



TITANIUM BINDING SYSTEM

张力带固定技术

Tension Band Fixation Technology

钛质捆绑系统

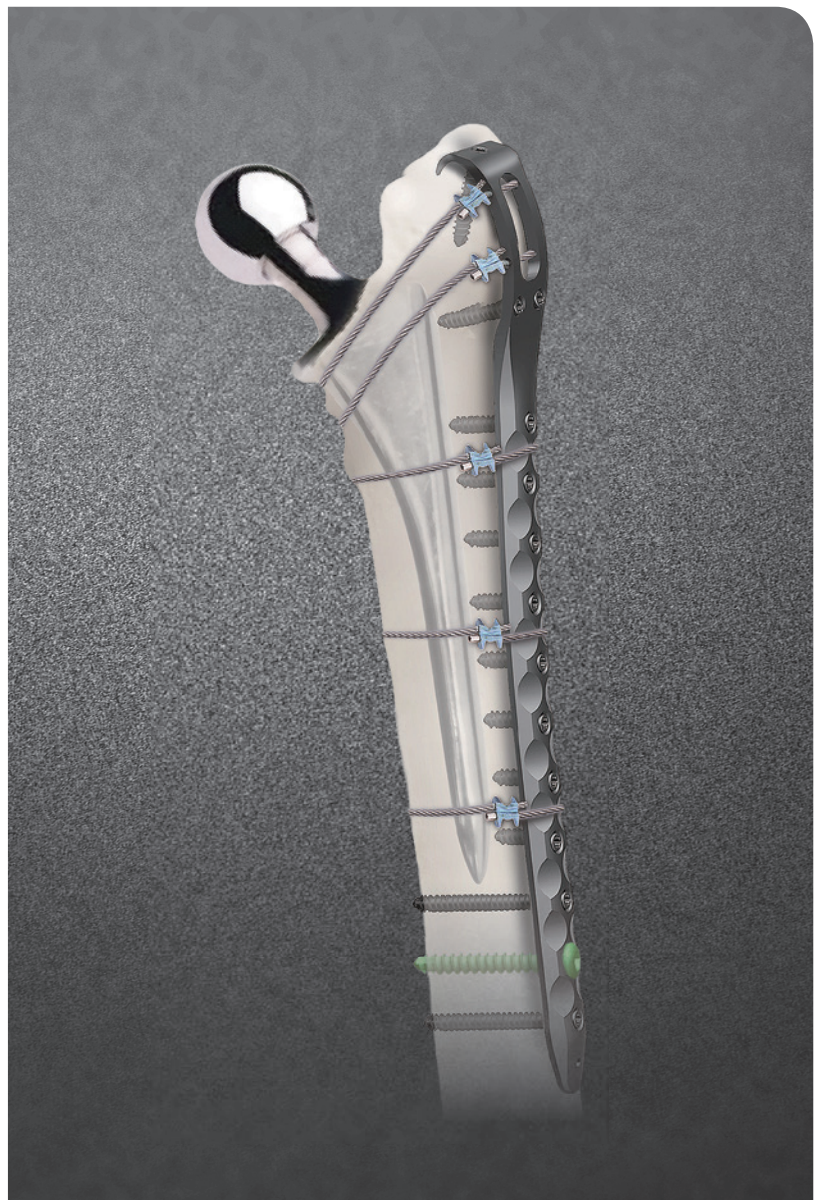
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ISO9001/ISO13485
医疗器械
质量管理体系认证企业



CE 0123





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钛质捆绑系统介绍

Titanium Binding System Introduction

设计理念 Design principle

无论固体还是液体，同样都具有表面张力，有对抗引起断裂的能量，所以钛缆随着所含钛丝股数的增多，表面积增大，具有更为出众的静态强度和更高的疲劳强度。

Solid and liquid all have surface tension to against fracture. So, titanium cable will have better static strength and fatigue strength along with the increase of strands.

产品特点 Product features

坚固耐用，同时又很柔软，这些特点使得钛质捆绑系统有很强的抗应变能力，可以理想地拉紧和固定，使接骨保持稳定。完全淘汰了打圈和扭结等一些硬钢丝的特点。

Strong, durable and soft. All these characteristics give Titanium Binding System great performance to be ideally taut and fixed, to make the fragments remain stable. Completely avoid the loop or kink as hard steel wire.

