Implants

the next big trend?

The one thing you can count on with a trend of any sort is that sooner or later another one will come along and take its place as the "Next Big Thing." That isn't to say the first trend disappears or that the new trend just comes out of the blue. Oftentimes, it's just something whose time has come.

A few years ago, periodontal disease and its link with systemic disease was on everyone's minds. Then tooth-whitening and smile design had their prominence. Whether this is, or was, a product of media hype, manufacturer promotion, or general concern for patient care remains best viewed with the luxury of hindsight. But each is still around and enjoys its own niche within clinical and technical dentistry.

Ever since osseointegration was developed in the early 1980s, implant dentistry has been ready for its turn to shine. Now, with further developments in technology and with an increase in patient awareness and expendable income, the tiny implant's time has come.

Just as smile design before it, implant restorations may be the next boon for labs willing to invest in required technology and education.

by Richard Palmer

GROWTH POTENTIAL

Renowned technician and instructor Lee Culp, founder of Mosaic Studios and the Institute for Oral Art & Design, has continuously been on the forefront of dental technology. When he believed that esthetic smile design had reached critical mass—"We've taught so many people to do nice, white, smile-design teeth, everyone can do it," he said—Culp moved to a field of dentistry that offered the most promise for growth, and even greater profits.

"For a little more challenge, I started aiming at implants" he said, adding that his lab case work is comprised of 50% implant work now, especially full-mouth reconstruction. "These large cases are just more complex, more challenging, more fun, and bring in a whole lot more money."

Looking back at the boom in esthetics during the previous decade, Culp said "The guys who specialized in smile design cases did phenomenally well. Now that implants are growing at the rate that they are, those who

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TAKEAWAY

* While single-unit implants currently represent the largest percentage of cases, complex full-mouth cases offer the greater potential for financial and professional growth.
* Use of cone beam CT radiography and CAD/CAM technology can help simplify certain implant procedures to open the treatment option to more clinicians, technicians, and patients.

Illustration courtesy of Astra Tech.

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get the education and specialize and actively market for these cases are going to do very well also."

Luke S. Kahng, CDT, Owner of Capital Dental Technology Laboratory, also believes that the implant patient is coming to the dental chair with higher expectations. "Implant dentistry is no longer just for a functional application," he commented. "Since there are increasing choices of restorative applications, esthetics should be expected."

Results from a recent survey conducted by *Dental Lab Products*[1] indicate that lab owners are seeing the potential in offering implants, as well as reaping the benefits. According to the 2006 survey, 91% of labs offer implant services, which shows a growth of more than one-third over the 68.4% indicated in DLP's 2005 implant survey.[2]

Further comparison of survey data shows that labs in the implant business are seeing more business. The percentages of responding labs handling as few as 1-5 implant cases monthly *decreased* from 56.1% in 2005 to 54.6% in 2006, while the percentage of labs reporting hefty work loads of 31-50 monthly implant cases *increased* from 2.2% in 2005 to 2.7% in 2006. And those with more than 50 cases grew from 4.3% to 6.0%. The growth rate shown from a 2003 DLP implant survey[3] shows an even more dramatic shift, with labs in the 1-5 range falling from 73.7% to 54.6%, and those with more than 50 cases growing three-fold from 2.0% to 6.0%.

The percentage of lab owners who answered that implants represent more than 25% of their total business also has experienced exponential growth: from just 1.1% in 2003 to 2.9% in 2005 to 6.0% this year—a 445% increase over a three-year span.

SINGLE VS. MULTIPLE IMPLANTS

Due to their relative simplicity, single-unit implants often represent the starting point, and continued focus, of labs that offer implant services. But that may not depict full growth potential.

More than one-third of respondents (33.9%) to the DLP 2006 implant survey said that 76%-100% of their implant cases involved single-tooth restorations, while only 11.4% indicated that full dentures make up 76%-100% of implant cases. However, 2005 survey figures show that only 1.5% of labs indicated that full dentures were involved in 76% or more of their implants cases.

