



IX Congreso Panamericano de Esterilización

WFHSS



1er Congreso internacional de Control de Infecciones Hospitalarias
1er Congreso internacional de Pacientes y Salas Quirúrgicas
22 al 24 de Junio del 2016, LATU. Montevideo-URUGUAY

Inspection and Cleaning of Laparoscopic Instruments

David Jagrosse CRCST CHL

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**Connecticut Central
Service Association
President 2008 09 10 11 12 13**

**AAMI STWG40 (ST79) voting member
IAHCSMM Ortho council
IAHCSMM Executive Board 2011-12 2012-2013
IAHCSMM President Elect 2013-2015
IAHCSMM President 2015-2016
David Jagrosse Consulting L.L.C.
President
01-203-465-8502**

**Manager
Middlesex Hospital
Central Sterile Service
28 Crescent Street
Middletown, CT 06457
860-344-6269**





IAHCSMM's Role in Transforming Healthcare



IAHCSMM

Instrumental to Patient Care[®]

International Association of
Healthcare Central Service
Material Management

IAHCSMM.ORG

The International Association of Healthcare Central Service Materiel Management

- **Established in 1958**
- **Largest network of Central Service professionals in the United States & growing**
- **Over 23,000 members and certified professionals**





IAHCSMM Mission Statement

The mission of IAHCSMM is to promote patient safety worldwide by raising the level of expertise and recognition for those in the Central Service profession.

IAHCSMM Accomplishes this:

- By providing educational, professional development, certification, communication, and representation opportunities for Central Service professionals.
- Through collaboration efforts with allied partners, members and associates.
- Through advocacy initiatives for public policy changes (certification)

This is how we are transforming healthcare today and into the future



Values:

- **Communication**

To share association and profession-related information in an open and timely manner with members, allied partners, associates, and the public

- **Education**

To advance knowledge and achieve excellence at all levels of the Central Service and associated professions

- **Professionalism**

To deliver professional performance and quality through integrity, accountability, trust, ethics, and collaboration



Values continued..

- **Leadership**

To act as the leading Central Service organization by: providing educational opportunities; creating an environment to promote patient safety; and mentoring and developing new leaders

- **Advocacy**

To promote the Central Service profession on international, national, state, and local levels and to support issues that promote the profession and patient safety

- **Excellence**

To strive for excellence within the Central Service profession by promoting quality performance and education



Vision statement!

Through international collaboration and organizational excellence, IAHCMM will be the leading association for education and certification for the Central Service profession, thereby improving patient safety and meeting the needs of the healthcare environment



Strategic Plan!

- Consistency in leadership
- United goals
- Voice of the membership
- Shorter terms of office
- 3 year plans



MECHANISMS OF TRANSFORMATION

Educational Programs

Certification

Publications

Information

Industry Representation

Vendor Interaction

Networking

Advocacy...and more!



IAHCSMM Chapters





IAHCSMM has over 63 regional chapters throughout the United States and four countries.

