

# Comparative Study of Thyroidectomy Wound Closure Using Subcuticular Suture, Metal Clips and Steristrips

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## ABSTRACT

**Background:** Thyroid surgeries are most commonly done in females. Most of the women are more worried about cosmetic scar and pain. Hence, we opted for the better methods of wound closure to have less pain and esthetic scar.

**Aim:** The study compared subcuticular suture, metal clips and steristrips for wound closure after thyroid surgery. Results are analysed based on Post-operative pain assessment, and Cosmetic appearance.

**Methods:** The prospective study was estimated to include a consecutive series of 93 patients undergoing thyroidectomy who will be randomized to had their wound's closed by subcuticular sutures or steristrips or staples.

**Results:** In our study wound closure by steristrips had less post-operative pain followed by subcuticular suture and metal clips. In our study cosmetic appearance after thyroid surgery wound closure with steristrips had excellent scar appearance followed by subcuticular suture and metal clips.

**Conclusion:** To conclude steristrips had less pain, acceptable

neck mobility, excellent scar appearance followed by subcuticular suture and metal clips .

**Keywords:** Steristrips, Thyroid Surgery, Cosmetic Appearance.

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## INTRODUCTION

In the present day scenario, people avail treatment at a very early stage in disease and expect the best outcome in terms of disease treatment and cosmetic appearance.

Thyroid is a very vascular structure which its needs general anesthesia for removal. Skin closure is the last step of any surgery where much time should not be spent so as to avoid unnecessary exposure of anaesthetic risks to the patient.

In the selection of a suture, a patient's health status, age, weight and comfort, and the presence or absence of infection are as important as the biomechanical properties of the suture, individual wound characteristics<sup>1</sup>, anatomic location, and a surgeon's personal preference and experience in handling a suture material. There is often more than one appropriate method of closure.

The techniques of wound closure have progressed from the earliest development of suturing materials to the synthetic sutures, absorbables, staples, tapes, and adhesive compounds<sup>2</sup> The creation of natural glues, surgical staples, and tapes to substitute for sutures has supplemented the armamentarium of wound closure techniques.<sup>3</sup> In view of the above said facts we decide to study the various skin closure techniques in thyroid surgery, with the aim to study which type of wound closure is simple, fast,

tension free with no subsequent adverse reactions, creation of protective barrier to pathogens has a simple post-operative management, simple for suture removal and optimal cosmetic appearance of scar.

## AIMS AND OBJECTIVES

The study compared subcuticular suture, metal clips and steristrips for wound closure after thyroid surgery based on Post operative pain assessment and Cosmetic appearance.

## METHODOLOGY

**Study type:** Prospective study

**Source of Data:** Patients underwent thyroid surgeries in Government Medical College Hospital, Kadapa between Sept 2016 to Sept 2018. The study included a consecutive series of 93 patients undergoing thyroidectomy who were randomized to have their wound's closed by subcuticular sutures or steristrips or staples. The randomization code was generated using a table of random numbers and sealed envelope was opened at end of the operation. All operations were performed by or under the direct supervision of the same consultant.

**Assessment of Pain:** Verbal response and Visual analogue scale for 3 consecutive post-operative days.

Assessment of cosmetic appearance will be done by using visual analogue scale at the time of 6th week. Subjective Scar assessment was Done by Visual Analog Scale (VAS)<sup>4</sup> and Patient and Observer Scar Assessment Scale (POSAS).<sup>5,6</sup>

**Data Analysis:** By Unpaired t Test and Chi-Square Test.

**RESULTS**

There were 93 patients in our study of which 31 patients had steristrips closure, 31 had metal clip closure and 31 had subcuticular closure.

**Sex Distribution:** There were 93 patients in our study, 82 were female and 11 were male patients. Mean age of patients was 40.5 years.

**Pathological Diagnosis:** There were 93 patients in our study of which 81 patients were Multinodular goiter, 10 patients were neoplasm of Thyroid and 2 patients were inflammatory Thyroid conditions.

Patients in the steristrips groups experienced less pain compared to metal clips and subcuticular sutures on the third post-operative day.

