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COMPARISON BETWEEN MICHEL CLIPS AND SUBCUTICULAR NYLON 2/0 SUTURE FOR CLOSURE OF COLLAR INCISION FOLLOWING THYROID OPERATION

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ABSTRACT

Aim: To study the advantage and disadvantage of Michel clips and 2 / 0 nylon subcuticular suture for closure of collar incision following thyroid operation. **Patients and Method:** A prospective cohort study from 1st of October 2010 to 1st of August 2011 for 200 patients were admitted to Al- Jumhoori Teaching Hospital and underwent thyroid operations. All the patients had no previous operation in the neck. Their incisions closed by either Michel clips (100 patients 10 of them male) or 2/0 nylon subcuticular suture (100 patients 10 of them male). The two groups were well matched for age, sex, diagnosis, systemic disease, drug history, ASA grade, indication for surgery, incision length, type and duration of operation. The time taken for operations for both groups and the time taken to close the skin were calculated using hand watch. At the end of the operation the length of each wound was measured and recorded to the nearest centimeter. then wound was washed by normal saline 0.9% and closed, application of povidone iodine and dressed by sterile gauze. Follow up for the both groups were done for at least 7 days for postoperative pain, volume of drain, day of removal of drain, surgical site infection, hematoma, day of removal, time taken for removal, and comfortable at removal of Michel clips or subcuticular suture and cosmetic of wound. The postoperative pain and pain at removal were assessed by using verbal response into four options (no pain, mild pain, moderate pain, and severe pain). The cosmetic appearance of each wound was assessed by the surgeon, and the patient. The patient, and the surgeon, were unaware of each other's grading. Verbal response again was used for grading into four options (poor, fair, good, and excellent). **Results:** The time taken for closure of wound by Michel clips is 60 –120 seconds in 89 patients, and by subcuticular suture is 60 –120 seconds in 82 patients. Pain at removal of Michel clips is mild in 5, moderate in 87, severe in 8 patients, while for subcuticular suture no pain in 35, mild in 62, moderate in 3 patients. Time taken for removal of Michel clips is 120 –180 seconds in 68 patients, and more than 180 seconds in 32 patients, while for subcuticular suture is less than 10 seconds in all patients. Cosmetic of wound at removal of Michel clips is poor in 35, fair in 52, good in 8, and excellent in 5 patients while for subcuticular suture is poor in 0, fair in 9, good in 30, and excellent in 61 patients. **Conclusion:** There is no significant difference in the time taken for closure of collar incision by Michel clips or subcuticular suture, Subcuticular suture is less painful, takes shorter time for removal, and more cosmetic at removal, subcuticular suture is more convenient than Michel clips for closure of collar incision following thyroid operation.

INTRODUCTION

Thyroid surgery requires experience and sound knowledge of the regional anatomy. The ability to locate the parathyroid glands, recurrent and external branch of the superior laryngeal nerves as well as familiarity with their anatomical variations is mandatory. Complication rates higher than 5% suggests that the surgeon does not have sufficient training or interest in thyroid surgery. Further training or referral of patients elsewhere is advisable.[1] A Kocher transverse collar incision, typically 4 to 5 cm in length, is placed in or parallel to a natural skin crease 1 cm below the cricoid cartilage, although longer incisions may be needed.[2] When making an incision through skin and deeper layers for access, the knife should be pressed down firmly at right angles to the skin and then drawn across it; at the same time, tension should be applied across the line of the incision so that the skin springs apart cleanly.[3] Cosmetic outcomes in thyroidectomy have been addressed in the literature since 1975.[4] Recognizing that the prevalence of thyroid disease is significantly higher in women than in men and given the increasing social focus on

appearance, cosmetic outcomes are an increasingly important consideration in thyroid surgery. When aesthetically pleasing thyroidectomy can be performed without compromising surgical goals or patient safety, cosmoses should be a factor in presurgical planning.[5] The pursuit of an esthetically pleasing scar after open thyroid surgery has led surgeons to perform endoscopic surgery on the neck,[6,7] but large multinodular goiters are not eligible for minimal invasive surgery. The presence of lymph nodes and high risk carcinomas are a contra-indication for video resection.[8] Up to date, we have been unable to find an approach in the literature that is both minimally invasive and totally scarless, although cadaveric investigation has been performed in some institutes, trans-oral thyroidectomy has not yet been applied to patients.[9,10]

Thyroid Surgery
Open Thyroidectomy
The patient is positioned supine, with a sandbag between the scapulae. The head is placed on a donut cushion and the neck is extended to provide maximal exposure. A Kocher transverse collar incision was done as mention above. The subcutaneous tissues and platysma are incised sharply and subplatysmal flaps are raised superiorly to the level of the thyroid cartilage and inferiorly to the suprasternal notch. The strap muscles are divided in the midline along the entire length of the mobilized flaps, and the thyroid gland is exposed. The middle thyroid veins are ligated and divided. The recurrent laryngeal nerves and parathyroid glands were identified and protected. The inferior, and superior thyroid vessels were ligated.[2] Thyroidectomy can be either total thyroidectomy (total excision of two lobe with isthmus), or subtotal thyroidectomy (subtotal excision of two lobe with isthmus), or near total thyroidectomy (total excision of one lobe, subtotal excision of one lobe with isthmus), or lobectomy (total excision of one lobe with isthmus).[11] Routine drain placement rarely is necessary.[2] Meticulous control of bleeders should be standard practice as the use of drains is not a replacement for hemostasis.[12] Drains are not useful if severe postoperative bleeding occurs, but could reduce a small hematoma.[1] After adequate hemostasis is obtained, the strap muscles are reapproximated in the midline. The platysma is approximated in a similar fashion.[2]