应用范围 Application

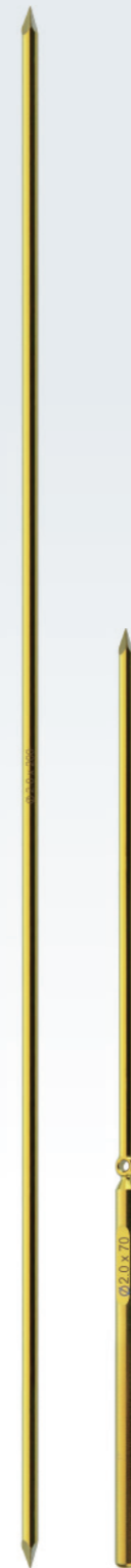
从解剖和功能意义上讲，临床上已经将钛质捆绑系统的张力带固定法用于治疗：髌骨骨折（髌骨缝合），尺骨鹰嘴骨折及尺骨近远端骨折，以及股骨大转子骨折，肱骨大结节骨折，内踝骨折，踝关节及 Pilon 骨折，肩锁关节脱位，骨性突起等一些撕脱骨折。所有这些骨折都以明显的骨折移位和功能障碍为特征，这些骨折的治疗要中和肌肉力量，但因为骨折块面积小，不允许使用大的内固定物，钛缆发挥了不可替代的作用。

钛质捆绑系统在许多特殊的情况下同样发挥重要作用，例如，股骨假体周围骨折、股骨干粉碎性骨折、内固定物失败导致的骨不连、骨缺损重建以及大范围斜劈骨折，在接骨时想再增加一些稳定措施时，钛质捆绑系统配合常规内固定物能取得更好的效果。

Based on the anatomical and functional purpose, tension band fixation technology of Titanium Binding System has been clinically applied to: patella fractures, olecranon fractures, proximal and distal ulna fractures, periprosthetic fractures, humerus and ankle fractures, medial malleolus fracture, pilon fracture, acromioclavicular dislocation...etc. All these fractures are characterized by obvious fracture displacement and dysfunction. Treatments of these fractures request balancing out muscle strength, but the fragments are too small to be fixed by big internal implants. So, titanium cable can play an irreplaceable role.

Titanium binding system can play an important role in many other case, such as PFF, comminuted fracture of femoral shaft, nonunion owing to failed internal fixation, reconstruction of bone defect and wide-bound splitting fracture. If need other measures to fix, titanium binding system can coordinate regular internal fixation to get better stability.

柔韧 Flexible 稳定 Stable



带孔可折断
bone needle with hole (can be broken)

骨针 Bone Needle

产品编号 Item No.	规格 Specification	
4278	Φ0.8	120mm
4279	Φ1.0	120mm
4280	Φ1.2	120mm
4281	Φ1.5	150mm
4564	Φ1.8	180mm
4282	Φ2.0	200mm
4283	Φ2.5	250mm

骨针 Bone Needle

带孔可折断 With hole (can be broken)

产品编号 Item No.	规格 Specification	
4289	Φ2.0	50mm
4290		55mm
4291		60mm
4292		65mm
4293		70mm
4297		90mm

无引针钛缆 Needle-free cable

钛缆由多股钛丝捻制而成，柔韧性好。

Titanium cable is made of multi-strand wire twist together, with good flexibility



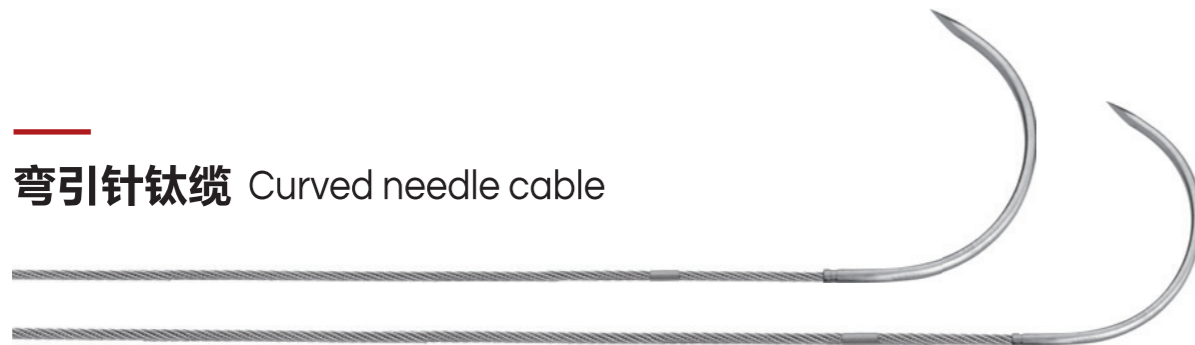
产品编号 Item No.	规格 Specification	
4232	Φ 1.3	600mm
4234	Φ 1.8	600mm

