XPERT KNEE.



TIBIAL PLATEAU TRAUMA PLATES





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Intended purpose:

The implants of Xpert Knee range are intended for the fixation of fractures, non-unions and malunions of the knee in adults.

Contraindications:

- Pregnancy.
- Acute or chronic local or systemic infections.
- Allergy to one of the materials used or sensitivity to foreign bodies.

A dedicated range of plates.

360° OF FIXATION FOR TIBIAL PLATEAU FRACTURES

Xpert Knee presents a wide range of anatomical plates to treat tibial plateau fractures. The treatments of posterolateral, postero-medial, and posterior fractures are particularly challenging. That is why Xpert Knee dedicates four specific designs to them.

MEDIAL PLATES



LATERAL PLATES

Lateral plates in 5 sizes with or without posterior extension:



Ref: TPTDL2

POSTERIOR PLATES





POSTERIOR / POSTERO-MEDIAL EXTRA PROXIMAL PLATES

TPTSR1

TPTSR2



• 2 sizes for the extra-proximal posterior aspect of the tibia:



Ref: TPTSP2

POSTERO-MEDIAL PLATES



• 2 sizes for the postero-medial aspect of the tibia:

Technical features.

PLATES FEATURES

DEDICATED SUTURE HOLES ON THE PLATES

• Xpert Knee offers the possibility to suture the meniscus directly on the plate after the plate fixation thanks to the design of its suture holes. Suture holes are compatible with suture wires with a diameter of Ø0.4 mm (USP 1 or Ph. Eur. 4) or less.



Example of plate fixation on a lateral plate (TPTDL2), this technique is only possible with medial (TPTxMx) and lateral (TPTxLx) plates.

MODULAR POSTERIOR EXTENSION

• To secure postero-lateral fragments through a lateral approach.







FIXATION AND SCREWS FEATURES

XPERT KNEE OFFERS A VERSATILE SYSTEM OF FIXATION

- Polyaxiality for every hole.
- 2 diameters possible, the Ø2.8 mm screws are only recommended in the extraproximal part of the tibia ⁽¹⁾.
- All the holes compatible with locking and non-locking screws and different screw diameters. (except for the ramp oblong hole)

(3)

- Locking oblong hole ⁽²⁾ compatible with:
 - Compression screw for plate positioning or plate compression.
 - Locking screw if needed.
- Lag screws to catch fragments ^(3-a).
- Ramp oblong hole ⁽⁴⁾ on lateral and medial plates to compress a distal fracture ^(3-b).









ANATOMICAL FEATURES

PRECONTOURED IMPLANTS

• The design of these implants is the result of a proprietary state-of-the-art mapping technology to establish the congruence between the plate and the bone.

BENDABLE PLATES

However, in the case of difficult bone anatomy, all the Xpert Knee plates can be bent with the appropriate bending irons (ANC1547) in a parallel position. The bending of these plates must be performed once and in one direction only, on the dedicated areas ⁽⁵⁾ and the stress of the irons must not be applied to a screw hole. Please refer to the IFU for bending precaution.



USER FRIENDLY INSTRUMENTS

- Color coding: each instrument reprises to the color of its associated screw:
 - Blue for Ø3.5 mm locking screws and Ø4.0 mm lag screws ⁽⁶⁾.
 - Purple for Ø3.5 mm non locking screws ⁽⁷⁾.
 - Green for Ø2.8 mm locking screws ⁽⁸⁾
- Polyaxial guide ensures the angular range of the screw.
- From 20 to 50 mm the measurement is read in the guide gauge, beyond 50mm the value is read directly on the drill bit at the back of the guide ⁽⁹⁾.
- An easy drilling guide locking possible thanks to the screwdriver ⁽¹⁰⁾.



Fracture locations covered by our range.





Details of the incisions.

The techniques presented below are some surgical techniques possibilities. The choice is made according to surgeon's expertise.

