

The LATER TECHNIQUE™

for Total Knee Arthroplasty

USER'S MANUAL

Featuring the



Sterling Innovations, LLC proudly presents:

Linked
and
tensioned
extramedullary
resection

The LATER TECHNIQUE™ for performing contemporary knee replacement.

AUDIENCE:

- Orthopedic Surgeons
- Surgical Techs
- Operative Room Nurses
- OEM implant manufacture representatives (TKA Rep)

INDICATIONS:

- Severe, End-stage knee arthritis
- Correction of intraarticular coronal knee deformity

ADVANTAGES:

- Balanced knee every time
- Simple to use
- No ligament releases
- No intra-medullary violation
- Decreased blood loss
- No special scans pre-operatively (CT, MRI)

LIMITATIONS:

-The LATER TECHNIQUE™ cannot be used in the absence of collateral ligaments. Incompetent medial or lateral collateral ligaments renders the LATER TECHNIQUE™ unsuccessful.

-Severe pre-operative flexion contractures >30 degrees can be challenging. An expert tip is provided to help address this potential situation

ASSUMPTIONS:

-User's are familiar with and have been trained in the general technique of performing a total knee arthroplasty surgery.

Expose the knee via the surgeon's preferred method (medial arthrotomy, mid-vastus or sub-vastus). Do not release the medial collateral ligament with the exposure. Obtain just expose enough to adequately visualize the knee. Remove all the distal femoral and proximal tibial osteophytes as they may be tenting the medial and lateral collateral ligaments. This step cannot be emphasized enough. This is a key step in creating a stable knee construct when using the Missing link Device®. Many surgeons may have been trained to not “waste time” with this step since the osteophytes will be removed when they create the 4-in-1 femoral resections and proximal tibial resections; however, a “tented” collateral ligament may seem tight or lax once the gaps have been created if they are not addressed prior to tensioning.

A tibia first technique is utilized with an extramedullary guide as provided by the original equipment manufacturer (OEM) implant company. A resection is made per the OEM user's manual recommendation (an assumption is made by the LATER™ technique that a posterior slope of approximately 3° was created). Step 1 shows the recently resected proximal tibia.

PEARL: To aid in removal of the proximal tibial resection consider using an osteotomy beneath the resected bone. Lift upward to separate the bone, do not push down toward the tibial tubercle or you may crush and deform the proximal tibia. This downward leveraging can also potentially disrupt the extensor mechanism.

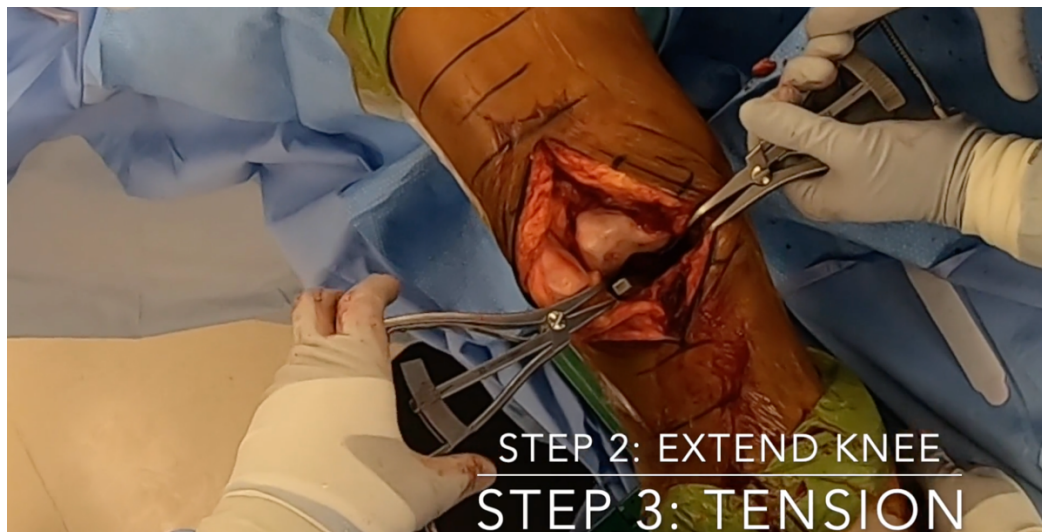
PEARL: Grasp the resected proximal tibia with a toothed tool and rotate out (as seen from above, clockwise in a Right knee; counterclockwise in a Left knee) detaching the medial soft tissue, then the PCL, then the posterolateral corner.

- **Step 1** is to use a protective tibial plate to protect the recently exposed metaphyseal bone. The roughened surface should be facing upward. This instrument is commonly called either the “Protective tibial plate”, “Tibial Shim” or “Lollipop”.



