

# CLINICAL AID

## A Grid for Guiding Miniscrew Placement

**A**lthough it is generally not difficult to place miniscrews for skeletal anchorage, we find that if a miniscrew contacts a root during insertion, the screw usually loosens within a few days.

We have developed a metal grid that can improve the accuracy of miniscrew placement in the anterior or posterior segments of either arch. The grid is easily attached to the archwire to determine the ideal miniscrew position and is then disengaged after drilling, without the need for archwire removal and with no deformation of either the archwire or the grid. Its simple design permits easy fabrication, and the same device can be used for different patients if it is sterilized between uses.

### Appliance Fabrication

The miniscrew grid is fabricated from straight, rectangular

.016" × .022" stainless steel wire. The wire is cut and welded to form a three-column grid, in which each cell measures about 1mm<sup>2</sup> (A). The appropriate length of the grid is determined by the desired miniscrew insertion point (generally, 5-6mm apical to the alveolar crest).<sup>1</sup>

The grid is attached to a locking device made from an electrical terminal connector with a screw at either end. Such a connector can easily be removed from a push-button switch\* or similar component, available in electrical stores. A slot is cut edgewise into the metal block of the locking device for seating the appliance onto the archwire (B). The device can be modified for use on the palatal side by welding an attachment that crosses over the occlusal surface (C).

Alternatively, the mesh grid can be attached to a Gurin lock\*\*

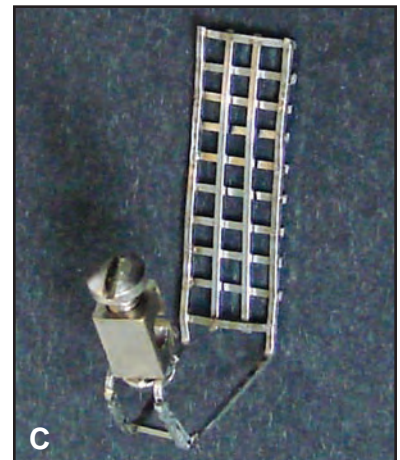
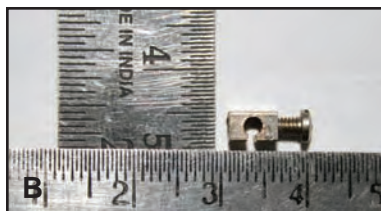
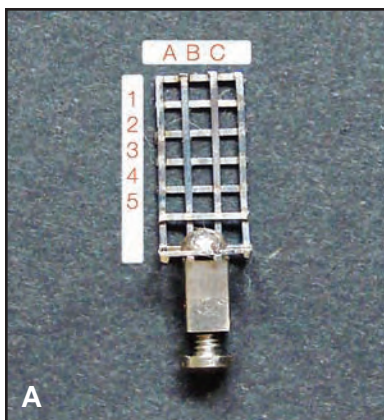
(D), which, although more readily available than the electrical connector, makes a less robust appliance due to its smaller size.

### Clinical Procedure

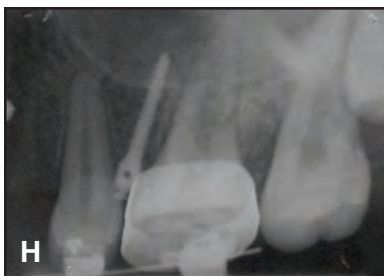
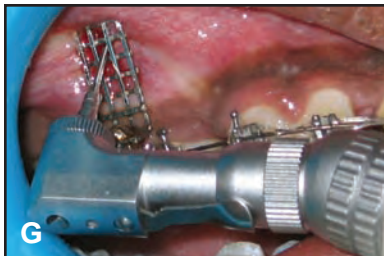
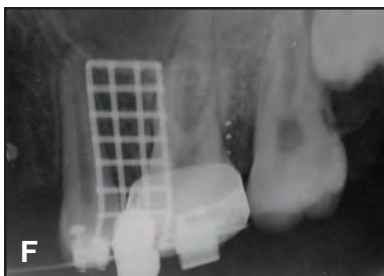
Once the general miniscrew placement area has been determined, a periapical radiograph is taken to show the locations of the

\*Part No. 679-1067-ND, Digi-Key Corporation, Thief River Falls, MN 56701; www.digikey.com.

\*\*3M Unitek, 2724 S. Peck Road, Monrovia, CA 91016; www.3Munitek.com.



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adjacent roots, and the grid is secured to the archwire (E). The appropriate cell of the grid for the exact miniscrew site is selected on the periapical radiograph (F). Cells can be identified by numbers and letters for ease of reference (A); in the case shown here, cell B2 was used.

The pilot drilling is performed with the grid in place (G). The cell size allows adequate angling of the pilot drill, even for diagonal miniscrew insertion. The grid is then disengaged from the archwire, and the miniscrew is driven in. Placement accuracy is confirmed clinically and radiographically (H).

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### REFERENCES

1. Sung, J.H.; Kyung, H.M.; Bae, S.M.; Park, H.S.; Kwon, O.W.; and McNamara, J.A. Jr.: *Microimplants in Orthodontics*, Dentos, Daegu, Korea, 2006.



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