

VETERINARY INSTRUMENTATION

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Modified Maquet Technique (MMT)

Introduction

The Modified Maquet Technique (MMT) is a variation on the TTA and TTO techniques of cruciate management in that it aims to bring the tibial plateau to sit at right angles to the straight patella ligament. By creating an incomplete tibial crest osteotomy the placement of a TTA advancement cage alone creates sufficient post operative stability for rapid healing to occur. The technique preserves soft tissue, requires a minimum of implants and saves time and morbidity. The Maquet technique is described in man as a technique to reduce patellofemoral pressure. The MMT technique described here is that presented by Sebastien Etchepareborde to ECVS in 2010 and published in VCOT 2011.3.



Preoperative Evaluation

The advancement required is calculated as in the TTA technique using either the traditional or the common tangent method. Transparent overlays for both are available free of charge on request.

Surgical Technique

The entire procedure may be performed with the dog in lateral recumbency but surgeons may find that internal examination of the stifle may be more easily performed with the dog in dorsal recumbency. The dog is then flipped onto the lateral side for the MMT surgery.

The full limb is aseptically prepared. Sterile bandaging of the foot allows the surgeon to fully manipulate the limb throughout the procedure. Exploration of the stifle joint is performed using the surgeon's preferred method. Meniscal injuries are dealt with and optionally a meniscal release may be performed. The craniomedial aspect of the tibia is approached via a craniomedial skin incision. Without dissecting the subcutaneous tissues a straight longitudinal incision is made to bone approximately 10mm caudal to the tibial crest and extended to 20mm beyond the extent of the tibial crest. The soft tissues at the distal end of the incision are cleared using a periosteal elevator (001271 or similar). The site of the tibial crest osteotomy (TCO) is minimally cleared using a narrow elevator (7350/05, Freer or similar).



A 3.5mm hole is drilled immediately caudal to the cranial cortex approximately 5-15mm distal to distal extent of the tibial crest. This will act as a hinge once the tibial crest incision is complete. Sebastien Etchepareborde has demonstrated (VCOT 2010.6) that a relatively large hole such as 3.5mm spreads applied stress and is less likely to result in hinge fracture than a small 2.0mm hole.

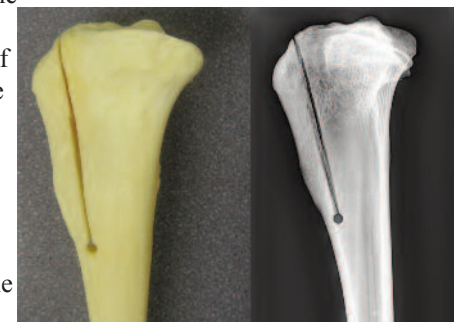
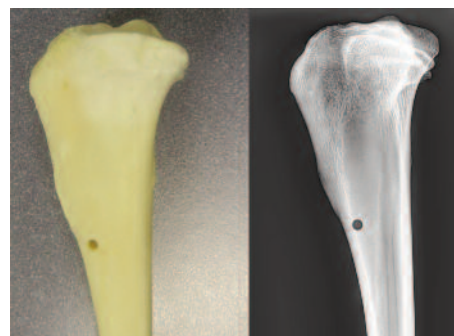
The tibial crest osteotomy is performed perpendicularly to the sagittal plane of the tibia. A saw guide is available to assist if required which will protect the patella ligament and direct the plane of the saw.

Alternatively a pair of artery forceps may be pushed through the joint from medial to lateral just caudal to the straight patella ligament to act as a marker and protect the ligament. The

osteotomy runs from a point cranial to the long digital extensor (LDE) to the previously drilled hinge hole. The position of the LDE may be gauged by palpating the tubercle of Gerdy laterally and passing a 'K' wire through from the medial side as a marker.

The osteotomy is best created using a power saw and blade approximately 10-15 mm wide and less than 1mm thick. All the modular air and electrical surgical saws are suitable. Where funds are limited the battery powered MultiSaw (001708) works very well.

The osteotomy is carefully eased open to allow placement of the predetermined cage. Experience with the TTO procedure suggests that incremental opening of the osteotomy using the 'wedge' (TTO002) minimises hinge fracture. The osteotomy may be finally opened to the correct width for the Titanium cage using the TTA spreader. (TTA444). This item has dedicated blades for each cage.



The cage is placed as shown in the image below, close to the proximal end of the TCO. The cage is secured using two 2.4mm titanium screws. The 'ears' of the cage should be contoured as follows: cranial ear down, caudal ear up.



If the hinge fails during surgery a tension band wire (TBW) may be placed bridging the distal end of the TCO as shown. If the hinge remains intact at the end of surgery there is no need for a TBW. It should be appreciated that even if the bone cracks the periosteum remains intact providing support.



Once again, the TTO experience shows that even when the hinge fails the tibial crest typically remains in place despite having no fixation. The TTA cage in the MMT procedure provides significant additional fixation so migration is unlikely.

A bone graft (autologous or allograft) may be added if desired.

In the Etchepareborde series a Robert Jones Dressing (RJD) was applied for one week post operatively. Analgesia as necessary, oral Cefazolin and Carprofene were administered for seven days postoperatively.

