GUIDOR easy-graft (classic) is a two-part, synthetic, syringable bone grafting material system comprised of beta-tricalcium phosphate granules coated with a polylactide polymer. Prior to placement, it is mixed with a liquid activator (BioLinker) comprised of N-methyl-2-pyrrolidone which makes the alloplastic bone grafting particles become a moldable compound and helps it harden when in contact with blood and oral fluids. GUIDOR easy-graft does not contain any substances of animal or human origin. It is indicated for extraction defects/alveolar ridge preservation, periodontal defects, peri-implant defects, guided bone regeneration, sinus floor augmentation, and more.

**Advantages:**
- Graft granules are easy to place and stay in place
- No membrane required in many situations
- Particles have radiopacity
- Excellent delivery system can save time in placement

**CR Notes:**
- Moldable compound set time was too fast for a few Evaluators
- Sockets with undercuts retain compound in most cases; crisscross suture required in other situations

**CR Conclusions:** 91% of 22 CR Evaluators stated they would incorporate GUIDOR easy-graft (classic) into their practice. 91% rated it excellent or good and worthy of trial by colleagues.
A Practical Approach to Socket Grafting: Just DO IT!

Gordon’s Clinical Observations: It has been estimated that although millions of teeth are removed every year, less than 5% of sockets are grafted. Is there a need to graft in the esthetic zone for subsequent placement of implants or pontics? YES—grafting extraction sockets reduces the bone and soft tissue shrinkage and allows more optimum placement of implants or fixed prostheses. In this issue and in our May 2010 issue, CR scientists and clinicians compare the various grafting materials and make clinical suggestions to aid you and your patients.

Socket preservation has become the prudent standard of care for the esthetic zone, pontic placement and implant restored anterior/posterior dentition. This article will help you understand:

• The principles of socket grafting;
• Materials available;
• Where and how to maintain the alveolus for dental rehabilitation;
• Which cases are best left for a more experienced practitioner or specialist;
• A practical, lower cost technique for socket grafting.

CR Survey Results \((n = 780)\)

• 45% used bone grafting substances for extraction sites, boney defects, ridge augmentation, and sinus lifts. However, 47% graft less than 20% of extraction sockets.
• Most common products for grafting: Bio-Oss, Foundation, DynaBlast Paste, and Grafton
• Sites most commonly grafted: esthetic zone; anticipated pontic and implant sites; and third molar sockets

Pathophysiology of Socket Healing

• Socket fills with blood/clot
• Mesenchymal cells stimulated to form: fibrous connective tissue, epithelium or bone osteoblasts/osteoclasts
• Fibroblasts invade clot much faster than osteoblasts
• Vertical and horizontal socket resorption is concurrent with socket healing. Timing is essential for implant placement.
• Socket boney walls >1.5 mm have minimal short term bone resorption without need for grafting
• Intact boney walls are essential for complete socket boney healing.
• Bone in-growth occurs via creeping from adjacent bone (osteoconduction) and direct conversion of mesenchymal cells to osteoblasts (osteо-induction)

Understanding Grafting Terminology

• Autogenous (autograft graft, osseous autograft)
  – Gold standard: patient’s own bone.
  – Bone inductive (has bone regenerative proteins)
  – Source: (second surgery site) tuberosity, chin, ramus, ilium
• Allograft (autologous graft) human cadaver bone
  – Mostly bone conductive (encourages bone creeping from adjacent bone)
  – Less morbidity
  – Unlimited amounts
  – Allows implant placement in 4–6 months
• Types of bone:
  – DMFDB (deminerlized freeze dried bone): cortical, cancellous, or mixed; examples: DynaBlast, Grafton
  – MFDB (menerlized freeze dried bone): cancellous or cortical
  – Mineralized cortical/cancellous grafts = osteoconductive; cortical takes longer for implant placement
  – Mixed mineralized/demineralized 70:30, more effective than either alone; example companies: Maxxeus, Life Net, Salvin
• Alloplasts (synthetic graft, synthetic biomaterials)
  – Inert synthetic graft material: hydroxylapatite, tricalcium phosphate, calcium sulfate, or bioactive glass products
  – Preferred by patients who take issue with human, bovine, or porcine donors
  – Preferred for future pontic sites because of greater longevity and prolonged ridge maintenance than allograft; example: Resorbable HA, Bioplant HA coated methylmethacrylate
  – Bioactive glass: Biocompatible ceramic = bone conductive; example: PerioGlas

Why Socket Grafting?

• 40–60% of socket bone height and width lost within 2–3 years
• Implants require sufficient bone
• Bridge pontic sites require esthetic and hygienic contours
• Easier to “preserve” bone than to “create” bone later
• Bone grafting at the time of extraction prevents 2nd surgery later
• Ridge width may reduce up to 50% within 12 months post extraction
• Buccal bone loss is greater than lingual/palatal
• Maxillary resorption is faster than mandible

Socket Classification

• 5 walled: mesial, distal, buccal/labial, lingual/palatal, apical
• 4 walled: mesial, distal, apical, lingual/palatal
  (technique sensitive, CE advised)
• 3 walled: mesial, distal, apical
  (best restored by experienced clinician)

Which Sockets to Graft?

