stryker®

Trauma

SPS

Periarticular Plates

- Introduction
- Operative Technique
- Ordering Information

Introduction

The newly designed Periarticular Plates have been developed as line extensions to the SPS Basic and Small Fragment Sets. The shape, design and the material properties of the plates take into account the current demands from surgeons for high fatigue strength, optimised load transfer and a simple standardised operative technique. The plates are available in Stainless Steel (316LVM) sterile packed.

Implant Rational

The Stryker Periarticular Plates incorporate some important design and application features for stable plate osteosynthesis of the proximal tibia and the distal femur. The plates are anatomically pre-contoured to offer a fit that requires minimum or no intra-operative bending.

The reduced plate thickness in the periarticular region minimises the potential for soft tissue irritation. The specially designed plate holes accept standard ISO-screws of diameter 4.5 or 6.5mm for the large plates and 3.5 or 4.0mm for the small tibia plate and no special low-profile screws are necessary. Furthermore, these plates can be fully implanted without any additions to the existing SPS Basic or Small Fragment Instrumentation respectively. Depending on the plate region and thickness, the screw heads can be almost completely countersunk into the plate holes.

Indications

Periarticular Plates are indicated for complex metaphyseal and articular fractures in the knee region.

Contraindications

Periarticular Tibial Plates are not indicated for tibial shaft fractures.

The physician's education, training and professional judgement must be relied upon to choose the most appropriate device and treatment. Conditions presenting an increased risk of failure include:

Any active or suspected latent infection or marked local inflammation in or about the affected area.

Compromised vascularity that would inhibit adequate blood supply to the fracture or the operative site.

Bone stock compromised by disease, infection or prior implantation that can not provide adequate support and/or fixation of the devices.

Material sensitivity, documented or suspected.

Obesity. An overweight or obese patient can produce loads on the implant that can lead to failure of the fixation of the device or to failure of the device itself.

Patients having inadequate tissue coverage over the operative site.

Implant utilization that would interfere with anatomical structures or physiological performance.

Any mental or neuromuscular disorder which would create an unacceptable risk of fixation failure or complications in postoperative care.

Other medical or surgical conditions which would preclude the potential benefit of surgery.

Features	Benefits
Anatomically pre-contoured	• Little or no bending necessary to fit the anatomy and facilitate proper reduction
Reduced plate thickness in the periarticular region	• Minimise potential for soft-tissue irritation
K-wire and reduction holes	• Enhanced primary/temporary plate and fracture fixation
Rounded and tapered plate ends	• Easier placement of plate during sub-cutaneous insertion
Staggered hole spacing in femoral plates	• Reduced potential for longitudinal fissures during screw insertion
Use of 6.5mm standard or cannulated screws	• Greater operative flexibility for fragment fixation
Can be used with existing SPS screws	• Special range of low profile screws not required
Used with current SPS Basic, Small Fragment or any ISO compatible instrumentation	• No special instrumentation necessary
Sterile packed	• Ready for use

Operative Technique

Femoral Plate

Patient Positioning

The patient is placed in a supine position with the option to flex the knee up to 60° over a knee support. This flexion will help to facilitate reduction under the muscle pulls.

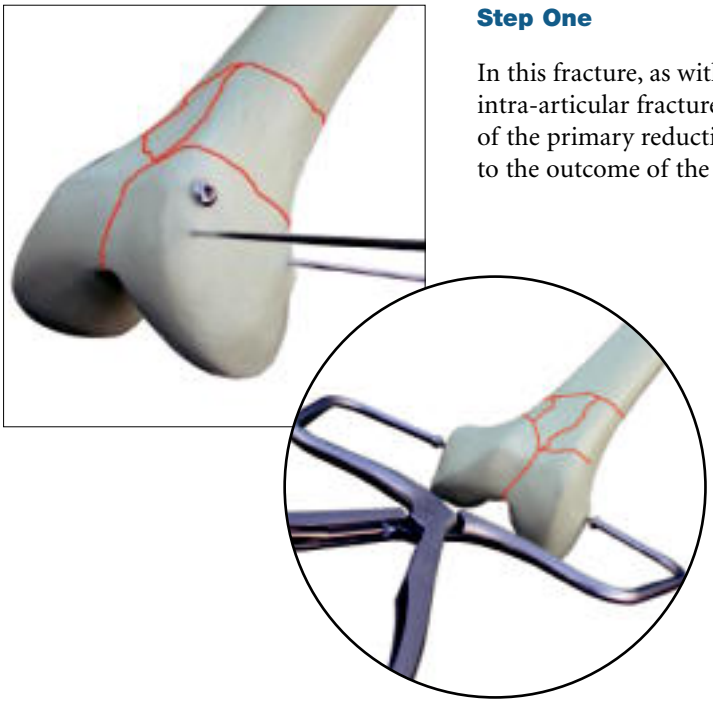
Surgical Approaches

The standard lateral or modified lateral approach simplifies the anatomical reduction of the shaft and the metaphyseal area. This incision can be extended distally as exposure is needed. However, in case of intra-articular fragmentation a medial parapatellar incision may be helpful for a precise reconstruction of the joint congruity.

