

N2 (UK) Ltd



Veterinary Supplies



FDI Pin™ Catalogue



Fracture Distractor Intramedullary Pin System for Veterinary Orthopaedic Surgery

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FDI Pin™: Intramedullary Pin Technology for Veterinary Surgery

The FDI Pin™ is an intramedullary pin system designed to significantly simplify and assist fracture distraction, reduction and stabilisation during veterinary orthopaedic procedures involving appendicular long bones (tibia, femur, humerus).

The system is also intended to help maintain fracture alignment during application of definitive fixation methods such as bone plates or external fixation systems, while also providing intramedullary pin support against bending forces following fixation.

Fracture Reduction Assistance

The FDI Pin™ incorporates a distraction capability intended to facilitate controlled alignment of the main proximal and distal fragments in the proximo-distal axis during surgery. The design reduces reliance on additional bone manipulation instruments (e.g. bone holders) and assists maintenance of alignment during application of the definitive fixation method (e.g. bone plate or external fixator). This enables very precise and accurate alignment with minimal physical effort, making fracture repair significantly easier and faster in companion animals, from cats to giant breed dogs.

Stability During Fixation

Once the desired alignment has been achieved, the FDI Pin™ is designed to maintain fragment positioning during placement of plates or external fixation constructs, which significantly eases their application and reduces surgical time.

Integration with Established Surgical Techniques

Following definitive fixation, the FDI Pin™ functions similarly to a conventional intramedullary pin by contributing resistance to bending forces, with the important added advantage of being immune to “pin back-out” which is a known complication with standard smooth intra-medullary pins.

Support During Weight Bearing

The device incorporates a cancellous threaded proximal segment and a blunt distal tip. These features contribute resistance to compressive forces not only during the intra-operative phase, but also post-operatively, in conjunction with the primary fixation method used.

Anti-Migration Design

The threaded proximal segment reduces the risk of pin migration (pin “back-out”). This feature improves long-term implant stability and reduces complications associated with pin displacement.

Advantages – Summary

- Simplifies and eases fracture reduction
- Maintenance of reduction during fixation
- Especially useful in oblique and comminuted fractures
- May reduce surgery time
- Reduced risk of proximal pin migration
- Compatibility with established fixation techniques
- Additional resistance to bending forces

Clinical Applications of the FDI Pin™ Intramedullary Pin System

Primary Indications

The FDI Pin™ is intended for the surgical management of appendicular long bone fractures in veterinary patients, including fractures of the:

- Tibia
- Femur
- Humerus

The system may be used in:

- Oblique fractures
- Comminuted and highly comminuted fractures
- Simple fractures

Applications in Complex Fracture Patterns

The FDI Pin™ may be particularly useful in fracture configurations where achieving reduction, and especially accurate reduction, is technically demanding in:

- Oblique fractures requiring precise fragment alignment
- Comminuted and highly comminuted fractures

Complementary Fixation Methods

The FDI Pin™ may be used in conjunction with:

- Internal fixation plates
- External fixation systems
- Hybrid fixation techniques

Intended Surgical Benefits

The system is designed to assist fracture distraction, reduction and alignment, maintain reduction during fixation, and provide supplementary intramedullary support without the risk of pin migration following definitive fixation.