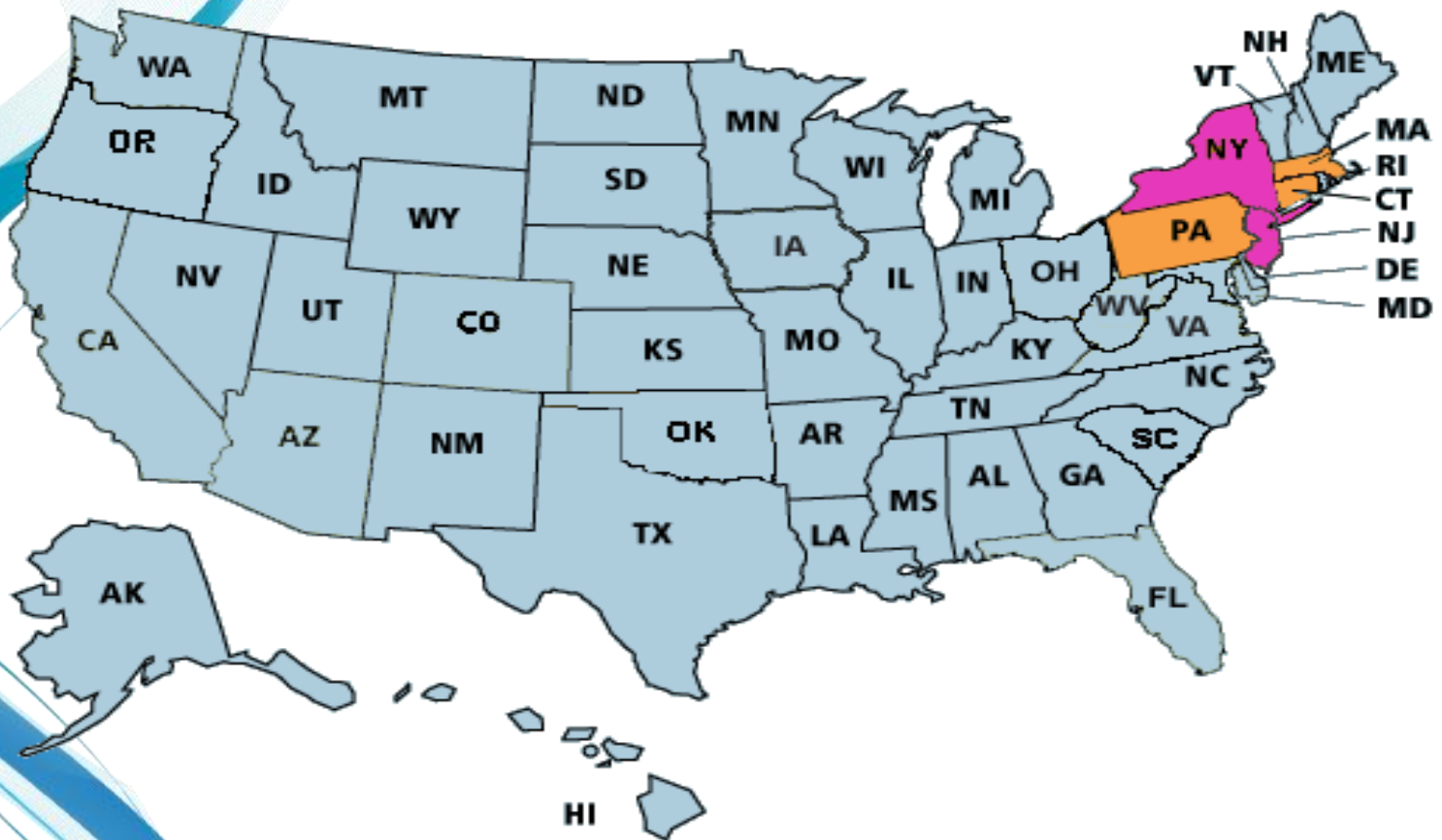
**Consideration has been given for an
“E” chapter**



IAHCSMM Certifications

- **Certified Registered Central Service Technician (CRCST)**
- **Certified Instrument Specialist (CIS)**
- **Certification in Healthcare Leadership (CHL)**
- **Fellowship in Central Service (FCS)**

-  Certification is required to work in Central Service in that state
-  Active state for legislation or regulation
-  Planning and Data Collection Stage to begin the Certification Process
-  Has not yet begun the legislative and/or DOH process







Inspection and Cleaning of Laparoscopic Instruments

Objectives:

- Overview of cleaning
- Definition of electro surgery
- Electricity. Its flow and use in surgery
- Difference between Monopolar and Bipolar surgery
- Unintended burns. Causes and consequences
- Hands on lab

Proper cleaning 1st!

- **Begin the cleaning process as soon as the procedure is done. Proteins in blood and other tissue can dry and cake on the internal as well as external surfaces of a device; when this happens, thorough cleaning is difficult, if not impossible.**
- **Levels of Fibrin vary from 2-4% in humans**

Cleaning

`Covering the instruments with a wet cloth is not enough to keep them from drying out. The best approach is to place the instruments in a basin of solution that is waiting for them when they come off the surgical table.

