



# Total thyroidectomy: Conventional Suture Ligation technique versus sutureless techniques using Harmonic Scalpel or Maxium



Jawad Kadhim S. Al-Dhahiry, Husam Majeed Hameed\*

Department of Surgery, AL-Karama Teaching Hospital, College of Medicine, Wasit University, Iraq

## HIGHLIGHTS

- HS and MAX are safe useful and fast alternatives to conventional techniques in total thyroidectomy.
- These two devices facilitate surgical procedures and cancel any need for clips and suture ligations.
- They significantly reduce operative time without increases in the amount of blood losses and hospital stay.
- Probably the only disadvantage of these two devices is the cost of the single-use devices.

## ARTICLE INFO

### Article history:

Received 25 July 2015

Received in revised form

22 November 2015

Accepted 23 November 2015

### Keywords:

Thyroidectomy

Conventional Suture Ligation

Harmonic Scalpel

Maxium

## ABSTRACT

**Objectives:** Harmonic Scalpel (HS) and Maxium (MAX) are surgical shears that enable simultaneous vessel sealing and tissue coagulation. This study compares the outcome of Total Thyroidectomy (TT) using Conventional Suture Ligation (CSL) technique versus (vs) two sutureless techniques; H S and MAX techniques in terms of safety, operative time, blood drainage volume, hospital stay and surgical complications.

**Study design:** This is a prospective observational cohort study.

**Setting:** This study was performed in AL-Karama Teaching Hospital/College of Medicine/University of Wasit/Iraq.

**Patients and methods:** This study was performed from June 2012 to 2015. A total of 80 patients, 60 patients were females and 20 patients were males (average/mean of age was 39/38 years). They underwent TT after been randomized into the following three groups: CSL group when Suture Ligation Technique was used, HS group when Harmonic Scalpel was used and MAX group when bipolar electro-surgery Maxium was used.

**Results:** The postoperative evaluation of operative time, blood drainage volume and surgical complications revealed no statistically significant differences between HS group & MAX group, but there were statistically significant differences between CSL group vs. HS and MAX groups. Operative time statistics showed significant differences between CSL vs. HS and MAX groups,  $113 \pm 10.9$  minutes (min),  $93 \pm 13$  min and  $92 \pm 10.6$  min respectively,  $p$ -value  $< 0.001$  and 95% confidence interval [CI] (92.3712, 101.6288). The postoperative blood drainage volumes were significantly different between the three groups: CSL group =  $150 \pm 12.7$  ml, HS group =  $89 \pm 16.21$  ml and MAX group =  $118 \pm 9.6$  ml,  $P$ -value = 0.046 and 95% [CI] (89.9932, 99.6068).

**Conclusions:** HS and MAX are safe, effective, and time-saving techniques. They are also associated with low blood loss and low complication rates. HS and MAX are good alternative techniques to CSL for thyroid surgery.

© 2015 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Limited. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

TT is the commonest operation in the field of endocrine gland surgery. It is the most convenient therapeutic choice in the treatment of many thyroid disorders through surgical interference [1,2].

\* Corresponding author.

E-mail address: [husam\\_majeed@yahoo.com](mailto:husam_majeed@yahoo.com) (H.M. Hameed).

A careful hemostasis is a priority for thyroid surgeons to avoid possible complications [3]. In addition to priority above, operative time-saving modulations became an increasingly significant factor [4]. A careful hemostasis prohibits bleeding in the site of surgery enabling the surgeon to have a clear and dry operative field. Hence, it decreases the potential trauma to parathyroid glands and laryngeal nerves, also it reduces potential risky postoperative bleeding [2]. Hemostasis achieved with classic methods such as tie and clamp, electrocautery, clips or glue of fibrin is time consumption and loaded with hazard of knot slipping, unsettlement and thermal trauma [5].

Vascular Sealing Devices (VSD), used during last decade seal vascular structures by coagulating them. The coagulated vessels will be ready to be safely transected without need for additional ligation. Although, VSDs are not appropriate for big and main vessels, they still able to coagulate all vessels faced intraoperatively for surgery of thyroid gland. They show an important reduction in time of operation [6]. Although, the cost is elevated, so it has been reported by some authors that this elevated cost is equiponderant with minimizing time of the operation [7].

VSD considerably assists endoscopic thyroid surgery [6]. Harmonic Scalpel (HS) is ultrasonically activated coagulation shear using ultrasound waves of a high-frequency (55 kHz) that can cut vessels of diameters up to 5 mm (mm). The active blade of HS vibrates in a longitudinal way against an inactive blade resulting in cutting and coagulation. It works at a comparatively low temperature (80 °C), hence there will be less thermal trauma to tissues in surrounding area than laser and electrocautery [8]. The innovation of Harmonic Scalpel is a great achievement as device for many views and now it is hugely used in laparoscopic surgery easing operations, time-saving and decreasing complications [9].

During last decade, many ergonomic and technical changes were made depending on experience of the surgeons who used HS, these changes led to improve hemostasis and dissection of tissue [10].

