

Minne Ties as a bridle wire for a palate fracture and IMF during LeFort Fixation

A 51-year-old previously healthy female with good oral hygiene and class I premorbid occlusion presented to the University of Pittsburgh Medical Center (UPMC) Mercy Hospital Emergency Department following a fall from a slide into a table, striking her midface. She presented with facial swelling, midface pain, and anterior open bite. The patient did not experience loss of consciousness. Immediately after the injury she noted blood in her mouth and a change in her bite. The patient denied dyspnea, trismus, paresthesia, dizziness or confusion. Physical exam showed right maxillary occlusal step off between teeth #6 and 7, gross maxillary mobility on manual palpation, and anterior open bite. CT Maxillofacial showed open LeFort I, right hard palate, and nasal bone fractures. The patient endorsed malocclusion.

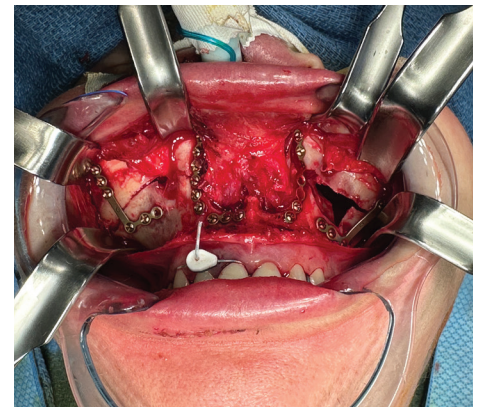
The patient lived out of state, rendering Erich or hybrid arch bars or a palatal splint technically difficult to remove. Minne Ties® applied as a bridle wire presented a hygienic alternative that would be straightforward for the general dentist or oral surgeon to remove in the office under local or topical anesthesia. Risks, benefits, and alternatives were discussed, and patient subsequently consented to open reduction and internal fixation of LeFort I and palatal fractures, and closed reduction of nasal bone fractures under general anesthesia.

After induction of general anesthesia, the patient was prepped and draped with exposure to the head and neck. A maxillary vestibular incision was used to expose the anterior maxilla, and all fractures were debrided of granulation tissue. Three Minne Ties were applied in the embrasures between the molars and premolars bilaterally, from posterior to anterior and beginning on the right side. Three large (1.0 mm) Ties were placed on each side and easily passed through the embrasures using the rigid, blunt tip introducer, and then through the self-locking clasp to form a loop with each Tie. One medium (0.7 mm) Tie was passed through the embrasures of teeth #6 through 8 using the rigid, blunt tip introducer, and then through the self-locking clasp to form a loop to reduce the right palate fracture, in a bridle wire fashion. The bridle wire was tightened first to reduce the palatal fracture at the level of the dentition.

Next, the Minne Ties were tightened from anterior to posterior to achieve premorbid occlusion. Final tightening was performed to ensure strong and stable MMF and occlusion. Fixation of the LeFort I fracture ensued at



Intra-op IMF



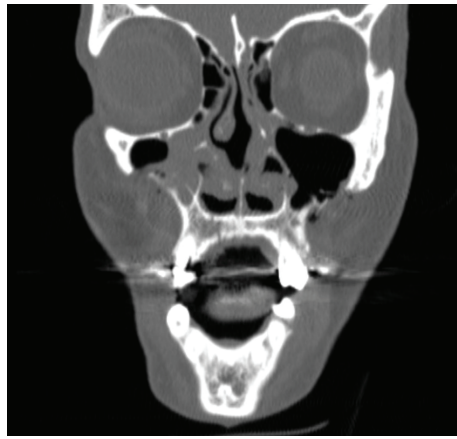
Intra-op fixation



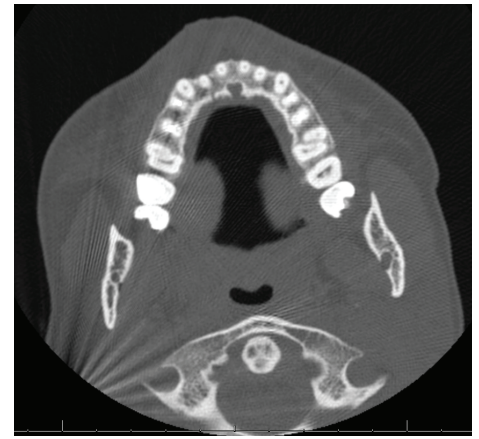
Immediate post-op occlusion

the piriform rims and zygomatic buttresses using 0.7 mm midface plates with monocortical fixation using two to three screws on either side of the fracture. Lastly, one 0.7 mm midface plate was adapted across the palatal fracture between teeth #7-8 to consolidate the segments. The patient was released from intermaxillary fixation and the desired class I occlusion was confirmed. The bridle wire was left in place for reduction of the palatal fracture.

Total procedure time was approximately 75 minutes. Adequate occlusion following Minne Ties application was demonstrated clinically and with postoperative CT. After several weeks, the Minne Ties bridle wire was removed in clinic using a heavy wire cutter without administration of sedation or local anesthetic. The patient tolerated the Minne Tie well and endorsed premorbid occlusion at the time of removal. The patient reported the Minne Tie being comfortable, and was able to maintain meticulous hygiene around the device. The accepting surgeon was able to



Pre-op coronal



Pre-op axial

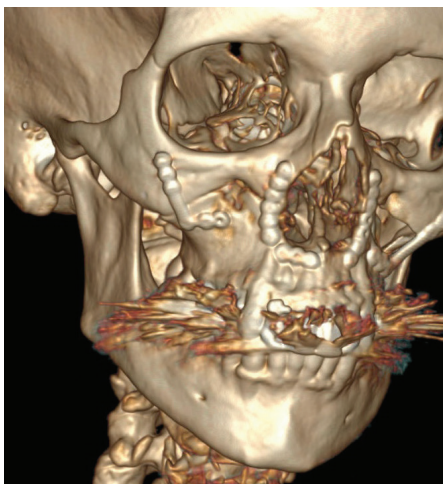


Post-op coronal



Post-op axial

remove the device in his office without needing to administer local anesthesia or acquire additional armamentarium. Minne Ties Agile MMF are impressive in their ability to achieve both patient satisfaction and provider satisfaction as a minimally cumbersome, sufficiently strong, and efficient option for closed reduction of palatal fractures. This case highlights the utility of Minne Ties in a bridle wire technique, with improved post-operative hygiene and easy removal in the office. Given the positive outcome, this case represents the first of what will eventually become broader utilization of Minne Ties for appropriate patients in the clinic, ED and OR at UPMC.



Post-op 3D recon



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