

Implant integration made predictable

Prof. David L. Hoexter, USA

In recent years, the public's acceptance of oral implants has been dramatically positive. People are living longer and desire an enhanced quality of life. Being able to eat all the foods they enjoy due to improved mastication, not requiring the full dentures of their grandparents, comfortably eating and speaking at the dinner table not only with their children but with their grandchildren, provides greater confidence and enjoyment of life. Implant aesthetics has also played a major role in improved appearance and social confidence.

Numerous shapes, sizes, widths, surface treatments, different groove surfaces, and other variations in design, have been developed to ensure predictable integration of the oral implant, thus facilitating prosthetic restoration and return of function. But what about the implant surgical site. How can it be optimised to ensure predictable integration? One of the practitioner's pressing questions today is if and when to extract. Will there be enough bone after extraction to support endosseous implants and their prosthetic restorations to function as desired. It is generally advisable to extract sooner rather than later, as there is more bone available to support an implant. In waiting you take a risk that you might end up with less bone. The bottom line is—the more bone available, the



Fig. 1: Hoexter Luxators: series of instruments designed to facilitate the removal of roots by mesial-distal movement, allowing the preservation of buccal and lingual bone during extraction, while allowing the practitioner to visualise the operating area in comfort and ease. The instruments are available in different incised edges and sizes for various sized teeth and comfortable angulations.

more predictable the integration of the implant. Predictability leads to success.

In the history of dental extractions, getting the debilitated tooth out of the oral cavity as quickly and as painlessly as possible, has been paramount. After anaesthesia, luxating buccal-lingually is usually the next step. The theory behind this concept is that the buccal bone is usually the thinnest zone of bone retaining the tooth, and thus it provides the least resistance. Anatomically, the buccal plate of bone is usually much thinner than the palatal or lingual. However, the easier extraction toward the buccal results in the loss of more buccal bone. Healing depends on the blood supply, primarily from the osseous walls of the extraction site. The constant pressure from the buccal-lingual luxation leads to ischemia in the remaining thin plate of buccal bone. This ischemia leads to further resorption and loss of the buccal wall.

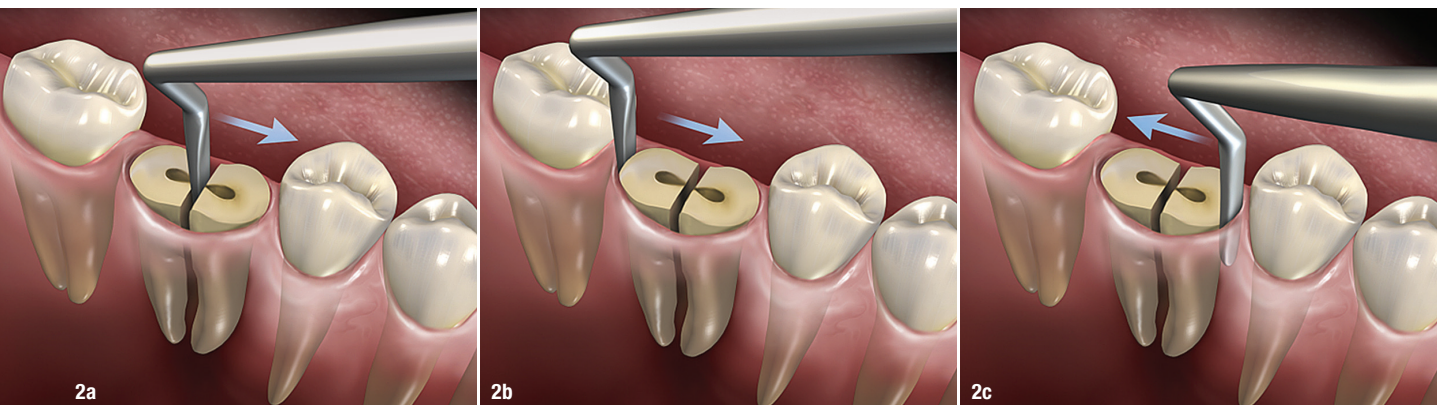


Fig. 2: The Hoexter Luxator in the septal area of the mandibular molar. The force is directed toward the mesial (a); the Hoexter Luxator placed at the distal of the mandibular molar with the force directed in a mesial direction (b); the Hoexter Luxator placed at the mesial of the mandibular molar. The force is directed in a distal direction. With the constant mesial-distal pressure, the root is easily made mobile and removed, thus preserving the buccal and lingual bone (c).