Technique

Clear identification and classification of the fracture should first be established using the recommended imaging methods.

The appropriate anatomical reduction of the articular surface should be carried out before any definitive fixation is undertaken.

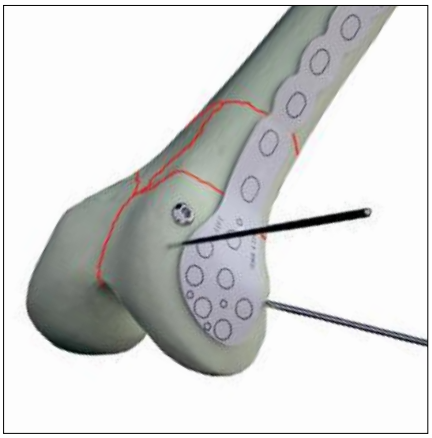


Step One

In this fracture, as with any intra-articular fracture, the precision of the primary reduction is critical to the outcome of the surgery.

After careful reduction of the joint fragments, the primary stabilisation should be carried out through the use of Reduction Forceps (702936) and/or K-wires. Depending on the type of fracture, the anatomical reconstruction of the articular block may be achieved using independent 6.5mm cancellous Lag-Screws.

Alternatively 6.5mm Asnis III cannulated screws can be used. The position of the Lag-Screws or the K-wires must not interfere with the final position of the plate.



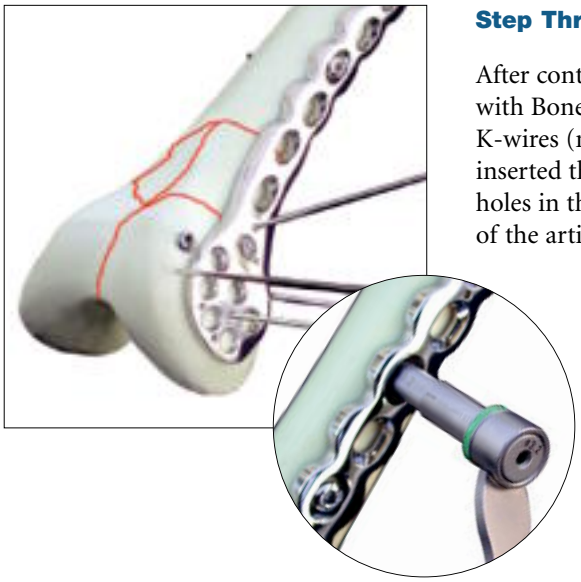
Step Two

In most cases the pre-contoured plate will fit without the need for further bending.

Bending Templates

In case the plate requires additional bending (generally at the junction from the shaft to the distal end) bending templates made of anodised aluminium are available. Temporarily position the template (710363) over the femoral condyle and verify plate contour and length. Carefully remove it from the fracture site and compare it to the pre-contoured plate.
The bending templates can be used for either left or right plates.

Operative Technique

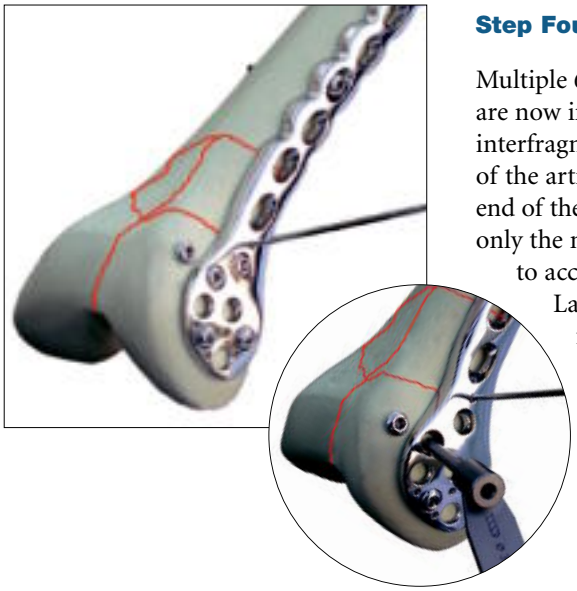


Step Three

After contouring and affixing the plate with Bone/Plate Forceps, additional K-wires (max. ø1.6mm) should be inserted through the relevant K-wire holes in the plate for improvedstability of the articular block.

