Suture

Selection of Applicable Abstracts

OSTEOGENICS

BIOMEDICAL

Urban IA, Lozada JL, Wessing B, Suárez-López del Amo F, Wang HL. **Vertical Bone Grafting and Periosteal Vertical Mattress Suture for the Fixation of Resorbable Membranes and Stabilization of Particulate Grafts in Horizontal Guided Bone Regeneration to Achieve More Predictable Results: A Technical Report.** Int J Periodontics Restorative Dent. 2016 Mar-Apr;36(2):153-9. doi: 10.11607/prd.2627.

Osteosynthesis screws and titanium or resorbable pins have been recommended for fixing guided bone regeneration (GBR) membranes and stabilizing the graft. However, the removal of fixation screws or pins often requires an additional surgical procedure. This article presents a periosteal suturing technique with resorbable sutures for the fixation of grafts and membranes in GBR in single implant sites. This technique avoids potential complications of using fixation screws or pins, such as perforation of the roots when inserting the pins, and eliminates the need for a second retrieval surgery.

Silverstein LH, Kurtzman GM, Shatz PC. **Suturing for Optimal Soft-Tissue Management.** J Oral Implantol. 2009;35(2):82-90.

Establishing nontension primary wound closure of various soft tissue flaps is paramount for optimal postsurgical wound healing. Surgical procedures that require clinical flap manipulation, such as those used with traditional periodontal therapy, periodontal plastic cosmetic surgery, hard and soft tissue regeneration, and the excision of pathologic tissue, also require excellence in execution. Also paramount to clinical success is a thorough understanding of the various techniques of surgery, suturing, and the materials currently available to ensure the desired clinical results. This article will discuss the rationale of specific suturing techniques and suture materials to help the clinician obtain optimal wound closure.

O'Neal RB, Alleyn CD. **Suture Materials And Techniques.** Curr Opin Periodontol. 1997;4:89-95.

Surgical improvements in periodontics have been achieved because of advances in basic science, animal and clinical research, and the insight of outstanding clinicians. Industry continues to develop new surgical materials, improving the quality of sutures and needles and in turn, supporting advances in all surgical specialties. The purpose of this article is to review sutures and suturing by focusing on both materials and methods as they relate to the present practices of surgical periodontics and dental implants.

Abellán D, Nart J, Pascual A, Cohen RE, Sanz-Moliner JD. **Physical and Mechanical Evaluation of Five Suture Materials on Three Knot Configurations: An in Vitro Study.** Polymers; 2016, 8(4), 147.

The aim of this study was to evaluate and compare the mechanical properties of five suture materials on three knot configurations when subjected to different physical conditions. Five 5-0 (silk, polyamide 6/66, polyglycolic acid, glycolide-e-caprolactone copolymer, polytetrafluoroethylene) suture materials were used. Ten samples per group of each material were used. Three knot configurations were compared A.2=1=1 (forward–forward–reverse), B.2=1=1 (forward–reverse–forward), C.1=2=1 (forward–forward–reverse). Mechanical properties (failure load, elongation, knot slippage/breakage) were measured using a universal testing machine. Samples were immersed in three different pH concentrations (4,7,9) at room temperature for 7 and 14 days. For the thermal cycle process, sutures were immersed in two water tanks at different temperatures (5 and 55 °C). Elongation and failure load were directly dependent on the suture material. Polyglycolic acid followed by glycolide-e-caprolactone copolymer showed the most knot failure load, while polytetrafluoroethylene showed the lowest ($P < 0.001$). Physical conditions had no effect on knot failure load ($P = 0.494$). Statistically significant differences were observed between knot configurations ($P = 0.008$). Additionally, individual assessment of suture material showed statistically significant results for combinations of particular knot configurations. Physical conditions, such as pH concentration and thermal cycle process, have no influence on suture mechanical properties. However, knot failure load depends on the suture material and knot configuration used. Consequently, specific suturing protocols might be recommended to obtain higher results of knot security.

Silverstein LH. **Suturing Principles: Preserving Needle Edges During Dental Suturing.** PPAD 2005;17:562-564.

The evolution of suture materials has presented today's clinician with numerous alternatives when performing dental suturing. Contemporary sutures not only eliminate some of the difficulties that the surgeon may have encountered previously during closure, but also decrease the potential of postoperative infection and help provide optimal healing. Despite the sophistication of the suture materials and surgical techniques now available, closing a wound still involves the same essential procedure used by physicians who tended to the Roman emperors. The practitioner still utilizes a surgical needle to pull the suture strand as it is placed within the tissue. ■

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