MEDIAL APPROACH

TYPE OF FRACTURE THAT REQUIRES A MEDIAL APPROACH AND FIXATION:

Can be used when an isolated anteromedial fracture pattern or a bi-condylar fracture of the tibial plateau occurs.

SURGICAL TECHNIQUE:

The patient is positioned in the supine position.

The skin incision begins from the medial femoral epicondyle, about 2-3 cm over the joint line, and ends 2 cm posterior to the tibial crest, depending on fracture extension. The knee must be flexed about 15° - 20° before proceeding with the skin incision.

The superficial dissection includes the sartorius fascia, which is incised in a straight line, like the skin. The gracilis and semitendinosus tendons are then identified. The pes anserinus tendons, posterior and proximal, and the superficial medial collateral ligament, are reclined.



POSTERO-MEDIAL APPROACH

TYPE OF FRACTURE THAT REQUIRES A POSTERO-MEDIAL APPROACH AND FIXATION:

Can be used for isolated postero-medial or bicondylar fractures, and fixed with a postero-medial buttress plate, or a postero medial rim plate, depending on the fracture site.

SURGICAL TECHNIQUE:

The patient may be positioned either supine or prone. When positioned supine, the patient's leg must be flexed at the knee and externally rotated at the hip to provide good exposure.

The posteromedial border of the tibia is first palpated throughout its length. The incision is performed longitudinally along the medial head of the gastrocnemius. During superficial dissection, the knee is slightly flexed to relieve gastrocnemius tension.

Subcutaneous dissection is done carefully to identify and/or protect the saphenous vein and nerve.

The fascia is then incised in line with the skin incision and the superficial and deep posterior compartments are mobilized. Retract the pes anteriorly and the gastrocnemius posteriorly and distally. Identify the medial edge of the tibial plateau.



LATERAL APPROACH

TYPE OF FRACTURE THAT REQUIRES A LATERAL APPROACH AND FIXATION:

Can be used for isolated lateral fracture or bi-condylar fracture.

SURGICAL TECHNIQUE:

The patient is positioned in the supine position and the knee is flexed. A curved incision is created at the anterolateral portion of the tibia, which does not extend beyond the front edge of the fibular head.

The biceps tendon and lateral collateral ligament complex are retracted posterolaterally. Careful attention is needed as it may be damaged if the LCL is excessively pulled.



LATERAL APPROACH WITH POSTERIOR EXTENSION

TYPE OF FRACTURE THAT REQUIRES A LATERAL APPROACH AND FIXATION WITH POSTERIOR EXTENSION:

Can be used for lateral fracture with posterior fragment.

SURGICAL TECHNIQUE:

The patient is positioned in the supine position and the knee is flexed.

A curved incision is created at the anterolateral portion of the tibia, which did not extend beyond the front edge of the fibular head.

The biceps tendon and lateral collateral ligament complex are retracted posterolaterally. Subperiosteal dissection (not extending beyond the posterior edge of the fibular head) is performed in the interval between the lateral plateau rim and lateral collateral ligament complex (the gap of the supra-fibular head), and a corridor is created to insert the plate.

The meniscotibial ligament is incised from the tibial attachment to gain access to the articular surface. Most parts of the posterolateral plateau articular surface can thus be exposed.

The depressed articular surface is elevated and temporarily fixed with k-wires.



POSTERIOR APPROACH

TYPE OF FRACTURE THAT REQUIRES A POSTERIOR APPROACH AND FIXATION:

Can be used for posterior fracture or posterior fragment

SURGICAL TECHNIQUE:

Position the patient in prone or supine position.

If in prone position, the patient's knee is slightly flexed.

If in supine position, the patient's knee is flexed and angulated to allow access to the posterior aspect.

An inverted L-shaped incision is performed starting at the center of popliteus parallel to Langers line superiorly and medial. Distally it turns at the medial corner of the popliteal fossa and is carried down to deep fascia.

The fascia is incised in the medial side which is the safe zone. Identify the peroneal nerves. Cut the medial border of the soleus muscle and detach it from the bone. Over dissection laterally toward the tibial shaft should be avoided because it is easy to injure the posterior tibial recurrent artery.

