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Insight - January 2018

Dugoni School of Dentistry

UNIVERSITY OF THE PACIFIC
Arthur A. Dugoni School of Dentistry

insight

January 2018 Research and Scholarship

News and updates about research and scholarship at University of the Pacific, Arthur A. Dugoni School of Dentistry

Welcome to a new edition of *Insight,* a quarterly newsletter celebrating some of the many accomplishments from our community of researchers. Whether you are involved in clinical research, biomedical research, the scholarship of teaching and learning, improvement of the health care system, or professional partnerships that advance the field, we aim to spotlight insights developed by people at the Dugoni School.

RESEARCH IN THE SPOTLIGHT

Resorbable versus Titanium Plates for Orthognathic Surgery

What is it?
A Cochrane systematic review to compare titanium (metal) and resorbable (biodegradable and able to be reabsorbed by the human body) plates to determine if one of them is better for the fixation of facial bones after corrective (orthognathic) jaw surgery.

What problem does it aim to solve?
Under- or overgrowth of one or both of the jaw bones can lead to reduced function and a distorted facial appearance, either of which may have lasting and significant psychosocial effects. Treatment of severe cases may require a combination of orthodontic appliances and orthognathic (corrective jaw) surgery. After surgery the cut bone needs to be immobilized to ensure that optimal healing can take place. Titanium

A radiograph of the jaw area. Image courtesy of Dr. Anders Nattestad.

plates used for fixation are recognized as the "gold standard", but recent developments in biomaterials have led to an increased use of bioresorbable plates or screws for corrective jaw surgery. The use of bioresorbable plates for the fixation of facial bones could potentially reduce the need for subsequent operations to remove the plates. However, while resorbable plates do appear to offer certain advantages over metal plates, concerns remain about the stability of fixation, the length of time required for the plates to be reabsorbed by the body, the possibility of foreign body reactions, and some of the technical difficulties experienced with resorbable plates.

How does it work?
Systematic literature review is a type of research which critically analyzes multiple studies using methods that are selected before a research question is formed. They are designed with the goal of providing a complete, exhaustive summary of current literature relevant to the research question. Systematic reviews of randomized controlled trials are key in the practice of evidence-based medicine.

The researchers included two randomized controlled trials, which included a total of 103 participants. The evidence in this review is up to date as of 20 January 2017. Study participants were adults older than 16 years of age. One study compared titanium with resorbable plates and screws and the other titanium with resorbable screws. One study was conducted in China, the other in Germany.

What are the real-world implications?
This review provided insufficient evidence to show any difference in postoperative pain and discomfort, level of patient satisfaction, plate exposure or infection for plate and screw fixation using either titanium or resorbable materials.

What are the next steps?
Although this review didn't yield any definitive answers, this result can in and of itself show the need for further investigation. 103 participants is a very small sample size. The results of this systematic review confirm the importance of conducting larger, sampled and methodologically sound trials that are reported according to the CONSORT statement.

Source
"Resorbable versus titanium plates for orthognathic surgery", *Cochrane Database of Systematic Reviews* 2017, Issue 10.

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Read more *"Research in the Spotlight"* articles online at dental.pacific.edu/faculty-and-research/research-in-the-spotlight

NOTEWORTHY PUBLICATIONS

Congratulations to Dugoni School faculty, staff and student researchers involved in the following research publications within the last three months as sourced by Scopus, the abstract and citation database of peer-reviewed literature. Visit the abstract links to learn more.