Doctors and lab technicians are more inclined to start and continue on the simpler single-unit implant cases. In addition, a patient is more likely to be missing a single tooth than to be fully or partially edentulous. Implants offer a method to replace a single missing tooth without compromising healthy adjacent teeth. A single implant also provides support to maintain healthy underlying bone, which could resorb in the absence of a tooth root.

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>
> — LUKE S. KAHNG, CDT

Warren Kolback, CDT, Master of the International Congress of Oral Implantologists (MICOI), a technician who works as a technical consultant to clinicians and technicians, puts it succinctly, "Implants are and always should be considered the first choice of treatment presented to a patient who is missing a tooth."

According to Robert Hicks, CDT, MICOI, "I'm finding that a lot of labs don't want to mess with it or don't have the experience with the overdentures." President of Hicks Dental Laboratory in Port Huron, Mich., he specializes in full-mouth fixed and removable constructions and has both developed the BTI implant systems as well as co-invented the Passive Plus system for divergent implants.

Financial and professional rewards potentially await labs with the training and talent to handle multi-implant cases, boosted by a growth in demand by patients preferring implant-supported fixed or removable prosthetics to traditional dentures.

COMPUTER SOLUTIONS

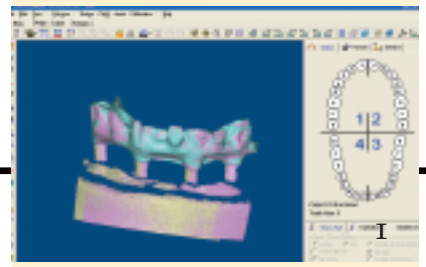
Technological advancements—both in practice and in the works— could soon open complex case work to more labs and general dentists willing to tackle the training necessary.

Culp has been working with U-Best Dental Technology to develop CAD/CAM software that will assist dental lab technicians in designing custom-fabricated implant bars used in com-

91%

Percentage of labs offering implant services (with an average percentage of total business represented by implants reported at 8.2%)

Source: November 2006 DLP Implant survey



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CUSTOM IMPLANT BARS

Lee Culp, CDT, and U-Best Dental Technology of Anaheim, Calif., are working together to develop CAD/CAM design software for custom-fabricating implant bars used in complex full-mouth cases.

1. The initial scan and design of titanium-acrylic implant-supported fixed hybrid mandibular restoration.
2. The final CAD design showing retentive support for acrylic.
3. The titanium hybrid CAM milled bar from a solid block of medical-grade titanium.
4. The finished precision-fit hybrid bar on the model, ready for acrylic application.
5. The final overdenture ready for clinical placement .

Photos courtesy of Lee Culp, CDT.


1


2


3

OPTIONS WITH IMPLANTS

With his choice of restorative options increasing, **Luke S. Kahng, CDT**, often utilizes all-ceramics in implant restorations, including CAD/CAM fabricated zirconia abutment and crown.

1. The patient has a Nobel Biocare 4.3 Replace Select Tapered implant with a Procera zirconia abutment.
2. A Procera zirconia restoration is placed over the zirconia abutment.
3. At the try-in, the combination of zirconia in the abutment and the crown results in an esthetic restoration that matches the adjacent teeth with no appearance of a dark metal substructure.

Photos courtesy of Luke S. Kahng, CDT.

plex cases. The bars are designed on the computer using either a scan of a bar wax-up or from a library of cases, then milled from a single piece of titanium, affording strength and ease of use. 3i also offers custom-fabricated titanium bars, CAM StructSURE precision milled bars, that are part of its ARCHITECH PSR family of patient-specific products.

CAD/CAM technology also is opening the field of implants through the creation of custom-fabricated abutments milled from titanium or zirconia blocks, available through 3i, Atlantis Components, Nobel Biocare, Sirona's infiniDent, and KaVo Neoss.

Tom Peterson, CDT, MDT, Owner of North Shore Dental Laboratories in Lynn, Mass., uses the 3i Encode CAD/CAM abutment system, which starts with a simple impression of the healing abutment from the doctor and results in a custom titanium abutment. "3i generates the abutments, which are machined beautifully and are shaped nicely," said Peterson. "We create a crown directly on the abutment, and the doctor gets back the abutment, placement jig, and the final crown all from a healing-abutment impression—that's pretty advanced."

