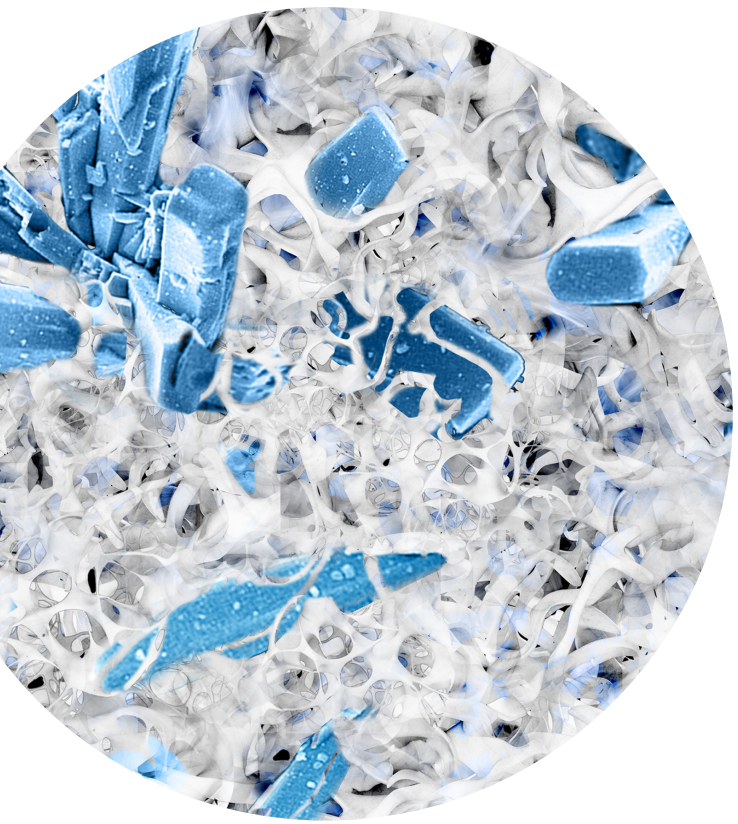
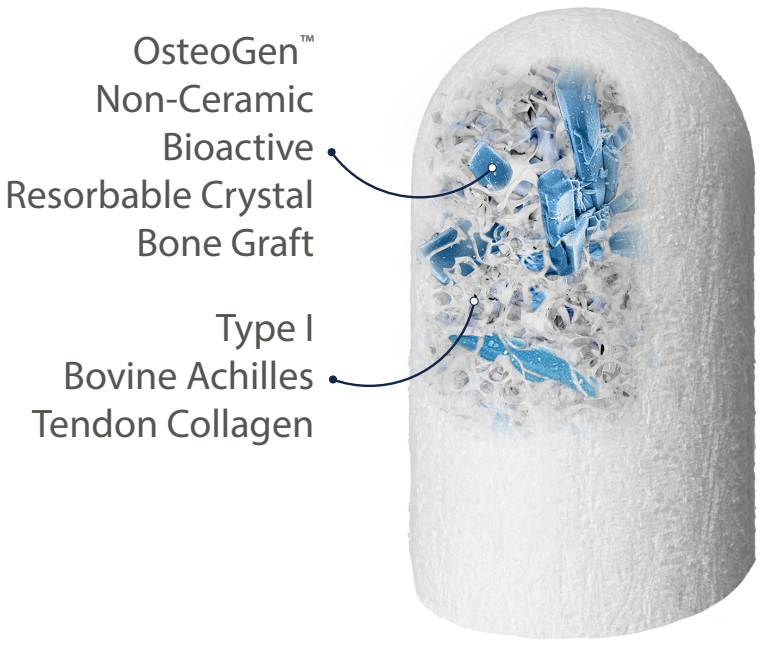
OsteoGen Plug®

Bioactive Resorbable Bone Graft

OsteoGen™ bone grafting materials – available in Plug, Strip, and Block forms – are designed to simplify grafting without compromising clinical outcomes. Each form is built on the same OsteoGen™ crystal technology, a proprietary, bioactive, resorbable calcium phosphate combined with Type I Bovine Achilles Tendon Collagen.[1,2]





1. Zhao R, Sarker A, Davies JE. Osteoblast-like cell behavior on calcium phosphate coatings with different Ca:P ratios. J Biomed Mater Res A. 2007;83(2):454-464
2. Jones K, Williams C, Yuan T, et al. Comparative in vitro study of commercially available products for alveolar ridge preservation. J Periodontol. 2022;93(3):403-411