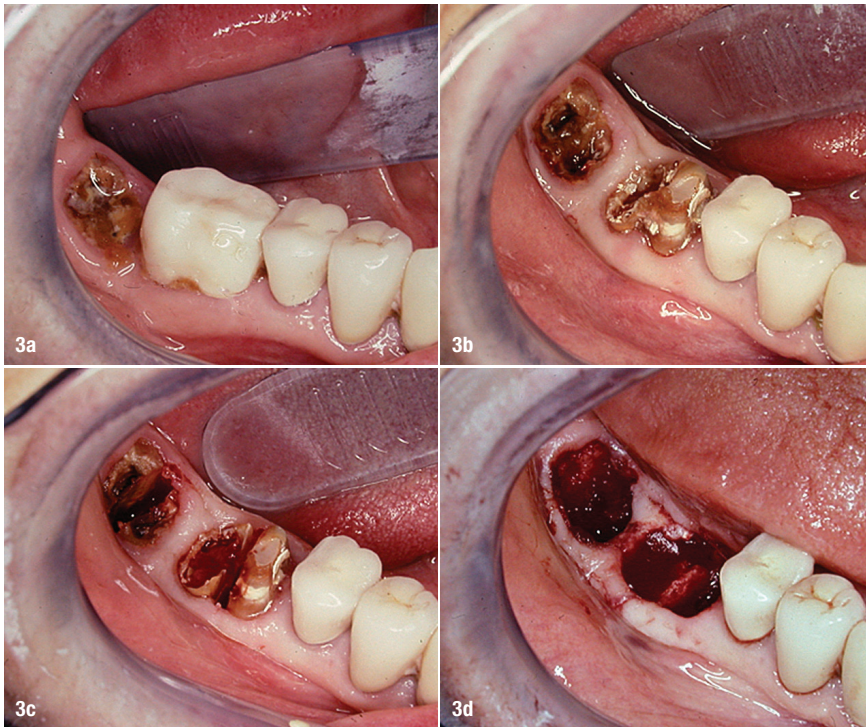


Fig. 3: Case presentation: Tooth #47 with the temporary crown off, showing caries and broken tooth structure (a); tooth #46 with its temporary crown now off, exposing extensive caries and poor prognosis for both #46 and #47 (b); tooth #46 crown portion divided into two halves (c); all four root sockets and even the osseous septum of #46 are preserved by luxating mesial-distally (d).

The area will now heal with a depression in the buccal plate as well as some occlusal resorption.

The buccal depression leads to problems in oral hygiene and aesthetics. Also, correct placement of the implant is now more challenging since the buccal depression has moved the remaining bone lingually (palatally). The implant needs to be placed in adequate bone to succeed. Since the implant must be located where the bone is, the placement will be lingual to the original tooth being replaced. This may create a situation requiring a prosthesis that is over-extended toward the buccal (similar to a buccal cantilever) to assure proper occlusion, potentially placing undue stress on the implant. The goal must be to preserve as much bone as possible by preventing bone loss, especially the buccal plate, during extraction. Instruments have been developed by the author for use during extraction for this specific purpose. The Hoexter Luxators (HuFriedy; Fig. 1) are designed to be used expressly in a mesial-distal motion, to avoid any buccal

pressure. The design ensures that the practitioner maintains the correct angle in mesial or distal pressure on the root to be extracted, thereby ensuring a predictable result.

The Hoexter Luxator technique relies on the premise that it is easier to extract a single root rather than a multi-rooted tooth. The practitioner, after applying local anaesthetic, removes the crown of the posterior tooth horizontally at the CEJ, exposing the individual roots. Now, the Hoexter Luxator is placed (Figs. 2a–c) in the desired location and moved with slight pressure in a mesial-distal direction. The root will become quite mobile and easily removed. During the procedure, there should be no pressure on the buccal plate of bone. The result is a void with osseous walls intact, that can induce osseous regeneration. This includes the buccal wall as well as the mesial, distal, lingual and probably some interseptal bone. All remaining osseous walls will be productive in guiding the positive regeneration of bone. This will result in bone regeneration in the