Consider prosthetic restoration of space
• Anterior esthetic zone
• Delayed implant placement (anterior or posterior)
• 5-walled socket <1.5mm buccal/labial bone
• Thin fractured buccal/labial plate
A Practical Approach to Socket Grafting: Just DO IT! (Continued)

Understanding Grafting Terminology (Continued)

- **Xenograft**: Animal derived, bovine or porcine
  - Generally requires more time prior to implant placement; examples: Foundation (collagen), Bio-Oss (bone)
- **Membranes** (absorbable/non-absorbable) are biocompatible physical barriers to confine graft materials delaying invagination of epithelium and fibrous cells allowing time for osteocytes to proliferate.
- **Osteogenic Substances** (osteoinductive)
  - BMP (recombinant bio-engineered bone morphogenic protein); examples: Infuse, Accell Connexus
  - PRP (platelet rich plasma): patient’s own centrifuged serum
  - Biomimetics: PepGen P-15

Clinical Tips

- Atraumatic tooth extraction; use luxators, root sectioning techniques
- Preserve buccal/labial plate during extraction
- Curette all granulation tissue from socket
- Near-primary closure if possible
  - Mucosa advance aided by 3 tooth envelope flap
  - <2–3 mm opening: collagen membrane is adequate
  - >3 mm opening: longer staying membrane advised (PTFE)
  - Note: decreases amount of keratinized mucosa,
- Use non-wicking suture (vicryl, PTFE, etc.); never silk!
- Use crisscross suture technique
- Keep any non-resorbing membrane as long as possible; 2–3 weeks
- No smoking during healing

Lower Cost Grafting Technique

1. Consider pre-op antibiotics
2. Atraumatic tooth removal (luxators, root sectioning etc.)
3. Gently elevate socket margin gingiva (if sufficient keratinized tissue is present, do periosteal release for near primary closure; see Clinicians Report August 2014)
4. Fill socket to boney crest with alloplast/allograft (Puros, Bio-Oss, or other lower cost alloplast/allograft)
5. Collagen plug membrane: CollaPlug cut to size and crush segment between fingers and tuck under gingival margin
6. Suture with crisscross vicryl or similar suture
7. Gentle chlorhexidine rinses beginning pre-op and then 12 hours later, then twice daily until socket closure

CR Conclusions:

Modern functional and esthetic dentistry requires an intact dental alveolus which is now possible using socket grafting techniques.

- Maintain buccal/labial plate with extractions.
- Graft esthetic zone and anticipated implant or pontic areas.
- Sockets with >1.5 mm labial/buccal bone do not require grafting.
- Consider referral to oral surgeon/periodontist for complex socket graft or atraumatic extraction.
- Take a socket grafting educational course.
This team is testing resin curing lights to determine their ability to cure a variety of resin-based composites. Every month several new projects are completed.

THE PROBLEM WITH NEW DENTAL PRODUCTS.
New dental products have always presented a challenge to clinicians because, with little more than promotional information to guide them, they must judge between those that are new and better, and those that are just new. Due to the industry’s keen competition and rush to be first on the market, clinicians and their patients often become test data for new products. Every clinician has, at one time or another, become a victim of this system. All own new products that did not meet expectations, but are stored in hope of some unknown future use, or thrown away at a considerable loss. To help clinicians make educated product purchases, CR tests new dental products and reports the results to the profession.

WHY CR?
CR was founded in 1976 by clinicians who believed practitioners could confirm efficacy and clinical usefulness of new products and avoid both the experimentation on patients and failures in the closet. With this purpose in mind, CR was organized as a unique volunteer purpose of testing all types of dental products and disseminating results to colleagues throughout the world.

WHO FUNDS CR?
Research funds come from subscriptions to the Gordon J. Christensen Clinicians Report®. Revenue from CR’s “Dentistry Update” courses support payroll for non-clinical staff. All Clinical Evaluators volunteer their time and expertise. CR is a non-profit, educational research institute. It is not owned in whole or in part by any individual, family, or group of investors. This system, free of outside funding, was designed to keep CR’s research objective and candid.

HOW DOES CR FUNCTION?
Each year, CR tests in excess of 750 different product brands, performing about 20,000 field evaluations. CR tests all types of dental products, including materials, devices, and equipment, plus techniques. Worldwide, products are purchased from distributors, secured from companies, and sent to CR by clinicians, inventors, and patients. There is no charge to companies for product evaluations. Testing combines the efforts of 450 clinicians in 19 countries who volunteer their time and expertise, and 40 on-site scientists, engineers, and support staff. Products are subjected to at least two levels of CR’s unique three-tiered evaluation process that consists of:

1. Clinical field trials where new products are incorporated into routine use in a variety of dental practices and compared by clinicians to products and methods they use routinely.
2. Controlled clinical tests where new products are used and compared under rigorously controlled conditions, and patients are paid for their time as study participants.
3. Laboratory tests where physical and chemical properties of new products are compared to standard products.

Clinical Success is the Final Test

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