

RADIOSURGERY

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As a profession we are sometimes exposed to unfavourable and ill-informed media attention and comment. Despite this occasional adverse publicity, the public image of dentistry is generally that of a modern progressive profession. This is because not all aspects of media reporting are negative. As the public becomes more aware of advances in cosmetic bonding materials, prevention, implantology and more, increasing numbers are seeking regular dental treatment, and acquire an appreciation of the value of healthy and attractive teeth.

Our operative skills, the materials and the standard and quality of the clinical equipment we use, not to mention the operative and post-operative comfort of our patients, cannot be mathematically assessed within a fixed health service scale of fees. The only criterion demand is a minimum (or adequate?) clinical standard. This is to the detriment of the practitioner who wants to provide the very best in quality dentistry for his patients.

Thus "independence" in practice, outside the financial and clinical constraints of the health services, enables us also to take a fresh approach to the economics of the purchasing of materials, and equipment. If the financial investment in such purchases and the skills acquired in their use bring more efficient procedures, safer dentistry, clinical excellence and greater comfort for the patient, then we can justifiably incorporate the costs of such purchases into our new independent fee structure. The new techniques used are as much for the patients' benefit as our own.

Recent advances in radiosurgery have had little media exposure but for the clinician it is one of these new techniques perfectly tailored to facilitate operative excellence with ease and efficiency in many aspects of clinical dentistry.

Radiosurgery is a method of cutting and coagulating soft tissues by means of passing high-frequency radio

waves through the tissue. The advantage of high-frequency radio waves is rapid tissue removal and excellent haemostasis thus affording the clinician increased visibility. Radiosurgery is distinguished from electrosurgery in that it produces a high-frequency radio wave (3.5-4.0 MHz) compared to the lower electrosurgery frequency (1.0-3.0 MHz).

Radiosurgery v laser surgery

Under local anaesthesia radiosurgery produces a pressureless, bloodless micro-smooth incision. It is considered to be quicker in cutting than laser and patients appear to have less post-operative discomfort. The USA Food and Drug Administration (FDA) "has not permitted the manufacturer of any laser to claim that it is painless" and a 1991 American Academy of Periodontology paper warns that reports of oral laser treatment being much less painful and requiring less local anaesthesia have "no scientific confirmation to date".¹

Uses of radiosurgery in restorative dentistry

Almost all advanced restorative procedures at some time during the preparation stages require visibly clear and tissue-unimpeded margins. This includes all full crown preparations in multiple or single units. But with the increased use of composite bonding materials (whether resin, glass-ionomer, compomer or cermets), particularly in cervical restorations, the absence of tissue fluid contamination from the margins is equally essential for long-term success.

The ability to control bleeding where subgingival preparation and gingival contouring has been effected makes predictable impressions more easily achieved. We have all struggled to restrict gingival marginal haemorrhage while trying to place an impression tray, particularly in less accessible areas of the mouth.

Radiosurgical implementation can guarantee a more relaxed technique in this and many other clinical situations. The ability to select different cutting and coagulating waveforms to cope with these situations is unique in operative dentistry and the certainty of adequate impressions with resultant reduction in chairside time and patient and operator stress is a further plus.

Uses of radiosurgery in common surgical procedures²

- Papillectomy.
- Hypertrophy.
- Gingivectomy, recontouring and gingival curettage.
- Frenectomy.
- Periodontal flap surgery.

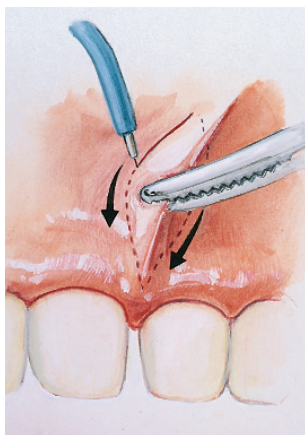


FIG 1 Frenectomy; vertical incision made with a vari-tip electrode

- Operculectomy.
- Pulpotomy.
- Coagulation and haemostasis.
- Drying out and sterilisation of root canals.

Advantages of radiosurgery

- 1) Almost total haemorrhage control.
- 2) Prevents "seeding" of bacteria in the incision.
- 3) Electrodes are flexible and can be bent or shaped easily.
- 4) Electrodes never need re-sharpening.
- 5) Soft tissue can be "planed", a procedure impossible with a scalpel.
- 6) A pressureless cut with a "paintbrush" type stroke.
- 7) Little or no scar tissue.

These qualities are shared with laser surgery *but* the initial cost of laser equipment is as yet prohibitive in terms of financial return and maintenance and servicing is highly specialised.

What to look for in a radiosurgery unit

When selecting a radiosurgical unit, it is important to purchase a unit that has all four of the available cutting and coagulating waveforms. A frequency of 3.5-4.0 MHz has been shown to assure a micro-smooth incision with the least amount of tissue damage.

Autoclavability of the handpiece and cutting tips will assure the dentist, staff and patients that cross-infection is no problem.

In our own practices we have used the Ellman Dento-Surg 90FFP* for a period of three years. It has a frequency of 3.8 MHz, four cutting and coagulating waveforms and a large number of cutting tips. It has the American Dental Association Seal of Acceptance. It is a highly sophisticated multi-current machine that allows an extensive range of clinical procedures.

Some everyday uses of the Ellman 90FFP are illustrated in Figs 1-8.

Summary

An outline of the uses of radiosurgery has been discussed. We have suggested that the expenditure on such a unit can repay the clinician

* Ellman International Inc, 1135 Railroad Avenue, Hewlett, NY 11557-2316 USA (UK distributor: Ellman International (UK) Ltd. Telephone: 01604 589928).



FIG 2 Absence of bleeding immediately after the incisions

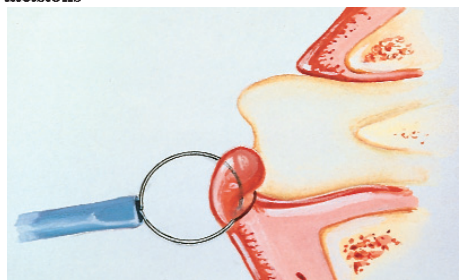


FIG 3 Operculum covering distal 38

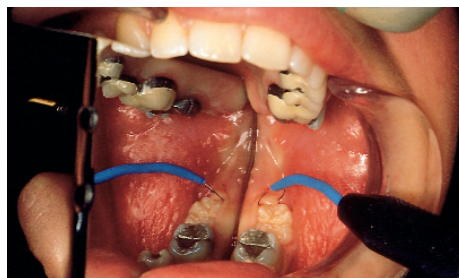


FIG 4 Bendable loop placed below the operculum

FIG 8 Oral Electrosurgery. An illustrated Clinical Guide. Text and video

through the facilitation of certain everyday procedures by almost wholly eliminating the causes of failure. That the patient's ultimate comfort and confidence is optimised is an important consideration as a practice builder.

- 1 McCubbin J. A light year ahead. *Dental Practice* 1993, February 18.
- 2 Sherman J A. *Oral Electrosurgery*. London: Dunitz, 1992.



FIG 5 Immediate post-operative view



FIG 6 A pulpotomy following traumatic fracture performed with fully rectified wave form and bendable loop electrode



FIG 7 Post-operative restoration of root filled 12



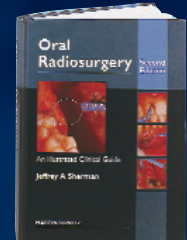
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