直引针钛缆 Straight needle cable



产品编号 Item No.	规格 Specification	
4254	Φ 1.3	600mm

弯引针钛缆 Curved needle cable



产品编号 Item No.	规格 Specification	
4236	Φ 1.0	600mm
4238	Φ 1.3	600mm

扁接头（锁扣） Flat Connector (Lock catch)

不同规格的扁接头有颜色区分，便于临床使用

四爪扁接头可以把持住骨面，确保紧缆过程中位置的相对稳定

Different size flat connector with different color, convenient for clinical use.

Four claws flat connector can hold bone surface, ensure the wire position stable when tightening.

产品编号 Item No.	规格 Specification		颜色 Colour
4217	Φ1.1	8mm	紫色
4208	Φ1.4	8mm	黄色
4209	Φ1.9	8mm	蓝色



扁接头
锁紧状态

Flat connector
locked state

配套器械 Matching instruments

- 9518 直引缆针 用于 Φ 1.0/Φ 1.3 钛缆
Straight needle guide
For Φ 1.0/Φ 1.3 titanium cable



- 9520 弯引缆针 用于 Φ 1.0/Φ 1.3 钛缆
Curved needle guide
For Φ 1.0/Φ 1.3 titanium cable



- 9455 敲打器
Beat tool



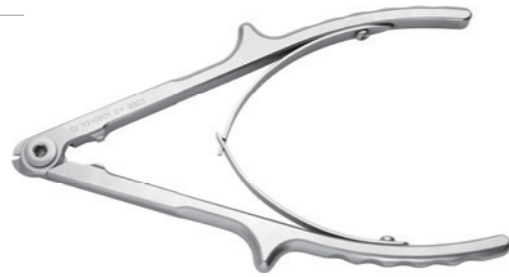
- 9328 引缆钩 用于 Φ 1.8 钛缆
Cable guide
For Φ 1.8 titanium cable



■ 9346 骨针折弯器
Spicule bender



■ 9303 剪缆钳
Cable cutter



■ 9538 骨针剪
Spicule cutter



■ 9392 扁接头压紧钳
Flat connector crimper



档位调节
Adjust the gears

- 不同规格钛缆选择不同档位（如图）
- 一次性压紧扁接头，无松脱现象
- 钛合金材质，轻便
- 有保险装置，确保扁接头压到位后，保险装置弹开
- Different cable size with different gear (as shown).
- One-time compress the flat connector, no loose phenomenon.
- Made of titanium alloy, handiness.
- With a safety device, ensure to sprang open after apposite compression.

