Small Animal Arthroscopy
Instrument Set by Dr. Brian Beale
I remember performing my first arthroscopic procedure with my mentor Dr. Robert Goring at University of Florida in 1987. I was skeptical that arthroscopy would ever develop into a clinically practical modality in companion animals. The poor quality of the image and lack of dedicated hand instruments made early small animal arthroscopy impractical.

Fortunately, those days are long gone. Image quality now is superb, thanks to the innovation of high definition cameras and dramatic improvement in arthroscope optics by KARL STORZ Endoscopy and others.

I was very humbled when asked by KARL STORZ to assist them in their design of a dedicated line of high quality hand instruments for use in companion animals. Their dedication to develop instruments for specific indications and of appropriate size and durability will improve surgical expertise and outcome. Early on, the arthroscope was primarily used for diagnostic purposes or very simple removal of cartilaginous or osteochondral fragments. Currently, the indications and applications of arthroscopy seem endless. Arthroscopy provides a view of the anatomic structures of the joint that far exceeds that seen by arthrotomy. Wayne McIlwraith said it best back in 2003 in his forward in the Textbook of Small Animal Arthroscopy where he recognized the advantages of arthroscopy over arthrotomy including decreased surgical morbidity, greatly enhanced visualization and diagnostic evaluation of joints, and an enhanced success rate. The application of arthroscopy to the relatively small joints of the dog has been made possible through the development of small joint arthroscopy equipment and the perseverance of pioneers in the field such as George Seimering, Myron Person, Jean Francois Bardet, Bernadette Van Ryssen, Don Hulse, Wayne Whitney, Kurt Schulz, Ian Holsworth, Ken Bruecker, Jimi Cook, Chad Devitt, Tim McCarthy, Antonio Pozzi, Caleb Hudson and others.

Arthroscopy has become the modality of choice for the diagnosis and treatment of many diseases of the joint in dogs. Arthroscopic surgery is minimally invasive, thus reducing postoperative pain and accelerating recovery. Arthroscopy improves visualization by magnifying and intensely illuminating the joint within its natural fluid medium. Finally, because of its low morbidity, arthroscopy is an excellent choice when it becomes necessary to treat two or more joints at the same time. The benefits of complete visualization and magnification of articular surfaces and structures cannot be overstated. Surgeons have much improved ability to diagnose and treat partial CrCL tears, meniscal tears, ligamentous and tendinous injuries of the shoulder and developmental problems in the elbow, including FCP, UAP and OCD.
Arthroscopic evaluation of the integrity of the articular cartilage and extent of osteoarthritis helps the surgeon make important decisions on prognosis and long term management of the affected joints. Novel applications of arthroscopy in small animals include assessment of joints to determine their candidacy for major orthopedic surgeries such as DPO, TPO, SHO, CUE, TPLO, TTA, THR, FHO, partial arthrodesis and complete arthrodesis.

My hope is that all small animal surgeons make the commitment to become proficient in arthroscopy for the sake of the patient. This commitment includes adequate training, dedicated time to train and purchase of a high quality arthroscopic video system, hand instruments and power shaver. Most importantly, arthroscopy will become fun. You will enter a new world when viewing the joint in its natural state and under incredible magnification. Resist the temptation for mediocrity – join the rapidly expanding group of colleagues making the switch to small animal arthroscopy.

Check out our schedule of upcoming hands-on training courses at http://go.karlstorz.com/eventsVET
Indications

Shoulder

- OCD and joint mice
- Microfracture
- Caudal glenoid fragmentation
- Shoulder subluxation and luxation
- Shoulder instability
- Medial and lateral glenohumeral ligament injury
- Biceps tendon tears
- Bicipital tenosynovitis
- Subscapularis tendon injury
- Septic arthritis
- Synovial Biopsy
- Osteoarthritis
- Synovitis

Elbow

- Fragmented medial coronoid process
- Biceps tendon release
- Subtotal coronoidectomy
- Abrasion arthroplasty
- Microfracture
- OCD of the humeral condyle
- Ununited anconeal process
- Incongruity
- Articular fractures
- Septic arthritis
- Synovial Biopsy
- Osteoarthritis
- Synovitis

Carpus

- Articular fractures
- Assessment of carpal trauma
- Evaluation for partial or pancarpal arthrodesis
- Carpal instability
- Septic arthritis
- Synovial Biopsy
- Osteoarthritis
- Synovitis