The first drill hole is then placed in the shaft part above the most proximal fracture line. Using the Neutral Drill Sleeve (green) the 4.5mm cortical screw will be centrally located in the plate holeallowing for the plate to be axially readjusted before final fixation. Alternatively the Double Drill Guide (702417) can be used.

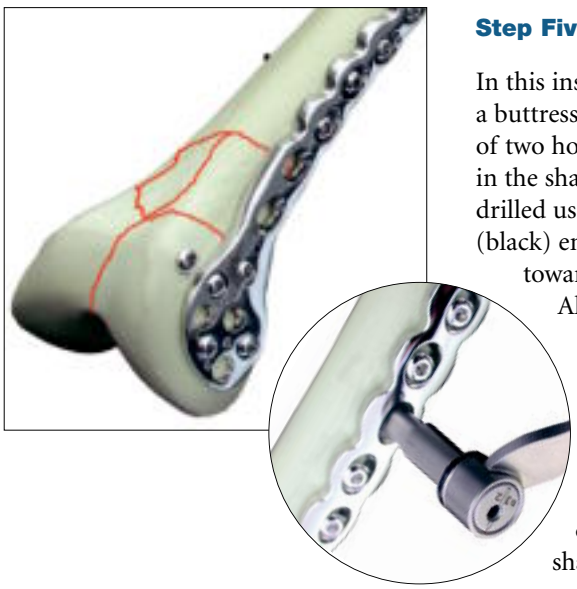
Some fracture patterns will allow submuscular insertion of the plate. After reconfirming the position of the plate with a lateral X-ray, set this first screw in the plate by making a small stab incision above the selected hole.



Step Four

Multiple 6.5mm cancellous Lag-Screws are now inserted for additional interfragmentary compression fixation of the articular block.Using the 4.5mm end of the Double Drill Guide (702417) only the near cortex is overdrilled to accept the shaft of the Lag-screw. This procedure facilitates the central placement of the screw in the hole.

The Double Drill Guide is then turned around and the 3.2mm sleeve is used to drill the core diameter of the screw. The near cortex may be tapped with the Tap for 6.5mm cancellous screws as necessary using the Tissue Protection Sleeve (702820). Alternatively 6.5mm Asnis III cannulated screws can be used. Remaining K-wires are manipulated as necessary.



Step Five

In this instance the plate should have a buttressing effect. A minimum of two holes of the remaining holes in the shaft section of the plate are drilled using the Buttress Drill Sleeve (black) ensuring that the arrow points towards the fracture site. Alternatively the Double Drill Guide (702417) can be used and must be positioned at the nearest end of the hole to the fracture line. Some fracture patterns may be allowed to have a slight compression effect in the shaft region.

The next drill hole (preferably placed next to the fracture) is made using the Compression Drill Sleeve (yellow) ensuring the arrow is pointing in the direction of the fracture site. Before final tightening of this compression screw, the first screw in the shaft section should be loosened approx. one turn to allow sliding of the fragments. Additional screws in buttress or neutral positions are added until adequate fixation is completed.

Operative Technique

Tibial Plate

Patient Positioning

The patient is placed in a supine position with the option to flex the knee up to 90°. This flexion will allow the iliotibial band to slip posteriorly, affording a better view of the posterolateral tibial plateau.

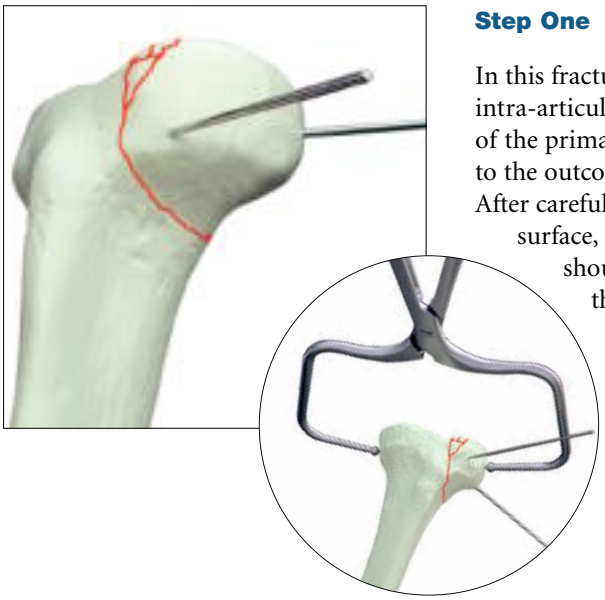
Surgical Approaches

Since the majority of plateau fractures primarily involve the lateral side, a straight lateral parapatellar incision is usually the first option. This incision can be extended proximally and distally as exposure is needed. When treating fractures with a bicondylar component, an additional posteriomedial incision may be required.