Gently retract the gastrocnemius laterally for the nerve. The gastrocnemius will protect the popliteal neurovascular bundle. It must be noted than the more distally is extended the incision, the safer will be the flap (a flap with a too short incision can trip the vessals).

The surgeon can now work posteriorly or postero-medially.



Surgical technique.

SURGICAL TECHNIQUE (PAGE 1/4)

Example using the lateral size 2 plate (TPTDL2). All the plates of the Xpert Knee range follow the same steps.



Reduce the fracture with the K-wires or with forceps and choose the appropriate plate size : for sterile plates apply the template on the bone to select the correct size.



Lock the threaded guide gauge (ANC1505 or ANC1506) into one of the proximal holes to manipulate the plate and insert it along the bone until the appropriate position.



Temporary fixation is then achieved by using a forceps to compress the plate to the bone. Temporary fixation may also be achieved by positioning K-wires (33.0216.180) within the K-wire holes in the head and shaft of the plate.

OPTIONAL STEPS: FIXATION OF THE POSTERIOR EXTENSION:

Only available for the lateral plates TPTxLx (sizes 1 to 5)



Position the posterior extension plate onto the lateral plate, in the dedicated area. Secure it with the small fixation screw (TPTxLx-VIS) using the T8 screwdriver (ANC575).

N.B: The screwdriver used for the extension screw is smaller that the one used for the screws.



Depending on your set composition, extensions are included in the set or available separately in sterile packaging.



Lock the threaded guide gauge (ANC1505 or ANC1506) into one of the proximal holes to manipulate the plate and insert it along the bone until the appropriate position.

Ensure that the posterior extension is flush to the bone. If not, use the bending irons (ANC1547) to bend it in the appropriate shape.



Temporary fixation is then achieved by using a clamp to compress the plate to the bone. Temporary fixation may also be achieved by positioning K-wires (33.0216.180) in the K-wire holes on the head and shaft of the plate.

SURGICAL TECHNIQUE (PAGE 2/4)

INSERTION OF A 3.5MM COMPRESSIVE SCREW IN THE MOST PROXIMAL OBLONG HOLE:



Position the Ø2.7mm oblong hole guide gauge (ANC1511 - Purple guide) in the large oblong hole and drill using the Ø2.7mm drill bit (ANC1508).



Length drilled can be measured directly with the drill bit on the guide gauge (for the lengths of 55 and above, the measurement is read on the drill bit at the back of the guide gauge) or with the length gauge (ANC1513) on the mark (highlighted in pink on the picture).



Insert the appropriate compressive screw (CAT3.5LxxD) in the oblong hole using the screwdriver (ANC1512).

N.B: If the plate position must be adjusted, unscrew CAT3.5LxxD, reposition the plate, and repeat this step.

N.B: Alternatively, a locking screw (SAT3.5Lxx) can be used in the oblong hole.

INSERTION OF THE PROXIMAL LOCKING SCREWS:



Position the Ø2.0mm (for a Ø2.8mm screw - green color - ANC1509) or the Ø2.7mm (for a Ø3.5mm screw - blue color - ANC1510) polyaxial guide gauge in one of the first row hole of the plate just below the tibial plateau.



Choose the appropriate angulation of the screw and drill using the corresponding drill bit (ANC1507 for a Ø2.8mm screw or ANC1508 for a Ø3.5mm screw).

Length drilled can be measured directly with the drill bit on the guide gauge (for the lengths of 55 and above, the measurement is read on the drill bit at the back of the guide gauge) or with the length gauge (ANC1513) on the mark (highlighted in pink on the picture).



Insert the appropriate locking screw (SAT2.8Lxx - green color or SAT3.5Lxx - blue color) in the locking hole.

Repeat the whole procedure for every proximal hole.

N.B: Alternatively, a non locking screw can be used in the locking hole. However at least 2 locking screws must remain in the first row.