Hip

- Evaluation for DPO or TPO
- OCD and joint mice
- Osteoarthritis
- Microfracture
- Hip assessment with hip luxation
- Round ligament evaluation and repair
- Articular fractures
- Capital physeal fractures
- Septic arthritis
- Synovial Biopsy
- Synovitis
Stifle
- Complete cranial cruciate ligament tears
- Partial cranial cruciate ligament tears
- Meniscal tears
- Partial meniscectomy
- Medial meniscotibial ligament release
- Medial meniscal midbody release
- Caudal cruciate ligament tears
- OCD and joint mice
- Microfracture
- Articular fractures
- Medial patellar luxation
- Trochlear groove evaluation
- Medial release incision
- Long digital extensor trauma
- Popliteal tendon injury
- Septic arthritis
- Synovial Biopsy
- Osteoarthritis
- Synovitis

Tarsus
- OCD and joint mice
- Articular fractures
- Assessment of tarsal trauma
- Evaluation for partial or pantarsal arthrodesis
- Septic arthritis
- Synovial Biopsy
- Osteoarthritis
- Synovitis
- Tarsal instability

Endoscopic photos courtesy of:
Caleb Hudson DVM, MS, Diplomate ACVS-SA, Gulf Coast Veterinary Specialists, Houston, TX
Arthroscopes

Telescope 1.9 mm, sheath diameter 2.5 mm, working length 4 cm

With a small diameter and short length, this telescope is ideal for the elbow in toy breeds and cats.

28305 BA

HOPKINS® Forward-Oblique Telescope 30°, diameter 1.9 mm, length 6.5 cm, autoclavable, fiber optic light transmission incorporated, color code: red

64306 S

High-Flow Arthroscope Sheath, with snap-in coupling mechanism, diameter 2.5 mm, working length 4 cm, one stopcock, fixed

For use with Arthroscope Sheath 64306 S

64306 BT Obturator, blunt
64306 BS Obturator, sharp

Telescope 2.4 mm, sheath diameter 3.2 mm and 3.5 mm, working length 6.5 cm and 8.5 cm

Extremely versatile, this telescope can be used in many different joints, in a variety of patient sizes.

64300 BA

HOPKINS® Wide Angle Forward-Oblique Telescope 30°, diameter 2.4 mm, length 10 cm, autoclavable, fiber optic light transmission incorporated, color code: red

28303 BS

High-Flow Arthroscope Sheath, with snap-in coupling mechanism, diameter 3.2 mm, working length 8.5 cm, one stopcock, fixed

28303 DS

High-Flow Arthroscope Sheath, with snap-in coupling mechanism, diameter 3.5 mm, working length 6.5 cm, two stopcocks, rotating

For use with Arthroscope Sheaths 28303 BS and 28303 DS

28302 BV Obturator, blunt
Telescope 2.7 mm, sheath diameter 4 mm, working length 7.5 cm

With the same outer diameter as the popular Multi-Purpose Rigid telescope, this scope is shorter and more convenient for arthroscopy.

![Telescope 2.7 mm image]

**HOPKINS® Forward-Oblique Telescope 30°**, diameter 2.7 mm, length 11 cm, **autoclavable**, fiber optic light transmission incorporated, color code: red

**Arthroscope Sheath**, with snap-in coupling mechanism, diameter 4 mm, working length 7.5 cm, one stopcock, rotating, for use with HOPKINS® telescope 30° and Obturator 64133 BC/BT

**For use with Arthroscope Sheath 64133 S:**
- 64133 BC  Obturator, blunt
- 64133 BT  Obturator, sharp

Telescope 4 mm, sheath diameter 5.5 mm, working length 6.5 cm

Ideal for endoscopy of the knee in most dogs, this telescope offers the largest image in a convenient, short length.

![Telescope 4 mm image]

**HOPKINS® Wide Angle Forward-Oblique Telescope 30°**, enlarged view, diameter 4 mm, length 12 cm, **autoclavable**, fiber optic light transmission incorporated, color code: red

**Arthroscope Sheath**, with snap-in coupling mechanism, diameter 5.5 mm, working length 6.5 cm, with one stopcock, rotating, for use with HOPKINS® Telescope 30° 64728 BWA and Obturator 64129 BT, color code: blue

**For use with Arthroscope Sheath 64126 KR:**
- 64129 BT  Obturator, semisharp
Arthroscopy Instruments

Alligator Graspers

For removal of cartilage flaps and bone fragments. Aggressive teeth provide superior holding power. Good for OCD, FCP and meniscectomy.

64572 AGS  SILGRASP® PRO Alligator Grasping Forceps,
serrated, tapered, low profile jaws, sheath diameter 2.8 mm, straight, handle with ratchet and cleaning connector, working length 8.5 cm

28571 AG  SILGRASP® PRO Alligator Grasping Forceps,
straight jaws, sheath diameter 3.5 mm, straight, handle with cleaning connector, working length 12 cm

Small Cup Forceps

Removal of small fragments, OCD, synovial biopsy, meniscectomy.