Cleaning

- **Wipe down surfaces of instruments with an enzymatic solution. Flush lumens in laparoscopic instruments and accessories to remove gross debris.**

Cleaning first!

- **Keep instruments free of gross soil during the surgical procedure and during transport to CSS/SPD**
- **Minimizing the length of time between instruments leaving the surgical field and the beginning of the cleaning process**

Cleaning

Having the right cleaning equipment and solutions in the right place Sonic irrigator??

Enzymes?

Washer Verification:

- **Utilize the new tests available to justify purchase of a new unit.**
 - **Post cleaning inspection for cleanliness I-Duro, ATP test, Hydrogen Peroxide, protein detection swabs.**

Cleaning

Clean according to manufacturers' written instructions or IFU (instructions for use). The manufacturers are responsible for developing the instructions which will provide a clean, ready-to-sterilize instrument.

Sterilize according to manufacturers' written instructions. The manufacturers are responsible for developing both of these instructions which are required for FDA 510K approval process

Inspection

**The next steps will take place on the Pack and
Prep area prior to Sterilization**



Quality

Safety



Electrosurgery

Definition:

Passage of very high frequency electrical current through tissue to create a desired surgical effect including: cut, coagulate, desiccate, or fulgurate.

Generator and specialized electrode instruments are used to deliver an alternating current (AC) directly heating the tissue itself (diathermy).

Heat is the destructive power that causes the tissue damage by converting the electrical energy into thermal energy

Simple Lesson on Electricity

Current is the flow of an Electrical charge

AC
Electricity



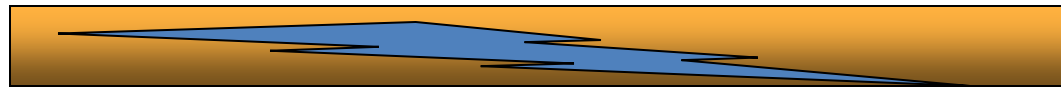
Example: Copper wire

(Similar to Blood flowing through Veins)

Simple Lesson on Electricity

Heat is created by current passing through a medium with resistance

AC
Electricity

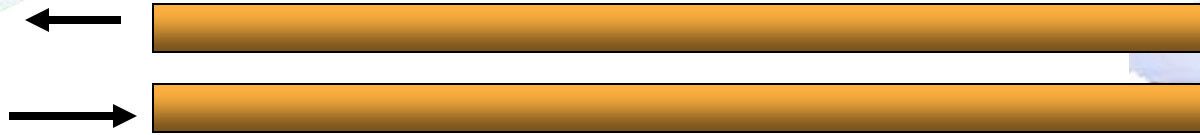


(Similar to narrowed veins causing increase pressure as the heart continues to pump at the same rate)

