MAXILLOMANDIBULAR Fixation (MMF) is a form of closed reduction resulting in normal occlusion for repair of fractures of the jaw and luxation of the temporomandibular joints.\(^1\) It is performed with the mouth open or closed. Closed mouth fixation can be accomplished in several ways including the use of interarcade wiring,\(^2\) tape muzzle,\(^3\) and the use of a nylon loop placed subcutaneously around the nasal and maxillary bones and the mandible.\(^4\) Open mouth fixation has been performed by interdigital bonding of the canine teeth\(^5\) and external skeletal fixation.\(^6,7\) Each method has advantages and disadvantages. The main disadvantage of a closed mouth technique is the risk of aspiration following vomiting or regurgitation. Therefore, the use of an open mouth technique is generally preferred.

One of the significant issues in the use of MMF is the cat’s ability to eat during the time of fixation. Open mouth fixation may permit slurping of blenderized food; however, closed mouth fixation renders the cat incapable of oral ingestion of food. The use of an esophagostomy or gastrostomy tube is appropriate in open mouth fixation and mandatory in closed mouth fixation.

**Indication:** To fix the mandibular in relation to the maxilla following reduction or repair of
- Temporomandibular luxation
- Temporomandibular fracture
- Mandibular fracture
**Procedure**

- General anesthesia is induced.
- Anesthesia is maintained without intubation.
- An esophagostomy tube is placed using a standard placement technique.
- A 0.2 cm (5/64 inch) intramedullary pin is inserted dorsal to the left side of the hard palate between the roots of the second and third upper premolars. [Figure 1](#).

After passing the wire through the nasal cavity it was passed ventral to the mandible using a large suture needle. [Figure 2](#); Blue Arrow.

- The pin is directed laterally so it would exit the nasal cavity at the corresponding location on the right side of the skull. The pin is removed.
- A 20 ga. stainless steel wire is inserted through the nasal cavity entering and exiting the holes made by the pin. [Figure 2](#); Blue Arrow.

- One end of the wire is threaded through the eye of a large, curved suture needle, which is inserted as near as possible to the lateral aspect of the left side of the mandible.
- The needle is directed ventral to the mandible and then lateral to the right side exiting in the contralateral corresponding location to its insertion. [Figure 2; Red Arrow](#).
- The ends of the wire were twisted together partially closing the mouth but leaving about 0.5 cm of space between the upper and lower incisor teeth. [Figures 3 and 4](#).

Incomplete oral closure left the incisors about 0.5 cm apart. [Figure 4](#).

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**Contribution**

**Authors**

DR. GARY NORSWORTHY

**Featured Case**

MAXILLOMANDIBULAR FIXATION IN THE CAT
• Radiographs are made to confirm wire placement. Figure 5a, b.

5a 5b

Figure 5
Ventrodorsal (a) and lateral (b) radiographs show placement of the wire.

Completion of Procedure

• The wire is removed when the fracture is healed or there has been sufficient time for healing of the peri-TMJ structures. For TMJ luxation, approximately 10 days is generally sufficient.
• The cat is anesthetized.
• The wire is cut on both sides of the twisted union permitting removal by traction on the contralateral side of the jaw. Figure 6.
• The esophagostomy tube is removed either at the time the wire is removed or when it is evident that the cat is eating.

Figure 6
After cutting the wire on both sides of the twisted ends, it was extracted using needle holders.

References

Bibliography

Dr. Gary Norsworthy is a Diplomate of the American Board of Veterinary Practitioners (Feline) and owner of Alamo Feline Health Center where he is a full-time practitioner. He is the editor of six feline textbooks and has lectured extensively in the US, Canada, Brazil, and Australia. He and his practice have been the recipient of several professional awards. He regularly hosts senior veterinary students as part of their externship requirements. He and his wife have two children and four grandchildren.