Skupin-Mrugalska, P., Szczolko, W., Gierlich, P., Konopka, K., Goslinski, T., Mielcarek, J., Düzgüneş, N.
Physicochemical properties of liposome-incorporated 2-(morpholin-4-yl)ethoxy phthalocyanines and their photodynamic activity against oral cancer cells
(2018) ***Journal of Photochemistry and Photobiology*** A: Chemistry, 353, pp. 445-457.
Abstract ›

Hendre, A.D., Taylor, G.W., Chávez, E.M., Hyde, S.
A systematic review of silver diamine fluoride: Effectiveness and application in older adults
(2017) ***Gerodontology***, 34 (4), pp. 411-419.
Abstract ›

Bahrami, P., Scott, R., Galicia, J.C., Arias, A., Peters, O.A.
Detecting Dentinal Microcracks Using Different Preparation Techniques: An In Situ Study with Cadaver Mandibles
(2017) ***Journal of Endodontics***, 43 (12), pp. 2070-2073.
Abstract ›

Singh, A., Koduru, B., Carlisle, C., Akhter, H., Liu, R.-M., Schroder, K., Brandes, R.P., Ojcius, D.M.
NADPH oxidase 4 modulates hepatic responses to lipopolysaccharide mediated by Toll-like receptor-4
(2017) ***Scientific Reports***, 7 (1), art. no. 14346.
Abstract ›

Peng, H.-H., Liu, Y.-J., Ojcius, D.M., Lee, C.-M., Chen, R.-H., Huang, P.-R., Martel, J., Young, J.D.
Mineral particles stimulate innate immunity through neutrophil extracellular traps containing HMGB1
(2017) ***Scientific Reports***, 7 (1), art. no. 16628.
Abstract ›

Hu, W.-L., Dong, H.-Y., Li, Y., Ojcius, D.M., Li, S.-J., Yan, J.
Bid-induced release of AIF/EndoG from mitochondria causes apoptosis of macrophages during infection with Leptospira interrogans
(2017) ***Frontiers in Cellular and Infection Microbiology***, 7 (NOV), art. no. 471.
Abstract ›

Ramirez, M.G., Takemoto, J.N., Oliveri, C.M.
Leg Loss and Fitness in Female Green Lynx Spiders Peucetia viridans (Araneae: Oxyopidae)
(2017) ***Arachnology***, 17 (6), pp. 277-281.
Abstract ›

Rossi, A., Ferreira, L., Cuevas-Nunez, M., Wright, J.M., De-Paula, A.M.B., Basile, J.R., Jham, B.C.
Angiopoietin-2 is expressed in oral Kaposi's sarcoma
(2017) ***Journal of Oral Pathology and Medicine***, 46 (10), pp. 1011-1014.
Abstract ›

Martel, J., Ko, Y.-F., Ojcius, D.M., Lu, C.-C., Chang, C.-J., Lin, C.-S., Lai, H.-C., Young, J.D.
Immunomodulatory Properties of Plants and Mushrooms
(2017) Trends in Pharmacological Sciences, 38 (11), pp. 967-981.
Abstract ›

Coutinho, C.M.L.M., Coutinho-Silva, R., Zinkevich, V., Pearce, C.B., Ojcius, D.M., Beech, I.
Sulphate-reducing bacteria from ulcerative colitis patients induce apoptosis of gastrointestinal epithelial cells
(2017) ***Microbial Pathogenesis***, 112, pp. 126-134.
Abstract ›

Source: Scopus, the largest abstract and citation database of peer-reviewed literature.
Updated January 16, 2018. Visit the publications page on the school website:
dental.pacific.edu/faculty-and-research/publications

CALL FOR PROPOSALS

All members of the Dugoni School faculty are encouraged to engage in scholarly activity in the clinical and/or basic sciences as part of their ongoing development as dental educators. The school supports such activity by providing time, funds, technical expertise and facilities in response to applications from individual faculty members. Access to instructions and applications for grant opportunities, as well as the names of individuals who can provide assistance, are available under the Research Resources webpage at **sfdental.pacific.edu/Intranet/researchResources/**

Deadlines for submissions of proposals are the first day of each month, and applications can be accepted throughout the year in a continuous basis for Pilot Project Research or Statistical Support Grants and for Interdisciplinary Pilot Projects.

Contact *Insight*: Have a suggestion for the next issue of *Insight*? Contact Dr. David Ojcius, Assistant Dean for Research and Chair of the Department of Biomedical Sciences, for editorial suggestions or to learn more about how to get involved in research at the Dugoni School. **dojcius@pacific.edu**