



# Prof. Berard's H.D.B. growth screw for slipped capital femoral epiphysis fixation



## Surgical technique



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# THE CONCEPT: A new philosophy since 1996

## Information

Prof. Bérard's H.D.B. screw has been developed for the fixation of the slipped capital femoral epiphysis. The objective is to stabilise the epiphyseal slippage while facilitating the local growth in order to minimise the risk of cervicocephalic dysmorphism.

## Characteristics

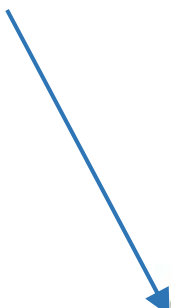


### Long proximal threading

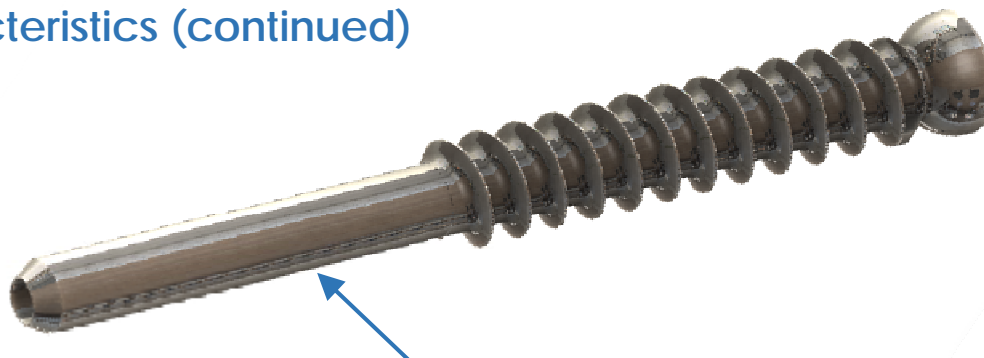
- Proper fixation in the metaphysis
- Easy screw extraction
- Length of the threading calculated at an adequate distance from the physis

### Cannulated screw for percutaneous implantation

- Percutaneous ablation and implantation on the guide pin
- Limited tissue trauma
- Minimum scarring



## Characteristics (continued)

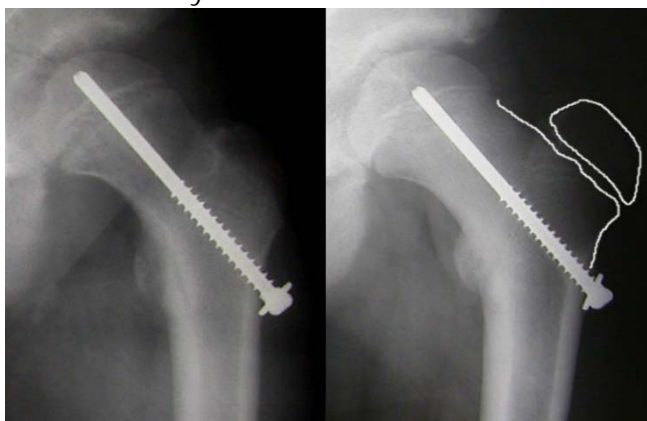


### Smooth distal end to facilitate the residual growth of the femoral neck

- Example of remodelling and "guided" growth after treatment of chronic epiphysiolysis (occurrence at the age of 5 years).



- Possibility of guiding the remodelling by combining the proximal thread screws and the distal thread screws
- Systematic and preventive contralateral tightening due to ill health and easy extraction of the material
- Change of screw required at times to ensure the fixation until full bone maturity