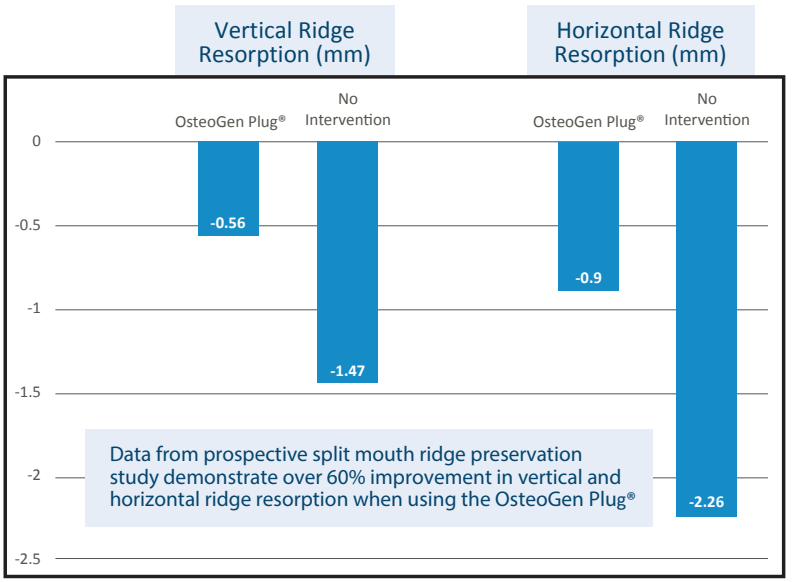
Key Benefits

The OsteoGen™ Bone Grafting Plug is an easy and cost-effective way to clinically deliver bone graft for ridge maintenance and socket preservation. The idea is simple – we take a collagen plug and fill it with our OsteoGen™ non-ceramic bone graft crystals to create the OsteoGen™ Bone Grafting Plug at an affordable price. The result is a bone graft combined with a collagen plug for ease of clinical delivery.

- The OsteoGen™ Bone Grafting Plug combines our OsteoGen™ Bioactive Resorbable Calcium Phosphate with a bovine achilles tendon collagen matrix to create a structure that mimics the organic and inorganic components of physiologic bone.
- OsteoGen™ is a bioactive and resorbable calcium phosphate based bone graft that is physicochemically and crystallographically similar to human bone.[3-6] The OsteoGen™ non-ceramic production process yields a resorbable bone graft with a unique Ca:P ratio that is not a ß-TCP and not a ceramic HA, nor is it a biphasic mixture of the two.

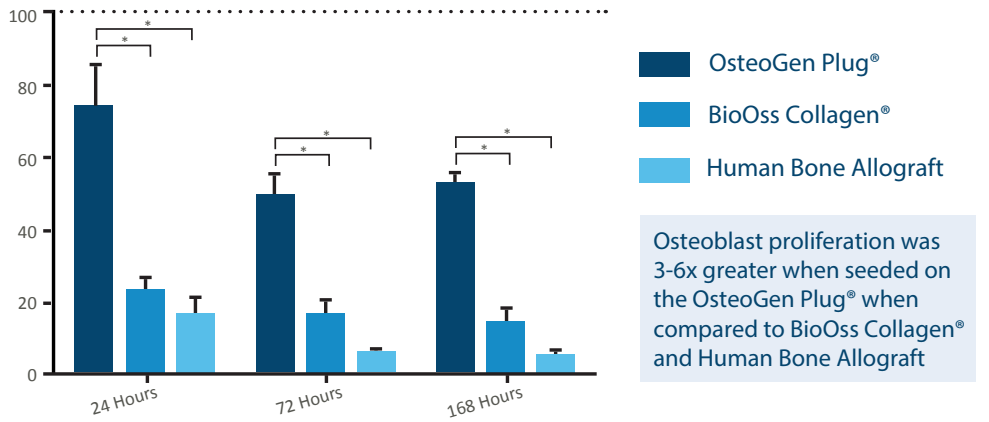
PROSPECTIVE SPLIT MOUTH RIDGE PRESERVATION STUDY

Data in line with research showing efficacy of human bone allografts[8]



Research published in Journal of Periodontology shows significantly better biocompatibility of the OsteoGen Plug® compared to Human Bone and BioOss Collagen®.[2]

Osteoblast Proliferation as Detected by CCK-8 Normalized to 100%



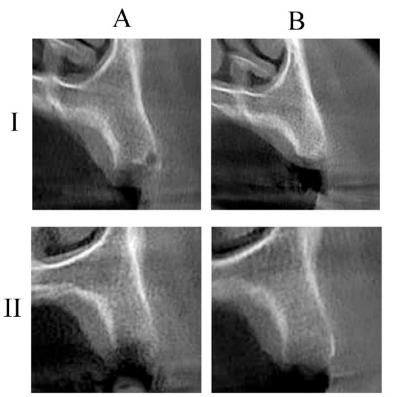
Osteoblast proliferation was 3-6x greater when seeded on the OsteoGen Plug® when compared to BioOss Collagen® and Human Bone Allograft

