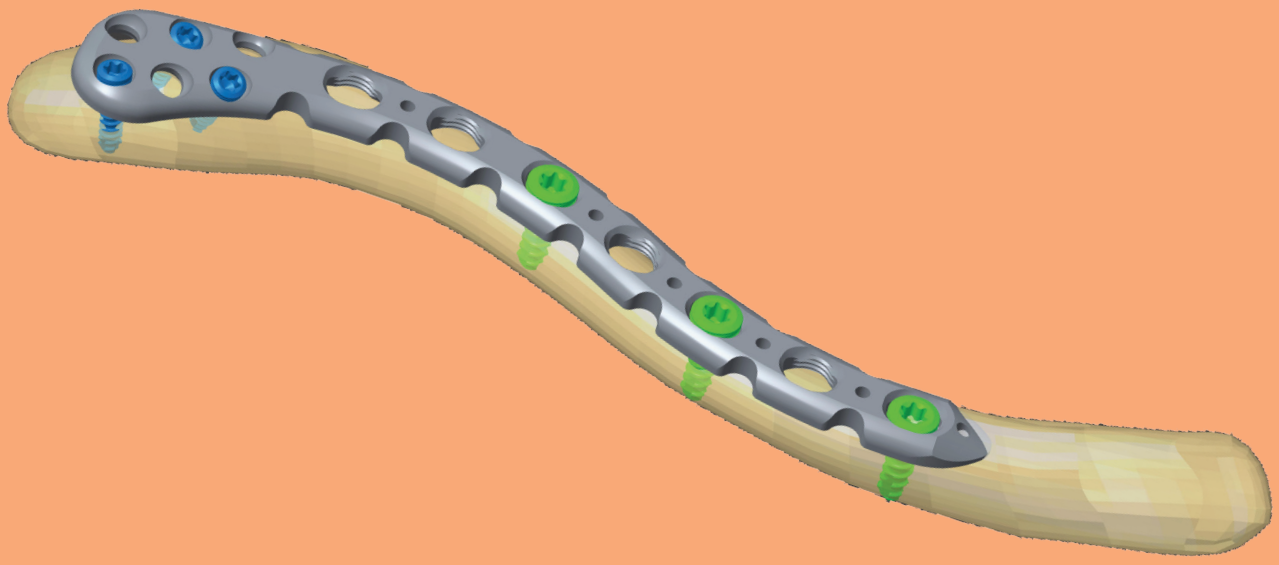
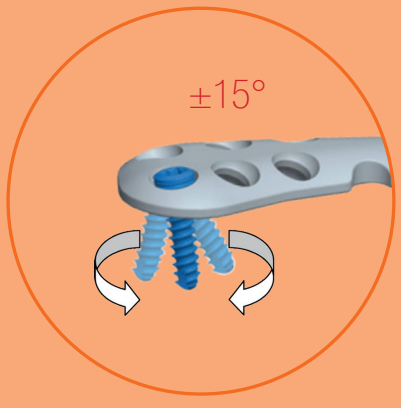
TRAUMATOLOGY

Vortex

Clavicle plate





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References

Dr. Ferenc Tóth
Chief Medical Director
Péterfy Sándor úti Kórház Rendelőintézet és Baleseti Központ,
Budapest, Hungary

Dr. Béla Turchányi PhD.
Associate Professor, Head of Department
University of Debrecen Medical and Health Science Center
Department of Traumatology and Hand Surgery
Debrecen, Hungary

Prof. Dr. Endre Varga
Professor of trauma surgery
University of Szeged
Albert Szentgyörgyi Medical and Pharmaceutical Center
Department of Trauma Surgery
Szeged, Hungary

Dr. László Vámhidy PhD. †
Head of Department, Clinical Director
MSI Department of Traumatology and Hand Surgery
Pécs, Hungary

The following surgical description contains general outlines for clavicle plate fixation with the Vortex clavicle plate system. However, the operating surgeon shall adapt the content to the patient, fracture type and all other relevant factors that may have influence on the outcome of the surgery.

Therefore, Sanatmetal Ltd. strongly recommends participation on workshops and trainings prior to the initial operation.

