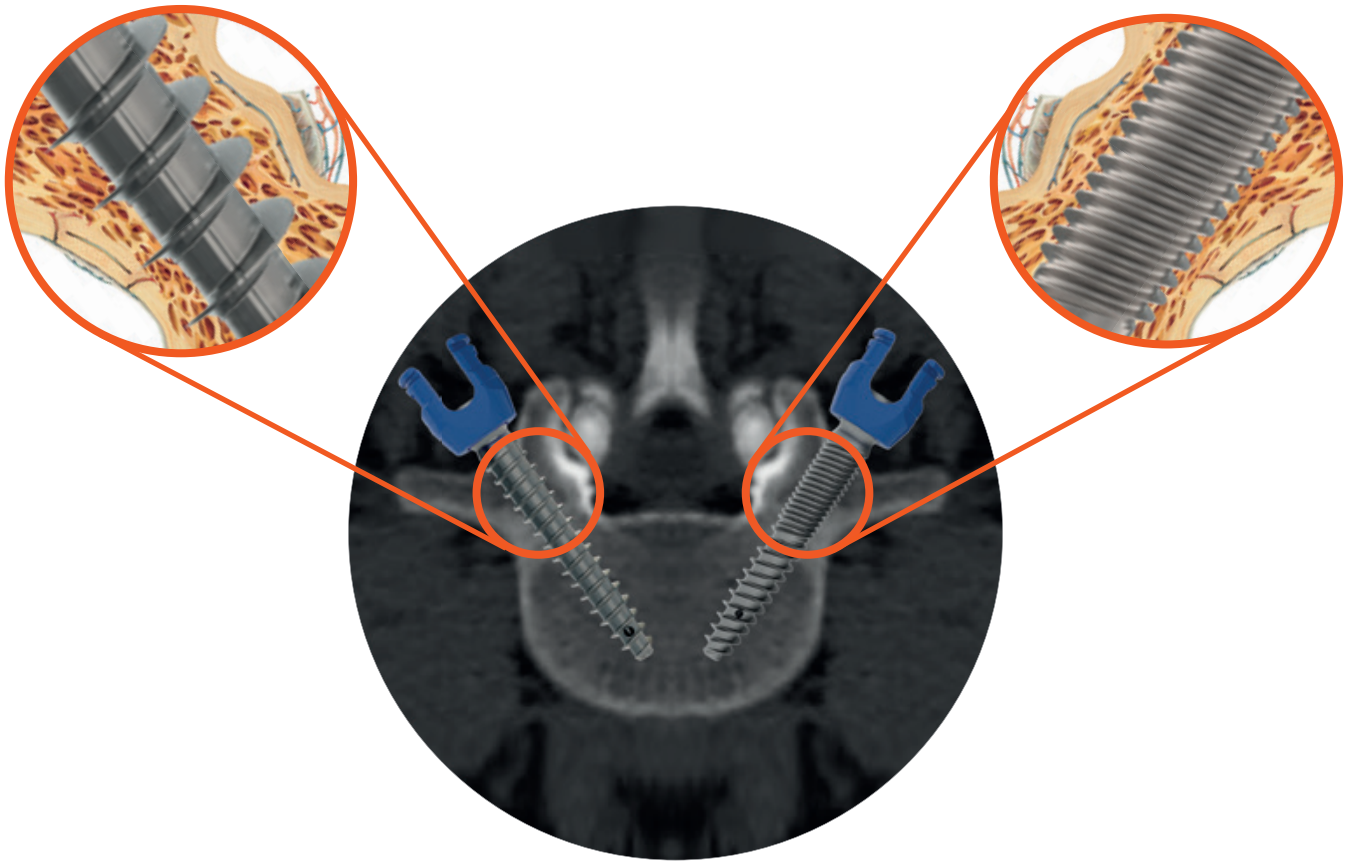
HumanTech
Medical Devices

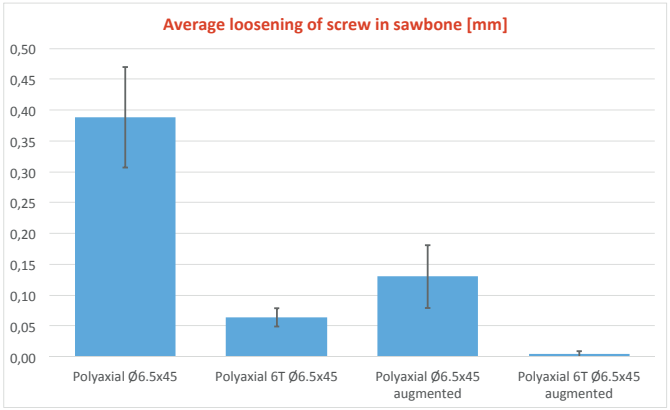


Osteoporotic6T-Screw

An alternative to Screw Augmentation?

Dynamic load tests in rigid foam blocks

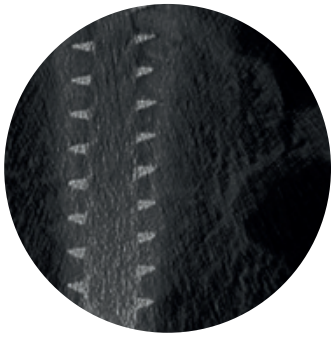
Comparison of the 6T screw with augmentable screws
(The whole poster can be found under the following link: https://www.humantech-spine.de/84-0-Poster.html)



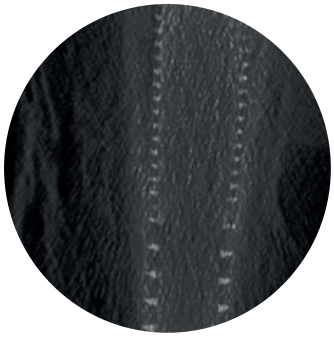
Screw type	Average value of loosening [mm]	Standard deviation
Polyaxial screw Ø6.5x45mm	0.39	±0.08
Polyaxial screw 6T Ø6.5x45mm	0.06	±0.02
Polyaxial screw Ø6.5x45mm augmented	0.13	±0.05
Polyaxial screw 6T Ø6.5x45mm augmented	0	±0.01

- The 6T screws showed **82% less screw loosening than standard pedicle screws.**
- Even compared to augmented screws, the 6T screws showed a 50% reduction in screw loosening.
- The highest strength was clearly measured with augmented 6T screws.

CT Scan

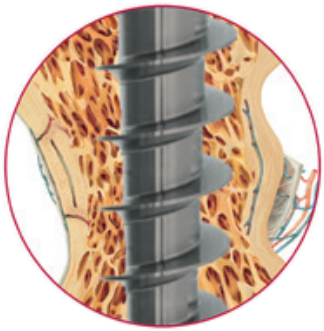


Standard Screw

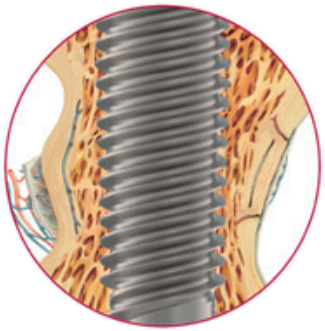


6T Screw

Graphic Illustration



Standard Screw



6T Screw

The CT scan confirms a significant increase of bone density in comparison to a standard pedicle screw. The compression of the bone structure is demonstrated in the graphic illustration.

