



RAPID. SIMPLE. SAFE.

TECHNIQUE GUIDE

Developed in collaboration with

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Minne Ties[®] Agile MMF is an innovative method to achieve maxillomandibular fixation (MMF) for a range of procedures. Typical application to achieve MMF uses six to eight sutures; however, other application methods (e.g. “figure 8” and “double vertical”) have also been effective.

The Minne Ties innovative design is non-invasive, eliminates sharp wires, enables easy access to fractures for exposure, reduction, internal fixation and incision closure. Minne Ties improves patient comfort and saves significant time compared to wire-based systems.

ABOUT THE MINNE TIES MMF SUTURE SYSTEM

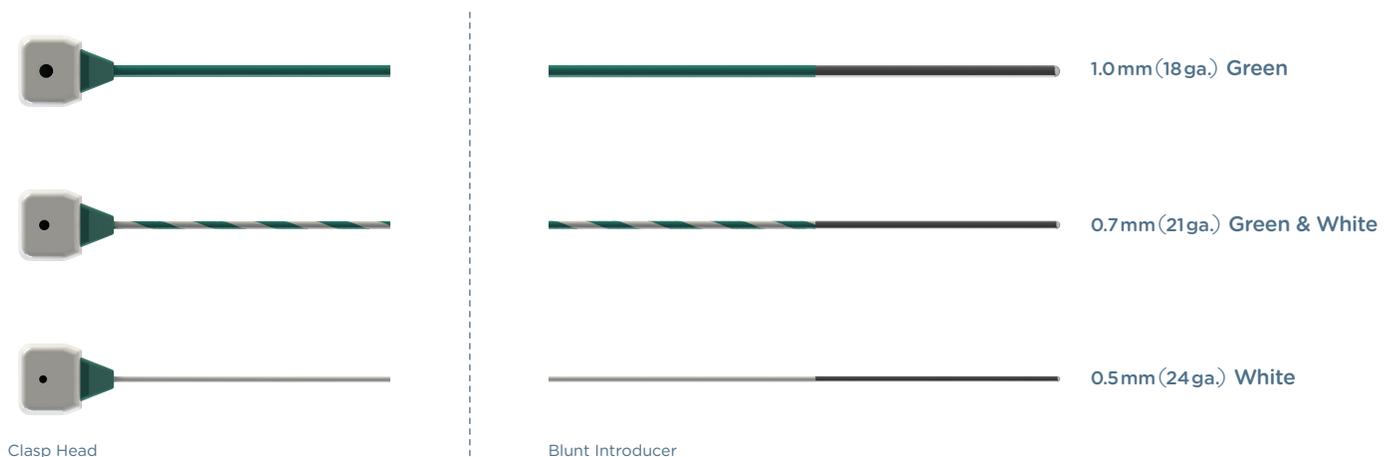
Minne Ties are available in two configurations allowing optimal application for each patient’s unique situation:

- **The Minne Ties Kit** includes 12 sutures, with an assortment of three different sizes that are differentiated by color, and a uniquely designed cheek retractor.
- **Minne Ties Two-Packs** including two sutures of each size.



Materials

Polypropylene, Polyester, Stainless Steel



Always refer to the instructions for use before using any Minne Ties products.

Minne Ties Agile MMF establishes maxillamandibular fixation (MMF) by applying a balanced series of sutures bilaterally, see figure 1. The sutures provide a stabilizing occlusive force to allow for closed reduction management of fractures or stabilization for internal fixation.

The sutures are applied between teeth in the interdental space and should proceed from the posterior dentition to the anterior dentition. As the maxilla is typically more stable than the mandible in facial trauma, the sutures typically cinch better when looping through the maxilla embrasure first, in a buccal to lingual direction, followed by placement through the mandibular embrasure in a lingual to buccal direction.

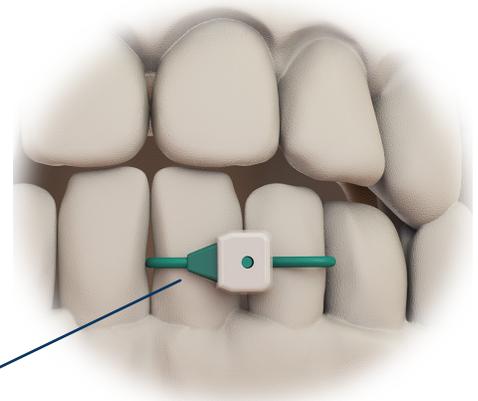
The sutures are applied through the interdental space with a nearly identical technique to wire application. The introducer can displace the apical papilla atraumatically within the apical embrasure.