紧缆枪 Tight cable tool

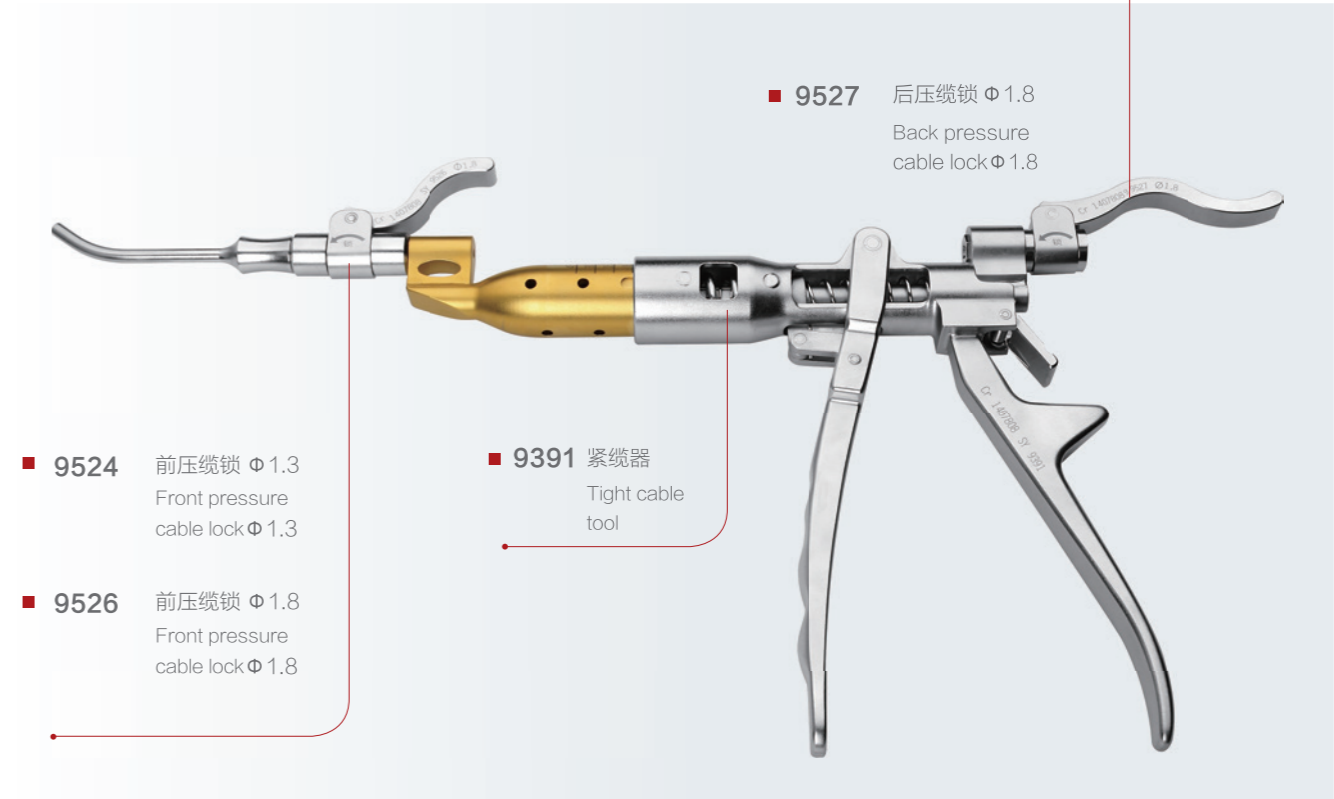
■ 9525 后压缆锁 Φ 1.3
Back pressure
cable lock Φ 1.3

■ 9527 后压缆锁 Φ 1.8
Back pressure
cable lock Φ 1.8

■ 9524 前压缆锁 Φ 1.3
Front pressure
cable lock Φ 1.3

■ 9526 前压缆锁 Φ 1.8
Front pressure
cable lock Φ 1.8

■ 9391 紧缆器
Tight cable
tool



单向收缆 one-way tighten cable

使用方便，单向收缆

紧缆枪的前后压缆锁可换，故不同规格的钛缆可通用一把紧缆枪

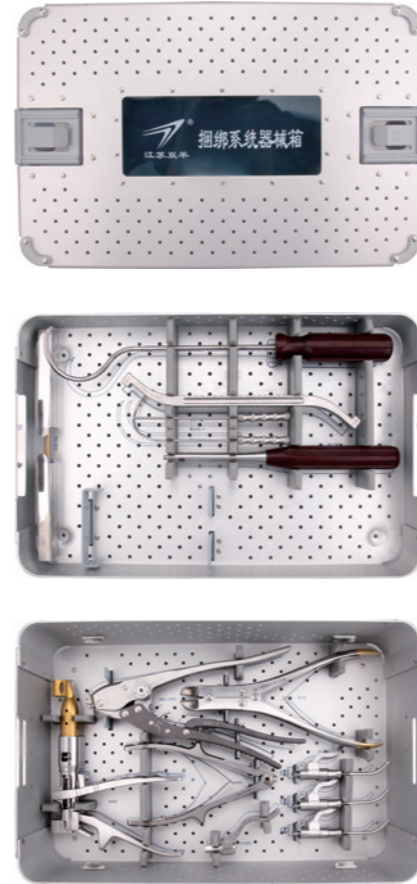
Easy to use, one-way tighten cable.