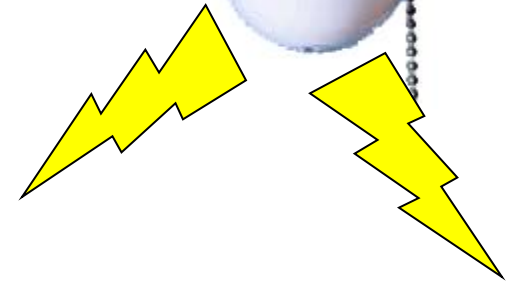
Simple Lesson on Electricity

Current can only flow in a completed circuit

AC
Electricity



**Electrical Surgical Unit is the active electrode
and the patient is the return electrode**





Simple Lesson on Electricity

Frequency

60Hz

Cause Cardiac Arrest

**100,000Hz
muscles**

No longer stimulates the

**3,300,000Hz
tissue/skin**

**RF range (used in ESU)
Can cut and coagulate**

Electrosurgical Operations

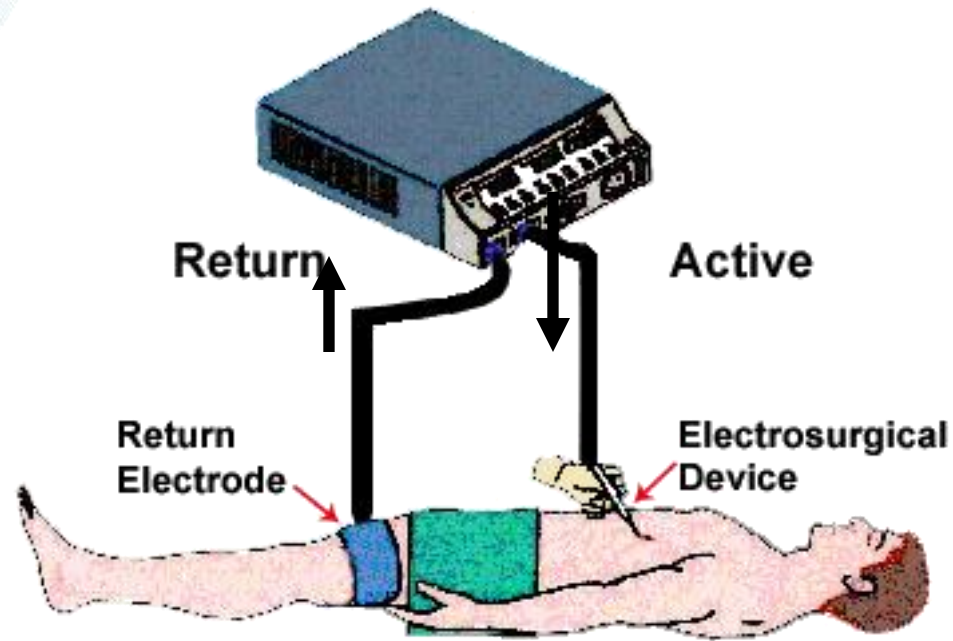
Used for:

- Ablating (remove)
- Sculpting
- Severing/Cutting
- Shrinking/Desiccating
- Coagulating
- Modifying a target tissue to be treated

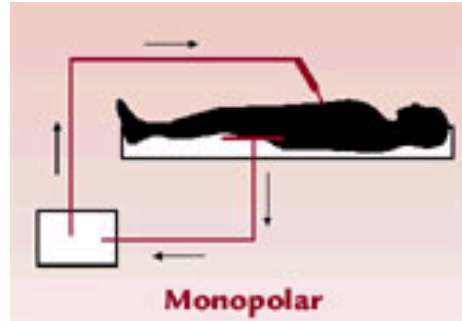
Operational Examples

- Many arthroscopic procedures require flushing of the region to be treated with isotonic saline, a highly conductive electrolyte, both to maintain an isotonic environment and to keep a clear field of view.
- With crack or pinhole in the electro-surgical instrument's insulation the escaping electrical current can flow along the path of the saline causing unnecessary heating to non-specific tissue causing their destruction.
- Keep in mind the two basic properties of electricity.
 - Current will always seek to complete a circuit.
 - Current will always take the path of least resistance

