Titanium Plates For Bone Regeneration

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SUMMARY

UCLA researchers in the School of Dentistry at the Weintraub Center for Reconstructive Biology have developed a new titanium plate to promote bone regeneration in dental reconstruction procedures.

BACKGROUND

Titanium plates are used as a scaffold to regenerate bone. In the case of dental implants, titanium plates are used to re-gain the width and height of jaw bone before dental implants are placed. These plates (often called titanium mesh plate) are bent by dentists and placed on jaw bone where bone regeneration is planned. Titanium plates serve to maintain and secure space for bone regeneration and to immobilize graft materials. The plates are then removed after successful bone regeneration.

However, there are major clinical problems in titanium plate-assisted bone regeneration. First, protracted healing time, ranging from 3 months to 2 years, is required to regenerate bone with sufficient mechanical strength to bear dental implants. Secondly, the mechanical and physiological quality of regenerated bone is lower than that of natural bone. Thirdly, bone regeneration using titanium plates has a substantial risk of failure, particularly in older patients, and those that suffer from osteoporosis and diabetes. These problems are directly related to the limited biological capability of titanium plates to regenerate bone and often limit their utility in the clinic.

INNOVATION

UCLA researchers led by Prof. Takahiro Ogawa have developed a new titanium plate optimized for bone regeneration. These new plates have optimized surface properties not only for bone generation but also easy separation from bone once it needs to removed. This may provide a new opportunity for titanium-plate-assisted bone regeneration.

ADVANTAGES

- Promotes bone growth and design facilitates easy downstream removal
- May increase efficacy of procedure and allow for faster recovery rates
- Generates stronger, more normal bone

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INVENTORS

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OTHER INFORMATION

KEYWORDS

bone regeneration, dental implant, micro machining, titanium plate, titanium dental plate, dental plate, bone re-growth, micro scale rough, micro scale machining, dental graft

CATEGORIZED AS

- **Biotechnology**
  - Health
  - Other
- **Medical**
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  - Disease: Dental

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