N.B: If the mean angulation of the locking hole is wanted, the monoaxial guide gauges (ANC1505 for a Ø2.8mm screw – green color or ANC1506 for a Ø3.5mm screw – blue color) can be used instead of the polyaxial drilling guides. They can be easily locked in the hole using the screwdriver inserted at the rear of the drilling guide.

Warning: When using the length gauge in a monocortical hole, please add 2 mm to the markings read.

NEWCLIP TECHNICS

SURGICAL TECHNIQUE (PAGE 3/4)

INSERTION OF A 4.0MM LAG SCREW (OPTIONAL):

A lag screw can be used in every hole of the plate to catch and compress a fragment.



Position the Ø2.7mm polyaxial guide gauge (ANC1510 - blue color) in the hole.



Choose the appropriate angulation of the screw and drill using the Ø2.7mm drill bit (ANC1508).

Length drilled can be measured directly with the drill bit on the guide gauge (for the lengths of 55 and above, the measurement is read on the drill bit at the back of the guide gauge) or with the length gauge (ANC1513) on the mark (highlighted in pink on the picture).



Insert the appropriate screw (QAT4.0LxxD) in the locking hole.

USE OF THE RAMP OBLONG HOLE (OPTIONAL):

If the compression of the fracture is needed in diaphysis. Only available for the medial and lateral plates.



Insert the Ø2.7mm oblong hole guide gauge (ANC1511 - Purple color) in the ramp oblong hole and drill using the \emptyset 2.7mm drill bit (ANC1508).

N.B: The distal pin Ø1.6 mm (33.0216.180) must be positioned in the distal part of the oblong pin hole (shown by the black arrow).



Length drilled can be measured directly with the drill bit on the guide gauge (for the lengths of 55 and above, the measurement is read on the drill bit at the back of the guide gauge) or with the length gauge (ANC1513) on the mark (highlighted in pink on the picture).

N.B: When using the length gauge on the ramp oblong hole, please deduct 2mm from the markings read.



Insert the appropriate compressive screw (CAT3.5LxxD) in the ramp oblong hole.

N.B: If there is no need for compression, insert the screw directly in the proximal part of the ramp oblong hole using the Ø2.7 polyaxial guide gauge (ANC1510 - blue color).

SURGICAL TECHNIQUE (PAGE 4/4)

INSERTION OF THE DISTAL LOCKING SCREWS AND FINALISATION OF THE ASSEMBLY:



If compression of the plate on the diaphyseal part of the bone is needed, repeat steps 4 to 6 for the other distal oblong holes of the plate.

Repeat the same procedure as the proximal locking screws (steps 7 to 9) for the required remaining distal holes.

N.B: SAT2.8 screws are only recommended in the extra-proximal part of the tibia.



Remove the k-wires, perform final check using fluoroscopy, AP and lateral, and close the surgery site.

Soft Tissue Management: If needed the meniscus can be fixed to the suture holes on the plate.

N.B: Suture holes are compatible with suture wires with a diameter of Ø0.4 mm (USP 1 or Ph. Eur. 4) or less.

FINAL RESULTS.



PLATES AND SCREWS REMOVAL

If you have to remove Xpert Knee implants, make sure to order the Newclip Technics removal set which includes the following instruments:

- ANC1512: T15 / 3.5 mm hexagonal prehensor screwdriver with AO quick coupling system

- ANC575: T8 quick coupling screwdriver
- ANC351: Ø4.5 mm AO quick coupling handle Size 2

To remove any of the Xpert Knee plates, first loosen all the screws without completely removing them (this prevents rotation of the plate when removing the last screw). Finally, completely remove all screws and the plate. An extraction set can also be ordered separately.

Implants references.

Remark: Please note that all implants are also available in sterile packaging. An "-ST" code is added at the end of the reference. Ex. : "TPTGL1-ST" stands for a Lateral plate for proximal tibia - Left - Size 1 - Sterile.