## Bibliography

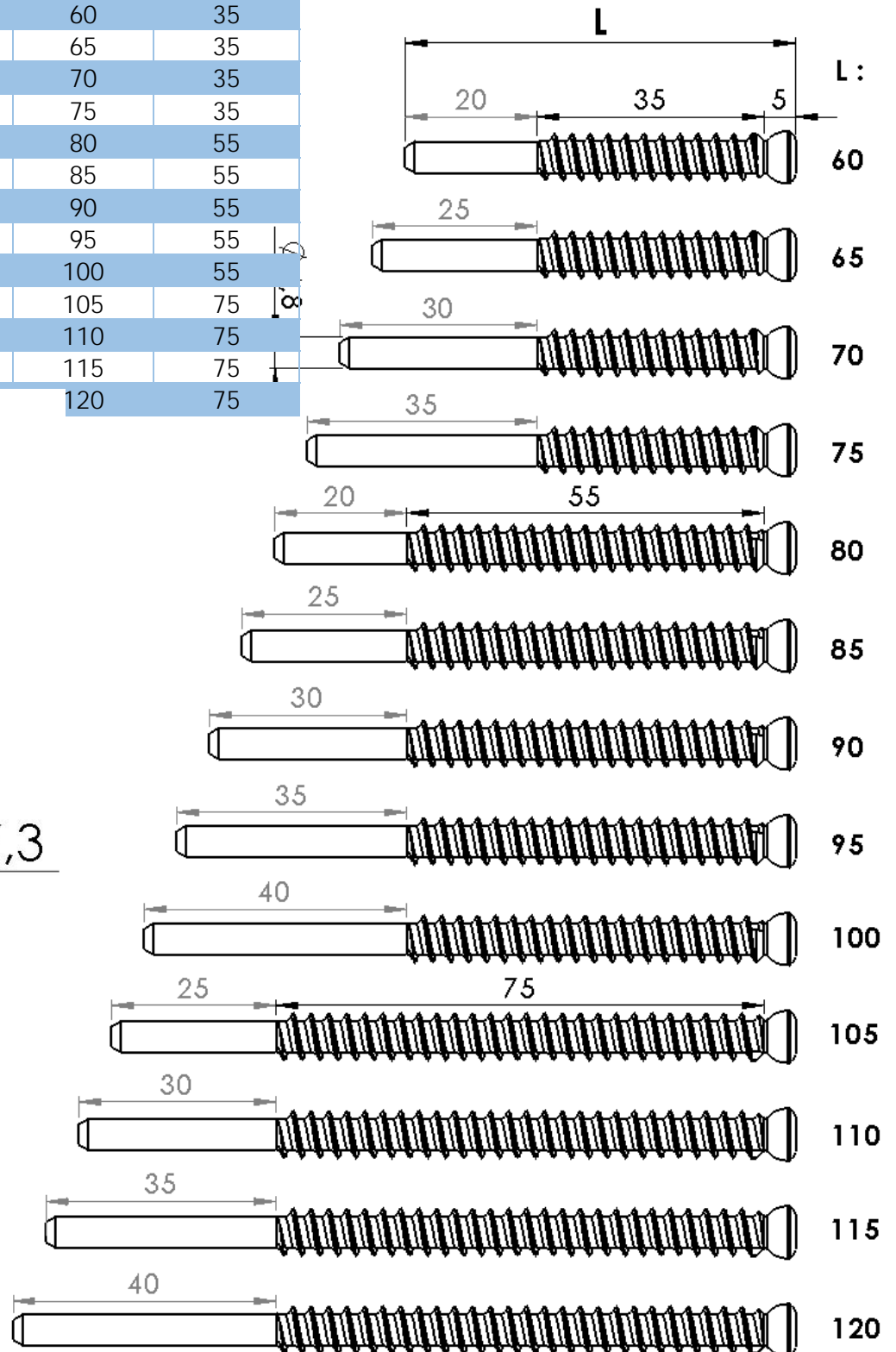
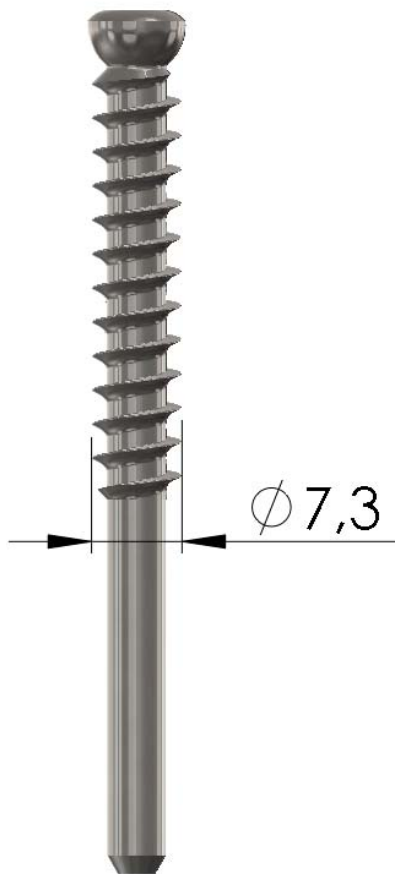
F. Chotel, "Cannulated "pin-screw" fixation for slipped capital femoral epiphysis: an original concept to allow stabilisation and growth." Symposium: "Current and future treatment of SCFE: is the status-quo still acceptable?", 33th EPOS Annual Meeting, Bruges, 2014