- **Step 2** is to extend the knee attempting to obtain zero degrees, fully flat. Do not hyperextend the knee during this step. Hyperextension will lead to an extended femoral component and severe femoral notching, which may result in malposition or even fracture of the femur.

PEARL: If the surgeon prefers to slightly flex the femoral component (0-5 degrees), then during this second step the knee should be just shy of full extension (between 0-5 degrees of flexion) per the surgeon's preference.

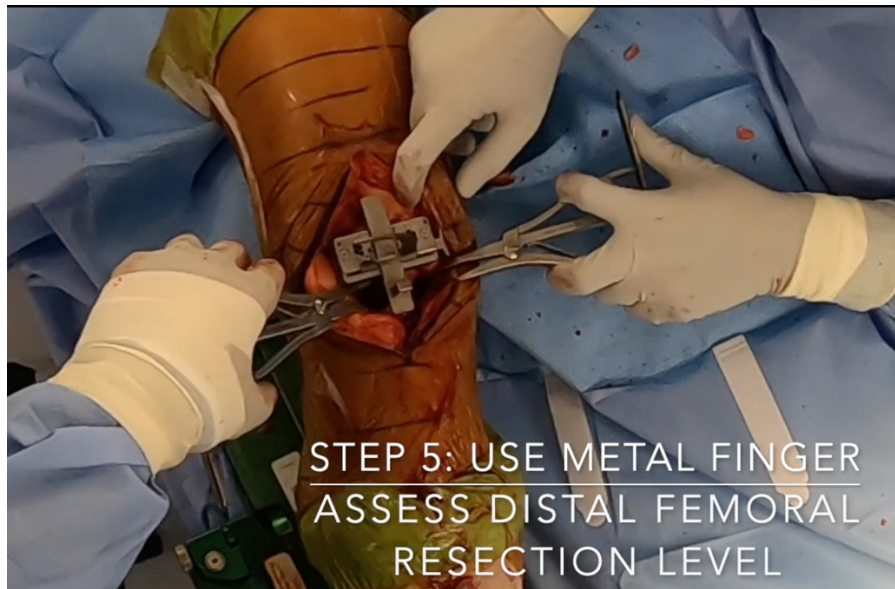


- **Step 3** is to tension both laterally and medially in an equal fashion. We use calibrated laminar spreaders and tension to a force between 20-30 Nm.

- **Step 4** is to apply the missing link device; this will allow you to “link” the femoral resection to the previously created tibial resection. Ultimately, this will create a rectangular extension gap.



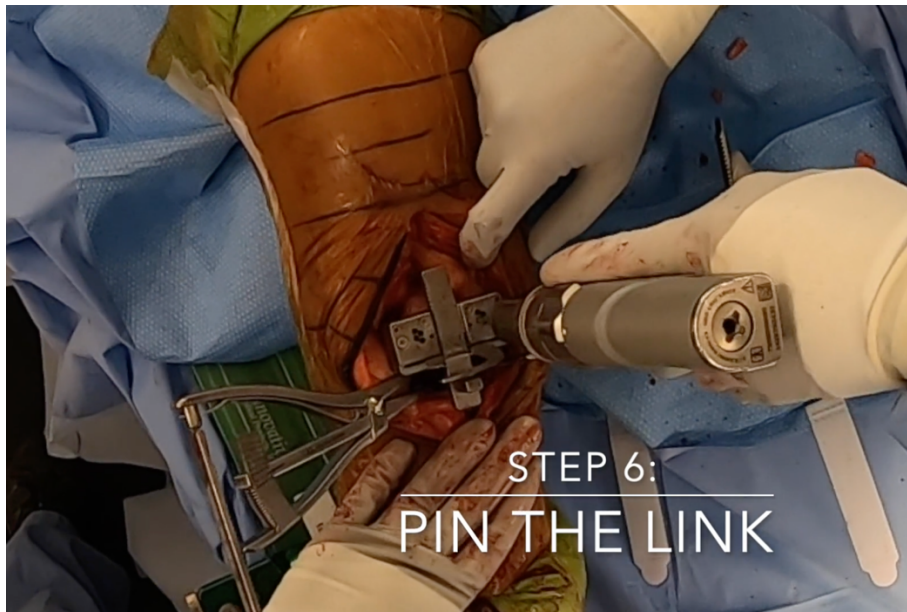
- **Step 5**, using a metal finger that is available in the OEM instrument set (often called, an “angel wing”, “finger”, “bat wing”) to assess the distal femoral resection level. Typically, the level of the notch is recommended. Use the sizing markings on the linking bridge piece of the Missing Link Device® to assure that a minimum space is being created for the implants in extension (most OEMs have a minimum of 17-19mm of material to fill the extension gap).



