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USE OF ELECTROSURGICAL UNIT IN AUSTRALIA

A PRACTICAL APPROACH



- Since its invention by Bovie and first use by Cushing in the removal of intracranial tumors in 1927, electrosurgery is now an integral part of modern surgery.

(Corner Stone of Diathermy Use for Junior Surgical Trainees. Available from:

[https://www.researchgate.net/publication/319867498_Complications Implications and Prevention of Electrosurgical Injuries Corner Stone of Diathermy Use for Junior Surgical Trainees](https://www.researchgate.net/publication/319867498_Complications_Implications_and_Prevention_of_Electrosurgical_Injuries_Corner_Stone_of_Diathermy_Use_for_Junior_Surgical_Trainees) [accessed Mar 16 2022].

ELECTROSURGICAL UNIT IN GASTROENTEROLOGY



1. resection of pre-malignant lesions in the gastric lumen



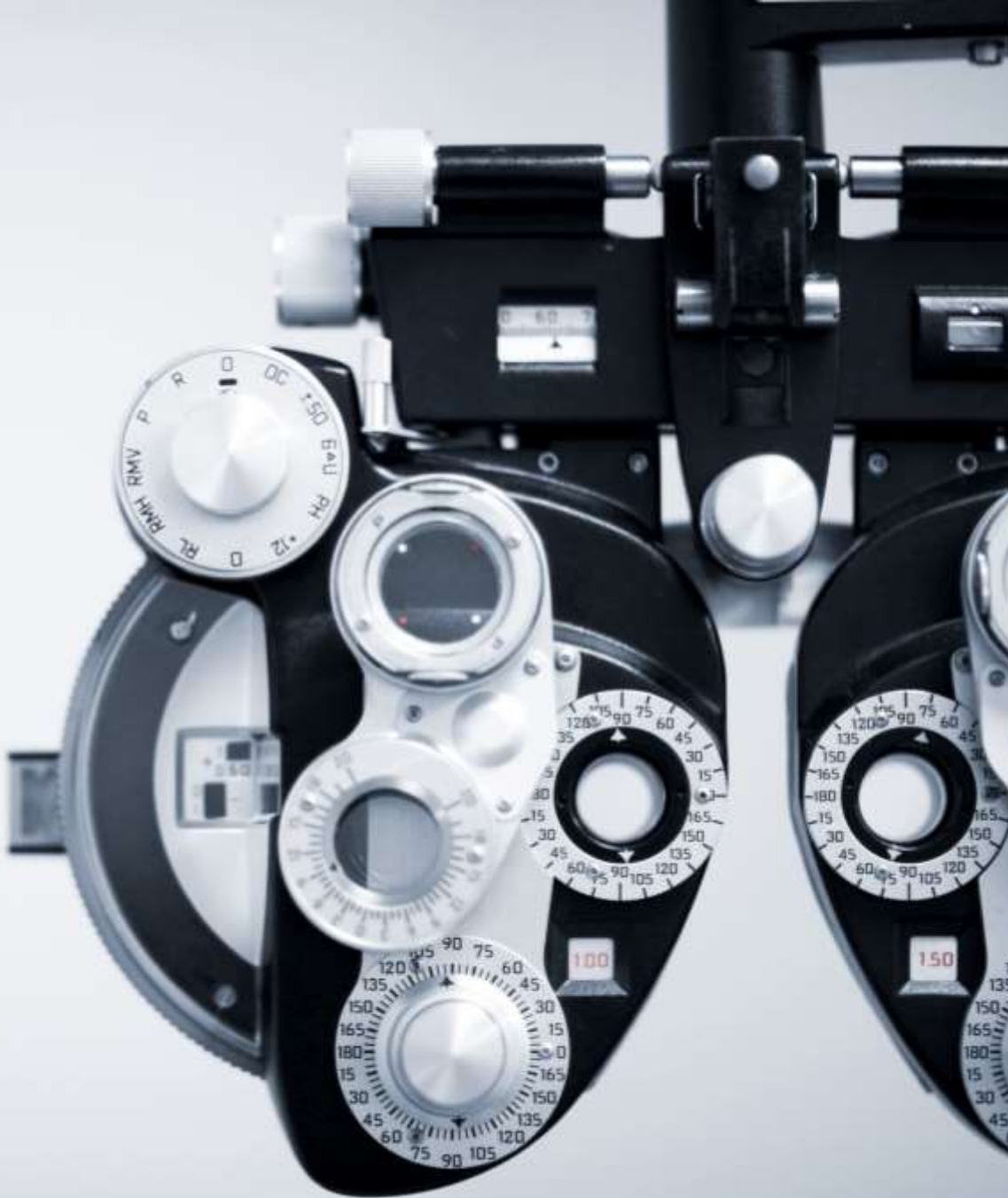
2. Procedures like POEM



3. ERCP



4. bleeding control especially after resection procedures



- New equipment has especial modes
e.g :
- EMR Mode , ESD mode,
sphincterotomy mode

