поєднання радикальної хірургії, сучасного дренування, антибіотикотерапії та надійного анестезіологічного супроводу – є визначальним для зниження ризику ускладнень, тоді як оптимізація анестезіологічної служби й технічного оснащення залишається ключовою умовою підвищення ефективності ургентної допомоги.

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REGENERATIVE DENTISTRY: CURRENT TRENDS AND CHALLENGES

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Regenerative dentistry aims to restore the form and function of dental tissues, including enamel, dentin, the pulp complex, and periodontium, by combining stem cells, bioactive cues, and innovative scaffolds. Over the past five years, the field has progressed from proof-of-concept to early clinical translation in pulp and periodontal regeneration, accompanied by parallel advances in 3D printing, extracellular vesicle (EV) therapy, and surface-engineered implants.

Regenerative dentistry has emerged as a promising field to address tooth loss and damage by harnessing technologies that promote the growth and differentiation of tooth cells. The integration of these technologies holds potential for sustainable, biologically integrated dental treatments [1, p. 27].

Traditional treatments, such as implants and prosthetics, provide functional restoration but fail to replicate the natural biology of teeth, leading to long-term complications, including bone resorption and secondary infections. Regenerative technologies aim to overcome these limitations by supporting the growth of tooth cells through tissue engineering, stem cell therapy, and biomaterial scaffolds [2, p. 4].

Dental stem cells, such as dental pulp stem cells (DPSCs), stem cells from the apical papilla (SCAP), and periodontal ligament stem cells (PDLSCs), remain key candidates for tissue regeneration. Stem cells have shown significant potential in regenerative dentistry, not only for their proliferative and differentiating ability but also for the powerful events induced by specific factors secreted during their lifetime. Stem cells are, moreover, strategic players that can modulate the inflammatory response when they are engrafted in tissues, either in combination with scaffolds or not. In the last few years, scientists have been focusing their attention on the interaction between stem cells and the biological site of implantation. This interaction is mediated by several cofactors that work to create a more "friendly" microenvironment, also known as the "stem cell niche" [3, p. 3].

Several applications of regenerative dentistry are already making a difference in clinical settings:

Periodontal Regeneration: Periodontal diseases, such as periodontitis, destroy tooth-supporting tissues. Regenerative dentistry utilizes stem cell-based therapies and biomaterials to regenerate the periodontal ligament and alveolar bone, thereby enhancing both function and aesthetics.

Endodontic Regeneration: Stem cell-based regeneration of dental pulp offers an alternative to traditional root canal therapy. Studies have shown that stem cells can regenerate dentin and restore vitality to the tooth, potentially eliminating the need for more invasive procedures.

Bone Grafting and Sinus Lifts: Regenerative dentistry also plays a pivotal role in bone regeneration, which is crucial for the placement of dental implants. Bioactive materials that enhance bone growth improve bone graft outcomes and sinus lifts.

A game-changing discovery in Regenerative dentistry can be the identification of USAG-1 protein, an antagonist of BMP/Wnt, which is associated with excessive tooth growth. Scientists from the Medical Research Institute of Kitano Hospital in Osaka, led by Katsu Takahashi, have discovered the key role of the USAG-1 protein in regulating tooth growth. This protein limits the number of teeth that a person can grow during their lifetime [4, p. 2–3]. The researchers developed a special antibody that blocks the action of the USAG-1 protein, thereby removing the ban on the growth of new teeth.

Experiments on mice and ferrets showed impressive results: the animals grew additional healthy teeth exactly where they were needed. To commercialize his discoveries, Katsu Takahashi founded Toregem BioPharma, a company he established in collaboration with scientists from Kyoto University. The company has already attracted significant investments to develop and market a drug that stimulates tooth growth. Toregem BioPharma pays special attention to children with congenital tooth absence, for whom this drug can be a real lifesaver. As an example, it should be mentioned that Toregem's Anti-USAG-1 Antibody "TRG035" is designated as an Orphan Drug by Japan's Ministry of Health, Labour and Welfare for the Treatment of Severe Congenital Oligodontia [5].

Despite its promising advances in early years, regenerative dentistry faces significant hurdles. Ethical concerns surrounding stem cell harvesting, high treatment costs, and the need for extensive clinical trials are among the barriers that need to be addressed. Moreover, translating laboratory research into clinical practice is a complex process, as patient responses to regenerative treatments can vary widely.

Nonetheless, the future of regenerative dentistry appears bright. Continued research and development will likely lead to broader accessibility and greater refinement of these technologies. The goal is to develop dentistry solutions that restore dental function, promote natural tissue regeneration, and achieve aesthetic outcomes [6, p. 2].

Regenerative dentistry is advancing rapidly toward clinical application. According to expert forecasts, the global regenerative dentistry market is expected to reach $10 billion by 2030. The most established progress lies in periodontal and pulp regeneration, supported by bioactive scaffolds, platelet concentrates, and EV-based therapies. A game-changing discovery in Regenerative dentistry can be the identification of USAG-1 protein, an antagonist of BMP/Wnt, which is associated with excessive tooth growth. However, long-term clinical validation, vascularization control, and regulatory clarity remain critical barriers. With improved scaffold design and consensus outcomes, regenerative approaches are poised to transform tooth preservation and implant integration over the next decade. While challenges remain, the perspectives for 2025 and beyond suggest a future where teeth can be naturally regenerated, enhancing patient outcomes and quality of life.

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ВПЛИВ COVID-19 НА АНТИМІКРОБНИЙ ПОТЕНЦІАЛ РОТОВОЇ РІДИНИ ХВОРИХ НА ХРОНІЧНИЙ РЕЦИДИВУЮЧИЙ АФТОЗНИЙ СТОМАТИТ

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Вступ. Вибуховий спалах інфекційного захворювання COVID-19 спричинив руйнівну пандемію глобального масштабу, географічне положення та тривалість якої непередбачувані [1]. В 10-20% пацієнтів, які перенесли інфекцію COVID-19, спостерігається тривалий COVID/PASC або пост-COVID синдром, який може проявлятись понад 200 симптомами [2]. Тривалий COVID/PASC характеризується продовження симптомів захворювання після початкової інфекції SARS-CoV-2, або розвитком нових симптомів, які не мають іншої ідентифікованої причини та тривають понад три місяці після одужання [2]. Визнання багатьох довгострокових наслідків COVID-19 і їх діапазону вказує на те, що пост-COVID синдром є мультисистемним розладом, який проявляється як ізольованими, так і комбінованими симптомами.