Note: The sutures can also be applied in a bridle wire fashion to help maintain reduction, see figure 2.

Figure 1

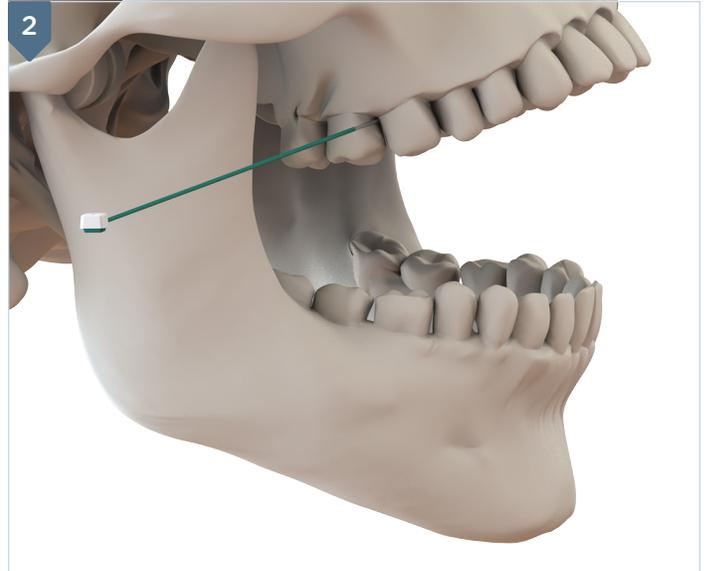


Figure 2

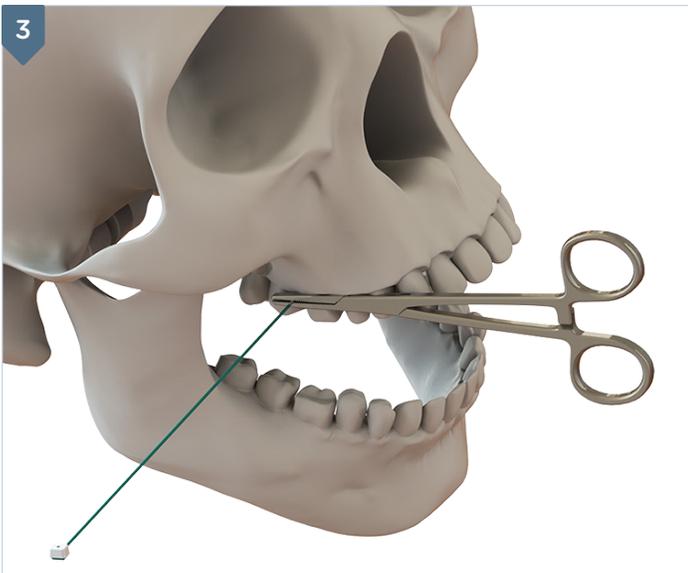




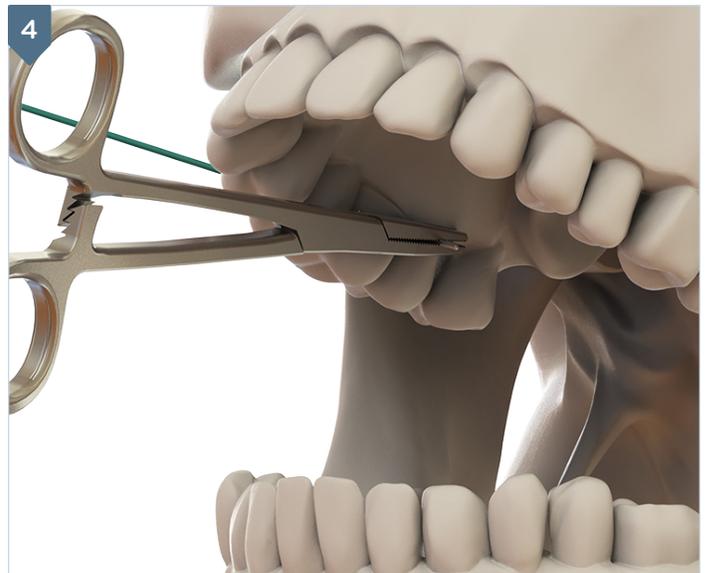
1 Insert cheek retractor.



