Clinical Alert

Magnetic Resonance Imaging
and Orthodontic Appliances

Orthodontists generally think of the stainless steels used in orthodontic appliances and surgical fixation as nonmagnetic, but this is not quite true. Even though these materials cannot be effectively magnetized, their iron content of more than 70% is enough for them to be attracted by magnets of even modest strength.

This was a trivial fact until magnetic resonance imaging (MRI) was added to the medical diagnostic armamentarium. This technology uses immensely powerful magnets energized by continuous electrical currents in supercooled coils, and their awesome attraction of any magnetic materials in their vicinity poses safety hazards unthought of a few years ago.

Even though the usefulness of MRI in the diagnosis of TMJ and other orthodontic problems may still be in its infancy, this modality has already taken a prominent place in the diagnosis of many life-threatening diseases. This means that it may be prescribed for our patients at any time, so orthodontists must now be prepared for a request to remove their appliances on short notice.

We must also consider these added implications in considering elective orthognathic surgery that could leave a patient with implanted magnetic fixation wires and plates. What has been considered innocuous up to now could deny a patient the possibly lifesaving benefits of this diagnostic procedure at some time in the future.

There is an urgent need for more definitive information on the potential hazards posed by orthodontic materials in the MRI environment; how serious are they, and what can we do about them?

*The Angle Orthodontist* would expedite publication of relevant clinical or laboratory findings.