



Small External Fixator

Surgical Technique

CHANGZHOU KANGHUI MEDICAL INNOVATION CO., LTD

Add: No.11, North Changjiang Road, Xinbei Zone, Changzhou, Jiangsu 213022, P.R.China
Tel: +86-519-85139851 Fax: +86-519-85128628
www.kanghui-med.com
Shanghai Office
Add: Building 18, No.1000, Jinhai Road, PuDong District, Shanghai, China 201206
Tel: +86-21-50319916 Fax: +86-21-50312913



Contents

Indications/Contraindications	1
Surgical Technique	1
Angle for screw insertion	2
Position of the screws	2
Insertion of screws	2
Screw diameters	3
Construction of partial frames	3
Partial frames as reduction handles	3
Insert modular rod and verify reduction	4
Benefits of the 3-rod modular technique	4
Additional stabilization	5
Product Information	6
Implants	6
Fixation components	6
Instruments	7

Indications/Contraindications

Indications

Unstable distal radius fractures

- Intra-articular
- Extra-articular
- Preliminary fixation before open reduction and internal fixation
- Fracture with open and closed soft tissue injury
- Multiple trauma (in terms of “damage controlled surgery injury-adapted care”)

Contraindications

- Patients who for social and physical reasons are not suitable for an external fixator.
- Agitation
- Patients in whom screws cannot be inserted due to a bone or soft tissue disease.

Surgical Technique

The assembly of the small external fixator is described here using the 3-rod modular technique on the distal radius as the example. At the start, perform an initial reduction on the hand with the fractured radius by gentle ligamentotaxis to minimize soft tissue injuries through internal pressure.

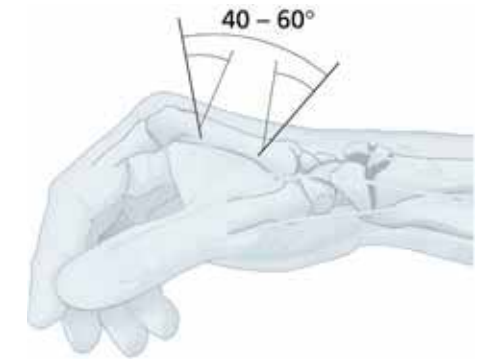


1

Angle for screw insertion

Implant the Schanz screws into the second metacarpal.

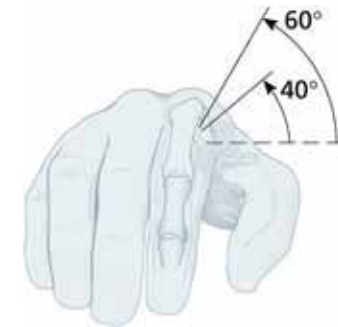
Note: For a better purchase, it is recommended to insert these at a slight angle. An angle of 40° to 60° between the proximal and distal pin has proven to be best.



2

Position of the screws

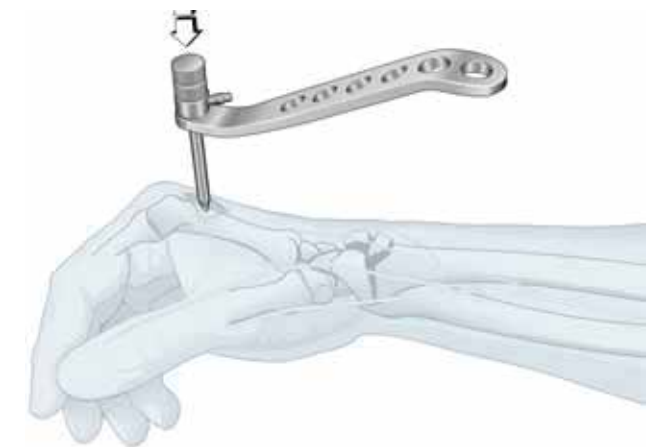
Pay attention to the extensor tendon and the radiodorsal neurovascular bundle on the extensor and radiodorsal side. If the screws are placed too far laterally, they will impede the function of the thumb. For this reason, an angle between 40° and 60° with respect to the horizontal has proven best when viewed from the orthograde position.