FDI Pin™ Intramedullary Pin Technology

Overview

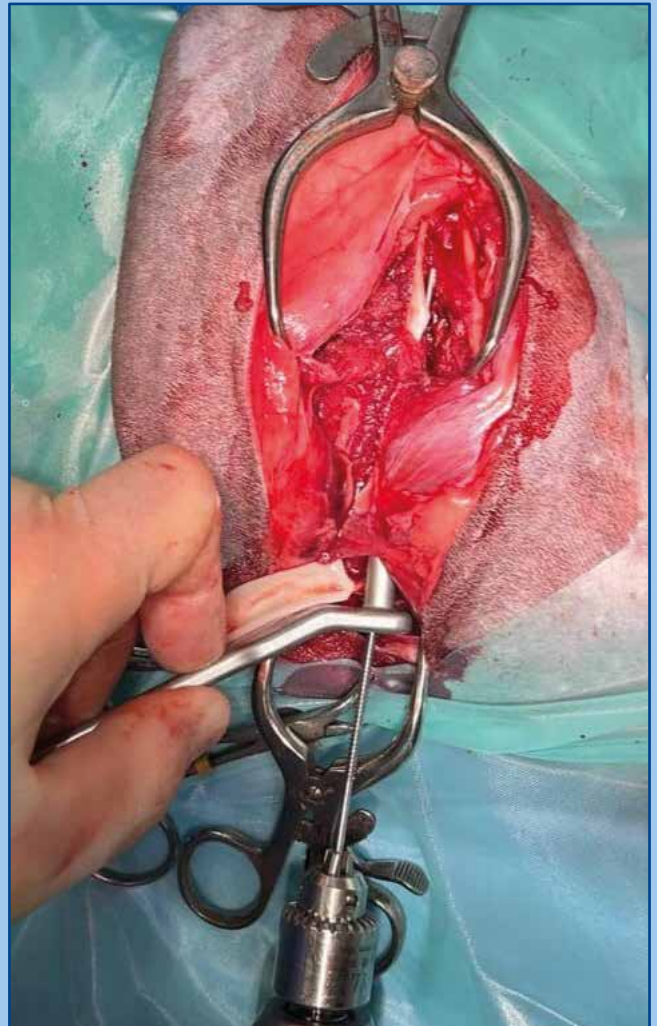
The FDI Pin™ is intended for use in appendicular fractures of the tibia, femur, and humerus. Although applicable in a range of fracture types, the system may be particularly useful in oblique and comminuted fractures.

Benefits

1. The system allows controlled distraction of proximal and distal fracture fragments while reducing the physical force needed and bone holder use during reduction.
2. Once the desired reduction has been achieved, the FDI Pin™ helps maintain fragment position during placement of the definitive fixation (plate or external fixator).
3. Following definitive fixation, the pin is highly resistant to migration and back-out thanks to the threaded proximal portion. The protruding portion of the pin may be trimmed similarly to a conventional intramedullary pin while continuing to contribute resistance to bending forces.
4. The threaded proximal segment and blunt distal tip may contribute resistance to compressive forces during postoperative loading.

Device Features

1. Smooth distal segment (approximately two-thirds of the pin length).
2. Cancellous threaded proximal segment (approximately one-third of the pin length)
3. Rounded blunt distal tip.
4. Smooth proximal extension intended for engagement with a drill or chuck.
5. Pin diameters compatible with commonly available drill bits and smooth intramedullary pins.



Surgical Technique

Example Fracture Details

Example case: comminuted fracture.

Patient Details

- **Species:** Canine
- **Breed:** German Shepherd Dog
- **Age:** 7 years 7 months
- **Sex:** Female spayed

Tissue Protector Placement

Position the tissue protector over the proximal aspect of the bone at the appropriate anatomical landmarks and align it with the longitudinal axis of the medullary canal.

Proximal Canal Preparation

A drill bit or appropriately sized smooth intramedullary pin may be used to prepare the proximal entry point using a normograde approach.

The FDI Pin™ shaft core diameter range corresponds to commonly available smooth pin and drill bit diameters.

A tissue sleeve should be used when drilling to minimise soft tissue injury.

Pin Insertion

The FDI Pin™ is inserted through the prepared proximal entry point until it exits the distal aspect of the proximal fragment.

A tissue sleeve should be used during insertion to reduce the risk of soft tissue entanglement with the threaded segment, particularly in regions containing important neurovascular structures.

Engagement of the Distal Fragment

The FDI Pin™ is advanced into the distal medullary canal using a power tool or hand-chuck.

Fragment Distraction

The pin is advanced distally until the blunt distal tip contacts the distal end of the intramedullary canal.

Further advancement allows the threaded proximal segment to engage the proximal fragment, generating controlled distraction between fracture fragments. This controlled distraction may be increased or decreased by changing the direction of the power tool or hand-chuck.