Technique

Clear identification and classification of the fracture should first be established using the recommended imaging methods.

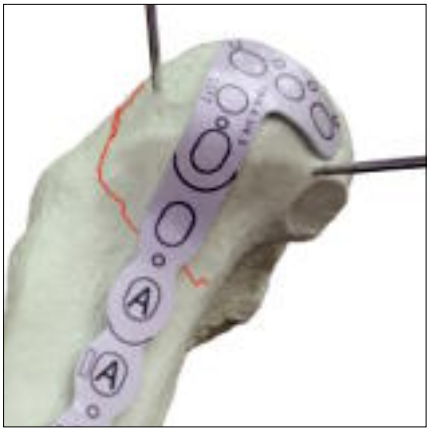
The appropriate anatomical reduction of the articular surface should be carried out before any definitive fixation is undertaken.



Step One

In this fracture, as with any intra-articular fracture, the precision of the primary reduction is critical to the outcome of the surgery. After careful reduction of the articular surface, the primary stabilisation should be carried out through the use of Reduction Forceps (702936) and/or K-wires.

The reconstruction of the articular surface could be achieved using independent cancellous Lag-Screws dia. 6.5mm. Alternatively 6.5 or 5.0mm Asnis III cannulated screws can be used. The position of the Lag-Screws or K-wires must not interfere with the final position of the plate.



Step Two

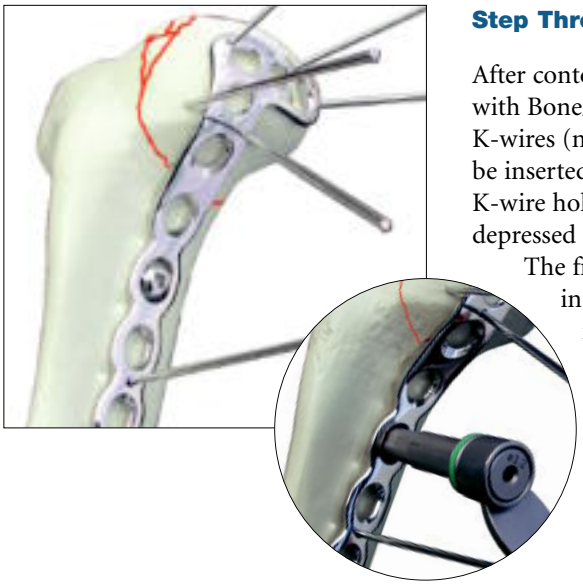
In most cases the pre-contoured plate will fit without the need for further bending.

Bending Templates

In case the plate requires additional bending (generally at the junction from the shaft to the proximal end) bending templates made of anodised aluminium are available. Temporarily position the template (710362) over the lateral tibial plateau and verify plate contour and length.

The plate should ideally sit 1–2mm off the bone in the region of the shaft holes distal to the fracture (marked A). This will result in additional compression at the articular surface during screw insertion in these holes. Carefully remove the template from the fracture site and compare it to the pre-contoured plate. The bending templates can be used for either left or right plates.

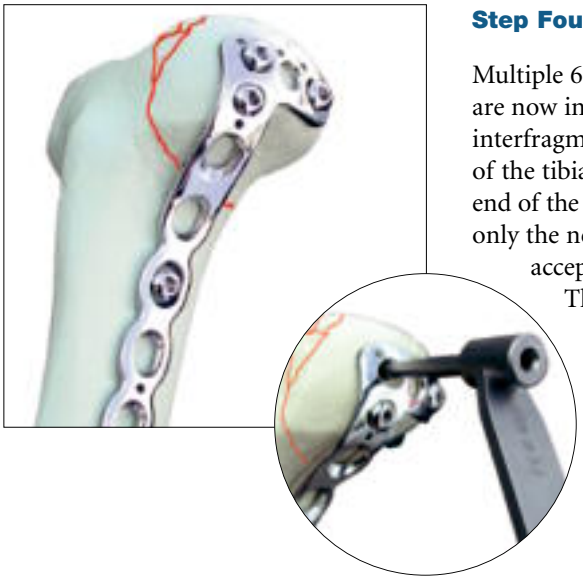
Operative Technique



Step Three

After contouring and affixing the plate with Bone/Plate Forceps, additional K-wires (max. ø 1.6mm) should be inserted through the relevant K-wire holes in the plate to support depressed areas in the articular surface. The first drill hole is then placed in the shaft part below the most distal fracture line.