APPLICATION OF CURRENT IN RESECTION PREOCEDURE LIKE POLYPECTOMY

- 1. Coagulating current alone : used by most experienced endoscopists, approximate setting of 20–30 W (with older generators this is not standardized)
- (close snare slowly over 2–3 seconds , deliver energy continuous))

Use your favorite energy : *pure Cutting current alone is not appropriate*

- 2. Blended current : for situations where snare entrapment has occurred as a result of stalling during polypectomy or when removing polyps with very thick pedicles, where stalling with the use of coagulating current alone is a significant risk for hemorrhage

COMBINATION MODE

- 1. Using a combination of short pulses of cutting current in combination with longer segments of coagulating current may provide a more controlled and safer polypectomy,
- 2. some electrosurgical generators capable of alternating cycles of pulse cutting and coagulation current
- (In theory, these generators confer a significant safety and technical advantage for major endoscopic resection)

**THE MOST
COMMONLY USING
ELECTROCAUTERY
SYSTEMS
IN AUSTRALIA**

1. Erbe VIO 300 (Erbe, Tübingen, Germany)

2. Olympus ESG-100 (Olympus, Tokyo, Japan)

3. ConMed electrosurgical generators (ConMed, Englewood, Colo, USA)

DIFFERENT PART OF A UNIT

An electrosurgical circuit includes electrosurgical unit (ESU), active electrode, patient, and the dispersive electrode.