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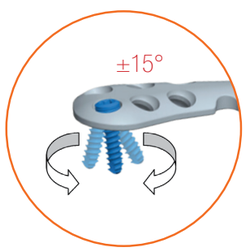
Introduction

Vortex polyaxial plating system has 4 members for the most complete care of clavicle fractures. Apart from the anatomically formed superior and anterior versions the headed and hooked plates are also available.
All this diversity of shapes have polyaxial locking features to make this system the most modern clavicle plating family.

1.1 | The implant

- Polyaxial angle stabilized system in step - free ±15 deg angulation of insertion



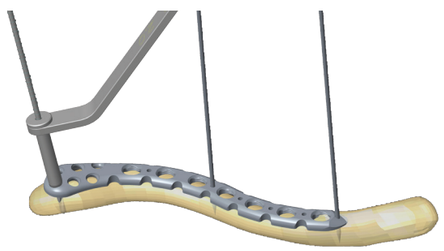
- Polyaxial and compression holes on the stem
- 4 different plate shapes:

- Minimally invasive technique supporting system

- Bending facilitating holes – no screw hole deformation
- Color coded Torx screws

1.2 | The instruments

- Capable of drilling in preset and ±15 deg directions step – free



- Double and dynamic drill sleeves for multifunctional locking
- Easy-to-use bending tools
- Instruments and implants in one tray
- Optimized instruments
- Color coded torque limiting screwdriver

1.3 | Indications

- For medial and distal third fractures of clavicle

Implant range

2.1 | Vortex Clavicle plate

Holes on stem	Side
6	right/left
7	right/left
8	right/left
10	right/left

Raw material
Anodized Titanium

Color
grey

2.2 | Vortex Clavicle plate H

Holes on stem	Side
4	right/left
5	right/left
6	right/left
7	right/left

Raw material
Anodized Titanium

Color
grey

2.3 | Vortex Clavicle plate HK

Holes on stem	Side
3	right/left
5	right/left

Length of hook
S: 15 mm
M: 18 mm
L: 21 mm

Raw material
Anodized Titanium

Color
grey

2.4 | Vortex Clavicle plate MA

Holes on stem
6
7
8

Raw material
Anodized Titanium

Color
grey

2 | Implant range

2.5 | Vortex screw Ø 2,7 mm

Length (mm)
8-14

Raw material
Anodized Titanium

Color
blue

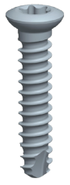
2.6 | Vortex screw Ø 3,5 mm

Length (mm)
10-22

Raw material
Anodized Titanium

Color
green

2.7 | Cortical screw - TX Ø 2,7 mm

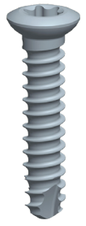


Length (mm)
8-14

Raw material
Anodized Titanium

Color
grey

2.8 | Cortical screw - TX Ø 3,5 mm



Length (mm)
10-22

Raw material
Anodized Titanium

Color
grey

2.9 | Cancellous screw - Ø 4 mm

Length (mm)
10-100

Raw material
Anodized Titanium

Color
grey

3 | Surgical description

The VCL system conatins 4 types of plates. Apart from the shape and slightly different function of the plates the surgical steps are identical. These are to be introduced on the example of the Vortex Clavicula plate – H (plate with head).

3.1 | Patient positioning

In beach chair or supine position on translucent surgical table. The head is rotated away from the affected shoulder. Reposition is helped by a tightly packed surgical tissue between the shoulder blades.

3.2 | Incision

Horizontal incision above or below the clavicula. Pay extra attention not to damage any of the local danger zones (i.e.: supraclavicular nerves)

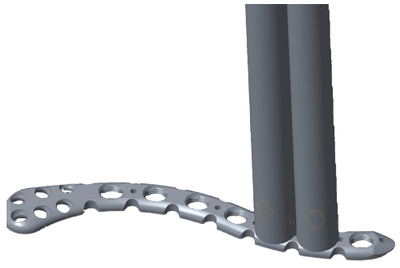
3.3 | Temporary fixation

Reduce the fracture and use 1,6 mm Kirschner wires for temporary fixation.

3.4 | Plate selection

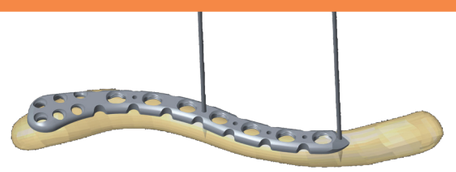
Choose the most appropriate plate size according to the nature of the fracture. If needed, modellate the plates with the bending tools supplied in the instrument tray.