It is suggested that the dog should be restricted to leash exercise until the six week check radiograph by which time bone infill should be very visible.

Physiotherapy will speed the recovery process and maximise mobility.

Special thanks to
Sebastien
Etchepareborde for
his assistance and
permission to use
his images.



MMT Instruments and implants

TTA PLATES AND CAGES TITANIUM			
TTAC310	Cage 3 x 10mm titanium	2.4mm screw	£55.00
TTAC313	Cage 3 x 13mm titanium	2.4mm screw	£55.00
TTAC316	Cage 3 x 16mm titanium	2.4mm screw	£55.00
TTAC4512	Cage 4.5 x 12mm titanium	2.4mm screw	£56.50
TTAC4515	Cage 4.5 x 15mm titanium	2.4mm screw	£56.50
TTAC4518	Cage 4.5 x 18mm titanium	2.4mm screw	£56.50
TTAC616	Cage 6 x 16mm titanium	2.4mm screw	£57.50
TTAC619	Cage 6 x 19mm titanium	2.4mm screw	£57.50
TTAC622	Cage 6 x 22mm titanium	2.4mm screw	£57.50
TTAC7513	Cage 7.5 x 13mm titanium	2.4mm screw	£60.00
TTAC7516	Cage 7.5 x 16mm titanium	2.4mm screw	£60.00
TTAC7519	Cage 7.5 x 19mm titanium	2.4mm screw	£60.00
TTAC919	Cage 9 x 19mm titanium	2.4mm screw	£62.50
TTAC922	Cage 9 x 22mm titanium	2.4mm screw	£62.50
TTAC925	Cage 9 x 25mm titanium	2.4mm screw	£62.50
TTAC10519	Cage 10.5 x 19mm titanium	2.4mm screw	£65.00
TTAC10522	Cage 10.5 x 22mm titanium	2.4mm screw	£65.00
TTAC10525	Cage 10.5 x 25mm titanium	2.4mm screw	£65.00
TTAC1222	Cage 12 x 22mm titanium	2.4mm screw	£67.50
TTAC1225	Cage 12 x 25mm titanium	2.4mm screw	£67.50
TTAC1228	Cage 12 x 28mm titanium	2.4mm screw	£67.50
TTAC1525	Cage 15 x 25mm titanium	2.4mm screw	£72.50
TTAC1528	Cage 15 x 28mm titanium	2.4mm screw	£72.50
TTAC1531	Cage 15 x 31mm titanium	2.4mm screw	£72.50

TITANIUM SCREWS 2.4MM CRUCIATE HEAD 1.8MM PILOT		
TICS2410	Titanium 2.4 Self Tapping Cortical Screw 10mm	£9.75
TICS2412	Titanium 2.4 Self Tapping Cortical Screw 12mm	£9.75
TICS2414	Titanium 2.4 Self Tapping Cortical Screw 14mm	£10.00
TICS2416	Titanium 2.4 Self Tapping Cortical Screw 16mm	£10.00
TICS2418	Titanium 2.4 Self Tapping Cortical Screw 18mm	£10.25
TICS2420	Titanium 2.4 Self Tapping Cortical Screw 20mm	£10.25
TICS2422	Titanium 2.4 Self Tapping Cortical Screw 22mm	£10.50
TICS2424	Titanium 2.4 Self Tapping Cortical Screw 24mm	£10.50
TICS2426	Titanium 2.4 Self Tapping Cortical Screw 26mm	£10.75
TICS2428	Titanium 2.4 Self Tapping Cortical Screw 28mm	£10.75
TICS2430	Titanium 2.4 Self Tapping Cortical Screw 30mm	£11.00
TICS2432	Titanium 2.4 Self Tapping Cortical Screw 32mm	£11.50
TICS2434	Titanium 2.4 Self Tapping Cortical Screw 34mm	£12.00
TICS2436	Titanium 2.4 Self Tapping Cortical Screw 36mm	£12.50
TICS2438	Titanium 2.4 Self Tapping Cortical Screw 38mm	£13.00
TICS2440	Titanium 2.4 Self Tapping Cortical Screw 40mm	£13.50

MMT INSTRUMENTATION		
TTA24	2.4 screwdriver (crosshead)	£115.00
H090208	1.8mm pilot drill for 2.4 screw	£155.00
H090106S	3.5mm Drill for hinge hole	£20.50
001271	Periosteal Elevator 6mm AO Type 180mm	£42.50
7350/05	Freer Periosteal Elevator	£40.00
TTA444	TTA Spreader and 3, 6, 9, 12 & 15mm Inserts	£175.00
001708	MultiSaw Surgical Kit	£485.00
TTA999	MMT Saw Guide	£125.00
TT0002	'Wedgie' osteotomy sSpreader	£85.00
TTAFCP	TTA Cage Forceps	£60.00
DG242735	Depth gauge for 2.4, 2.7 & 3.5 Ti Screws	£75.00
TTAFCP	Traditional TTA/MMT advancement overlay	£FOC
TTATAN	Common Tangent TTA/MMT advancement overlay	£FOC