Monopolar Surgery



Monopolar Surgery

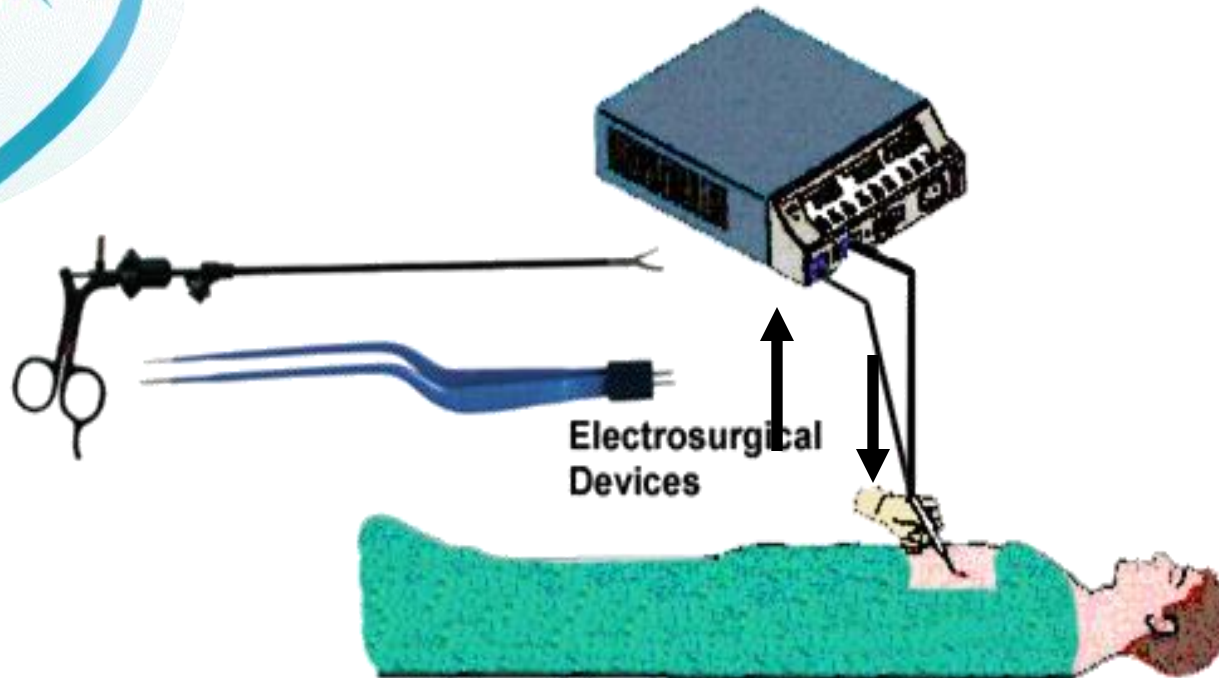


Electric current from the active electrode through body to the return electrode, attached on the patient's skin.

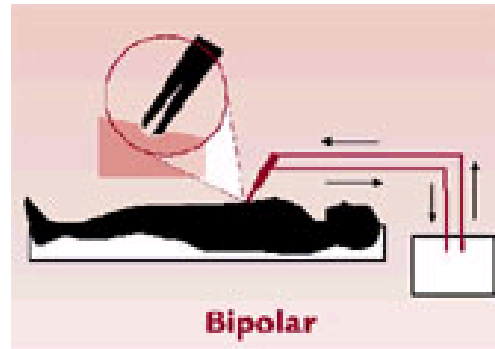
This path through the patient's body has high electrical impedance, large voltage differences must be applied between the active and return electrodes generating current suitable for the operation.

If current inadvertently flows along localized pathways in the body it may cause damage to or destroy tissue along and surrounding this pathway.

Bipolar Surgery



Bipolar Surgery

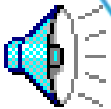


Bipolar electrosurgical devices: both the active and return electrode are exposed and contact tissue. The return current path from the active to the return electrode is through the tissue.