Attention!
Avoid the extensive and the multiple to-and-back bending of the plate.
There are bending facilitating holes on the plates which make the bending of the plate possible without the screw hole deformation.



3.5 | Plate positioning

Place the plate to its position and fix it temporarily with 1,6 mm Kirschner wires.



3.6 | Screw insertion

The VCL headed plate fixes itself with 2,7 mm polyaxial screws on the head while on the tail 3,5 mm polyaxial or 4,0 mm cancellous screws.

3.7 | Screw insertion on the head

First insert 2,7 mm polyaxial screws into the holes of the head of the plate. This can be performed mono- or polyaxially.

3.7.1 | Monoaxial screw insertion (2,7 mm screws)

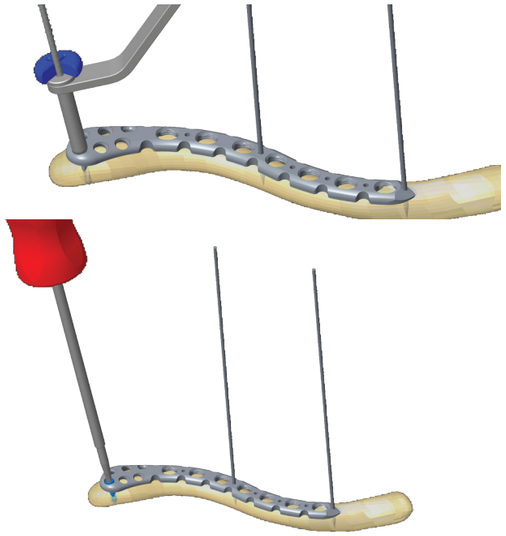
Place the straight part of the 2,0 mm double drill sleeve into the appropriate hole and perform drilling with 2,0 mm drillbit through that.

Determine necessary screw length with a depth gauge.

Alternative length gauging method:
Use the blue drill stop placed on the drillbit before drilling, just above the spiral part.

Drill through the 2.0 mm sleeve. Below the stop the necessary value can be read.

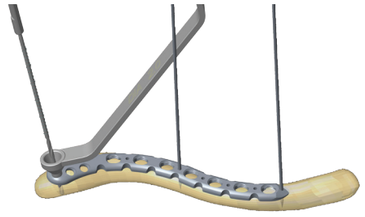
Attention!
Perform length gauging accurately to avoid bicortical screws hurting soft tissues below the clavicula. For the same reason the protection of the area is also necessary during drilling. Apply image intensifier control!



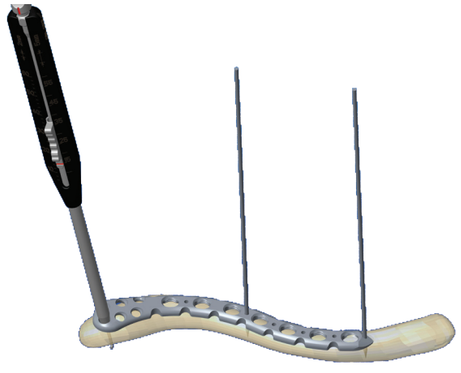
Drive the 2,7 mm polyaxial screws in with the T9 screwdriver. The final tightening of the screw is always performed with the red handle and blue cup torque screwdriver.

3.7.2 | Poliaxial screw insertion (2,7 mm screws)

Fit the end of the conical part of the 2,0 mm double drill sleeve into the hole of the plate. There is a ±15 degree freedom with reference to this position. Perform drilling with the 2,8 mm drillbit in the optimal direction under image intensifier control. Make sure to protect tissues below the clavicula.



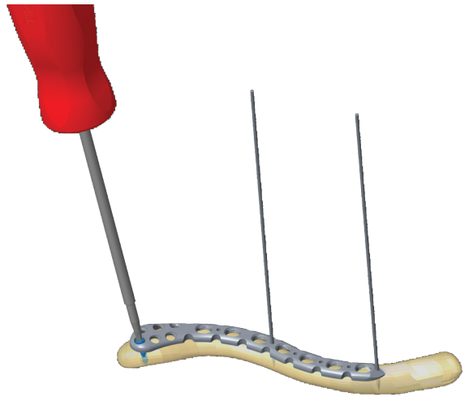
Perform length gauging. Note that the drillbit and drillstop cannot be used for length gauging when using the conical side of the double sleeve.