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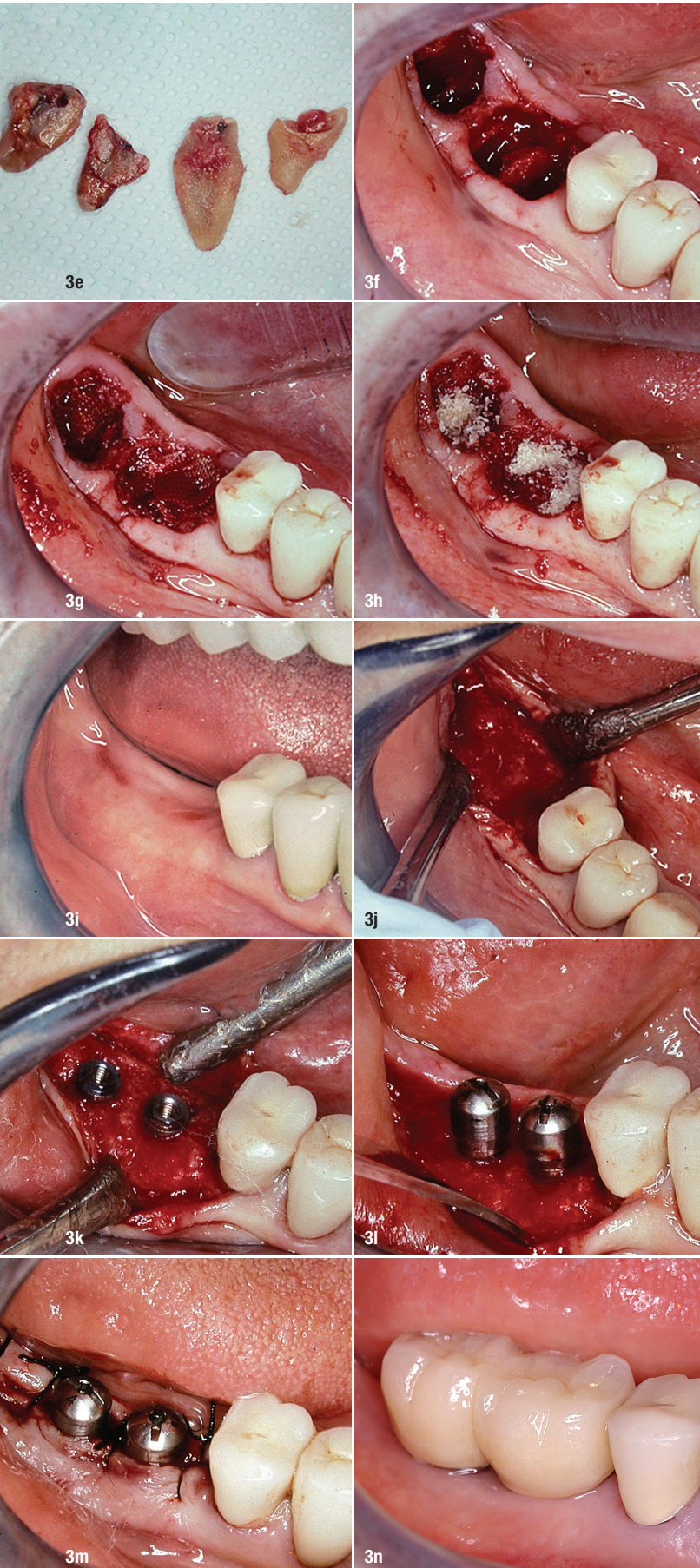


Fig. 3: Case presentation: All four of the roots easily luxated out (e); blood clots in the #46 and #47 sockets (f); osseous graft material inserted into the sockets (g); resorbable membranes placed over the grafts, before suturing (h); lower right area three months post-op (i); exposed regenerated bone area three months later. Note the full ridge of bone regenerated buccal-lingually as well as mesial-distally (j); implants inserted at bone level (k); implant healing abutments in place (l); keratinised area of the mucogingival flap now sutured at the correct level (m); final buccal view of the restored prosthesis with healthy keratinised tissue (n).

entire previous void, eliminating the resorptive depression of the buccal bone and the elimination of the oral hygiene, aesthetic and restorative challenges.

After the mesial-distal luxation and removal of the individual roots, leaving the intact walls of extracted roots, it is suggested to utilise an osseous resorbable material and regenerative bone graft material. A GTR technique using a resorbable barrier membrane to cover the osseous graft is placed under the flap margins and sutured in place, which, after the correct healing time, will result in bone regeneration that will support an endosseous implant in the correct supported position (Figs. 3a–n). The practitioner will be able to provide the optimal prosthetic replacement—one in occlusal harmony, physiologically-shaped for best function, aesthetically pleasing, and easy to maintain.

about the author



David L. Hoexter DMD, BA, FIADFE, FACD, FICD is Director of the International Academy for Dental Facial Esthetics and Clinical Professor of Periodontics and Implantology, Temple University School of Dental Medicine. A Diplomate in the International Congress of Oral Implantology, American Society of Osseointegration, and the American Board of

Aesthetic Dentistry, he publishes and lectures internationally. Dr Hoexter has been awarded thirteen fellowships, including FACD, FICD, and Pierre Fauchard. His practice in New York City is limited to periodontics, implantology and aesthetic surgery.

contact

Prof. David L. Hoexter

DDS, DMD, FACD, FICD
 Clinical Professor of Periodontology and Implantology
 Temple University, Philadelphia, USA
 300 East 74 Street, Suite 4ABC
 New York City, NY 10021, USA
 DrDavidLH@gmail.com



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