**Current will always flow
to the path of least resistance**

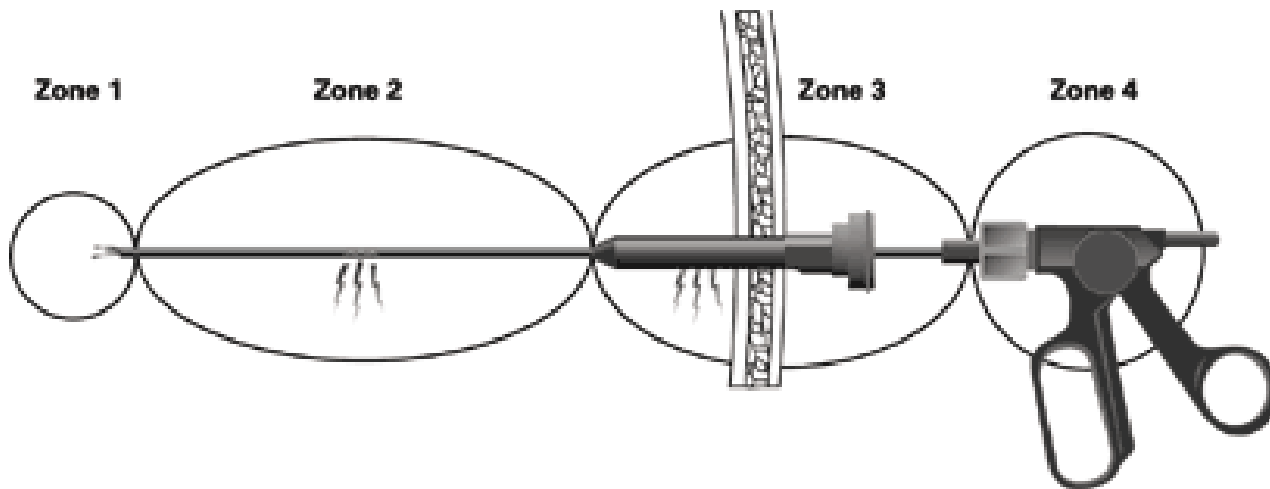


Acadia National Park, Maine
July 4, 2002
Copyright © 2002 Johan van Achterberg



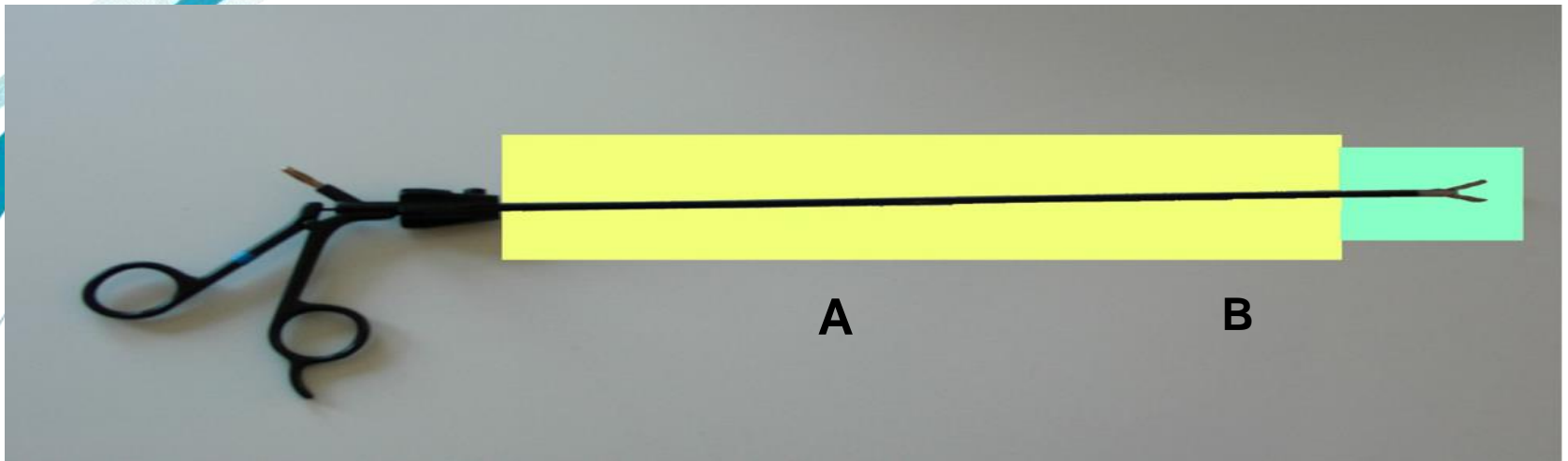
Unintended Tissue Burns

Thermal burns to patients during minimally invasive surgeries, such as laparoscopy, that use electro-surgical instruments can burn or vaporize non-targeted tissue



