Current perspectives on oral surgery

How to improve consistency and implementation of contemporary treatment recommendations and options in general dental practice

Dr Ziad Noujeim, Lebanon

Dr Ziad Noujeim
Lebanon

The term “surgery” is derived from the Greek word “chir” (hand) and “ergos” (work). According to this etymology, surgery should include any clinical work implemented with our hands. In daily clinical practice, however, the use of this word is often limited to practical therapeutic acts, such as those involving cutting soft tissue (incisions), flap raising, ostotomies and reconstruction, as well as repairing and dressing living tissue.

The term “oral” pertains to the mouth (or oral cavity), and oral surgery would consequently encompass maxillary sinus membrane lifts, onlay and inlay bone grafts, the placement of dental osseointegrated implants, exodontia (including surgical extraction of impacted teeth and tooth-like structures), as well as the excision and drainage of cellulitis, just to name a few. Despite these different fields of use, the limits of oral surgery are not yet well defined and may reach maxillofacial surgery, a term that implies a greater scope of surgical interest, such as temporomandibular joint surgery, orthognathic surgery, the treatment of head and neck trauma, as well as cancer surgery.

General dental practitioners are only required to undertake surgical treatment of teeth, tooth-like structures, and soft tissue surrounding teeth. In this regard, the US General Dental Council defines “surgical dentistry” as “those surgical procedures within the mouth which would normally be accomplished for a cooperative patient under local anaesthesia, with or without sedation, in a tolerably short operating time.”

In the past 50 years, oral surgery has progressed significantly in the diagnosis and treatment of dental and jaw pathology. Dentistry, particularly surgical dentistry, is rapidly changing and evolving, and dentists worldwide are attempting to adapt to the revolutionary changes and new opportunities resulting from globalisation of dental and medical surgical specialties. New insights and discoveries related to oral surgery are indeed astonishing and many of them have already been applied in everyday practice, and addressed in textbooks and at international conferences.

The near future will probably witness Er:YAG laser bone ablation replacing surgical drill osteotomy in oral surgical practice. Indeed, scanning electron microscope observations have determined that Er:YAG laser treatment produces well-defined edges. Melting and carbonisation associated with carbon dioxide lasers observed on sites irradiated with Er:YAG lasers. In addition, FTR spectoscopy revealed that the chemical composition of bony surfaces after ablation with an Er:YAG laser was almost the same as that after conventional drilling with a bur, proving that the use of Er:YAG laser ablation can be an alternative to traditional bur ablation in oral and periodontal osseous surgeries, particularly in mandibular ramus onlay block harvesting, apicectomy cysts and benign jaw tumour surgery, or the irradiation of bisphosphonate-associated jaw osteonecrosis.

Dental pulp stem cells (DPSCs) can now be cryopreserved and stored for years, while still retaining their multipotency and bone-producing capacity. These highly specialised cells show very low mortality and are easy to collect from extracted wisdom teeth or buds, for example. They also interact with bone bio materials and substitutes, which makes them an ideal cell population for jaw reconstruction. In addition, stromal bone-producing DPSCs in mandible cell subpopulation of DPSCs, are capable of differentiating into osteoblasts, and they are claimed to possess immune privilege and exert anti-inflammatory abilities like many other mesenchymal stem cells.

Introduced in the late 1990s, CBCT is becoming the main imaging armamentarium of oral surgeries, as it provides more and comprehensive anatomical information and data that help to improve preoperative and operative clinical implementation of surgical procedures. Impacted teeth, cystectomies, removal of bone grafts, the placement of dental osseointegrated implants, exodontia (including surgical extraction of impacted teeth and tooth-like structures), as well as the excision and drainage of cellulitis, just to name a few. Despite these different fields of use, the limits of oral surgery are not yet well defined and may reach maxillofacial surgery, a term that implies a greater scope of surgical interest, such as temporomandibular joint surgery, orthognathic surgery, the treatment of head and neck trauma, as well as cancer surgery.

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