Microplate Fixation of Prefabricated Subperiosteal Orbital Floor Implants

David R. Jordan, MD

ABSTRACT
Microplatting and miniplatting systems are widely available for repairing fractures involving the orbit, face, cranial vault, and mandible. These plates are superior to traditional wiring techniques because the fractured bones are held in position immediately after the plates have been screwed into position (rigid fixation). Recently, we have found the T-shaped microplate quite helpful in securing the prefabricated subperiosteal orbital floor implants commonly used to augment orbital volume in anophthalmic sockets.

Titanium miniplate and microplate fixation systems are widely used to repair fractures involving the face, cranial vault, and mandible. These plates allow rigid fixation of the fractured bones and are superior to traditional wiring techniques.

Howard and colleagues described the use of a six-holed T-shaped titanium microplate for fixation of the medial canthal tendon in six patients with malpositioned or surgically excised medial canthal tissue. The small size of plates and screws, immediate support, easy placement, and malleability of these microplates make them ideal for reattaching the medial canthal tissues to an anatomically desirable position.

Recently, I have used this same T-shaped titanium microplate to fixate the prefabricated subperiosteal orbital floor implants used to augment volume in anophthalmic sockets, particularly those implants that cannot be fixated with cyanoacrylate or ones that have migrated forward following surgical placement.

SURGICAL TECHNIQUE

Case Report
A subperiosteal orbital floor implant had been placed in a 40-year-old anophthalmic patient under general anesthesia. The implant was secured with cyanoacrylate. Within 3 months, the edge of the implant was felt anterior to the orbital rim. This indicated that the cyanoacrylate had not held, allowing the implant to migrate forward.

A revision of the original surgery was scheduled. At the time of surgery, we decided to fixate the floor implant with one of the T-shaped microplates. The malleable template for the T-shaped microplate is molded along the floor, with the last hole bent in such a way that it hangs over the orbital rim. The T-shaped microplate is then bent to conform to the shape of the template. The top of the "T" is wired to the inferior surface of the preexisting holes on the orbital floor implant (Fig 1A). The implant and attached microplate are then slipped into position on the orbital floor. The last hole on the vertical portion of the "T" should be overhanging the orbital rim. A hole is drilled into the rim, and the plate secured into position with a single screw (Fig 1B). The T-shaped microplate fixes the

From the Oculoplastic, Orbital, and Lacrimal Service, The University of Ottawa Eye Institute, Ottawa, Ontario, Canada.
Reprint requests should be addressed to David R. Jordan, MD, The Doctors Building, 267 O'Connor St, Suite 611, Ottawa, Ontario, K2P 1V3, Canada.
orbital floor implant in position and allows placement of the floor implant further posteriorly than would be possible were the same implant wired to the rim. The portion of the microplate overhanging the rim is not readily palpable. The wire used to secure the microplate to the implant is well behind the orbital rim.

DISCUSSION

Subperiosteal floor implants are commonly used to augment volume in anophthalmic sockets. They may be secured by cyanoacrylate or by wiring them to the orbital rim. The cyanoacrylate may loosen, as in the case reported, allowing the implant to migrate. I have found that when a wire is used to secure these implants to the orbital rim, it is difficult to get the floor implant to sit well behind the orbital rim so that it is not palpable. In addition, the patient can often palpate the wire over the rim. The titanium microplate allows excellent posterior placement of the floor implant (the most desirable position), is simple to use, and is not palpable at the rim.

REFERENCES