3

Insertion of screws

The Schanz screws can be placed first in the second metacarpal or radius. Insert the drill sleeve in the radius and particularly in the second metacarpal, while protecting and pushing aside the extensor tendon. Maintain a secure bone contact when implanting the Schanz screws with the drill sleeve.

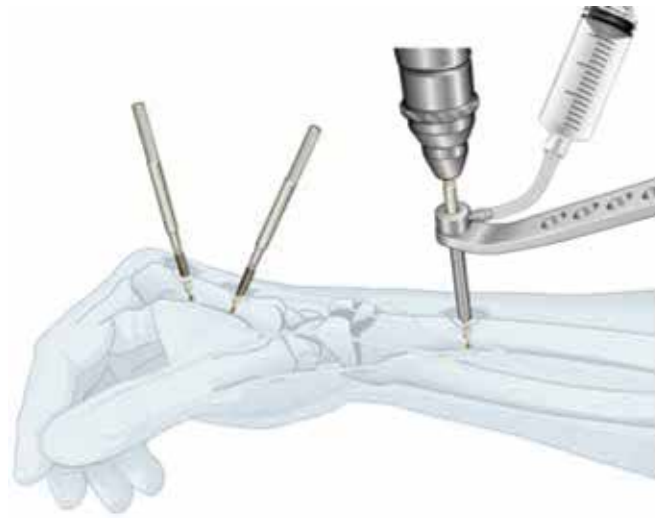




4

Screw diameters

Insert two Schanz screws each into the second metacarpal and the radius. Depending on the size of the skeleton, select Schanz screws with a diameter between 2.5 mm and 4.0 mm for the second metacarpal and Schanz screws with a diameter of 4.0 mm for the radius. It is recommended for the shaft that cooling be provided for the drilling or insertion of the Seldrill Schanz screw. To accomplish this, the connector on the drill sleeve can be connected to a tube and a syringe.

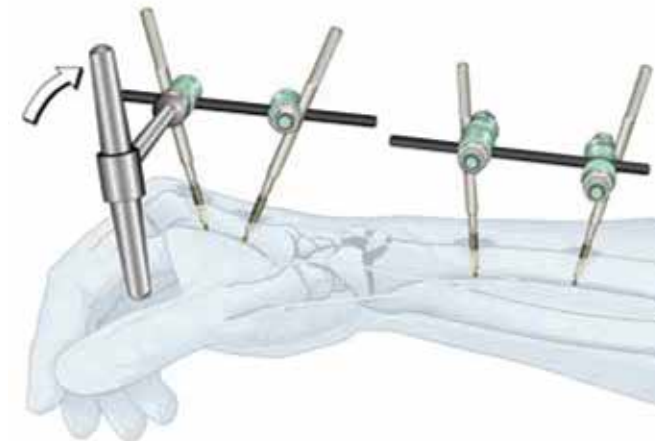


5

Construction of partial frames

Connect the pairs of Schanz screws in the radius and the second metacarpal using short rods. Firmly tighten the clamps of these partial frames.