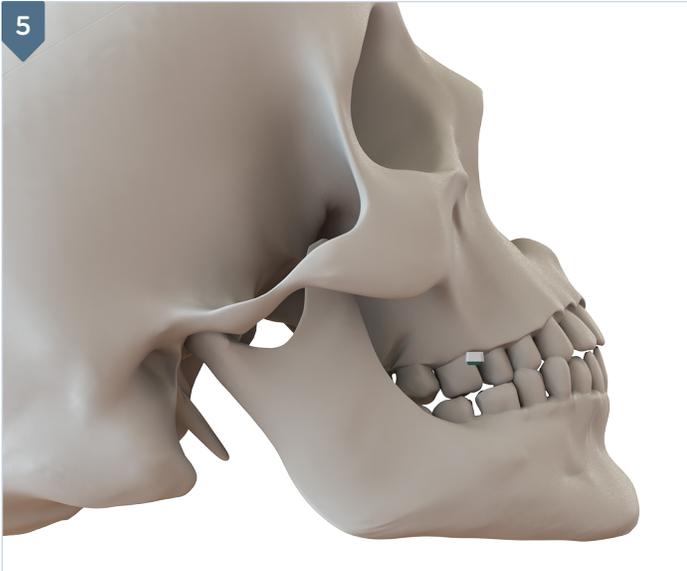
2 Start with the largest size Minne Tie and downsize if you need to – the introducer is the sizer. Use the introducer to probe the embrasures.



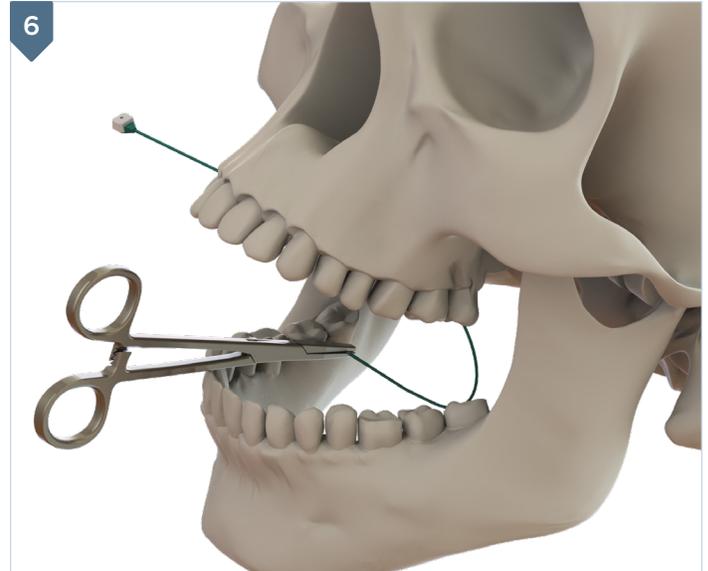
3 Start posteriorly and insert the introducer using a needle driver. Enter the maxillary embrasure from the buccal side and push through the embrasure to exit on the lingual side.



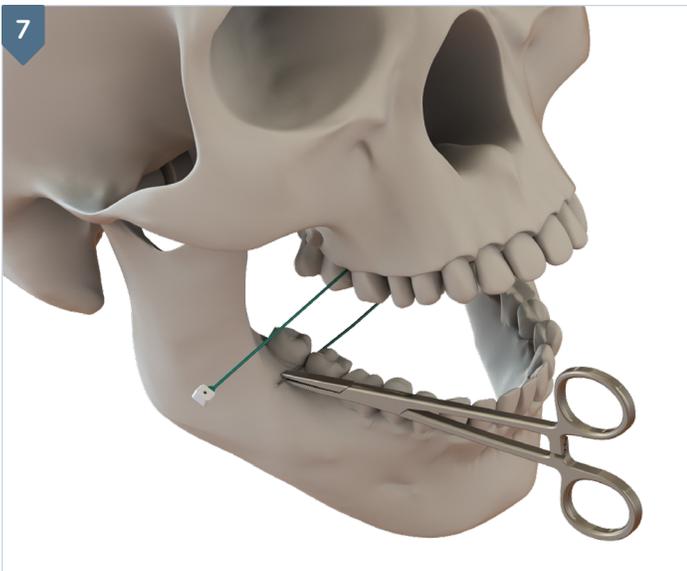
4 Maneuver the needle driver to grasp the introducer on lingual side. Complete crossing the embrasure by pulling the suture until clasp head is 2.5-5.0 cm from teeth.