F. Sailhan, A. Courvoisier, O. Brunet, F. Chotel, and J. Berard, "Continued growth of the hip after fixation of slipped capital femoral epiphysis using a single cannulated screw with a proximal threading.," Journal of Children's Orthopaedics, vol. 5, no. 2, pp. 83-88, 2011.

F. Chotel, "Cannulated "pin-screw" fixation for slipped capital femoral epiphysis: an original concept to allow stabilisation and growth." XXX Congreso de la Sociedad Argentina de Ortopedia y Traumatología Infantil, Buenos Aires, 2010.

## IMPLANTS

STAINLESS STEEL reference	Total length	Thread length
36.115.60	60	35
36.115.65	65	35
36.115.70	70	35
36.115.75	75	35
36.115.80	80	55
36.115.85	85	55
36.115.90	90	55
36.115.95	95	55
36.115.10	100	55
36.115.15	105	75
36.115.11	110	75
36.115.16	115	75
	120	75



# ANCILLARY MATERIAL

Guide pin of 2.5 mm diameter, 40 cm length with threaded end  
Ref: 31.240.25/12



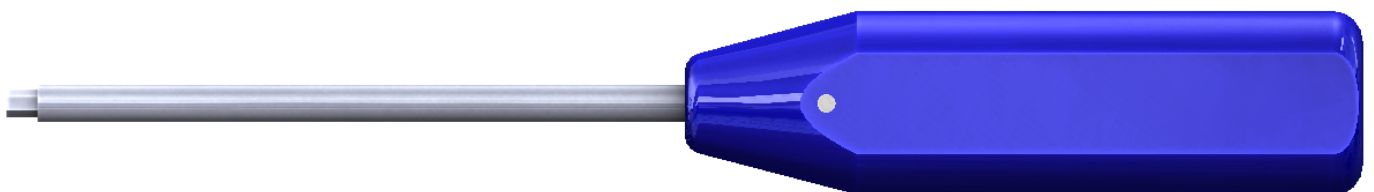
Pin measurer of 40 cm length  
Ref: 31.150.02