Conmed Hyfrecator 2000

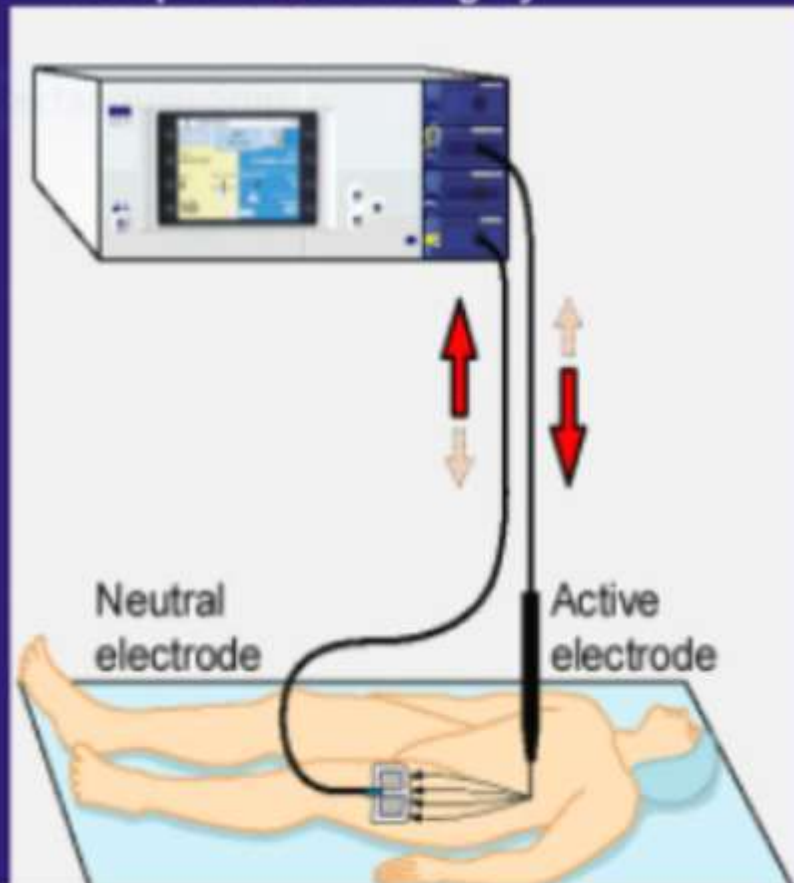


CONMED

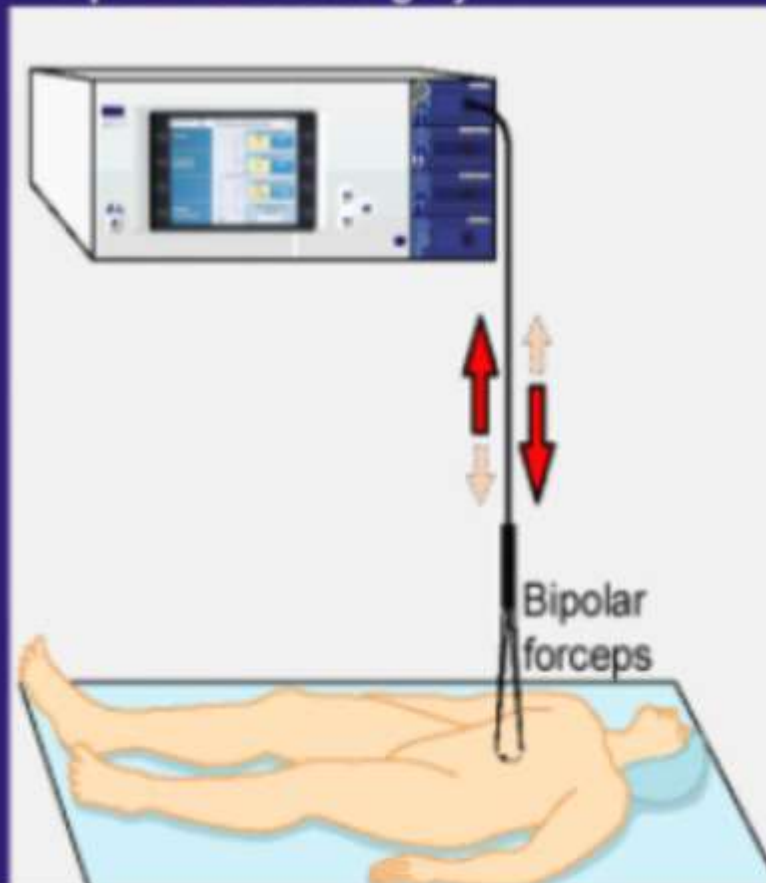
Basic Principles of Electrosurgery

BIPOLAR

monopolar electrosurgery



bipolar electrosurgery



ERBE VIO300 SETTING FOR EMR (BY DR. REX)





Electrocautery setting for polyp resection



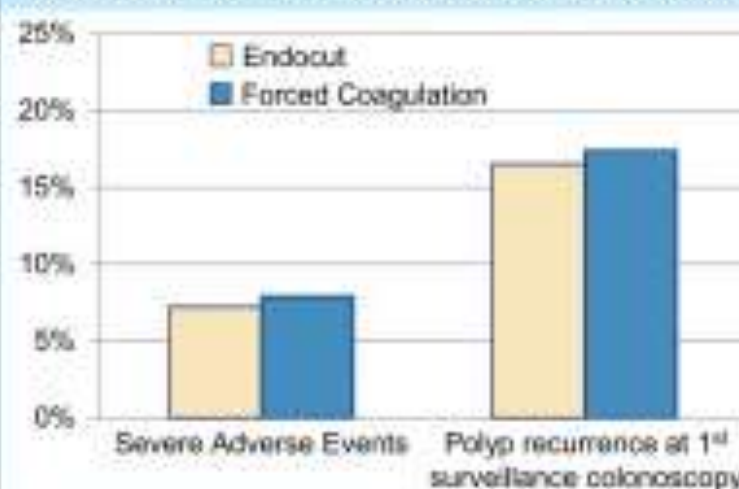
The type of electrosurgical setting for polyp resection and its effect on efficacy and safety is unclear.

In this multi-center randomized trial, two commonly used electrosurgical setting (Endocut and Forced Coagulation, Erbe Vio® 300D) for endoscopic mucosal resection (EMR) showed no difference with respect to severe adverse events or recurrence

500 × 192

RCT: 928 patients with ≥20 mm non-pedunculated colorectal polyps

Risk of severe adverse events and recurrence



Gastroenterology

Gastroenterology

Effects of Blended (Yellow) vs Forced Coagulation (Blue) Currents on Adverse Events, Complete Resection, or Polyp Recurrence After...