> "In the not-too-distant future, you'll be able to have everything finished BEFORE you even perform the surgery. That's where the real EXCITEMENT lies."
>
> — LEE CULP, CDT

While the Encode abutments are designed to sit on 3i's implants, the custom abutments from Atlantis Components and from Nobel Biocare function with a range of implant platforms. With the Nobel Biocare Procera system, the technician scans the impression model with a Forte or Piccolo digital scanner, designs the abutment, and electronically sends the design to the company for CAM milling. With the Atlantis Virtual Abutment Design system, custom abutments can be created to correspond to the majority of the implant systems available and require only the master model and a diagnostic wax-up from the lab.

Gary Killgo, CDT, of Georgia Dental Laboratory appreciates how the Atlantis system frees his master implant technicians from tasks such as casting and trimming custom-cast abutments. "They can spend more time at the bench doing the things that they do best."

DLP implant surveys show that the rate of use of custom CAD/CAM milled abutments is increasing. Nearly half of respondents (44.8%) indicated that they provide their restoring doctors with patient-specific implant abutment crowns, compared with 36.5% from the 2005 survey.

Technology also is improving success in implant procedures through cone beam CT radiography, which allows the dental surgeon to create a precise 3D digital image of the patient's head and jaw. The computer data can then be evaluated by the surgeon, dentist, and lab technician as a team to plan the placement of the implants and to allow for adequate restorative room.

As Culp put it, "What the software is going to do is let the general dentist know really quick whether he should be doing the case or referring it out." If the CT scan indicates problems with bone, tissue, or root angulation, the case is referred to a specialist, he added.

The data from the scan can then be used to design and create a surgical stent used by the surgeon to drill and place implants at the precise angle and depth for optimal osseointegration. The information also assists the technician in designing a custom abutment and a CAD/CAM framework to top the abutment as well as a temporary restoration.

"In the not-too-distant future, you'll be able to have everything finished before you even perform the surgery," predicted Culp. "That's where the real excitement lies."

Renzo Casellini, MDT, MICOI, says he starts each day going through e-mails about implant cases from doctors and surgeons. "Before we even have an implant placed from the surgeon, we really pre-plan the case in communication with a team approach between the dentist, surgeon, and laboratory," said Casellini, owner of Swiss Quality Dental Ceramics & Dental Implant Studio, a high-end esthetics lab in Los Angeles.

EDUCATION

If you're not currently offering implant services to your clients but want to move up to multi-unit cases in this promising field, the first step is to get the proper training. About two-thirds

54%

Mean percentage of implant cases that involve single-tooth restorations.

28%

Mean percentage of implant cases that involve full dentures.

Source: November 2006 DLP Implant survey

ONLINE IMPLANT SOLUTIONS

Company.	Web
3i/Implant Innovations Inc.	www.3i-online.com
Ace Surgical Supply	www.acesurgical.com
Almitech Dental	www.almitechimplants.com
Astra Tech	www.astratech.com
Atlantis Components	www.atlantiscomp.com
Attachments Int'l	www.attachments.com
BASIC Dental Implants	www.basicdentalimplants.com
Bicon Dental Implants	www.bicon.com
Bio-Lok Int'l	www.biolock.com
BioHorizons Implant Systems	www.biohorizons.com
Biomedical Implant Technology	www.dental-implant.com
BTI of North America	www.bti-implant.com
Dentatus USA	www.dentatus.com
Dentsply Friadent CeraMed	www.friadentna.com
DiamoDent	www.diamodent.com
Hi-Tec Implants	www.hitec-implants.com
Impladent	www.impladentltd.com
Implant Direct	www.implantdirect.com
Implant Solutions Technology	www.implanttechnology.com
Imtec	www.imtec.com
Innova	www.innovalife.com
Intra-Lock Int'l	www.intra-lock.com
KaVo Dental Corp.	www.kavousa.com
Lifecore Biomedical	www.lifecore.com
MIS Implants Technologies	www.misimplants.com
Nobel Biocare USA	www.nobelbiocare.com
OCO Biomedical	www.ocoinc.com
Osteo Implant	www.osteo-implant.com
Rhein 83 USA	www.rhein83.com
Sargon Enterprises	www.sargondentalimplants.com
Simpler Implants	www.simplerimplants.com
Sirona/infiniDent	www.infinident.com
Sterngold	www.sterngold.com
Straumann USA	www.straumannusa.com
Sullivan-Schein Dental	www.sullivanschein.com
Thommen Medical USA	www.thommenmedical.com
Titan Implants	www.titan-implants.com
U-Best Dental Technology	www.ubestdental.com
Vident	www.vident.com
XPdent/Bredent	www.xpdent.com
Zest Anchors	www.zestanchors.com
Zimmer Dental	www.zimmerdental.com