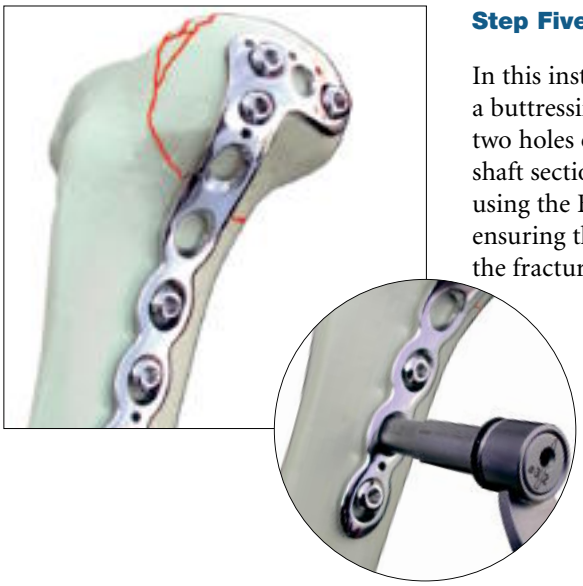
Using the Neutral Drill Sleeve (green) the 4.5mm cortical screw will be centrally located in the plate hole allowing for the plate to be axially readjusted before final fixation. Alternatively the Double Drill Guide (702417) can be used.



Step Four

Multiple 6.5mm cancellous Lag-Screws are now inserted for additional interfragmentary compression fixation of the tibial plateau. Using the 4.5mm end of the Double Drill Guide (702417) only the near cortex is overdrilled to accept the shaft of the Lag-screw. This procedure facilitates the central placement of the screw in the hole.

The Double Drill Guide is then turned around and the 3.2mm sleeve is used to drill the core diameter of the screw. The near cortex may be tapped with the Tap for 6.5mm cancellous screws as necessary using the Tissue Protection Sleeve (702820). Alternatively 6.5mm Asnis III cannulated screws can be used. Remaining K-wires are manipulated as necessary.



Step Five

In this instance the plate should have a buttressing effect. A minimum of two holes of the remaining holes in the shaft section of the plate are drilled using the Buttress Drill Sleeve (black) ensuring that the arrow points towards the fracture site.

Alternatively the Double Drill Guide (702417) can be used and must be positioned at the nearest end of the hole to the fracture line. Additional screws are added in buttress or neutral positions until adequate fixation is completed.

Ordering Information

Plate Bending

The Table Plate Bender (702900) shown below can be used to facilitate precise bending using the contoured bending sleeves.

Implants and Instruments

Femoral Plate 4.5/6.5mm

StSt Left REF	StSt Right REF	Plate Length mm	Holes
435506S	435526S	157	6
435508S	435528S	193	8
435510S	435530S	229	10
435512S	435532S	265	12
435514S	435534S	301	14
435516S	435536S	337	16
435518S	435538S	373	18

Tibial Plate 4.5/6.5mm

StSt Left REF	StSt Right REF	Plate Length mm	Holes
435602S	435622S	42	2
435604S	435624S	78	4
435606S	435626S	114	6
435608S	435628S	150	8
435610S	435630S	186	10
435612S	435632S	222	12
435614S	435634S	258	14

Templates

StSt REF	Length mm	Plate
710362	186 (10 holes)	Tibial (Left & Right)
710363	301 (14 holes)	Femoral (Left & Right)
710364	138 (10 holes)	Tibial small (Left & Right)

N.B. Can be cut to size

Tibial Plate 3.5/4.0mm

StSt Left REF	StSt Right REF	Plate Length mm	Holes
435002S	435022S	34	2
435004S	435024S	60	4
435006S	435026S	86	6
435008S	435028S	112	8
435010S	435030S	138	10
435012S	435032S	164	12
435014S	435034S	190	14

N.B. For use with SPS Small Fragment Instrumentation

Reference	Description
Periarticular Reduction Instrument	
702936	Mantis Tongs Forceps L385mm
Bending Instrument	
702900	Table Plate Bender

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