OsteoGen™ vs. Allograft:

COMPARISON STUDY HIGHLIGHTS[7]

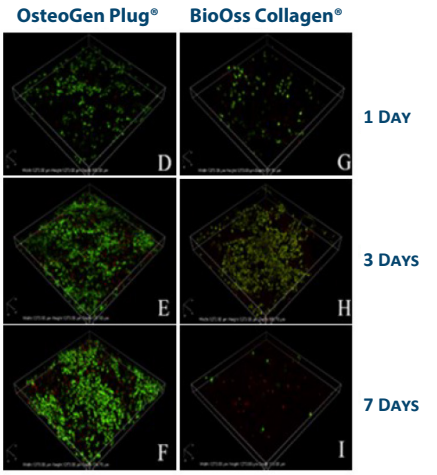
Clinical histomorphometric study comparing a competitive corticocancellous allograft and membrane to OsteoGen™ Plug alone between 3 and 5 months after implantation:

- No significant difference in the quality of bone for placing an implant at 3-5 months between the OsteoGen™ Plug and the current "gold standard" of corticocancellous allograft and membrane.
- Authors noted that the benefits of using an OsteoGen™ Plug include simplified clinical application saving chair time, decreased costs and no need for a second surgery to remove the membrane.
- Additional findings include no difference in post op patient reported time. All samples yielded viable bone for implant support.



CBCT analysis. The horizontal and vertical dimensional changes were measured by comparing the CBCT images taken immediately after the graft (baseline) and after (4 months). I: Control group, II: Test group, A_i: Immediately after extraction, A_{ii}: OsteoGen Plug® applied, B_i: Empty socket after 4 months, B_{ii}: OsteoGen Plug® after 4 months.

[8]Yosouf, K., Heshmeh, O. and Darwich, K., 2021. Alveolar Ridge Preservation Utilizing Composite Graft: A Cone-Beam Computed Tomography Assessment in a Randomized Split-Mouth Controlled Trial. *Journal of Biomedical Science and Engineering*, 14(2), pp. 64-73.



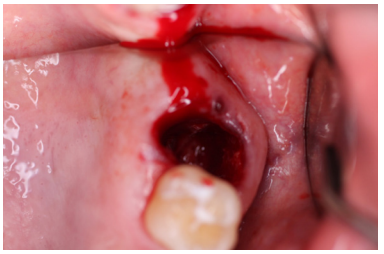
[2]Jones, K., Williams, C., Yuan, T., Digeorge-Foushee, A.M., Chambers Wilson, R., Burton, T., Hamlin, N. and Martinez, L., 2022. Comparative in vitro study of commercially available products for alveolar ridge preservation. Journal of periodontology, 93(3), pp.403-411.

Clinical Application

Clinical images courtesy of German Murias DDS, ABOI/ID



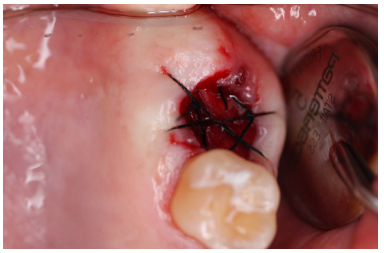
Tooth #15,
set to be extracted.



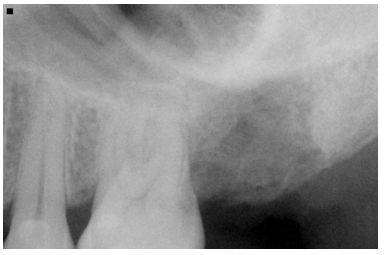
The surgical site was initially debrided to induce bleeding and establish the Regional Acceleratory Phenomenon.[9]



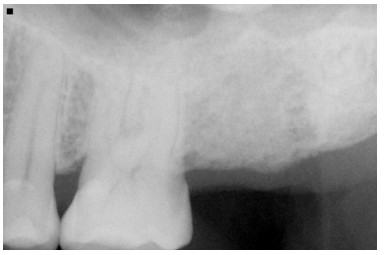
Insert Large or Slim sized OsteoGen™ Bone Grafting Plugs and allow blood to absorb.