PEARL: Check with your OEM company to determine the combined thickness of the tibial baseplate + minimal polyethylene thickness + distal femoral implant thickness = (typically between 17-19mm) this is your minimal goal with the extension gap.

PEARL: If a pre-operative flexion contracture has been identified, then consider resecting 1-3mm proximal to the notch. This will elevate the joint line; however, having a knee that fully extends will contribute to improved patient satisfaction.

□ **Step 6** is to secure the link to the anterior distal femur with 2 pins.

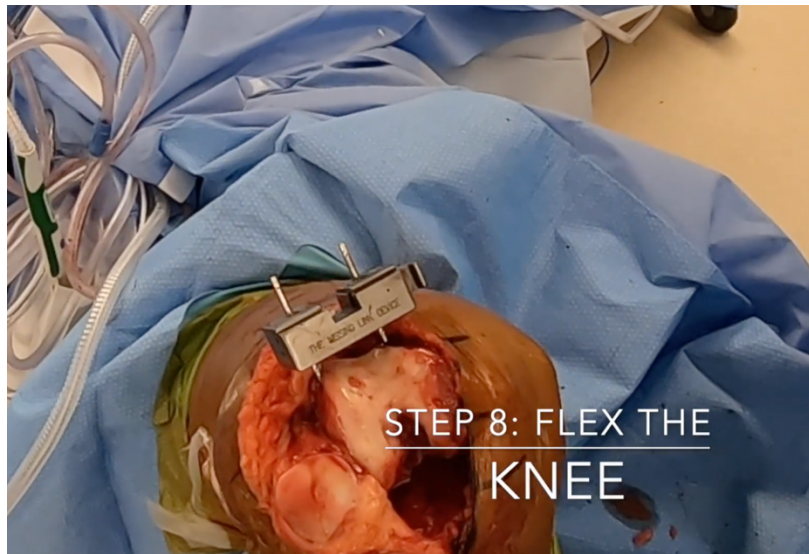


- **Step 7**, once secure, then disengage the link by using the side release button to remove the linking bridge. Then remove the tensioners laterally and medially.

PEARL: You will not be able to easily remove the linking bridge if you first remove the tensioners. Once the tensioners are removed, all the force is then placed onto the missing link device® and the bridging piece. So, always remove the linking bridge while the extension gap remains tensioned with the laminar spreaders.

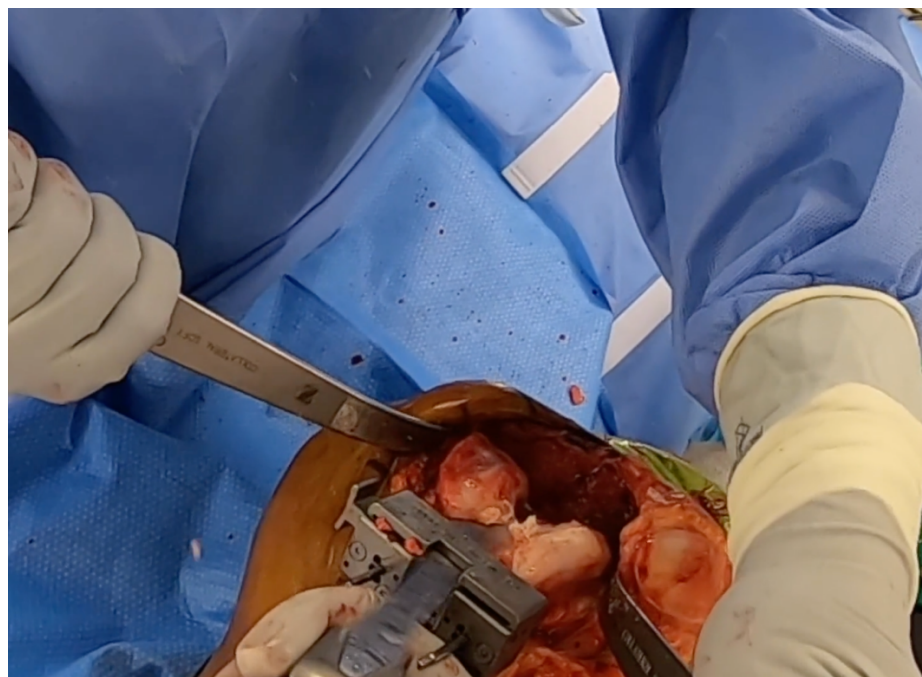
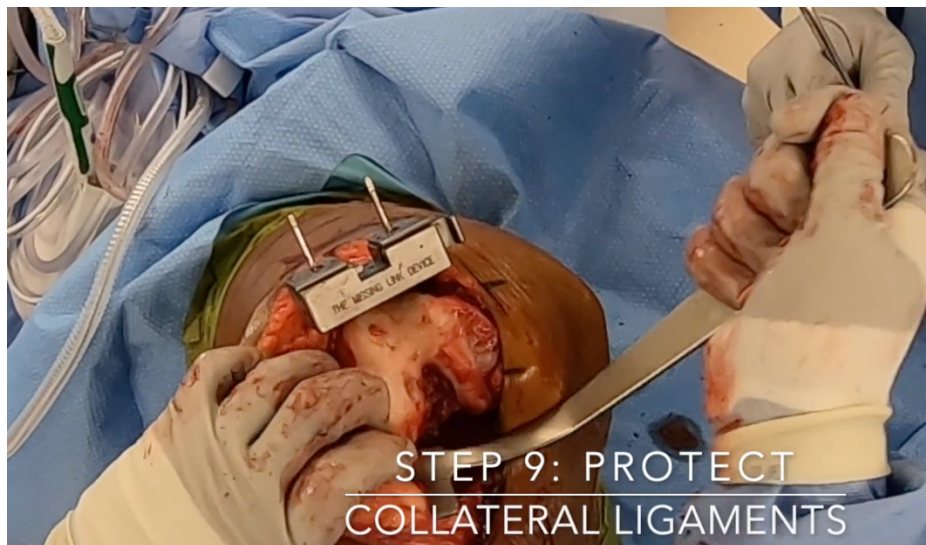


