

# Fusion Implants

Advanced Veterinary Devices



# HIRS

Humeral intracondylar Repair System



APPLICATION NOTES

Humeral intracondylar fissure (HIF) is most commonly seen in English Springer Spaniels, and occasionally other breeds. The condition is characterised by a fissure in the centre of the humeral condyle, which has been hypothesised to be either failure of the ossification centres to fuse, or a stress fracture. Reported healing rates for the fissure vary, with techniques that employ bone grafting appearing to be superior in this regard.

### The HIRS

The HIRS was developed by Ben Walton and John Innes, to optimise healing and minimise complications for cases of HIF and humeral condylar fractures. Specifically, to allow application of bone graft or allograft to the site of the fissure, to provide compression (improving stability), to ensure bone-holding either side of the fissure (to minimise the risk of screw loosening), and to be low-profile (headless) to minimise soft-tissue irritation.

The screw is titanium alloy, self-tapping, headless, and self-compressing. The drill-bit is designed to simultaneously drill a hole of varying diameter, simplifying the procedure and creating a void around the central section that is packed, typically, with DBM putty,

### Clinical Results

Clinical results have been reported (Walton et al, 2020\*). Out of 17 dogs with CT follow-up, partial healing of the fissure was seen in all, and the fissure accounted for less than 50% of the cross-sectional area in fifteen. The major complication rate for the HIRS, when used to manage HIF, was 6%.

### Surgical Planning

Accurate placement is key to success with this implant. We advise the planning of a custom safe corridor for every case, and surgical guidance in the form of either an aiming device, or a custom-made drilling guide. Ben Walton has created a video describing planning of the transcondylar tunnel, and how to execute this plan during surgery. It is available to view at <https://www.youtube.com/watch?v=GHH9Mm7Umy8>



\* Walton, M. B., Crystal, E., Morrison, S., et al. (2020) A humeral intracondylar repair system for the management of humeral intracondylar fissure and humeral condylar fracture. Journal of Small Animal Practice 61, 757- 765

### Surgical Technique Summary

- A 2.0mm pilot hole is drilled across the humeral condyle.
- The tunnel length is measured using a depth gauge. Select the HIRS that matches, or slightly exceeds, this measured depth.
- Measure the depth of the tunnel with a depth gauge. Select the HIRS that matches or slightly exceeds this depth.
- The HIRS stepped drill bit is used to prepare the hole for the implant, using the laser-etched depth markers as guides, and drilling in a medial-to-lateral direction. Use the drill at full speed, drill in bursts, removing and cleaning away swarf 3-4 times, and lavage regularly.
- Insert the HIRS into the tunnel, firstly engaging the trans thread. Drive the screw in fully and check that it is fully seated when full torque is achieved. At least 2 threads should be engaged cranially.
- If the head is not adequately engaged when fully tightened, back the screw out, and reduce the height of the medial epi condyle by 2mm, using rongeurs or a burr. Seat the screw again, and recheck head engagement.
- When head engagement is confirmed, partly withdraw the screw, disengaging the head, to allow access to the void for DBM injection.
- Inject DBM putty around the screw, using a 16g IV catheter or needle.
- Drive in the screw until it is tight, creating compression at the fissure site
- A surgical demonstration video is available at <https://www.youtube.com/watch?v=nMhBNBPadXs&t=146s>

### Required Equipment

- Periosteal elevator
- 2mm drill bit
- Depth gauge
- 3.5mm hex head screw driver
- point reduction forceps
- Drill chuck up to 6mm diameter

