

Cost-Utility Analysis of Laparoscopic Versus Open Appendectomy in Children

Dissertation submitted to



The IIHMR University, Jaipur

For the partial fulfillment for the award of the degree of

Master of Business Administration

in

Pharmaceutical Management

By

Parminder

Singh

Roll no- 0416

Under the Supervision and Guidance of

Dr.Saurabh

Banerjee

School Dean

School of Pharmaceutical Management

IIHMR UNIVERSITY, JAIPUR

**1, Prabhu Dayal Marg, near Sanganer Airport, Maruti Nagar, Jaipur,
Rajasthan 302029**

SYNOPSIS

Title- Distinguish between bipolar, vessel sealing and ultrasonic technologies for laparoscopic procedures, emphasizing their respective precision and hemostatic capabilities.

Introduction:

Conventional hysterectomy typically involves removing the uterus through an abdominal incision or the vagina. Depending on the procedure, the cervix may be removed together with the uterus (total hysterectomy) or left intact (subtotal or supracervical hysterectomy). The goal of all surgical techniques is to achieve minimal tissue damage and a minimally invasive approach.

In total laparoscopic hysterectomy, colpotomy, the procedure of opening the vagina, is commonly performed using an energy source. The most frequently used energy sources for this purpose are monopolar energy and harmonic energy. These technologies are aimed at providing a surgical approach that respects tissue integrity and minimizes trauma.

- Research Question:**
1. How does the cost-utility of laparoscopic Ultrasonic as compare to bipolar vessel sealer in terms of health-related quality of life (HRQoL) in complicated surgery cases ?
 2. What is the incremental cost-effectiveness ratio (ICER) of laparoscopic appendectomy compared to open appendectomy in the hysterectomy cases?
 3. Which is more significant if we compare ultrasonic to vessel sealer in terms of less blood loss and quick healing time?

Objective: The objective of this study was to evaluate the effectiveness of the bipolar vessel sealer compared to the Harmonic Scalpel in total laparoscopic hysterectomy (TLH). TLH is a minimally invasive surgical procedure used to remove the uterus, and reducing intraoperative blood loss is crucial for improving patient outcomes.

Material and Methods:

This was a retrospective study conducted at Jeevan Jyoti Hospital and Guru Gobind Singh Memorial Vandana Women's Hospital in Allahabad, Uttar Pradesh, India. A total of 242 patients who underwent TLH were included in the study and randomized into two groups based on the surgical instrument used: bipolar vessel sealer group and Harmonic Scalpel group. Both groups were matched for homogeneity to ensure a fair comparison.

Implications of Research:

Vessel Sealer:

1. **Mechanism:** Uses advanced electrosurgical technology to seal blood vessels and tissue.
2. **Advantages:**
 - Efficient for sealing larger vessels quickly.
 - Can handle thicker tissue.
 - Typically provides good hemostasis (control of bleeding).
 - Often integrates cutting and sealing in one device, reducing instrument exchanges.
3. **Considerations:**
 - May generate smoke during use.
 - Requires proper technique to avoid tissue damage or collateral thermal injury.
 - Effectiveness can depend on tissue type and thickness.

Ultrasonic Device:

1. **Mechanism:** Uses ultrasonic energy to cut and coagulate tissue by converting electrical energy into mechanical vibrations.
2. **Advantages:**
 - Offers precise dissection and coagulation simultaneously.
 - Generally produces less smoke compared to electrosurgery.
 - Effective in delicate procedures or around critical structures.
 - May cause less thermal damage to surrounding tissues.
3. **Considerations:**
 - May have a steeper learning curve for optimal use.
 - More expensive compared to traditional electrosurgical instruments.
 - May not be as effective for larger vessels or thicker tissues compared to vessel sealers.

Choosing the Better Option:

- **Procedure Specificity:** Consider the specific surgical task and the type of tissue being handled. For thicker tissue or larger vessels, a vessel sealer might be more efficient. For delicate procedures or when precision is paramount, an ultrasonic device might be preferred.
- **Surgeon Experience:** Familiarity and comfort with either technology play a crucial role in device selection.
- **Patient Factors:** Consider the patient's overall health and any specific conditions that may influence the choice of instrument (e.g., coagulation disorders, tissue fragility).

In summary, both vessel sealers and ultrasonic devices have distinct advantages depending on the surgical context. The choice often boils down to the specific needs of the procedure, surgeon preference, and patient factors.

- 1.