The front and back pressure cable lock can be substituted. Tighten cable tool is universal to all cable sizes.



标配 Standard tools

9518	直引缆针	Straight needle guide	1支
9520	弯引缆针	Curved needle guide	1支
9538	骨针剪	Spicule cutter	1把
9328	引缆钩	Cable guide	1把
9455	敲打器	Beat tool	1把
9346	骨针折弯器	Spicule bender	1把
9303	剪缆钳	Cable cutter	1把
9391	紧缆器	Tight cable tool	1把
9524	前压缆锁 $\Phi 1.3$	Front pressure cable lock $\Phi 1.3$	1个
9525	后压缆锁 $\Phi 1.3$	Back pressure cable lock $\Phi 1.3$	1个
9526	前压缆锁 $\Phi 1.8$	Front pressure cable lock $\Phi 1.8$	3个
9527	后压缆锁 $\Phi 1.8$	Back pressure cable lock $\Phi 1.8$	1个
9392	扁接头压紧钳	Flat connector crimper	1把
9398	钛质捆绑系统器械箱	Titanium binding system instrument	1个



选配 Options



柔韧 Flexible 稳定 Stable

张力带固定技术
Tension Band Fixation Technology

ISO9001/ISO13485
医疗器械
质量管理体系认证企业

TUV
SUD
CE 0123

锁定股骨假体翻修接骨板

Prosthesis and
revision femur locking plate

产品编号 Item No.	规格 Specification		
3757		2孔	125mm
3758	左 L	11孔	270mm
3759	右 R	11孔	270mm



配用 $\Phi 5.0$ 锁定钉、 $\Phi 4.5$ 皮质骨螺钉
Used for $\Phi 5.0$ locking screw, $\Phi 4.5$ cortical screw

手术操作 Operative Procedure

先捆缆 再上钉

Bind cable first, then put screws

以锁定股骨假体翻修接骨板为例介绍钛质捆绑系统

Take prosthesis and revision femur locking plate for example to introduce titanium binding system

锁定股骨假体翻修接骨板（下称接骨板）有 2 款规格——2 孔和 11 孔，2 孔接骨板配合钛缆使用时，4 根钛缆均需穿过接骨板上的钛缆孔捆绑；11 孔接骨板配合钛缆使用时，股骨大粗隆部位的钛缆需穿过钛缆孔捆绑，骨干部位配合 R 槽捆绑。

需穿过钛缆孔捆绑的钛缆，推荐技术是在将接骨板连至骨面之前将钛缆连同相应规格的扁接头穿过钛缆孔，不然受软组织的限制，钛缆穿过接骨板钛缆孔比较困难。

Prosthesis and revision femur locking plate has two specifications --- 2 holes and 11 holes. Generally, 2 holes plate with 4 cables and all cables must pass through the plate's cable holes; when using 11 holes plate, cables on the trochanter of femur need pass through the plate's cable holes, cables on the femur diaphysis need match the R grooves.

Before fixing plate, please connect cable and flat connector together, then pass the cable through plate's cable hole. Otherwise, it maybe hard to through wires owing to soft tissues.

NO.2 使用引缆钩 Use cable guide

将引缆钩从后侧紧贴骨面穿到前侧（避免损伤软组织和血管），将钛缆由引缆钩头部进入穿过引缆钩，然后引缆钩撤出（见图 3），钛缆穿过扁接头另一孔（扁接头四爪贴紧骨面），钛缆游离端指向前方（见图 4）

Lead cable guide against bone surface from back to front(avoid injury of soft tissue and blood vessels). Insert cable into the cable guide head, then withdrawal the guide (picture 3). Forward the cable through another hole of flat connector(flat connector has four claws to hold bone surface). The left cable will be in front (picture 4).



图 3 Picture 3



图 4 Picture 4

NO.1 穿入钛缆 Insert titanium cable

Φ 1.8 钛缆（连同 Φ 1.9 扁接头）可以从任一方向穿过接骨板的钛缆孔，在常用的股骨外侧入路中，将钛缆从后侧穿过接骨板（图 1 即为股骨外侧手术入路）。用敲打器将接骨板的大粗隆尖钩部敲入股骨大粗隆（见图 2）

Φ 1.8 titanium cable (Φ 1.9 flat connector) can pass through the plate's cable hole from both side. When apply to the common femoral lateral approach, recommend passing from the back to front (picture 1). Use beat tool to knock the hook into greater trochanter (picture 2).