Lateral plates

Ref.	Description	Length
TPTGL1	Lateral plate for proximal tibia - Left - Size 1	L88 mm
TPTDL1	Lateral plate for proximal tibia - Right - Size 1	L88 mm
TPTGL2	Lateral plate for proximal tibia - Left - Size 2	L115 mm
TPTDL2	Lateral plate for proximal tibia - Right - Size 2	L115 mm
TPTGL3	Lateral plate for proximal tibia - Left - Size 3	L139 mm
TPTDL3	Lateral plate for proximal tibia - Right - Size 3	L139 mm
TPTGL4	Lateral plate for proximal tibia - Left - Size 4	L162 mm
TPTDL4	Lateral plate for proximal tibia - Right - Size 4	L162 mm
TPTGL5	Lateral plate for proximal tibia - Left - Size 5	L183 mm
TPTDL5	Lateral plate for proximal tibia - Right - Size 5	L183 mm
TPTGLx-E1*	Extension for lateral plates for proximal tibia - Left - Size 1	
TPTDLx-E1*	Extension for lateral plates for proximal tibia - Right - Size 1	



* These references do not include the fixation screw "TPTxLx-VIS", please order it separately. **N.B:** In sterile version ("TPTGLx-E1-ST" and "TPTDLx-E1-ST"), the fixation screw is included in the packaging.

Fixation screw*

Ref.	Description
TPTxLx-VIS	Fixation screw - Extension for lateral plates for proximal tibia
*Non anodized	

Medial plates

Ref.	Description	Length
TPTGM1	Medial plate for proximal tibia - Left - Size 1	L80 mm
TPTDM1	Medial plate for proximal tibia - Right - Size 1	L80 mm
TPTGM2	Medial plate for proximal tibia - Left - Size 2	L104 mm
TPTDM2	Medial plate for proximal tibia - Right - Size 2	L104 mm
TPTGM3	Medial plate for proximal tibia - Left - Size 3	L127 mm
TPTDM3	Medial plate for proximal tibia - Right - Size 3	L127 mm
TPTGM4	Medial plate for proximal tibia - Left - Size 4	L150 mm
TPTDM4	Medial plate for proximal tibia - Right - Size 4	L150 mm
TPTGM5	Medial plate for proximal tibia - Left - Size 5	L175 mm
TPTDM5	Medial plate for proximal tibia - Right - Size 5	L175 mm



Posterior plates

Ref.	Description	Length	000	000	0.00		00	00
TPTST1	Posterior plate for proximal tibia - Symmetrical - Size 1	L62 mm	H	h	G	G	ň	ň
TPTST2	Posterior plate for proximal tibia - Symmetrical - Size 2	L84 mm		,	H	Ų	ĕ	ĕ
TPTSP1	Extra-proximal posterior plate for proximal tibia - Symmetrical - Size 1	L69 mm		Ď	6		8	R
TPTSP2	Extra-proximal posterior plate for proximal tibia - Symmetrical - Size 2	L91 mm	IPISII	O	TPTSP1		TPTSR1	<u>E</u>
TPTSR1	Posteromedial plate for proximal tibia - Symmetrical - Size 1	L68 mm		TPTST2		TPTSP2		TPTSR2
TPTSR2	Posteromedial plate for proximal tibia - Symmetrical - Size 2	L89 mm						

Ø2.8 mm Locking screws*

Ref.	Description	
SAT2.8L20 to SAT2.8L50	Ø2.8 mm locking screw - L20 to 50 mm (2mm increments)	())Connentron
SAT2.8L55 to SAT2.8L80	Ø2.8 mm locking screw - L55 to 80 mm (5mm increments)	
*Green anodized		

Ø3.5mm Locking screws*

Ref.	Description	
SAT3.5L20 to SAT3.5L50	Ø3.5 mm locking screw - L20 to 50 mm (2mm increments)	(()Lagangagagagagagagagagagagagagagagagagag
SAT3.5L55 to SAT3.5L80	Ø3.5 mm locking screw - L55 to 80 mm (5mm increments)	
*Blue anodized		

