

# Extracapsular Stabilization Technique Tips for CrCL Deficiency

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The cranial cruciate ligament (CrCL) counteracts cranial tibial translation, excessive internal rotation, and hyperextension of the stifle joint. Presently, there is no technique for ruptured CrCL 'repair' in dogs; however, multiple surgical treatments exist; extracapsular stabilization (ES) having been used since the 1960s to provide transient joint stabilization until such time as periarticular fibrosis provides long-term stability for near normal function. ES is popular amongst general practitioners because: 1) the technique is easy to learn, 2) successful results are common, and 3) required instrumentation/implants are minimal. Based upon clinical examination, the lateral fabellotibial suture technique results in satisfactory outcome in approximately 85 percent of cases, with normal gait at a walk being about 60 percent.

Following inspection of the joint for meniscal damage and removal of CrCL remnants, the joint capsule is closed with monofilament absorbable suture in a horizontal mattress type pattern-- the procedure assisting periarticular fibrosis that ultimately stabilizes the joint. For stabilizing the joint a nonabsorbable, heavy, lateral fabellotibial suture is placed from the lateral fabella to the proximal tibia. Because the craniodistal aspect of the lateral fabella articulates with the femur, the suture is best placed slightly proximal to the fabella, in the strong fibrous origin of the lateral head of the gastrocnemius muscle often referred to as the



Extracapsular Stabilization technique illustrating the *quasi-isometric* points of suture attachment.

*fabellofemoral ligament*. The recommended tibial fixation point(s) is located at the bony protuberance (Gerdy's tubercle) located 2mm caudal to the sulcus of the long digital extensor tendon, as proximal as possible while avoiding the joint and LDE tendon.

Clinically, nonisometric sites may result in stifle joint instability at joint positions in which the suture loosens, or it may lead to suture failure by suture breakage, elongation, knot or crimp slippage, or loss of anchorage in joint positions in which the suture tightens.



Using the tensioning device to hold tension on the suture loop, test for thrust and drawer, then crimp the clamp with the PowerX crimper.

A tensioning device assists the surgeon in applying the appropriate amount of suture tension prior to placing a crimp clamp. This Universal Tensioning Device utilizes two secondary crimp clamps to provide self-retaining, incremental tension.

Monofilament nylon leader line is most frequently used as the fabellotibial suture with line strength (pound test) generally chosen to be at least equivalent to the body weight of the patient. Mechanical testing of 27 and 36 kg test nylon leader line secured with a metallic crimp tube has shown lower loop elongation, higher load at failure, greater stiffness, and greater initial loop tension compared with nylon leader line secured with square knots. Presterilized (gamma radiation) monofilament suture is optimal, as it avoids issues of bacterial adherence and elongation resultant from steam sterilization.

Appropriate crimping is essential. Historically, two issues existed in crimping: 1) appropriate force required with a crimping device to sufficiently close the crimp, while avoiding excessive force that might actually crush or sever the enclosed suture, and 2) design of the crimping tool jaws so as to provide the optimal crimp pattern.

The PowerX Crimping Device is the 4th generation of SECUROS crimping devices and provides several benefits over previous models:



- Precisely engineered wave pattern delivers three crimps at once
- 50 percent increase in holding strength (as measured by ultimate tensile strength)
- 5X mechanical advantage due to multi-action design that eases crimping, while preventing over-crimping
- Use with the NEW Securos 40# crimp clamp reduces force needed to crimp the suture by 25 percent
- Compatible with monofilament nylon (40#, 80#, and 100#) and OrthoFiber sutures



Extracapsular stabilization remains a viable technique for the treatment of CrCL deficiency when used on the appropriate patient utilizing current isometric placement recommendations. Combined with the use of the latest instrumentation and implants assures a more reproducible procedure with more consistent outcomes.