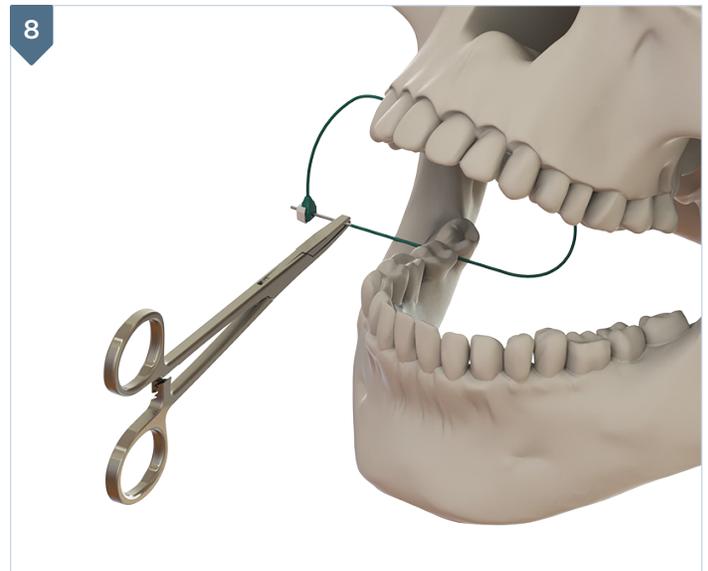
After placing the tie through either the mandible or maxilla embrasure, place the teeth in occlusion. Confirm that the teeth are lined up vertically before placing tie in the corresponding embrasure.



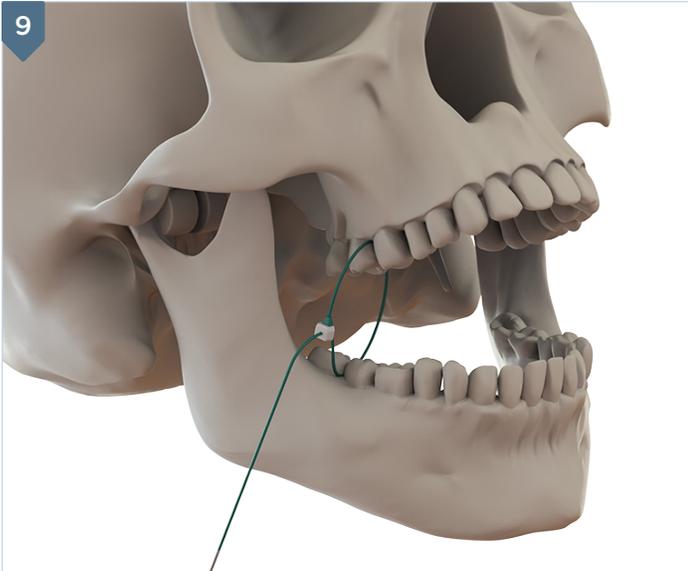
Advance the needle driver to the mandible lingual side. Push across embrasure to exit on the buccal side.



