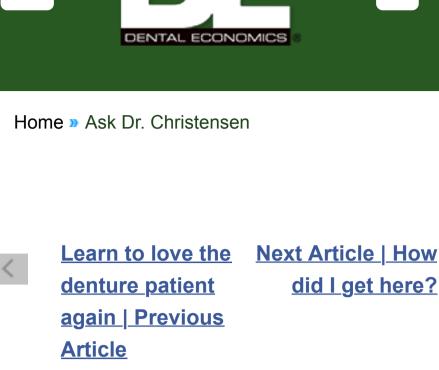
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Christensen
January 1, 2009

info@pccdental.com.

by Gordon J. Christensen, DDS, MSD, PhD

In this monthly feature, Dr. Gordon

Christensen addresses the most frequently

to Dr. Christensen, please send an e-mail to

readers. If you would like to submit a question

asked questions from Dental Economics®

Ask Dr.

## For more on this topic, go to www.dentaleconomics.com and search using the following key words: mini implants, conventional-diameter implants, SDIs, osteotomy, flap operation, Gordon J. Christensen. Q I have seen many articles and courses supporting "mini" implants, but the oral surgeon

which makes the controversy even more frustrating to me. What can I expect from the "mini implant" concept for my patients, especially for lower complete dentures?

**A** I have heard complaints about mini implants similar to those you mentioned for more than eight

years. During this same period, I have had

with whom I work condemns them. The

technique seems to be simple and noninvasive,

significant clinical success with these small-diameter implants. I will answer your question by comparing mini implants with conventional-diameter implants in cases of mandibular edentulism. These are the types of cases where they are most recommended. My pictures with this article will demonstrate adequate placement under a mandibular denture.

Mini implants are usually defined as root-form

Mini implants are usually defined as root-form implants smaller than 3 mm in diameter. This definition is related to the 1976 FDA clearance of root-form implants 3 mm in diameter and larger and the subsequent initial 1977 FDA clearance of root-form implants under 3 mm in diameter for "long-term" use. Those persons and groups defining implant terminology are trying to call these small implants "small diameter implants, or "SDIs." However, the phrase "mini implants" is already so embedded in the dental terminology that it will probably continue to be used.

Figure 1 shows the differences in the diameter of

SDIs (less than 3 mm compared to conventional-

common and needed use of SDIs is for mandibular

frequently occurring condition in dentistry. There

interested, visit the Web site, www.pubmed.com,

My use of SDIs for mandibular edentulous patients

has become routine; however, I still use both

conventional-diameter implants and SDIs for

only minimal bone (Fig. 2). These patients are

support and retention of mandibular dentures.

Most of the elderly edentulous patients I treat have

frequently in ill health, and the surgical trauma of

conventional-diameter implants is significantly more

difficult on them than placement of SDIs. Therefore,

dimension and is in ill health, SDIs are definitely the

if the patient has minimal bone in a facial-lingual

treatment of choice. If these implants are placed

adequately, there are no reasons to question the

adequately and the denture is fabricated

are numerous research projects supporting the use

diameter implants (3 mm and larger). The most

edentulism, which is the most debilitating,

of SDIs for mandibular dentures. If you are

and read these research reports.

use of SDIs. On the other hand, if the edentulous patient has adequate bone and appears to be in good health, conventional-diameter implants, which have been used for nearly 50 years, should provide excellent support and retention for mandibular overdentures. A state-of-the-art comparison of SDIs with conventional-diameter implants is revealing. It makes the decision on whether to use conventional-diameter implants or "mini implants" for edentulous mandibles more difficult. The following comparison explains my opinions on the subject: • SDIs expand the bone as they are placed, producing immediate stabilization in most

situations with minimal bone removal. Most

diameter.

conventional-diameter implants are placed in an

osteotomy only slightly narrower than the implant

• SDIs require only a narrow-diameter osteotomy

that does not extend to the depth of the implant.

Conventional-diameter implants require an osteotomy extending to the entire depth of the implant, thereby removing significantly more bone.

• SDIs usually are loaded on the day of placement, reducing the length of the treatment period. Most conventional-diameter implants are not loaded immediately, requiring the patient to use a provisional restoration for a longer period of time.

• In the event of the infrequent failure of an SDI, it is merely unscrewed and the osteotomy closes and heals within a few weeks.