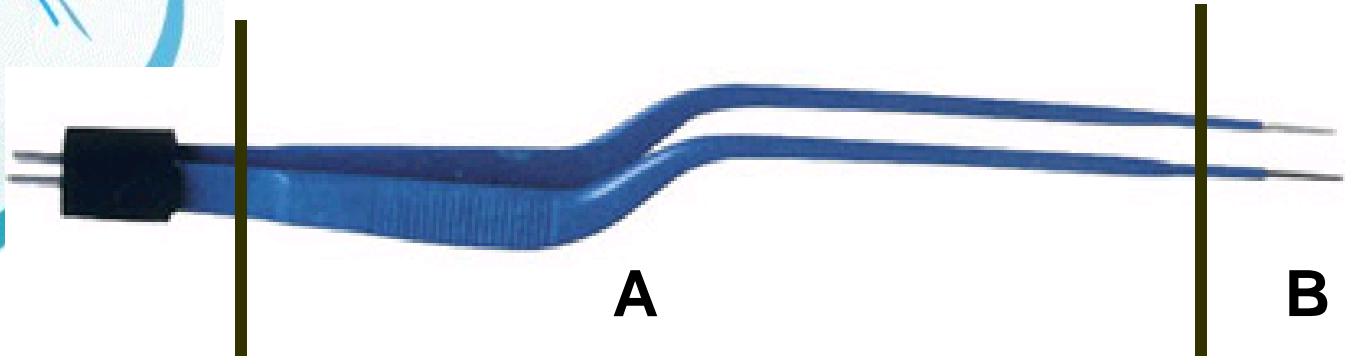
Laparoscopic Instrument

About 95% of the active electrode is outside of the surgeon's visibility



A is OUTSIDE the Surgeon's field of view
B is IN the Surgeon's field of view

Bipolar Forceps



A is OUTSIDE Surgeon's View
B is IN the Surgeon's View

**Powder Coated instruments can wear out
anywhere!**

Potential Problems:

Unintended Tissue burns

Possible Shock to Surgeon

Unintended Burn

Laparoscopic instrument with insulation pin hole.

Electrical charge escaping and burning the bowel.

Complications include a leak into the abdominal cavity



The smaller hole in the insulation the more concentrated the power and more destructive



**Collateral damage is caused
by Electro Surgical Devices,
via pinholes, cracks and/ or
worn areas.**

Causes of Unintended Tissue Burns

Insulation Failures- When the electrical current jumps through a break or defect in the insulation of an instrument to the unintended tissue.

Capacitive Coupling- When most of the power of the electrical current is transferred into the suction/irrigator cannula and onto unintended tissue.

Direct Coupling- When there is unintended contact between the active electrode and other metal instruments or cannulas.

Causes of Insulation Failure

- Normal wear and tear
- Stress placed on the electrode from high voltage
- Sterilizing the instrument along side a sharp object
- Rubbing of the instrument within the body.

Issues

Burns Cause

- Hemorrhages
- Perforations in organs, causing contamination, collapse of vessels

Results:

- Patient injury
- Serious post-operative complications or Death

Issues

Hospital Issues:

- **Longer term patient care**
- **Inability to determine proper care**
- **Potential Lawsuit**
- **Increased reporting Documentation**
- **Lower Hospital Rating**
 - **Less Patients**
 - **Less Revenue**



Statistics USA

Laparoscopic surgical procedures
are growing at
5% per year.

Issues

Symptoms can be delayed until after the patient has gone home making a later diagnosis very difficult.

Statistics USA

(source United Press International 6-21-2004)

- In 2007 there will be an estimated 4,600,000 electrosurgical operations

That's close to 250,000 patients!!

- Approximately 5.4% of these operations will have unintentional tissue burns

- One study showed that 1 in 4 patients who suffer internal injuries from stray burnsdies



Statistics

In 1999 there were 2,195 closed claims reported with an average indemnity of \$260,215

Summary

- It takes less than TWO minutes to test an electro-surgical instrument
- Electro-surgical Cables, Instruments and other accessories should be inspected carefully each time before use to assure safety and trouble free operation and to ensure patient safety.



