A Contemporary review of Electrosurgery and its applications in Pediatric Dentistry

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ABSTRACT

Former two decades have seen remarkable development in the field of Dentistry that make dental care for children faster, easier and more pleasurable experience. Advances have allowed Dental Practitioner to treat the patients more efficiently with better results, precision, fewer mistakes and lesser complications. As Pediatric Dentist struggles with the difficult task of helping their patients achieve optimum wellness, we must be mindful of the current technologies in the varied fields of Dentistry and be able to use it to the patient’s advantage. The learning objective of this article is to review the application of Electrosurgery in Pediatric Dentistry so as to aid in the proper utilization of the available treatment options with discretion.

KEYWORDS: Contemporary Pediatric Dentistry, Electrosurgery

INTRODUCTION

Patients today are gradually taking more responsibility for their own health care. They tend to be educated and well-read by previous health-care experiences and much more discriminating in their own choice of practitioners and treatment methods. As health practitioners struggling with the intricate task of helping these patients achieve optimum wellness, we should continually search for the information that best answers their questions and offers solutions to their health concerns.

Hence, this unit encompasses the review of the application of Electrosurgery in Pediatric Dentistry.

ELECTROSURGERY & PEDIATRIC DENTISTRY

Electrosurgery (ES) has been described as the deliberate passage of high-frequency currents or waveforms, through the tissues of the body to achieve a controllable surgical effect. Electrosurgery which can also be called as radiosurgery has been used in Dentistry for more than 50 years. By means of carefully designed electrodes, a controlled precise application of radiofrequency electrical current to the soft tissue site to be cut is achieved.

Since 1914, it has been used regularly in various aspects of Medicine and Dentistry. William T Bovie was named as the father of Electrosurgery. Electrosurgery is unlike from Electrocautery, in which electricity is used to heat an object and to burn a specific site. While in Electrosurgery, electrical current heats the tissue.

I. Electrodes used in Electrosurgery

- Single-wire electrodes - for incision or excision.
- Loop electrodes - for planing procedures.
- Heavy, bulkier electrodes - for coagulation procedures.

II. Electrosurgical Techniques

The four types of electrosurgical techniques are:
- Electrosection- also referred to as ‘Electrotomy’ or ‘Acusction’, is used for tissue planning, incisions, and excisions. Incisions and excisions are performed with single-wire active electrodes that can be adapted or bent to accomplish any type of cutting procedure.
- Electrocoagulation- It provides a wide range of coagulation or hemorrhage control by using the electrocoagulation current. The active electrodes used for coagulation are much bulkier than the fine tungsten wire used for Electrosection.
- Electrofulguration
- Electrodesiccation(Electrofulguration and Electrodesiccation are not used in general Dentistry.)

III. Electrosurgical devices for energy delivery

Electrosurgical technology offers two types of devices for energy delivery:

- Monopolar- The current begins with the Electrosurgery device and moves along the wire to the oral site and then to an indifferent plate placed behind the patient’s back. As the surgical electrode contacts the patient’s oral soft tissues, heat is produced, and controlled cutting is achieved. Smoke and pain also are produced as the tissues are cut, requiring the use of anesthesia.
- Bipolar- It has two electrodes on the cutting tip. The current flows from one electrode to the other, making a broader cut than does the Monopolar unit, but reducing the need for the indifferent plate.

Both types of Electrosurgery units achieve their intended purposes well, but Monopolar Electrosurgery is used more often than is Bipolar Electrosurgery.

IV. Currents used in oral Electrosurgery

- Fully rectified filtered (usually called “cut” or

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“filtered”).
- Fully rectified (usually called “coagulate,” “coagulate/cut,” “coagulate/ hemostasis” or “unfiltered”).
- Partially rectified (usually called “coagulate” or “fulgurate”).

Most dentists use fully rectified current on a medium setting, so the electrode tip cuts but does not drag. 4

Indications:
- Gingivectomy
- Pulpotomy
- Operculectomy
- Frenectomy
- Incision of periodontal abscess
- To achieve hemostasis
- Crown lengthening
- Gingival melanin depigmentation
- Removal of pulp or gingival polyp

Contraindications:
- Patient with pacemaker
- Procedures involving proximity to bone such as flap operations, mucogingival surgeries.

Advantages:
- Tissue separation is clean with little or no bleeding
- Surgical site has a clear view
- Procedure is pressure less and precise
- Planning of soft tissue is possible
- Healing discomfort and scar formation are negligible
- Access to difficult-to-reach areas is increased
- Chair time and operator fatigue are reduced. 2,3

Disadvantages:
- Causes unpleasant odor
- The possibility of tissue damage or necrosis
- Gingival recession
- Cannot be used on patients with pacemakers
- Near inflammable gases the electrosurgery units cannot be used
- Preliminary cost of the electrosurgery equipment is far greater than the cost of a scalpel.

Electrosurgery can definitely not substitute the scalpel but it requires more knowledge, skill and complete understanding of the biophysical aspects of the interaction of tissue and electrosurgical energy. 2 Electrosurgery can be used as an alternative to conventional surgery. The Successful result can be obtained with cautious usage and having appropriate knowledge. 2

CONCLUSION

Modern Pediatric Dentistry must take advantage of all new advances and once tested and proven useful, apply them to improve the standard of care of children and adolescents. If we enjoy what we are doing, we are in a better state of mind to help pediatric dentistry progress by being more creative in terms of developing new techniques or modifying and improving the existing ones.

REFERENCES


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