Limb Length Assessment

Once preliminary reduction and distraction have been achieved, limb length assessment may be performed using anatomical landmarks and intraoperative reference points. It is especially useful to measure normal limb length pre-operatively on the contralateral normal limb, which aids in improving accuracy, especially in highly comminuted fractures.

The FDI Pin™ is intended to maintain longitudinal (proximo-distal) stability and thus prevents fragment collapse, which simplifies bone plate (or external fixator) application.

Fine Adjustment of Reduction

Following initial assessment, distraction may be adjusted incrementally by controlled advancement or withdrawal of the FDI Pin™ until the desired alignment is achieved.



Surgical Technique cont.

Bone Plate (or External-Fixator) Application

Definitive stabilisation may then be performed using an appropriately selected bone plate or external fixator construct.

Pin Trimming

Following plate (or external fixator) application, the protruding proximal portion of the FDI Pin™ may be cut using standard orthopaedic technique and instrumentation.

Final Construct

The final construct consists of the definitive fixation system working in conjunction with the retained intramedullary pin to support fracture stability.



Product Information

Code	Description	Shank Diameter	Thread diameter	Total length
PIN-FDI-20	2.0mm Fracture Distractor Intramedullary Pin	2.0mm	2.7mm	140mm
PIN-FDI-24	2.4mm Fracture Distractor Intramedullary Pin	2.4mm	3.5mm	195mm
PIN-FDI-28	2.8 mm Fracture Distractor Intramedullary Pin	2.8mm	4.0mm	270mm
PIN-FDT-TP	Tissue Protector for FDI Pin Range			



Case Study

Fracture Distractor Intramedullary Pin (FDI Pin™)

A new product introduction from IDR-Biomed (UK)

Dr Tamir Hargittai
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Haim Geva
BA Physics, BSc Materials Engineering

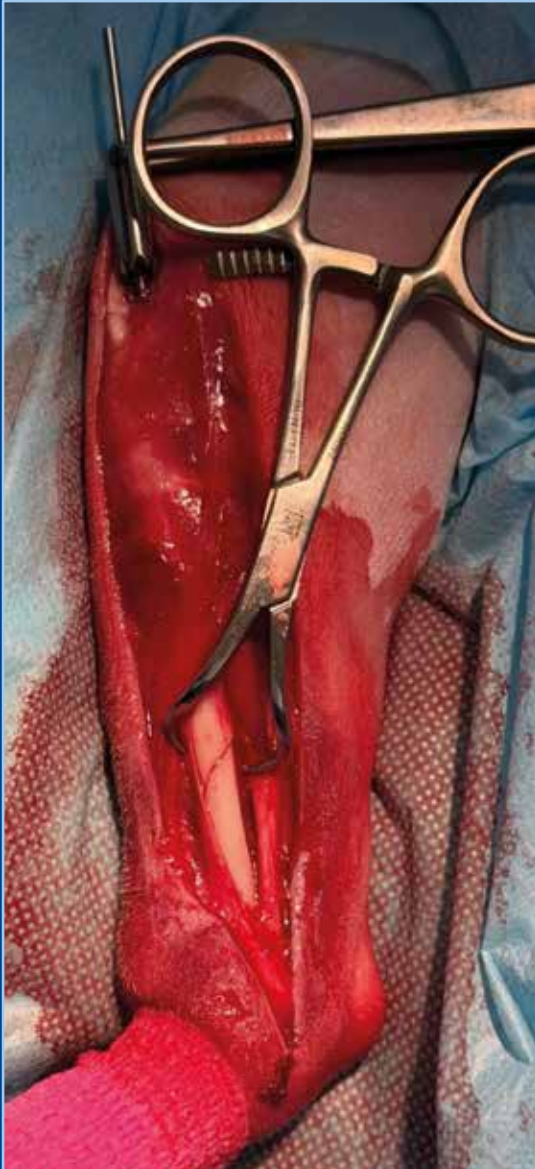


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