Ø3.5 mm Non-locking screws*

Ref.	Description	
CAT3.5L20D to CAT3.5L50D	Ø3.5 mm non-locking screw - L20 to 50 mm (2mm increments)	
CAT3.5L55D to CAT3.5L80D	Ø3.5 mm non-locking screw - L55 to 80 mm (5mm increments)	
*Fuschia anodized		

Ø4.0 mm Lag screws*

Ref.	Description	
QAT4.0L50D to QAT4.0L80D	Ø4.0 mm lag screw - L50 to 80 mm (5mm increments)	
*Dark blue anodized		

This information is intended to demonstrate the Newclip Technics portfolio of medical devices. Always refer to the package insert, product label and/or user instructions including cleaning and sterilization before using any Newclip Technics product. These products must be handled and/or implanted by trained and qualified staff who have read the instructions before use. A surgeon must always rely on her or his own professional clinical judgement when deciding whether to use a particular product when treating a particular patient. Product availability is subject to the regulatory or medical practices that govern individual markets. Please contact your Newclip Technics representative if you have questions about the availability of Newclip Technics products in your area.

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Instruments references.

N.B: Depending on your set composition, implants are included in the set or available separately in sterile packaging.

#	Ref.	Description	Qty
01	ANC351	Ø4.5 mm AO quick coupling handle - Size 2	2
02	ANC575	T8 quick coupling screwdriver	1
03	ANC1505	Ø2.0 mm threaded guide gauge for Ø2.8 mm screws	2
04	ANC1506	Ø2.7 mm threaded guide gauge for Ø3.5 mm screws	2
05	ANC1507	Ø2.0 mm quick coupling drill bit - L190 mm	2
06	ANC1508	Ø2.7 mm quick coupling drill bit - L195 mm	2
07	ANC1509	Ø2.0 mm non threaded polyaxial guide gauge for Ø2.8 mm screws	1
08	ANC1510	Ø2.7 mm non threaded polyaxial guide gauge for Ø3.5 mm screws	1
09	ANC1511	Ø2.7 mm non threaded guide gauge for Ø3.5 mm screws - Oblong hole	1
10	ANC1512	T15 / 3.5 mm hexagonal prehensor screwdriver with AO quick coupling system	2
11	ANC1513	Length gauge for Ø2.8 and Ø3.5 mm screws	1
12	ANC1536	Template for proximal tibia lateral plates - Left - Sizes 1-2 (TPTGL1-2)	1
13	ANC1537	Template for proximal tibia lateral plates - Right - Sizes 1-2 (TPTDL1-2)	1

#	Ref.	Description	Qty
14	ANC1538	Template for proximal tibia lateral plates - Left - Sizes 3-4-5 (TPTGL3-4-5)	1
15	ANC1539	Template for proximal tibia lateral plates - Right - Sizes 3-4-5 (TPTDL3-4-5)	1
16	ANC1540	Template for proximal tibia medial plates - Left - Sizes 1-2 (TPTGM1-2)	1
17	ANC1541	Template for proximal tibia medial plates - Right - Sizes 1-2 (TPTDM1-2)	1
18	ANC1542	Template for proximal tibia medial plates - Left - Sizes 3-4-5 (TPTGM3-4-5)	1
19	ANC1543	Template for proximal tibia medial plates - Right - Sizes 3-4-5 (TPTDM3-4-5)	2
20	ANC1544	Template for proximal tibia posterior plates - Symmetrical - Sizes 1-2 (TPTST1-2)	1
21	ANC1545	Template for proximal tibia extra-proximal posterior plates - Symmetrical - Sizes 1-2 (TPTSP1-2)	1
22	ANC1546	Template for proximal tibia posteromedial plates - Symmetrical - Sizes 1-2 (TPTSR1-2)	1
23	ANC1547	Bending iron	2
24	33.0216.180	Pin Ø1.6 - L180 mm	6





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