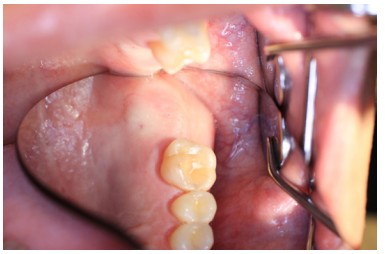
OsteoGen Plugs® are in place.
Suture over top of socket to contain.
No membrane is required.



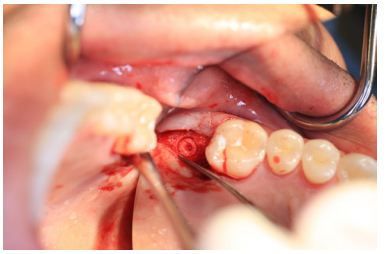
OsteoGen™ is a low density bone graft and the OsteoGen Plugs® will show radiolucent on the day of placement.



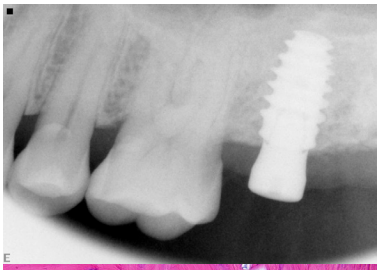
As the OsteoGen™ crystals are resorbed and replaced by host bone, the site will become radiopaque (typically 4 - 6 months).

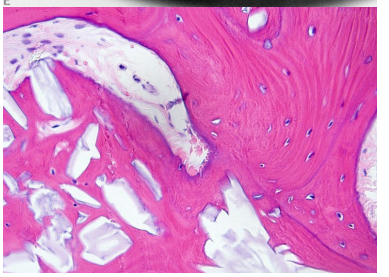


The collagen promotes keratinized soft tissue coverage over the graft.



Solid bone is seen upon re-entry prior to implant placement.
In this image, a core sample was retrieved.





Implant is placed.
Note the histology showing mature osteocytes in lamellar bone formation.
Some of the larger OsteoGen™ crystals and clusters are slowly resorbing.
Bioactivity is demonstrated by the high bone to crystal contact, absent of any fibrous tissue encapsulation.[5,6]

OsteoGen Plug® Availability

OsteoGen™ Bone Grafting Plugs are available in three sizes:

OsteoGen™ Bone Grafting Plugs:
One step socket preservation solution with no membrane needed when clinically indicated

OPL1020-5	OsteoGen Plug - Large 10x20mm — Box of 5
OPL1020-10	OsteoGen Plug - Large 10x20mm — Box of 10
OPL1020-25	OsteoGen Plug - Large 10x20mm — Box of 25
OPS625-5	OsteoGen Plug - Slim 6x25mm — Box of 5
OPS625-10	OsteoGen Plug - Slim 6x25mm — Box of 10
OPS625-25	OsteoGen Plug - Slim 6x25mm — Box of 25
OPXL1520-5	OsteoGen Plug - Extra Large 15x20mm — Box of 5

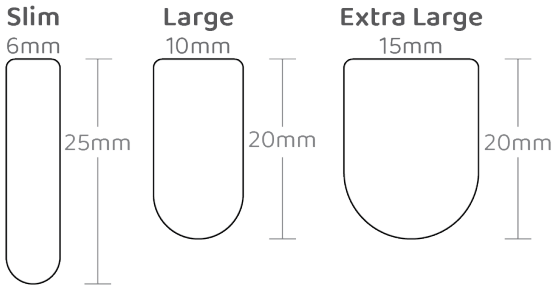
OsteoGen™ Bone Grafting Strips:
Resorbable mineralized collagen bone graft in flexible strips

OSL20403-2	OsteoGen Strip - Large 20x40x3mm — Box of 2
OSS12203-2	OsteoGen Strip - Small 12x20x3mm — Box of 2

OsteoGen™ Malleable Bone Block:
Resorbable mineralized collagen bone block for ridge widening or sinus elevation

OBB101517-2	OsteoGen Malleable Bone Block - 10x15x17mm — Box of 2

Slim: 6mm diameter x 25mm Length
Large: 10mm diameter x 20mm Length
Extra Large: 15mm diameter x 20mm Length



Available in Boxes of 5, 10 or 25

- OsteoGen Plugs® are an easy and affordable way to graft extraction sites
- Mineral and Collagen composition mimics structure of human bone

Contact your sales representative for more information.

Impladent, ltd.

888-212-4383
www.osteogen.com

1. Zhao (2007) 2. Jones (2022) 3. Ganz (2002) 4. Valen (2002) 5. Spivak (1990) 6. Ricci (1992) 7. Ferreira (2022) 8. Yosouf (2021) 9. Frost (1983)
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