28572 CG  SILGRASP® PRO Cartilage Grasping Forceps,
spoon-shaped jaws, straight jaws, sheath diameter 2.8 mm, straight, handle with cleaning connector, working length 8.5 cm
Punch, Straight

For cutting and excising soft tissue, cartilage and meniscus. For biceps tendon release, cranial cruciate ligament resection and meniscectomy / meniscal release.

28572 AD  **SILCUT® PRO Punch**, through-cutting, cross-toothed, cutting width 2 mm, straight jaws, sheath diameter 2.5 mm, straight, handle with cleaning connector, working length 8.5 cm

28572 AE  **Same**, cutting width 1 mm, sheath diameter 2.5 mm

28171 SPN  **Same**, cutting width 0.5 mm, sheath diameter 3 mm, working length 12 cm

Pointed Grasping Forceps

Pointed, serrated tip. Excellent for removal of small fragments in tight spaces, especially useful in small dogs and cats.

28572 NJ  **SILGRASP® PRO Suture Grasper**, straight jaws, sheath diameter 2.8 mm, straight, handle with cleaning connector, working length 8.5 cm
**Probes**

To probe articular cartilage and subchondral bone. To probe cranial cruciate ligament and meniscus to assess tears. To apply traction to meniscus during partial meniscectomy.

64145 S  **Probe**, graduated, diameter 3.5 mm, length of hook 2 mm, working length 8 cm

28145 SN  **Probe**, graduated, length of hook 2 mm, diameter 1 mm, working length 4 cm

**Small Curette**

For debridement of articular cartilage or damaged subchondral bone: OCD, FCP, intraarticular fractures.

64146 K  **Curette**, spoon-shaped, round, straight, diameter 2.3 mm, for use with Trocar 64183 X
Meniscal Lever

Levers tibia cranially and distracts femoral condyle away from the tibial plateau to allow better access to meniscus.

Egress Cannula

For efficient, adjustable outflow of distention fluid. Side holes prevent blockage of fluid flow.

64146 T  Egress Cannula, Luer-Lock, with stopcock, diameter 3.2 mm, length 7 cm

28146 QB  Obturator, blunt, for use with Egress Cannula 64146 T
Small Diameter Arthroscopy Knives

For treating meniscal injuries, performing tenodesis and cutting soft tissue attachments to bony fragments.

- 64146 MS **Knife**, curved, pointed, cuts both sides, width 2.5 mm
- 64146 LS **Same**, hook-shaped
- 64146 KS **Same**, straight

Osteotome

For making precise incisions. Flat, double edged tip.

- 486102 WALTER **Osteotome**, flat, double-edged grinding, width 2 mm, length 19 cm
- 64104 **Same**, width 4 mm, length 19 cm

Mallet

For use with osteotome.

- 174200 COTTLE **Metal Mallet**, length 18 cm
LEIPZIG Stifle Distractor

Distraction device for arthroscopic assessment of the medial meniscus in dogs.

64820 LSD  LEIPZIG Stifle Distractor, including:
Distractor
Fixation Screw, package of 6
Lever Arm
Screwdriver

64821 S  Fixation Screw, package of 6
Basic Instrument Set as recommended by Dr. Brian Beale

28572 AE  **SILCUT® PRO Punch**, through-cutting, cross-toothed, cutting width 1 mm, straight jaws, sheath diameter 2.5 mm, straight, handle with cleaning connector, working length 8.5 cm

64572 AGS  **SILGRASP® PRO Alligator Grasping Forceps**, serrated, tapered, low profile jaws, sheath diameter 2.8 mm, straight, handle with ratchet and cleaning connector, working length 8.5 cm

64145 S  **Hook and Retractor**, graduated, diameter 3.5 mm, length of hook 2 mm, working length 8 cm

28145 SN  **Probe**, graduated, length of hook 2 mm, diameter 1 mm, working length 4 cm

64146 K  **Curette**, spoon-shaped, round, straight, diameter 2.3 mm, for use with Trocar 64183 X

64728 SL  **Articulated Lever**, working length 16 cm

64146 T  **Egress Cannula**, LUER-Lock, with stopcock, diameter 3.2 mm, length 7 cm

28146 QB  **Obturator**, blunt, for use with cannulas

64146 LS  **Knife**, hook-shaped, straight, width 2.5 mm

64146 KS  **Knife**, straight, width 2.5 mm

486102  **WALTER Osteotome**, flat, double-edged grinding, width 2 mm, length 19 cm