- **Step 8**, flex the knee and careful place retractors to protect the medial and lateral collateral ligamentous structures.



- **Step 9**, the link then becomes your distal femoral resection cutting guide and you resect the distal femur without ever violating the femoral canal. This will lead to less blood loss which can be very advantageous for the patient and surgeon, especially when performing this technique in an ASC setting.

PEARL: Additional advantages: no special scans (CT or MRI pre-op), no additional intra-operative radiation and no additional drill holes or pins into the bones (often seen with navigation). Also, no changes to your standard incision or extra-incisional wounds needed.



- **Step 10**, assess the gap with specific, patented, angled spacer blocks from Sterling Innovations, LLC. You will have achieved patient-specific limb alignment and no medial nor lateral instability.

PEARL: If there is instability in the coronal plane, then return to step 3 above and reassure that the medial and lateral tensions are equal. Typically, unequal tension leads to a slight imbalance during this step. In short, the bone was not resected properly.



- ❑ **Step 11**, we're going to address the flexion gap. An equal amount of tension needs to be applied in the flexion gap that was applied in the extension gap.
 - ❑ **Step 12**, Using a calibrated tensioner and the OEM manufacturer's flexion gap balancer, you will be able to create a rectangular flexion gap that also determines external rotation for the femoral component. Then, use the OEM standard 4-in-1 block to complete the femoral resections.
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SUMMARY OF STEPS:

Remove all osteophytes

Tibia first technique

- 1 - Protective tibial plate (lollipop)
 - 2 - Extend the knee
 - 3 - Tension equally, medially and laterally
 - 4 - Connect the Missing Link Device®
 - 5 - Assess distal femoral resection level with a metal "finger"
 - 6 - Pin the Link
 - 7 - Disengage the Linking connector bridge & remove tensioners
 - 8 - Flex the knee & protect the collateral ligaments
 - 9 - Resect distal femur
 - 10 - Assess the extension gap with space block(s)
 - 11&12 - Address the flexion gap per OEM recommendations or surgeon's preference
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With the LATER TECHNIQUE™ you can create a well-balanced knee, in excellent alignment, with no ligament releases. No touch patellar tracking can often be achieved with this simple and reproducible method.

The Missing Link Device® has three positions: a sliding position that allows you to determine distal femoral resection, a locked position, and then ultimately a disengaged position.

We at Sterling Innovations would like to thank you for taking time to read our User's Manual outlining the LATER TECHNIQUE™ for performing knee replacement surgery and hope you found it informative.

Missing Link Device® Tray



Citations:

Dungy, Danton S. MD; de Jesus, Kayla BS An Extramedullary Spacing Block Technique to Restore Native Coronal Limb Alignment in TKA, Techniques in Orthopaedics: December 2021 - Volume 36 - Issue 4 - p 496-504