This study also used a new device Maxium which is a bipolar electro-surgical radiofrequency device with hemostatic mechanism causing a biologic seal that tightly closes the vessels.

### 1.1. Aim of the study

The study aims to compare use of both H S and Max versus CSL in thyroid surgery for 80 patients. This comparison was in terms of operative time, drainage volume, analysis of surgical complications and duration of hospital stay.

## 2. Patients and methods

The study started from 1st of June 2012 to 1st of June 2015. Eighty patients were complaining of thyroidal disease with need to surgical treatments. All 80 patients were enrolled in this study. This study was performed in AL-Karama Teaching Hospital/College of Medicine/University of Wasit/Iraq. The exclusion criteria of this study are the need for central or lateral compartment lymphadenectomy, previous neck irradiation, recurrent goiter, ablation with radioiodine and malignant goiters.

The study design: It was a prospective observational cohort study analyzing outcomes of TT using CSL technique vs. HS and MAX techniques.

Setting: This study was performed in AL-Karama Teaching Hospital/College of Medicine/University of Wasit/Iraq. Randomization was performed by Quasi random allocation using sequentially numbered patient in a parallel group way. Each patient was numbered either 1, 2, or 3 in order to allocate which technique was to be used for them, patient number 1 was treated by CSL

technique, patient number 2 was treated by sutureless technique using HS (produced by Soring, Germany) and patient number 3 was treated by sutureless technique using Max (produced by KLS martin group, Germany). Then patient number 4 was treated by CSL technique and so on, sequentially. The eighty patients who underwent TT signed and gave informed consent to be enrolled in the study. Preoperatively, the patients were clinically and biochemically evaluated, in addition to vocal cord mobility checking. All surgical procedures were performed under general anesthesia with endotracheal intubation. After division of platysma muscle, cervical linea alba was opened. Very large goiters necessitated division of strap muscles. The lobe of thyroid gland was progressively dissected away from strap muscles, its vascular pedicles were ligated with Vicryl 2/0 suture or coagulated and divided with HS or MAX. The thyroid lobe was progressively dissected off trachea after the recurrent laryngeal nerves and parathyroid glands were identified and dissected off the thyroid capsule (Fig. 1). After securing hemostasis, a suction drain was routinely put in the thyroid bed as a part of the study protocol to measure amount of blood loss during the first 48 h. The cervical linea alba and platysma muscle were closed with Vicryl 3/0 and the skin was closed by an intracutaneous running suture.

Preoperative data concerning age, gender, thyroid pathology and preoperative serum calcium were prospectively recorded. The surgical time was estimated in minutes from incision of skin to skin closure. The postoperative evaluation comprised analysis of both, the characteristics of preoperative and postoperative parameters (operative time, drainage volume, postoperative serum calcium levels, surgical complications (laryngeal nerve palsy, hypoparathyroidism, bleeding and wound infection), length of hospital stay, reoperations and histopathologic diagnosis. Serum calcium levels were monitored on the 1st, 2nd 10th and 30th days postoperatively. Hypocalcaemia was known as a serum calcium level below 8.0 mg/dL (2.00 mmol/L) (reference range, 8.0–10.5 mg/dL [2.00–2.60 mmol/L]) [11]. Hypoparathyroidism was known as a requirement for calcium or vitamin D administration. Regarding Recurrent Laryngeal Nerve (RLN) palsy, when there was no evidence of recovery within 6 months of follow up postoperatively, a

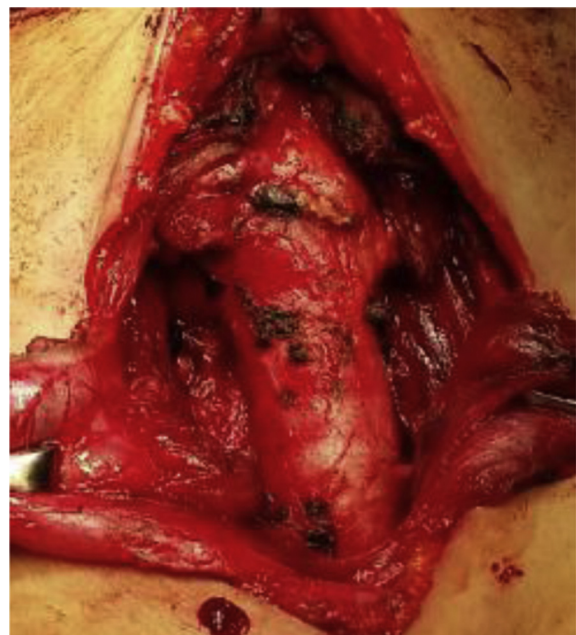


Fig. 1. Sutures less TT by Maxium.

Download English Version:

<https://daneshyari.com/en/article/4195289>

Download Persian Version:

<https://daneshyari.com/article/4195289>

[Daneshyari.com](https://daneshyari.com)