174200  **COTTLE Metal Mallet**, length 18 cm
Cleaning and Sterilization Tray

39910 SC  **Stainless Steel Tray for Sterilization, Storage and Transport** of up to 12 SILCUT® or RHINOFORCE® forceps, with lid, latches and handles, removable rack with double silicone holders for max. 12 instruments, external dimensions (w x d x h): 340 x 250 x 145 mm

39360 AS  **Silicone Tie-Downs**, package of 12, for use with Fixation Pins 39100 PS and 39360 AP

39100 PS  **Fixation Pin**, including screw and washer, to screw instruments into position in wire trays, height 38 mm, package of 12, for use with Silicone Tie-Downs 39360 AS

39100 S  **Silicone Grid Insert LARGE DIAMOND GRID**, blue, extra wide meshed, for the storage of instruments in standard wire trays, plastic and sterilization containers, external dimensions: (w x d): 470 x 240 mm

For information on correct configuration please see the instruction sheet 96186603DF at www.karlstorz.com
VITOM® 25 Telescope 0°, VITOM® 25 HOPKINS® straight forward telescope 0°, working distance 25-75 cm, diameter 10 mm, length 11 cm, autoclavable, fiber optic light transmission incorporated, color code: green

Make use of your endoscopy tower for open surgery too! The VITOM® provides a bright, magnified view of any open surgery. Particularly useful for teaching, recording, or performing any difficult access surgical intervention.

Holding System

28272 RGC Holding System, autoclavable, with quick release coupling KSLOCK including:
Rotation Socket, to clamp to the OR table, for European and US standard rails
Articulated Stand, reinforced version, L-shaped, with quick release coupling KSLOCK (female)
Clamping Jaw, clamping range 16.5 up to 23 mm

Optional Accessory:

28272 MR Mobile OR Rail, for installation on tables in veterinary and laboratory settings or experimental surgery including:
Retaining Plate
2x C-Clamp
2x Stop Block
Shaver System

UNIDRIVE® S III ARTHRO SCB

Multi-function motor system allows for quicker procedure time, reducing patient time under anesthesia.

UNIDRIVE® S III ARTHRO SCB, with color display, touch screen operation, two motor outputs, with integrated SCB module, 100-120/230-240 VAC, 50/60 Hz

including:
SCB Connecting Cable, length 100 cm
Mains Cord

Handpiece

DRILLCUT-X® ARTHRO Shaver Handpiece, up to 8000 rpm, for use with UNIDRIVE® S III ARTHRO SCB, as of software status 1.10.

Optional Accessory:

Three-Pedal Footswitch, for use with UNIDRIVE® S III ARTHRO SCB

Reusable and single use shaver blades are available in a variety of styles and sizes, see Veterinary Endoscopy, Small Animal Catalog
ENDOMAT® SELECT VET

The most versatile and economical fluid pump for veterinary endoscopy from KARL STORZ.

ENDOMAT® SELECT VET is the ideal choice for safe and precise arthroscopic fluid irrigation in small and large animals. Irrigation and flow rate is set by the user using the intuitive, color touch screen.

ENDOMAT® SELECT VET is a cross-discipline roller pump device suitable for fluid irrigation and suction during a variety of surgical and diagnostic procedures in large and small animals such as laparoscopy, thoracoscopy and gastrointestinal endoscopy, as well as arthroscopy. During any given procedure irrigation or suction can be selected, but only one function can be used during a single procedure. If suction is needed, such as with an arthroscopic shaver, a supplementary suction unit will be required.

ENDOMAT® SELECT VET comes programmed with two primary menus, VET SURG and VET ART. VET ART is further subdivided into two programs with the following pre-programmed settings:

**ART SA**
- Irrigation pressure: 20-150 mmHg; increments: 10 mmHg
- Boost function: 10% - 20% - 30% - 40%
- Irrigation flow rate: 1,500 - 2,000 - 2,500 ml/min

**ART LA**
- Irrigation pressure: 20-400 mmHg; increments: 10 mmHg
- Boost function: 10% - 20% - 30% - 40%
- Irrigation flow rate: 1,500 - 2,000 - 2,500 ml/min
Ordering Information:
When ordering an ENDOMAT® SELECT for veterinary use, the UP 210 basic device and the UP 609 software module must both be specified, otherwise the device is not functional.

UP 210  ENDOMAT® SELECT, suction or irrigation pump, incl. mains cord, power supply 100-240 VAC, 50/60 Hz

UP 609  VET Software for ENDOMAT® SELECT

Tubing Set for use with ENDOMAT® SELECT VET – ART SA and ART LA:

Single Use
031523-10*  Tubing Set, irrigation, PC, sterile, for single use, package of 10

Reusable
UP 008  Tubing Set, irrigation, PC, reusable, sterilizable

For further information regarding the VET SURG programs and tubing sets, see MFL UNITS 2, 96321002