Cosmetic result of wounds closed by Steristrips was superior to subcuticular and metal clips

**Table 1: Visual Analogue Scale For Pain Day 3**

Visual	Closure Type			Total
	Metal clips	Steristrips	Subcuticular suture	
<b>0 Count (%)</b>	16 (51.6%)	29 (93.5%)	19 (61.3%)	64 (68.8%)
<b>1 Count (%)</b>	13 (41.9%)	2 (6.5%)	12 (38.7%)	27 (29.0%)
<b>2 Count (%)</b>	1 (3.2%)	0 (0%)	0 (0%)	1 (1.1%)
<b>3 Count (%)</b>	1 (3.2%)	0 (0%)	0 (0%)	1 (1.1%)
<b>Total</b>	31 (100%)	31 (100%)	31 (100%)	93 (100%)

Value df	Value	df	Asymp.sig(2-sided)
<b>Pearson Chi-Square</b>	16.566a	6	.011
Chi-Square Tests	-	P value is significant	

**Table 2: Visual Analogue Scale For Cosmetic Appearance After 6 Weeks**

		Closure type			Total
		Metal clips	steristrips	subcuticular	
<b>Cosmetic appearance after 6 weeks</b>	<b>Excellent</b>	19 (61.3%)	30(96.8%)	25(80.6%)	74(79.6%)
	<b>Good</b>	12 (38.7%)	1 (3.2%)	6 (19.4%)	19(20.4%)
<b>Total</b>		31 (100%)	31 (100%)	31 (100%)	93 (100%)

**DISCUSSION**

The aim of any skin closure technique is to precisely oppose the skin edges without tension for sufficient time to allow healing to take place. The factors which have to be considered in making a comparison of different types of wound closure are: the complication rate, the ease and speed with which the skin closure is completed, the level of patient discomfort and the final cosmetic result.

In our experience, patients are more worried about their neck incision and the final cosmetic appearance of a neck wound as it leaves a permanent scar. One benefit of neck incisions is that the blood supply is so good that they heal very quickly. This allows sutures or clips to be removed early and we have never experience any problems in doing this on the 3rd postoperative morning. This is an earlier time for skin clip or suture removal than is traditional, but its success is clear from the final cosmetic appearance visual linear analogue scores. Leaving skin clips for a period of 5 days produces disfiguring, cross-hatched scars and they should certainly only be left for maximum of 3 postoperative days. Although it was not formally assessed, the placement of a subcuticular suture probably requires more technical expertise than the placement of skin clips.

In a study by Selvadurai et al<sup>8</sup> Thirty-eight patients were randomised to the Metal clip group and 42 to the subcuticular suture group. The two groups were well matched for age, sex, race, ratio of thyroid to parathyroid surgery<sup>4</sup>, thyroid diagnosis, degree of thyroid resection and parathyroid diagnosis. Patients in the metal clip and subcuticular suture groups experienced similar degrees of pain on the first 3 postoperative days and there were no statistically significant differences between the two groups using either visual analogue or verbal response scales.

In a study DM Ridgway et al<sup>9</sup> Glued (n = 14) and stapled (n = 15) closures were performed for hemithyroidectomy (n = 8 versus 6), sub-total thyroidectomy (n = 2 versus 4), total thyroidectomy (n = 1 versus 4) and parathyroidectomy (n = 3 versus 1). Closure with tissue glue took significantly longer than with staples (mean, 95 versus 28 s; P < 0.001). Neck mobility scores were comparable at 48 h and 1 week (mean, 4.8 versus 4.4; P = 0.552: and 2.7 versus 2.6; P = 0.886). In our study cosmetic appearance after thyroid surgery wound closure with steristrips had excellent scar appearance followed by subcuticular suture and metal clips.

In a study Yang YL et al<sup>10</sup> These patients were randomly divided into two groups (one experimental and one control group) of 70 patients each. In the process of the study, 8 patients were

excluded because of intraoperative findings. Therefore there were 65 patients in the experimental group (tissue adhesive) and 67 patients in the control group (surgical staples). The objective of this study was to compare the effectiveness and cosmetic results of tissue adhesive or surgical staples in thyroidectomy through a

supraclavicular incision. At the first month after surgery, the score was significantly lower in the experimental group (range: 5–7) compared to that of the control group 73 (range: 8–10;  $P < 0.001$ ). However, at the third month after surgery, there was no significant difference between the two groups.

**Table 3: Comparison of Studies**

	<b>Our study</b>	<b>Selvadurai et al<sup>8</sup></b>	<b>Yang YL et al<sup>10</sup></b>
<b>No. of patients</b>	93	80	140
<b>Post-operative pain</b>	Steristrips had less post-operative pain followed by subcuticular suture and metal clips.	No difference in post-operative pain between metal clips and suture	Tissue adhesive less pain compare to staples
<b>Cosmetic appearance</b>	Steristrips had excellent scar appearance followed by subcuticular suture and metal clips after 3 <sup>rd</sup> and 6 months follow up	At the time of discharge suture closed wound good cosmetic appearance. 3rd and 6 months follow up no difference	At the end of 3 <sup>rd</sup> month no significance difference between tissue adhesive and staple

**CONCLUSION**

In the final analysis, the choice of wound closure materials will depend on the surgeon’s preference. However, this study does show that steristrips sutures can be removed more quickly and cause less discomfort than removal of metal clips. Steristrips had less pain, excellent scar appearance followed by subcuticular suture and metal clips.

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