Attention!
Perform length gauging accurately to avoid bicortical screws hurting soft tissues below the clavicula.

Drive the 2,7 mm polyaxial screws in with the T9 screwdriver. The final tightening of the screw is always performed with the red handle and blue cap torque screwdriver.

Attention!
If you use 4,0 mm cancellous screw you need to apply 2,5 hexagonal screwdriver.



3.8 | Screw insterion on the tail

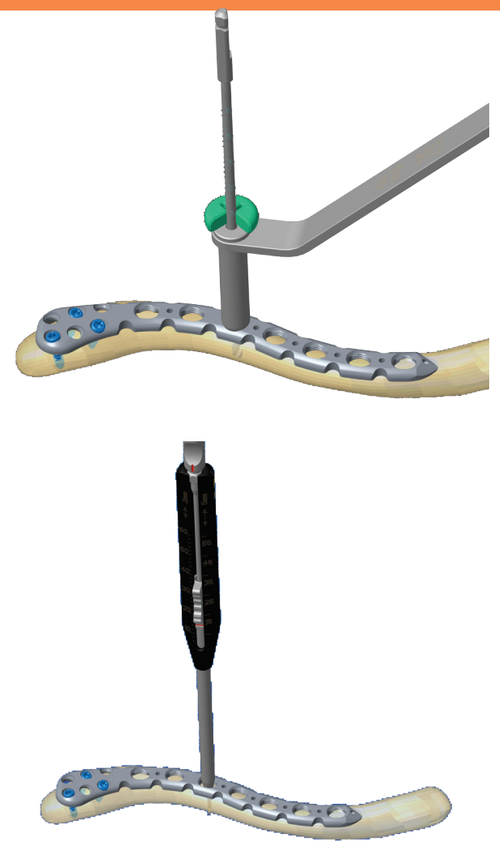
On the tail mono- or polyaxial and compression locking can be applied.

3.8.1 | Monoaxial screw insertion (3,5 mm screws)

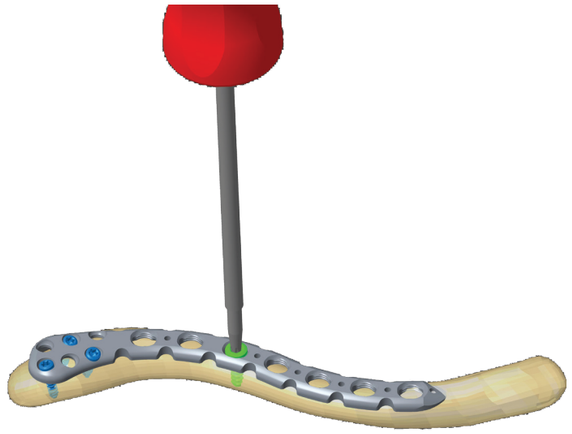
Place the straight part of the 2,8 mm double drill sleeve into the hole of the plate and perform drilling through that with the 2,8 mm drillbit. Measure screw length.

Use the green drill stop placed on the drillbit before drilling, just above the spiral part. Drill through the 2,8 mm sleeve. Below the stop the necessary value can be read.

Attention!
Perform length gauging accurately to avoid bicortical screws hurting soft tissues below the clavicula. For the same reason the protection of the area is also necessary during drilling. Apply image intensifier control!



Drive the screw in with T15 screwdriver. For the final tightening of the locking screws always use red handle and green cap torque screwdriver.

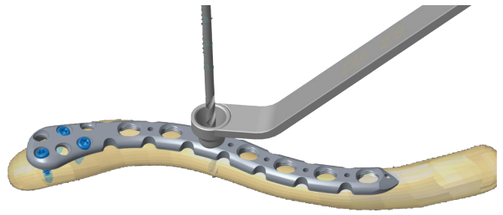


3.8.2 | Poliaxial screw insertion (3,5 mm screws)

Fit the end of the conical part of the 2,8 mm double drill sleeve into the hole of the plate. There is a ±15 degree freedom with reference to this position. Perform drilling with the 2,8 mm drillbit in the optimal direction under image intensifier control. Make sure to protect tissues below the clavicula.