Cannulated drill of 5 mm diameter, 30 cm length  
Ref: 51.040.48



Cannulated hexagon screw driver (4 mm)  
Ref: 36.115.01

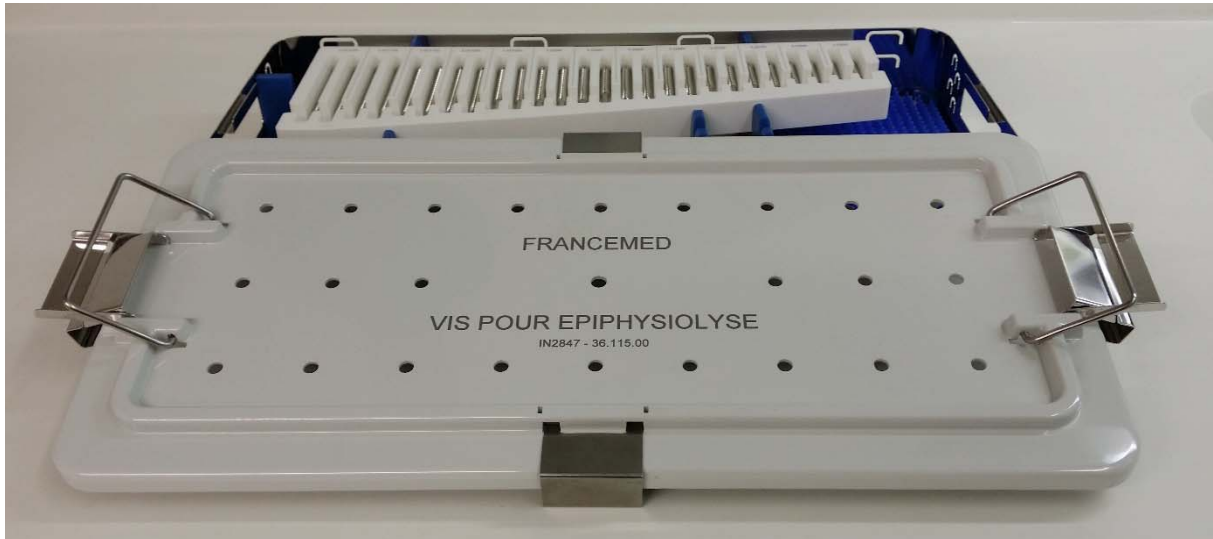


Box

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## IMPLANTATION TECHNIQUE

### 1. Position of the patient





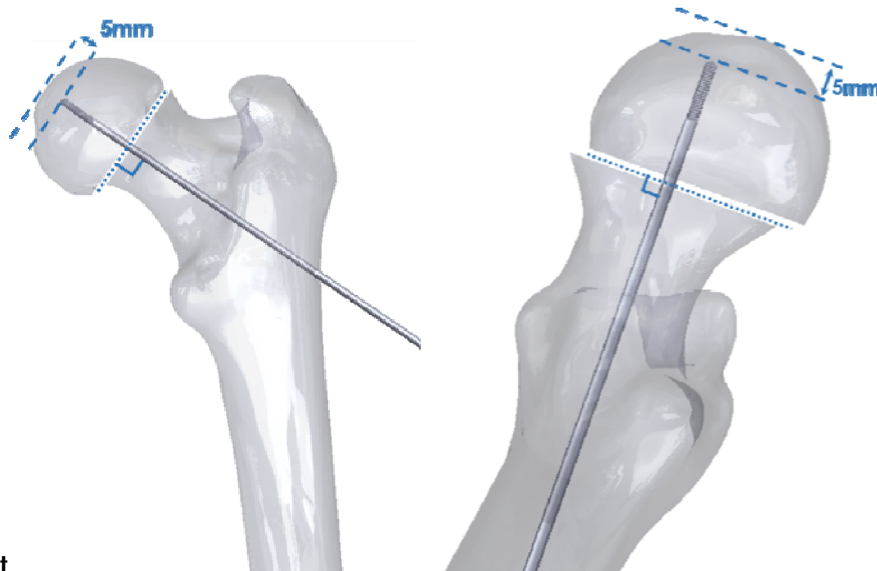
The patient will be in a supine position on the orthopaedic table in the presence of the surgeon with gentle or no traction of the limb (depending on whether the slippage is acute or not). The contralateral limb is abducted to facilitate the placement of the image intensifier and allow views for the front, lateral and 45-degree angle positions.

## 2. Insertion of the guide pin

### Material

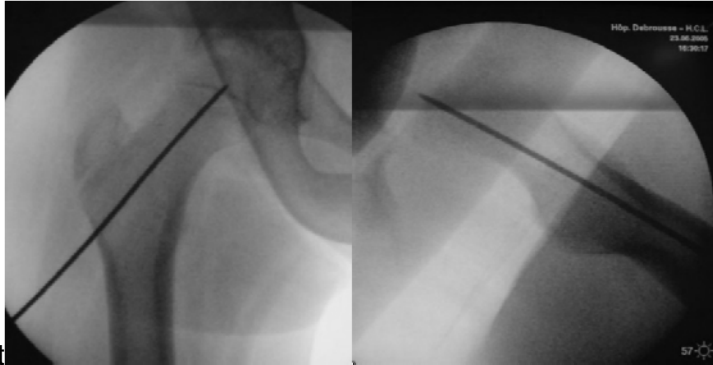
Ref: 31.240.25/12 Guide pin of 2.5 mm diameter, 40 cm length with threaded end