(67.0%) of respondents to the most recent DLP Implant survey who offer implant services said that they have attended programs directly related to implant dentistry within the past two years.

However, both Casellini and Culp said that labs are poorly represented at the implant seminars that they have attended or taught. "If there's 1,000 people in the audience, I'll be one of 30 technicians," said Culp.

Of lab owners who actively sought education, 78.7% attended programs sponsored by manufacturers of implant systems.

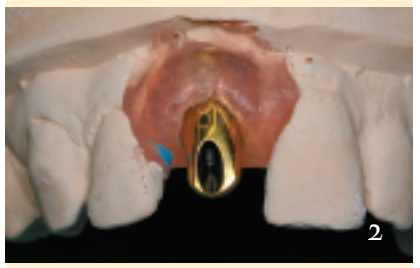
Kolback recommends that labs ask their restoring dentists which system they use and inquire to that company about training. He said that many implant manufacturers offer free hands-on training to get labs started, but warned, "It's equally important to get either some unbiased opinion from other sources or attend some other seminars sponsored by implant associations."

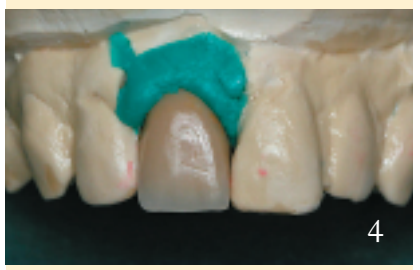
"If you know one system, then you know a lot," suggested Casellini. "Select one implant system that you're very comfortable with, then branch out to different implant systems and companies."

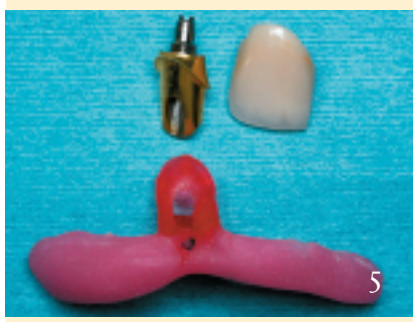
While it's advisable to know one system very well, knowledge of a wide range of systems, especially their similarities and differences, also will help you attract a wide range of doctors from across the countries, as implant systems can tend to be regional. lab

References

1. A November 2006 DLP Implant survey was e-mailed 1,355 lab owners/managers in the United States; a total of 201 responses were received for an overall response rate of 14.8%.
2. A July 2005 DLP Implant survey was mailed 1,000 lab owners/managers in the United Sates; a total of 209 useable responses were received for a useable response rate of 20.9%.
3. A November 2003 DLP Implant survey was mailed to 1,000 lab owners/managers in the United Sates; a total of 265 useable responses were received for a response rate of 26.5%.







CUSTOM ABUTMENTS

From just a healing abutment impression received from the clinician, **Tom Peterson, MDT**, can have a patient-specific abutment custom designed and milled using 3i's Encode CAD/CAM abutment system, which starts with a simple impression of the healing abutment from the doctor and results in a custom titanium abutment. After receiving the finely machined abutment, Peterson can concentrate on the esthetics of the final crown.

1. Encode custom abutment with titanium nitride coating as received from 3i.
2. Encode abutment on doctor's cast.
3. Encode abutment secured to lab analog with die spacer applied in preparation for waxing coping.
4. Finished metal ceramic crown with porcelain shoulder on lab cast.
5. Encode abutment, abutment placement jig, and finished crown.

Photos courtesy of Tom Peterson, MDT.