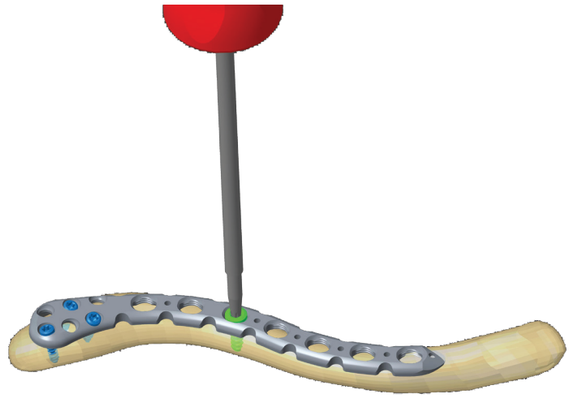
Perform length gauging. Note that the drillbit and drillstop cannot be used for length gauging when using the conical side of the double sleeve.

Attention!
Perform length gauging accurately to avoid bicortical screws hurting soft tissues below the clavicula.



Drive the 3,5 mm polyaxial screws in with the T15 screwdriver. The final tightening of the screw is always performed with the red handle and blue cap torque screwdriver.

Attention!
If you use 4,0 mm cancellous screw you need to apply 2,5 hexagonal screwdriver.

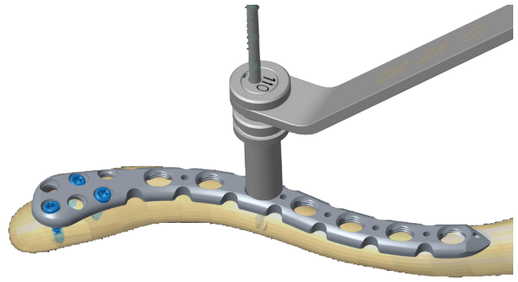


3.8.3 | Compression screw insertion

Compression technique can also be used on the tail of the plate. To achieve compression use the double compression sleeve. On side is marked 1,0, which is the compression side while the other functions as neutral.

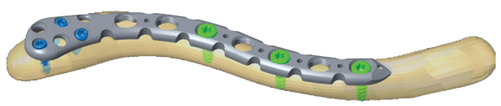
Put the required part of the double compression sleeve into the hole of the plate. Make sure that the small arrow shows towards the direction of the fracture. Perform drilling and length gauging.

Attention!
Use only the length gauge. The drillbit and drillstop technique cannot be used!
Drive in the appropriate screw. By using this technique 1 mm compression can be achieved.



3.9 | Closing of the wound

After image intensifier control close the wound in the usual fashion.

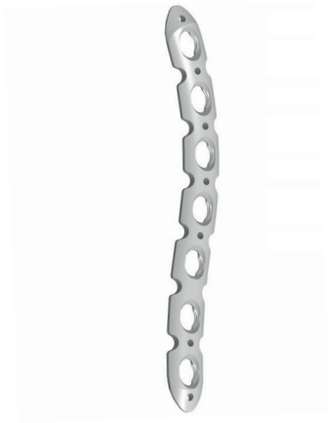


3.10 | Using cancellous screws

For the VCL plates AO type cancellous screws can also be used. Please note that they require some separate instruments which cannot be found in VCL tray. See section Implant list for reference.

4 | Implant list

4.1 | Vortex Clavicle plate



Cat. no	Size
280261306	Left/6H
280261307	Left/7H
280261308	Left/8H
280261310	Left/10H
280261406	Right/6H
280261407	Right/7H
280261408	Right/8H
280261410	Right/10H

4.2 | Vortex Clavicle plate - H

Cat. no	Size
280261504	Left/4H
280261505	Left/5H
280261506	Left/6H
280261507	Left/7H
280261604	Right/4H
280261605	Right/5H
280261606	Right/6H
280261607	Right/7H

4.3 | Vortex Clavicle plate - HK

Cat. no	Size
280260503	S Left 3H
280260513	M Left 3H
280260523	L Left 3H
280260505	S Left 5H
280260515	M Left 5H
280260525	L Left 5H
280260603	S Right 3H
280260613	M Right 3H
280260623	L Right 3H
280260605	S Right 5H
280260615	M Right 5H
280260625	L Right 5H