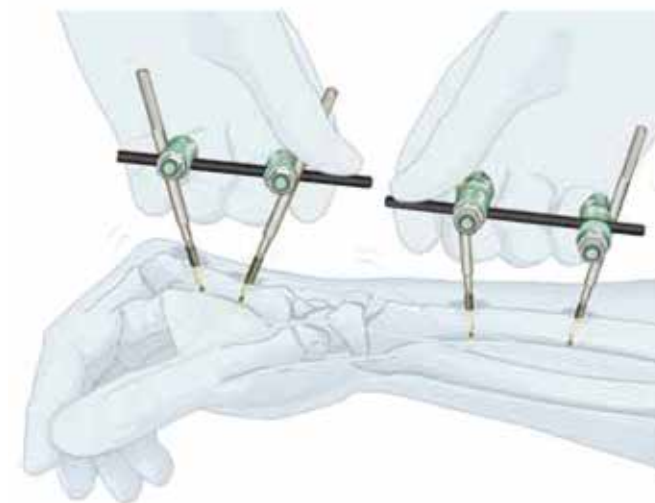
Note: Select the rod length so that the ends near the fracture do not interfere with each other during the later reduction but there is sufficient room at the end of the rods to attach the middle modular rod to the partial frames with two additional clamps (modular clamps). This is achieved, for example, by placing the rod in the second metacarpal on the ulnar side and in the radius on the radial side (or vice versa).



6

Partial frames as reduction handles

Use the partial frames as handles for every main bone to be reduced. The fracture can be reduced in all six degrees of freedom (longitudinal-ligamentotaxis, translation, and rotation). This technique protects soft tissues from unnecessary pressure and compression and can be easily performed.



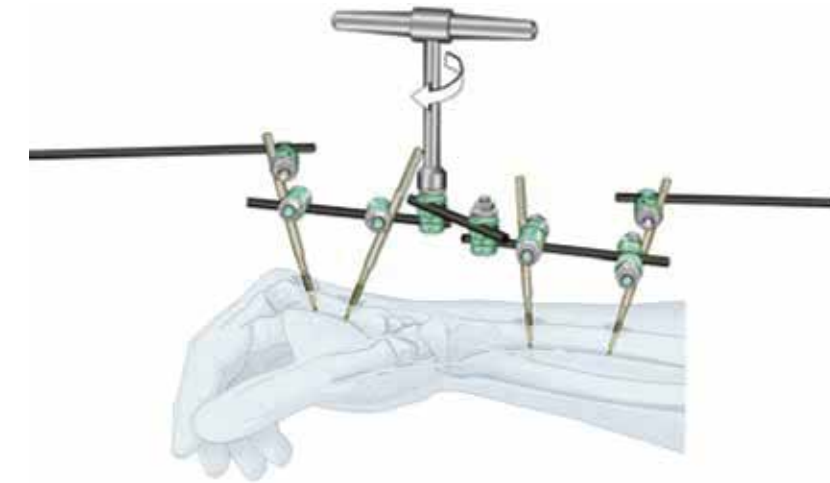
7

Insert modular rod and verify reduction

Place the third rod before the final reduction.

Note: If the rod slips out during the reduction manoeuvre, it can be reinserted later. Loosely connect the two “modular clamps” at the end of the fracture by means of the third rod (similar to two connected universal joints). After the fracture has been reduced, verify this clinically by palpation and radiographically with the image intensifier in two planes and if necessary in oblique planes.

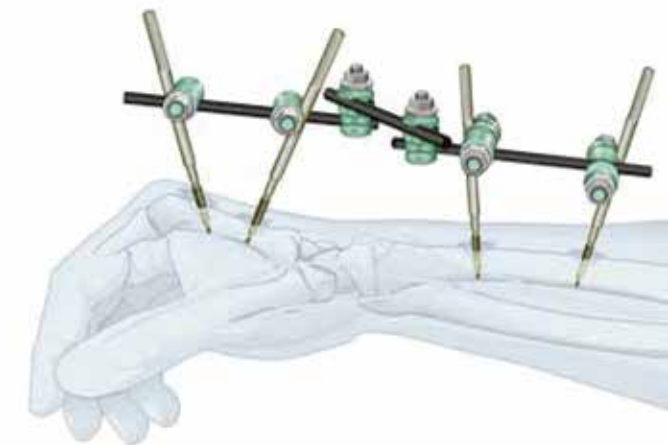
Note: The two “modular clamps” can be tightened slightly before the radiographic verification to avoid unnecessary exposure to X-rays. After successful reduction, gradually tighten the two “modular clamps”.