Not provided Electric drill



Front

Lateral



Front

Side

1. The position of the desired pin is identified under the intensifier after being placed on the skin; the intersection of the two lines (front and lateral) helps to be close to the insertion point of the pin.
2. Insert the guide pin percutaneously using an electric drill and with the help of the image intensifier.

The lateral bone penetration point of the pin is located at the thinning of the metaphyseal cortex. The pin must be, if possible, perpendicular to the physis and stop at 5 mm from the subchondral bone. These two constraints require a check using the intensifier of the front, lateral and 45-degree views.

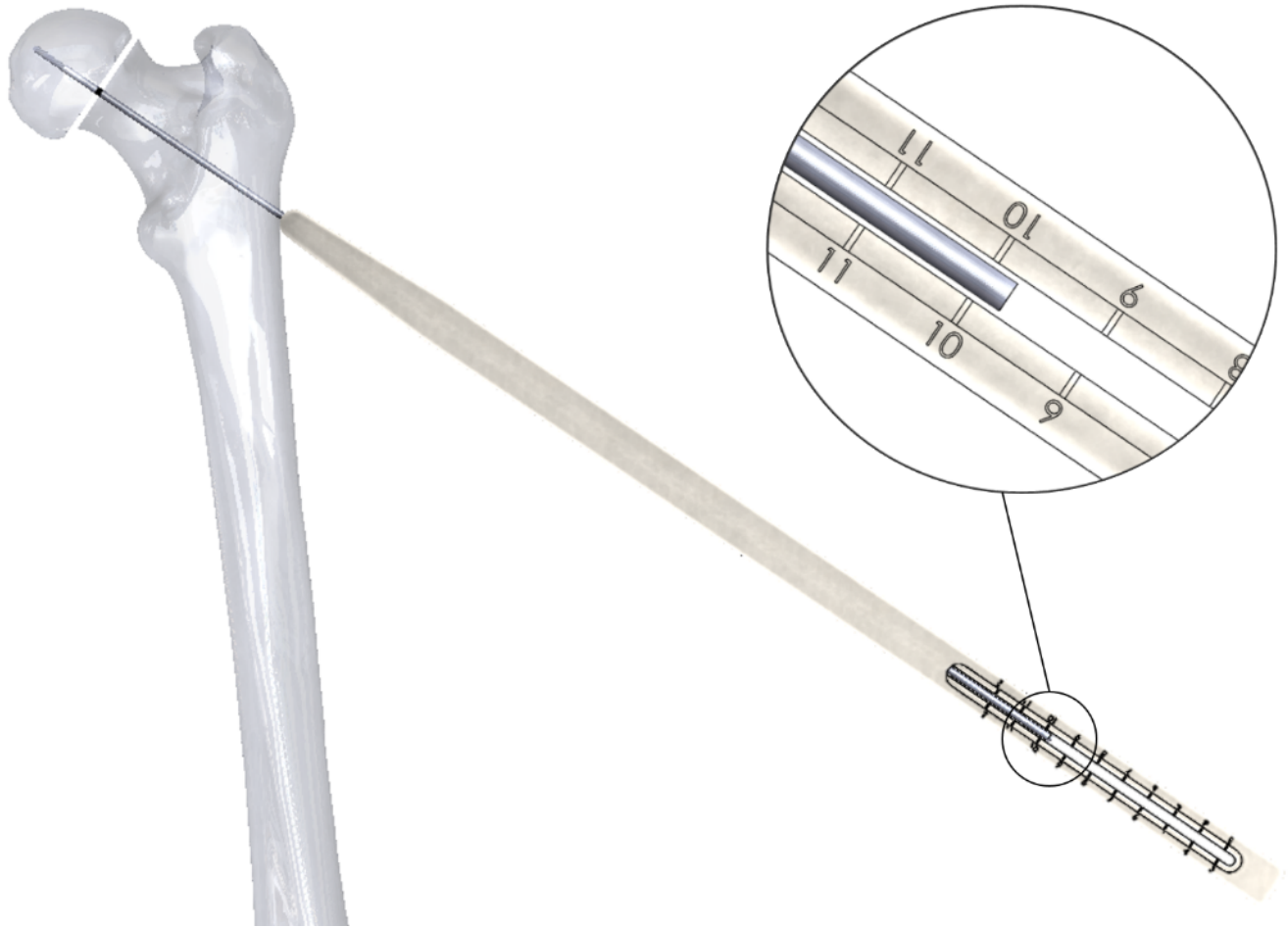
*In case of posterior tilt of the head, the entry point of the pin must be in the front.*