Visit

PRACTICAL EXPERIENCE

- Regularly, new equipment (Erbe 360 or new Kavehandish device) have different saving mode(e.g.. Polypectomy mode, EMR mode, ESD mode, sphincterotomy mode or finally STSC)

MY PERSONAL EXPERIENCE

- Two center which I have worked there preferred Erbe system to other equipment

SNARE TIP SOFT COAGULATION

- The first evidence come from Westmead Sydney Australia and was presented in DDW 2012
- In a new randomized trial from Michael Bourke's study group, 390 patients with lateral spreading tumors 20 mm or larger were randomized to receive thermal treatment of the margin with snare tip soft coagulation (STSC) or no treatment. Snare tip treatment was performed, using the Erbe power source in the **SOFT COAG setting, effect 4, 80 watts maximum**, until a few millimeters of normal tissue at the margin turned white.
- At first follow-up, **the recurrence rate in the treatment group was 5.2% versus 21% in the control group**. Patients with lesions 40 mm or larger had recurrence rates of 3.3% and 36.4%, respectively.

STANDARD EMR

- This dramatic result establishes a new standard of care for EMR. The correct sequence of treatment should begin with resection of all visible polyp tissue using a snare -- with avulsion of flat or fibrotic areas as needed -- followed by STSC of the normal-appearing margin. APC might be as effective as STSC, but it is much more expensive. In addition, the snare tip technique is easy to perform, but only a soft -- not forced -- coagulation current should be used.

WHAT IS SOFT COAG?

- SOFT COAG is a **coagulation mode unique to VIO electrosurgical** units (ERBE Elektromedizin GmbH, Germany). This system regulates the temperature rise below boiling point without generating sparks, which is high enough to denature protein.

Additional treatment of reduce local recurrence

- Snare tip ablation -

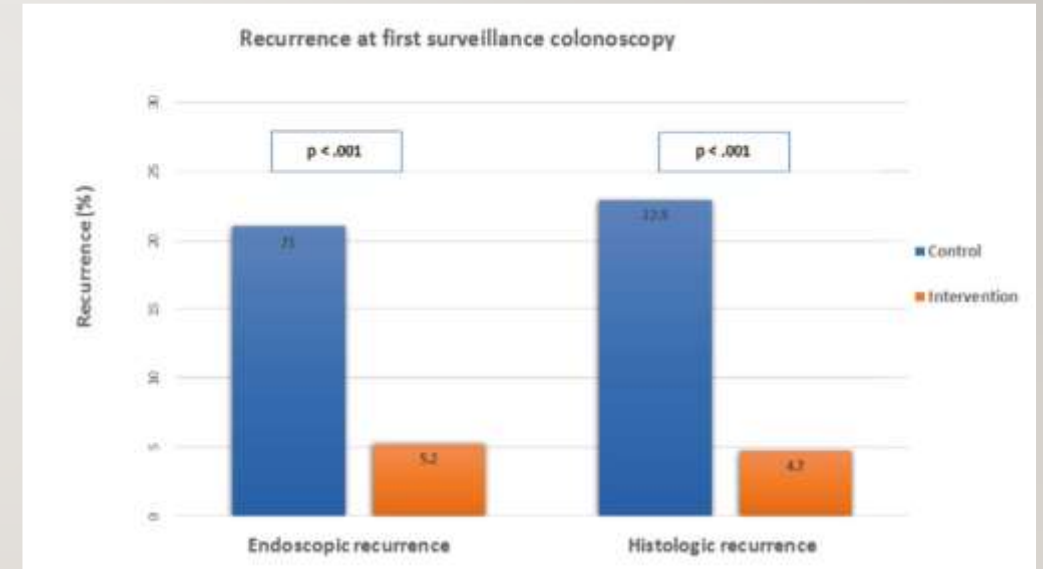
Rectangular Snare

- A prospective study of 390 patients with large laterally spreading colonic lesions (≥ 20 mm, n = 416) referred for EMR



PREVENTING RECURRENCE AFTER EMR

- Careful inspection of EMR defect (use water jet)
- Resect any visible lesion
- Snare tip coagulation of EMR margin*
 - Soft coag; effect 5; 80 Watts



*Klein, et al. Gastroenterology 2019

Happy
Nowruz

