

Risk of Wire Stick Injury in Oral & Maxillofacial Surgery

INTRODUCING MINNE TIES AGILE MMF

Minne Ties® Agile MMF is an innovative approach to achieving maxilla-mandibular fixation (MMF). Unlike other systems on the market, Minne Ties is a non-invasive solution that provides a steady force and secure bite to allow for closed reduction fracture management or stabilization for internal fixation.

The Minne Ties self-locking suture tie design resembles that of a zip tie — one end being a smooth clasp head and the other a blunt tip introducer — which minimizes the risks of wire sticks to the surgeon and decreases patient discomfort.

Mimicking the embrasure wire application technique, each tie is applied through the interdental space from posterior dentition to anterior dentition, which when finished creates a balanced series of bilateral sutures. And with the sleek design of Minne Ties, doctors are granted easy access to fractures for exposure, reduction, internal fixation and incision closure.

These reasons and many more are why Minne Ties Agile MMF is a safe, simple and efficient alternative to existing wire or hybrid devices.

RISK OF WIRE STICK INJURY TO SURGEONS AND PATIENT DISCOMFORT

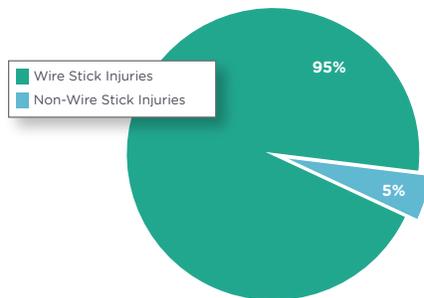
A common concern within the healthcare industry is sharp hazards, which present two forms of risk. There are both surgical glove perforation risks¹ and skin penetrating sharps injuries. Skin penetration is more concerning than glove perforations, but both are problematic. A study concluded that the incidence of glove perforations is 4.6 per operation² and a higher number of perforations (1.8-2.5 times) in procedures where jaw wiring is being used (arch bars application, ivy loops application, intermaxillary fixation (IMF) wiring, etc.) compared with procedures that did not include wire⁴. Sharp wires used with MMF systems can potentially result in wire sticks and the risk of associated diseases due to blood borne illnesses (Hepatitis B, Hepatitis C and AIDS). Oral Maxillofacial surgeons experience about three wire stick injuries each year². An additional study found that during 172 cases, 40 injuries occurred — 98 percent of those injuries were caused by wire⁵.

The current standard of care (arch bars, wires, hybrid systems) leaves the patient in extreme discomfort. Bone screws used in

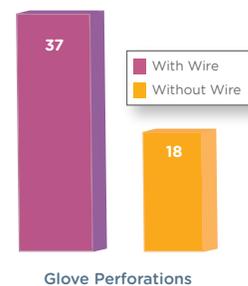
hybrid systems do not have sharp protrusions, but are not a pain free treatment option because of periodontic trauma⁶, which is defined as the incidence of mucosa overgrowing metal MMF systems (screws, arch bars and wires). This trauma has a high occurrence rate among current treatment options and, in general, the longer the implant resides in the mouth, the risk of oral mucosa overgrowth increases. Removal of these devices requires incisions to expose screw heads and wires. Also, the sharp ends of twisted wire pairs and metal hooks cause collateral damage to soft tissue where there was none before.

Minne Ties are intentionally designed without wire to minimize the risks associated with wire stick injuries to doctors and patient discomfort. The smooth surfaces of Minne Ties are intentional and minimize sharp edges that can cause injury. Minne Ties Agile MMF holds occlusion without inflicting additional pain, damage and/or discomfort to the patient, can potentially eliminate wire stick risks associated to MMF, and significantly reduce operating room time.

Injuries During MMF⁵



Rate of Glove Perforations⁴ out of 100 oral surgery procedures



References:

- 1 Avery, C., & Johnson, P. (1992). Surgical glove perforation and maxillofacial trauma: to plate or wire? *British Journal of Oral and Maxillofacial Surgery*, 30(1), 31-35.
- 2 Carlton, J. E., Dodson, T. B., Cleveland, J. L., & Lockwood, S. A. (1997). Percutaneous injuries during oral and maxillofacial surgery procedures. *Journal of Oral and Maxillofacial Surgery*, 55(6), 553-556.
- 3 Avery, C., Taylor, J., & Johnson, P. (1999). Double gloving and a system for identifying glove perforations in maxillofacial trauma surgery. *British Journal of Oral and Maxillofacial Surgery*, 37(4), 316-319.
- 4 Khosla, A., Gupta, K., Padhye, M., & Girotra, C. (2011). Efficacy of double gloving technique in major and minor oral surgical procedures: A prospective study. *Annals of Maxillofacial Surgery*, 1(2), 112.
- 5 Bali, R., Sharma, P., & Garg, A. (2011). Incidence and patterns of needlestick injuries during intermaxillary fixation. *British Journal of Oral and Maxillofacial Surgery*, 49(3), 221-224.
- 6 Farber, S. J., Snyder-Warwick, A. K., Skolnick, G. B., Woo, A. S., & Patel, K. B. (2016). *Maxillomandibular Fixation by Plastic Surgeons: Cost Analysis and Utilization of Resources*. *Annals of Plastic Surgery*, 77(3), 305-307.

Disclaimer:

A surgeon must always rely on his or her own professional clinical judgment when deciding whether to use a particular product to treat a particular patient. Invisian Medical does not dispense medical advice and recommends that surgeons be trained in the use of any particular product before using it in surgery. The information presented is intended to demonstrate risks associated to wire and hybrid systems. A surgeon must always refer to the instructions for use and product labeling before using any Invisian Medical product. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact Invisian Medical if you have questions about the availability of Invisian Medical products in your area. Always refer to the instructions for use before using any Minne Ties products.