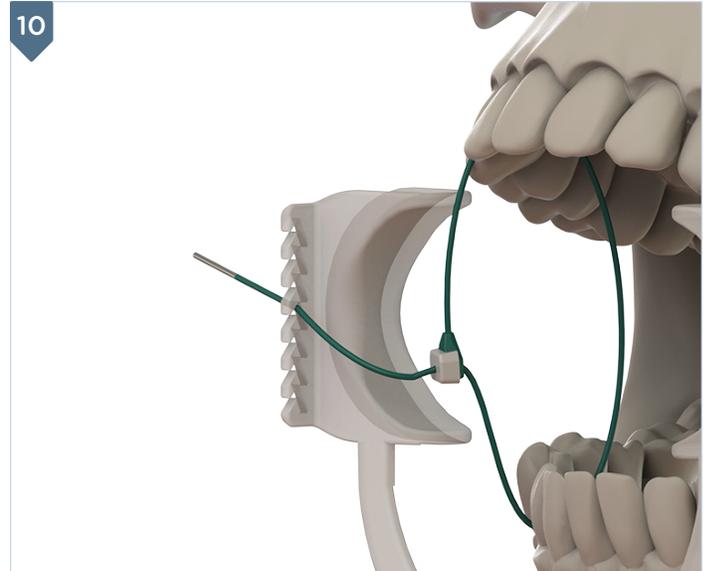
Pull the suture through, while ensuring the clasp head remains 2.5-5.0 cm (1-2") from teeth. The maxilla and mandible should remain separated at this point in the procedure.



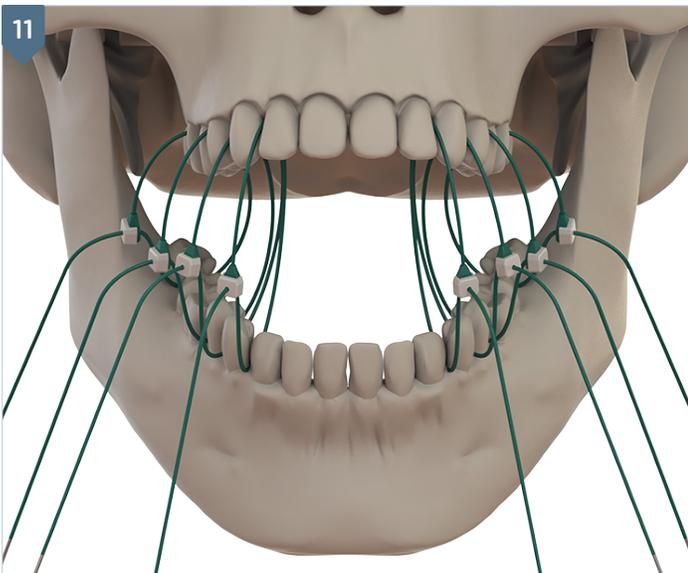
Using needle driver, advance the introducer through the GREEN SIDE of the clasp head.



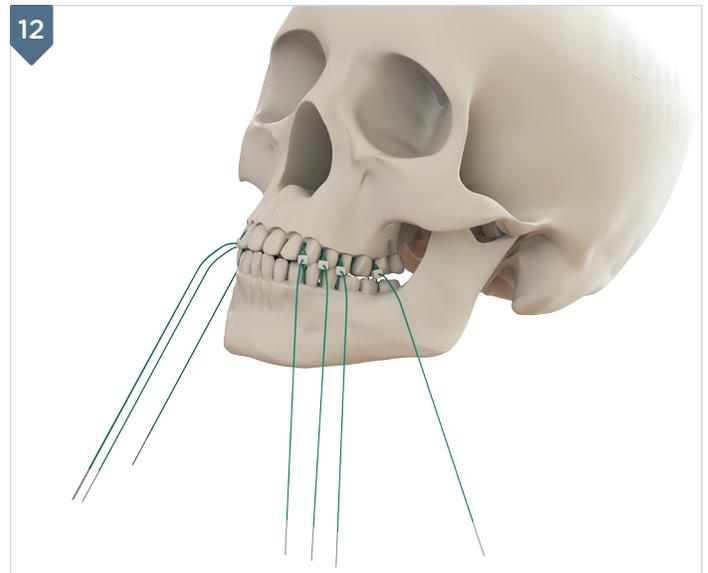
Tighten to remove slack — final tightening will occur after all the sutures are placed.