• SDIs cost significantly less than conventional implants; however, two SDIs must be used where only one conventional-diameter implant would have been used. Therefore, cost of implant therapy is

only slightly less for the SDI technique.

patients do not require an analgesic

minimal continuing education.

requiring a flap.

brands are:

3136

following points:

diameter):

best choice.

1.

2.

3.

6.

8.

concept.

present.

one.

• The surgical trauma caused by an SDI placed

without a soft-tissue flap is minimal, and most

postoperatively. In a recent CLINICIANS REPORT

2007), only 20% of SDIs were placed with a flap

survey of 200 SDI users (CRA Newsletter, November

operation. It has been estimated that the reverse is

true with conventional-diameter implants, with 80%

• Placement of SDIs is relatively easy after obtaining

• Placement of conventional-diameter implants is

somewhat more difficult than SDI placement.

Figure 3 — A conventional diameter implant more than 3 mm in diameter is shown on the far right. Next to it is an implant, size a "him" and a conventional diameter implant, starting at 1.6 mm apocally and withining to 3.6 mm on the cockeal portion. These of implants require an obsectiony and borse removal only slightly anualist than the implants. The implants at the far last and second lift are less than 3 mm in diameter and are sexually designated as "nice" or small-diameter implants at the far last and second lift are less than 3 mm in diameter and are sexually designated as "nice" or small-diameter implants (SDN). They require only a smooths amail instruction, and make their over threeding and widening of the tense as they perentuate past the cestacitine with poorly instanced and supported denture.

Figure 3 — Soft transfer marked to planned locations for small-diameter implants. The marks were transferred from water-activities on the denture base with a Vin A-Via" pas.

Figure 3 — South diameter implants placed (MTECT, a 3M Company).

Figure 5 — Radingraphs: representation of the 13-mm langth, 1.6 mm diameter, small diameter implants.

Click here to enlarge image

Several brands of small diameter implants have

been cleared by the FDA for "long-term" use. These

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 Making the decision on whether to use conventional- implant or SDI techniques for

edentulous patients requires consideration of the

necessary for conventional implants and SDIs. Few

patients want to have or can afford extensive bone-

grafting. Therefore, the amount of bone present is a

major factor in deciding which concept to use.

For implants 3 mm and larger (conventional

For implants up to 3 mm in diameter (SDIs):

3 mm to 4 mm in a facial-lingual dimension

2) Quality of bone: Dense bone is significantly

better for SDIs than highly trabeculated porous

considered, conventional implants are probably the

3) Age and physical health of the patient: If the

patient is older and has significant physical health

bone. If the bone is porous in the area being

6 mm in a facial-lingual dimension

10 mm in a crestal-apical dimension

1 mm to 2 mm from vital structures

10 mm in a crestal-apical dimension

1 mm to 2 mm from vital structures

1) Quantity of bone: The following are my

suggestions concerning the amount of bone

challenges, the SDI concept is easier for the dentist and less threatening for the patient.

Technique for small-diameter implants for mandibular

overdentures (Figs. 3-7)

(3 mm to 4 mm).

4. Place the SDIs.

Deliver typical local anesthetic.

Decide on the best location for the implants

by marking the internal area of the denture

Decide whether to make a flap to facilitate

implant placement. Making a flap is usually

Make an impression to rebase the patient's

previous denture or to make a new one.

Various attachments including rubber "O"

rings, ERA, or Locator attachments can be

Rebase the previous denture or make a new

used, depending on the SDI brand used.

Readjust the denture after a few days.

As a brief summary answer to your question, "mini

implants" are not only working well, they also have

literature, and they provide a viable alternative to

more expensive conventional-diameter implant

implants, which are great for use in some

the more invasive, time-consuming, and somewhat

However, don't forget about conventional-diameter

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at www.pccdental.com for more information.

Dr. Christensen is a practicing prosthodontist in Provo,

Utah, and Dean of the Scottsdale Center for Dentistry.

organization initiated in 1981 for dental professionals.

Dr. Christensen is a cofounder (with his wife, Rella) and

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He is the founder and director of Practical Clinical

Courses, an international continuing-education

information available on "mini" implants in

hands-on courses and live clinical-action

overdenture situations where adequate bone is

been cleared by the FDA, supported in the research

7. Seat the denture and adjust it.

necessary only for minimal facial-lingual bone

and transferring the marks to the soft-tissue.

- senior consultant of CLINICIANS REPORT (formerly Clinical Research Associates), which since 1976 has conducted research in all areas of dentistry.
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