There are no more excuses!!

**If you care about your
patients you must care about
your insulation!**

CSSD Manager with Judge!



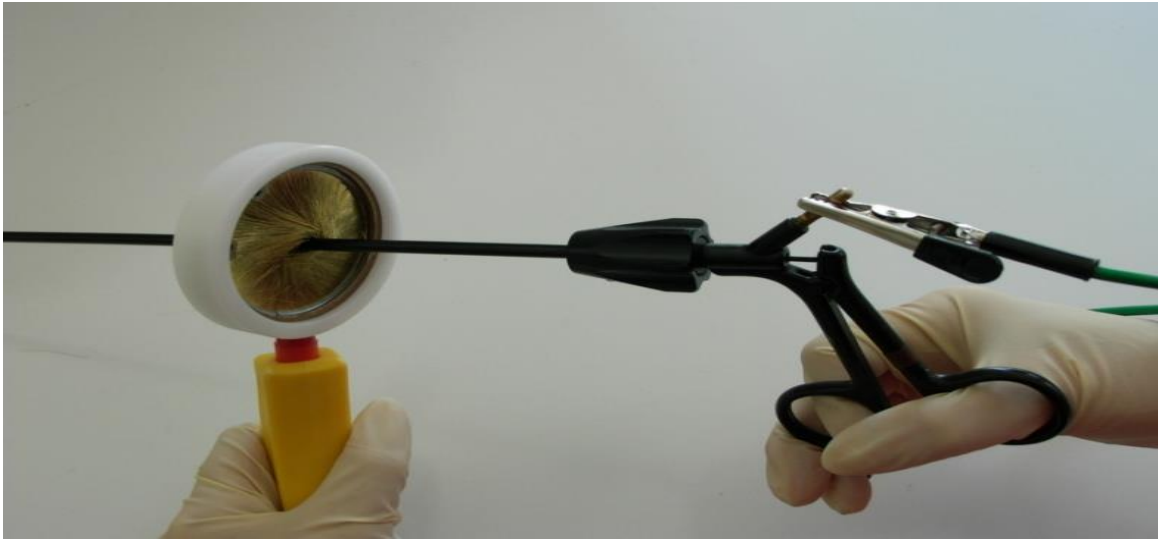
Product Demonstration



Specifications

- IEC 60601-2-2
 - International Electro Technical Commission Standard for Electro Surgical Devices
- ANSI/AAMI HF-18
 - Standard for Electro Surgical Devices

Application





Product Metrics

- **Features**
 - **Low cost**
 - **Hand Held**
 - **Battery operated**
 - **Operates while being charged**
 - **Replaceable charger pack**
 - **Voltage Source DC versus AC**
 - **Fault Detection- current drop**



Other devices

There are plenty of devices on the market today by multiple vendors. Sometimes included in repair contact ask your supplier

The use of something is better than the use of nothing!

Look around at the vendor fair!

Sources for more reading

- <http://www.endonurse.com/articles/1c1feat3.html>
- <http://www.communicore.com/downloads/laprisk1.1.pdf>
- <http://www.davol.com/HTMLFiles/Laparoscopy/Complications1.html>
- www.theuniversityhospital.com/bloodless/html/bloodlessterms/glossary.htm
- <http://www.freshpatents.com>
- “The Basics of Sterile Processing” 1st Edition 2006 Editor Nancy Chobin
- PIAA Laparoscopic Study August 2000


Global War on Infection

- **Are YOU doing all You can**
- **C.D.C. 2006 1.3 million infections in USA**
 - **100,000 deaths annual**
 - **22% Surgical Site**
- **The Same as a large jumbo jet crashing every single day of the year!**

Fight for professionalism



- Fight for self through education
- Fight for co-workers through participation and education
- Fight for the best patient care through certification and recognition for our profession



Change will not come about
through expectation
–Dave Jagrosse



QUESTIONS and ANSWERS