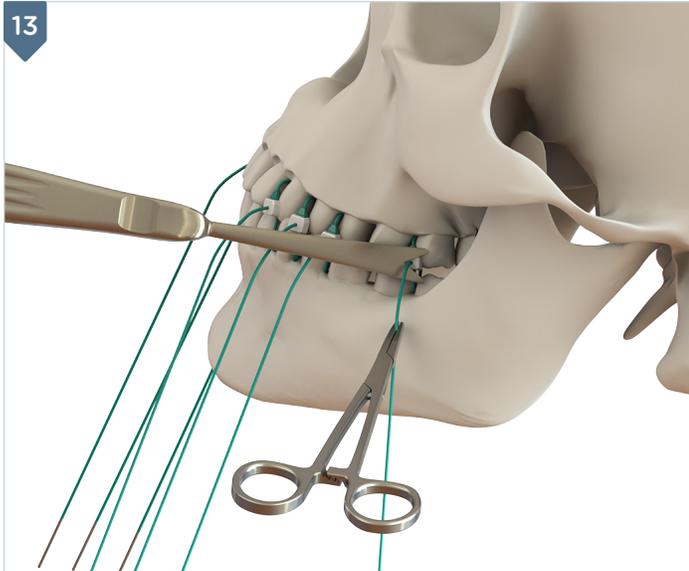
The slotted sections of the cheek retractor will hold and help manage the sutures during the procedure. Note: Forceps attached to the introducer help hold the suture in the cheek retractor slot.



Once eight (8) sutures are placed, the dentition should be placed in occlusion. Secure the sutures against the teeth sequentially from anterior to posterior. Cinch them inferiorly, this will pull against the typically stable maxilla by pulling on the suture.



To cinch pull on the suture, not the introducer. Apply cinching force with your fingers for best tactile feedback.



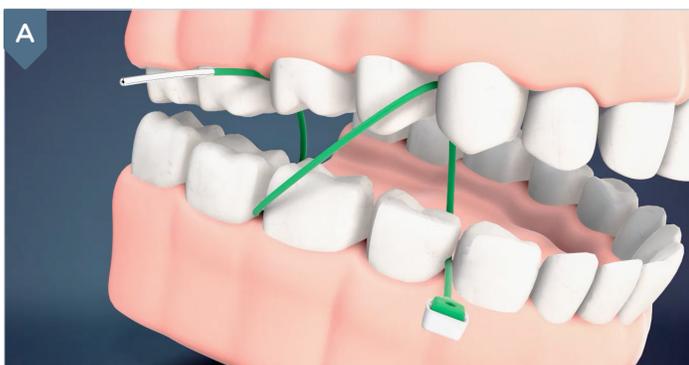
A pickle fork on head of Minne Tie could be used for cinching the last 2-3 mm.



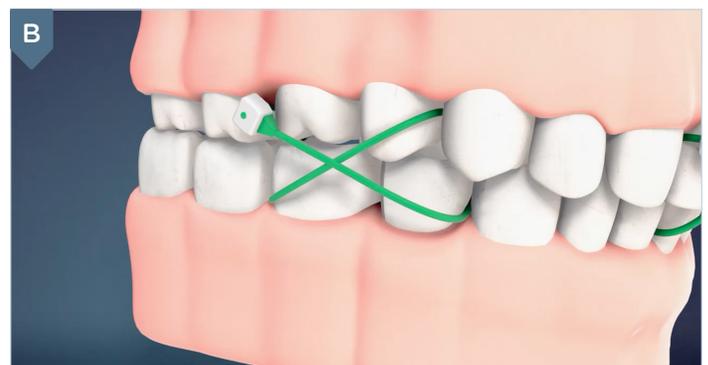
When MMF is established, and after the final tightening has occurred, trim the sutures.

ALTERNATIVE APPLICATION TECHNIQUES

In addition to the typical application of eight sutures to achieve MMF, other application techniques have been developed to meet clinical needs. The Figure 8 Technique is beneficial for certain clinical situations and achieves MMF with three Minne Ties sutures.



Insert the blunt introducer into a mandible buccal embrasure space. Leave a half inch "tail" at the clasp end to secure during the last step. Loop vertically and exit maxilla lingual embrasure. Cross diagonally to reinsert into mandible buccal embrasure.



Loop vertically and exit maxilla lingual embrasure. Advance the introducer through the green side of the clasp head. Leave slack to apply additional sutures. Pull on sutures to tighten. Remove all slack. When MMF is established, trim sutures.