4.4 | Vortex Clavicle plate - MA

Cat. no	Size
280261706	6H
280261707	7H
280261708	8H

4 | Implant list

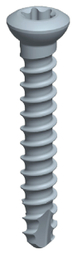
4.5 | Vortex screw Ø 2,7 mm

Cat. no	Size
260827108	8 mm
260827110	10 mm
260827112	12 mm
260827114	14 mm

4.6 | Vortex screw Ø 3,5 mm

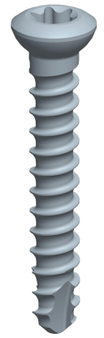
Cat. no	Size
260835510	10 mm
260835512	12 mm
260835514	14 mm
260835516	16 mm
260835518	18 mm
260835520	20 mm
260835522	22 mm

4.7 | Cortical screw - TX Ø 2,7 mm



Cat. no	Size
267527008	8 mm
267527010	10 mm
267527012	12 mm
267527014	14 mm

4.8 | Cortical screw - TX Ø 3,5 mm



Cat. no	Size
267535010	10 mm
267535012	12 mm
267535014	14 mm
267535016	16 mm
267535018	18 mm
267535020	20 mm
267535022	22 mm

4.9 | Cancellous screw Ø 4,0 mm

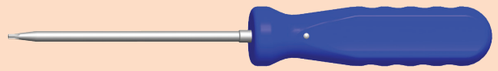
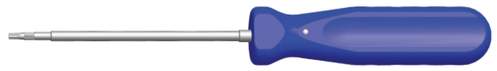
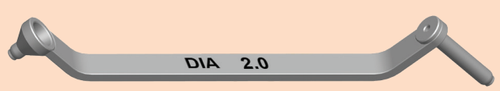
Cat. no	Size
919140010	10
919140012	12
919140014	14
919140016	16
919140018	18
919140020	20
919140022	22
919140024	24
919140026	26
919140028	28
919140030	30
919140032	32
919140034	34
919140035	35
919140036	36
919140038	38
919140040	40
919140045	45
919140050	50
919140055	55
919140060	60
919140065	65
919140070	70
919140075	75
919140080	80
919140085	85
919140090	90
919140095	95
919140100	100

Instrument set for 4,0 mm screws

Surgical instruments

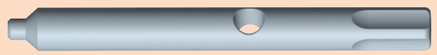
Description	Size	Quantity	Cat. no.
Spiral drill with quick connecting end	2,5x180 mm	1	939525180
Screwdriver	2,5 mm	1	210700025
Double drill sleeve	3,5/2,5 mm	1	233900001

5.1 | Instruments

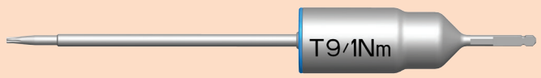
Screwdriver (T9)	1 pc	 210720009
Screwdriver (T15)	1 pc	 210720015
Torque screwdriver (T9 / 1 Nm)	1 pc	 210510036
Torque screwdriver (T15 / 15 Nm)	1 pc	 210510044
Spiral drill (2x125 mm)	1 pc	 280114903
Spiral drill (2,8x135 mm)	1 pc	 280122905
Double drill sleeve - PAS (2 mm)	1 pc	 280114902

Double drill sleeve - PAS (2,8 mm)	1 pc	 280122903
Double drill sleeve - V (Small)	1 pc	 275212902
Kirschner wire (1,6x150 mm)	5 pcs	937516150
Screw forceps	1 pc	 939999002
Drill stop (blue) (2 mm)	2 pcs	 210510222
Drill stop (green) (2,8 mm)	2 pcs	 210510227
Depth gauge (2,7-3,5 mm)	1 pc	 280114905

5.1 | Instruments

Plate bender (4 mm)	2 pcs	 280114901
Plate bender - V (6 mm)	2 pcs	 280122914
Filled up tray VCL		280261800

Optional instruments

Power torque screwdriver (T9/1 Nm) (for blue screw)		 210510047
Power torque screwdriver (T15/1,5 Nm) (for green screw)		 210510037

Product family

TRAUMATOLOGY

1.1. Intramedullary nails
1.2. Plates
1.2.1. Vortex plates
1.2.1.1 VDR
1.2.1.2 VDH
1.2.1.3 VDT
1.2.1.4 VPT
1.2.1.5 VPH
1.2.1.6 VCL
1.3. Screws
1.4. Fixateur

ORTHOPAEDICS

DENTAL

SPINE

Contact

Address: 5 Faiskola str. 3300 Eger
E-mail: metal@sanatmetal.hu
Phone: +36 36 512 900
Fax: +36 36 512 932