8

Benefits of the 3-rod modular technique

The 3-rod modular technique allows rapid and secure reduction and retention with protection of soft tissue. A secondary correction or adjustment can also be made easily at any time by opening the two “modular clamps”.

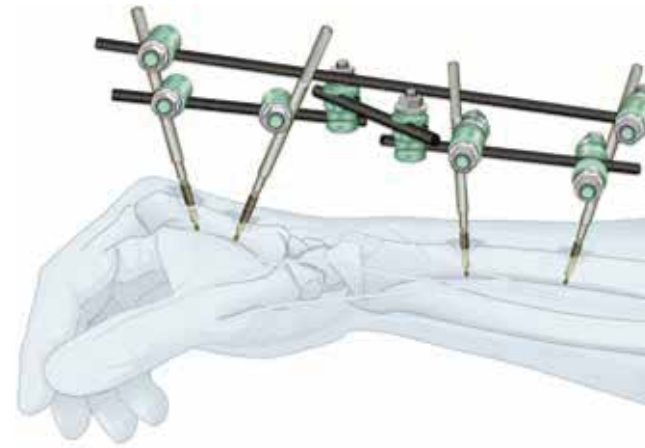




9

Additional stabilisation

The construct can be stabilised as needed by using a “neutralization rod“. Depending on the position, it is sufficient to grasp one end of the screw from the distal and proximal group. Finally, verify again whether all clamps have been tightened well.

**Product Information****Implants**

Code	Products Description	Size
10740065	Schanz Screw, self-drilling	Φ3 × 65
10740080	Schanz Screw, self-drilling	Φ3 × 80

Code	Products Description	Size	Material
10739080	Schanz Screw, self-drilling	Φ2.5 × 80	SS

Code	Products Description	Size	Material
10735150	K-wire	Φ1.8 × 150	SS
10705150	K-wire	Φ2.0 × 150	SS

Code	Products Description	Size	Material
10727150	K-wire	Φ2.5 × 150	SS

Fixation Components

Code	Products Description	Size	Material
521510	Clamp, Clip-on, self-holding(small)	Φ4	TA

Code	Products Description	Size	Material
521520	Rod-to-Rod Clamp(small)	Φ4	TA

Code	Products Description	Size	Material
521530	Combination Clamp, Clip-on, self-holding(small)	Φ4	TA

Code	Products Description	Size	Material
521540	Connecting Rods	Φ4 × 60	Carbon Fiber
521550	Connecting Rods	Φ4 × 80	Carbon Fiber
521560	Connecting Rods	Φ4 × 100	Carbon Fiber
521570	Connecting Rods	Φ4 × 120	Carbon Fiber
521580	Connecting Rods	Φ4 × 140	Carbon Fiber
521590	Connecting Rods	Φ4 × 160	Carbon Fiber
521600	Connecting Rods	Φ4 × 180	Carbon Fiber
521610	Connecting Rods	Φ4 × 200	Carbon Fiber

Code	Products Description	Size	Material
521620	Protective Caps	Φ2.5 × 27	Silicon
521440	Protective Caps	Φ4 × 27	Silicon



External Fixator (small) Instruments



524100
Drill Sleeve 4.0/2.6



524110
Trocar, Φ 2.6mm



522140
T-Clip



524120
T-Wrench, SW7



524130
Combination Wrench, SW7



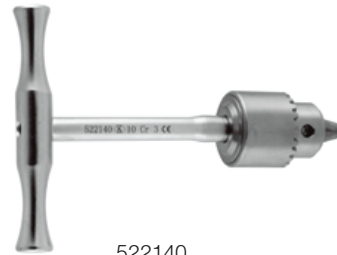
523150
Drill Bit, Φ 2.0mm



524140
Drill Bit, Φ 1.8mm



525100
Holder



522140
T-Clip



525120
Combination Wrench, SW5.5



525130
Hex Wrench, SW5.5



525140
Double Drill Guide 1.6/1.2