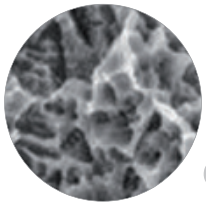
Osteoporosis Treatment at the Spine

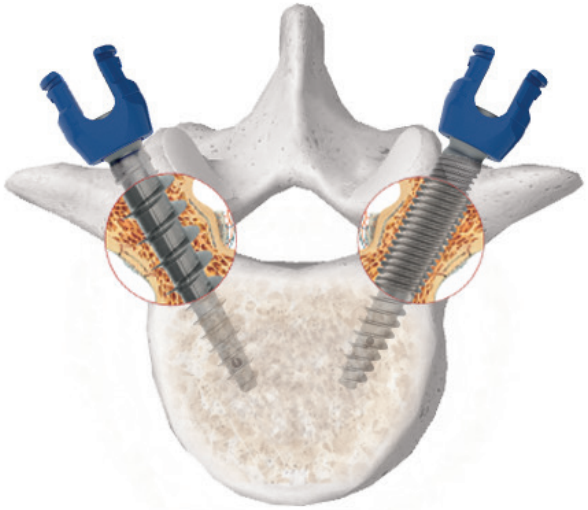
Worldwide, more than 200 million people are affected by osteoporosis. Due to the epidemiological development this number is expected to increase by 25% until 2025. Spinal fractures are the most common type of bone breakage as result from osteoporosis. Biomechanically the pedicle provides the strongest screw fixation in healthy bone, whereas in osteoporosis all areas of the vertebra are affected by that desease. This explains the high screw failure in these patients. New screw designs show significant advantages over screw augmentation.

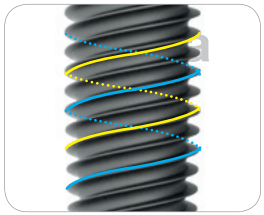
Main disadvantages of Screw Augmentation

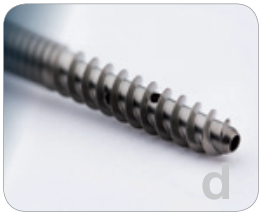
- **Leakage**
- **Revisiblity**
- **Thermal necrosis of soft tissue**
- **OR-Time**
- **Additional Costs**

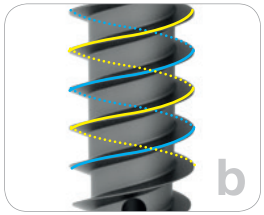
Screw Design











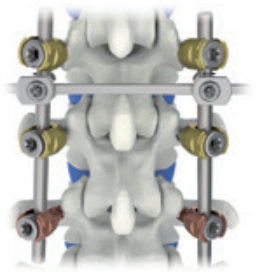
The main feature of the 6T Pedicle Screw is the design of the screw shaft:

- The thread is divided into a cancellous bone thread in the lower part and a cortical thread in the upper part of the screw shaft. The two interlocking threads in the lower part (b) provide a stronger support in cancellous bone.
- In the pedicle area, the screw has a 4-path cortical thread (colored in (a)). This increases the contact area to the bone and increases both primary and secondary stability in the cortex. An increased core diameter in the area of the pedicle increases bone density and significantly reduces postoperative screw loosening.
- The surface of the implant thread is treated in a special procedure (c) and leads to an improvement in the growth behavior of the bone to the screw and to a shortening of the osseointegration time.
- In addition, the 6T screw is available as a fenestrated screw that can be augmented for maximum hold (d).

Available types of the VENUS-6T screw

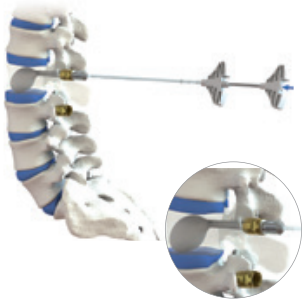
The 6T Osteoporosis Screw is available in the following variants:

Screw type	open	percutaneous
Solid (4.8-7.2mm Ø)	x	
Fenestrated Screws (5.5-8.5mm Ø)	x	x
Reduction Screws (4.8-7.2mm Ø)	x	



Solid Cannulated Fenestrated Reduction Revision

For any further questions please contact the HumanTech-Spine team in Germany or your local distributor:



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