*In case of unstable slipped capital femoral epiphysis, a second temporary anti-rotation pin is recommended.*

### 3. Measurement of the guide pin

#### Material

Ref: 31.150.02	Pin measurer of 40 cm length (graduation in cm).
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Slide the pin measurer on the guide pin until it comes in contact with the cortex. To determine the length of screw to be used, add 5mm to the value read on the measurer to take into account the part of the screw head that remains outside of the cortex. For this example, we calculate 10 cm and thus use a 10.5 cm long screw.

#### 4. Drilling

##### Material

Ref: 51.040.48

Cannulated drill of 5 mm diameter, 30 cm length

*Not provided*

Electric drill



Place the cannulated drill on the guide pin and drill slowly under with the help of the image intensifier, up to the tip of the pin. Remove the drill while ensuring that the guide pin is placed correctly.

## 5. Insertion of the screw

### Material

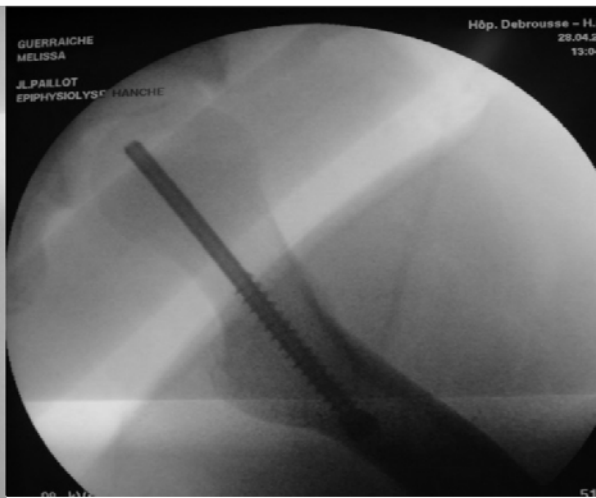
Ref: 36.115. \$\$	HDB screw for slipped capital femoral epiphysis
Ref: 36.115.01	Cannulated hexagon screw driver (4 mm)



Place the cannulated screw of the chosen length on the guide pin using the cannulated screw driver. Gently screw-in until the screw head is in contact with the lateral cortex. The threading must never exceed the level of the physis, so as to allow residual growth.

*Using a washer does not benefit this material because no compression is possible.*

## 6. Final check



1. Ensure that the screw is in the correct position using the image intensifier or by a test X-ray.
2. Remove the guide pin and close the skin incision by way of a stitch.

# ABLATION TECHNIQUE

## 1. Position of the patient



It is recommended to correctly position the child on the orthopaedic table to facilitate the extraction of the material.  
(see position for placement)



## 2. Removal of the screw

### Material

Ref: 36.115.01

Cannulated hexagon screw driver (4 mm)



1. Initiate the skin incision.
2. Insert the guide pin into the screw head with the help of the image intensifier and then cannulate the screw till the end.
3. Remove the screw with the screwdriver; the long threading ensures the smooth extraction of the screw. Once the threaded portion removed from the lateral cortical bone, the screw may be pulled out.
4. Remove the guide pin.

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