图 1 Picture 1



图 2 Picture 2

NO.3 拉紧钛缆 Tighten cable

将钛缆游离端从前压缆锁穿过后压缆锁穿出，使钛缆完全穿过紧缆枪，并将钛缆松弛部分拉平（见图 5），扣紧后压缆锁，锁定钛缆，然后扣动紧缆枪把手，进行加压紧缆（见图 6），一旦达到预期的张力，扣紧前压缆锁（见图 7），松开后压缆锁，将紧缆枪取下（见图 8）（前压缆锁暂时不要取下）。

操作过程中注意紧缆枪和扁接头的角度，尽量平行，防止钛缆受到卡压，以至无法达到预期的拉力。

Pass all the left cable from front pressure cable lock to the back one. Straighten cable and lock the later pressure lock, press the trigger (picture 6). Lock the front pressure lock upon getting the expected tension (picture 7). Open the back pressure lock, remove the tighten tool (picture 8). (Remark: don't remove the front pressure lock!)

Pay attention to the angle of tighten tool and flat connector, as parallel as possible. To avoid the cable stuck and guarantee getting expected tension.

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图 5 Picture 5

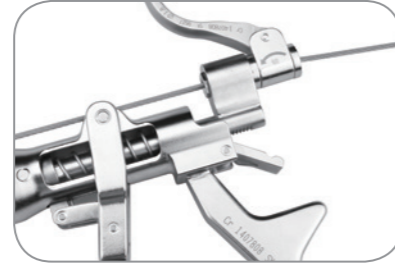


图 6 Picture 6



图 7 Picture 7



图 8 Picture 8

NO.4 拉紧 / 再次拉紧 Tighten/Tighten again

拉紧接骨板各端的钛缆后，由于有前压缆锁（处于扣紧状态）维持钛缆的拉力，在必要时可按上述步骤再次拉紧钛缆，完成钛缆的最终拉紧。

After finishing all cables, owing to the front pressure cable locks remain locked. Please tighten again according to above steps if needed to get satisfying tension.



图 9 Picture 9

一般情况下不建议再次拉紧

Generally, recommend no tighten again (unless cable loose).

NO.5 固定钛缆（压紧扁接头） Fixed titanium cable(compress flat connector)

将扁接头压紧钳的档位调至 $\phi 1.8$ 钛缆适用的位置（见图 10），依次压紧扁接头（压紧时最好保持 10 秒以上，见图 11），然后松开前压缆锁，依次取下（见图 12）

Adjust the gear to $\phi 1.8$ (picture 10), compress all flat connectors one by one(keep compressing over 10 seconds, picture 11). Then open the front pressure cable lock and remove (picture 12).



图 10 Picture 10



图 11 Picture 11

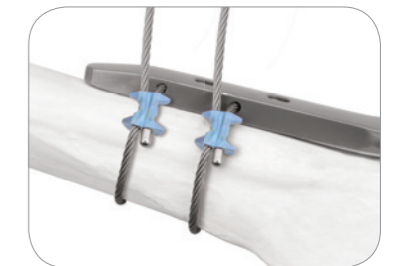


图 12 Picture 12

NO.6 剪断钛缆 Cut titanium cable

沿扁接头边缘依次剪断钛缆（尽量一次性剪断，若重复剪缆，需垫纱布防止钛屑散落），最后根据具体情况拧入 $\phi 5.0$ 锁定钉（配用锁定 5.0 系列器械包）

Cut titanium cable along the edge of flat connector(please cut one-time, if cut again, must lay gauze to avoid scraps of titanium cable). Then screwing in $\phi 5.0$ locking screws according to specific circumstances (matching $\phi 5.0$ locking instrument set).

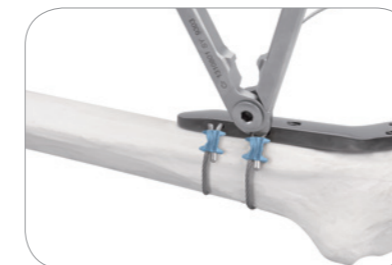


图 13 Picture 13



图 14 Picture 14



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