Collar Incision Closure
Wounds should be closed with a minimum of tension. The edges of skin should gape slightly to allow swelling as the inflammation of healing occurs over the following few days. If a wound is closed tightly, swelling may cause wound edge necrosis and add to the risk of exogenous infection.[3] The skin can be closed with subcuticular sutures or clips.[2] The reason for Michel clips use in thyroid and parathyroid surgery would appear to be largely traditional. Although a number of studies have compared the use of clips and conventional sutures for abdominal and limb wound closure,[13-16]

there are a little trial data relating to cervical incisions. The use of a 3/0 or 2/0 nylon subcuticular stitch with anchoring knots at both ends, is removed after about 7 days in the clinic. Care should be taken to allow free sliding at the time of surgery to avoid difficulties of removal and possible breakage. This is more likely to happen with a 3/0 stitch. It is cheap, cosmetic and provokes insignificant skin reactions.[17] Subcuticular sutures are cosmetically appealing. Any dead space in the subcutaneous fat layer may also need to be closed separately. Nevertheless, subcuticular closure is the most widely practised skin closure in virtually all specialties, although skin clips have their advocates. Non-absorbable skin sutures are removed when the wound has healed to avoid scarring, infection and irritation.[3]

Minimally Invasive Approaches
Several approaches to minimally invasive thyroidectomy have been described. Mini-incision procedures use a small, 3-cm incision with no flap creation and minimal dissection to deliver the thyroid into the wound and then perform the pretracheal and paratracheal dissection. Video assistance can be used to improve the visualization via the small incision. Totally endoscopic approaches also have been described, via the supraclavicular, anterior chest, axillary, and breast approach.[2] These techniques have been described, with the primary aim of obtaining better cosmetic results. The new methods have largely been developed because the incidence of thyroid nodules is on rise and all involved parties are concerned about cosmetic results.[18-22] Mini-invasive thyroid surgery has not been already accepted.[23-27] One of the reasons for this initial refusal is partly due to technical difficulty of endoscopic resection requiring adequate training both in open and endoscopic procedures before safely perform gland resection.[27]

Wound Healing
Normal wound healing follows a predictable pattern that can be divided into overlapping phases defined by characteristic cellular populations and biochemical activities: (a) hemostasis and inflammation, (b) proliferation, and (c) maturation and remodeling.

Hemostasis and Inflammation Phase
Hemostasis precedes and initiates inflammation, with the ensuing release of chemotactic factors from the wound site. Exposure of subendothelial collagen to platelets results in platelet aggregation, degranulation, and activation of the coagulation cascade. Neutrophils are the first infiltrating cells to enter the wound site, peaking at 24 to 48 hours. The postulated primary role of neutrophils is phagocytosis of bacteria and tissue debris.[28] The second population of inflammatory cells that invades the wound consists of macrophages, which are recognized as being essential to successful healing.[29] Macrophages achieve significant numbers in the wound by 48 to 96 hours postinjury and remain present until wound healing is complete. The macrophages regulate cell proliferation, matrix synthesis, and

angiogenesis.[30,31] Macrophages also play a significant role in matrix remodeling. T-lymphocyte numbers peak at about 1 week postinjury and truly bridge the transition from the inflammatory to the proliferative phase of healing.[32]

Proliferation Phase

The proliferative phase is the second phase of wound healing and roughly spans days 4 through 12. It is during this phase that tissue continuity is re-established. Fibroblasts and endothelial cells are the last cell populations to infiltrate the healing wound. Endothelial cells also proliferate extensively during this phase of healing. These cells participate in the formation of new capillaries (angiogenesis), a process essential to successful wound healing. Collagen, the most abundant protein in the body, plays a critical role in the successful completion of adult wound healing. Type I collagen is the major component of extracellular matrix in skin. Type III, which is also normally present in skin, becomes more prominent and important during the repair process.

Maturation and Remodeling Phase

The maturation and remodeling of the scar begins during the fibroplastic phase, and is characterized by a reorganization of previously synthesized collagen. Collagen is broken down by matrix metalloproteinases, and the net wound collagen content is the result of a balance between collagenolysis and collagen synthesis. Wound strength and mechanical integrity in the fresh wound are determined by both the quantity and quality of the newly deposited collagen. Fibronectin and collagen type III constitute the early matrix then collagen type I is the final matrix. By several weeks postinjury the amount of collagen in the wound reaches a plateau, but the tensile strength continues to increase for several more months.[33] Scar remodeling continues for many (6 to 12) months postinjury, gradually resulting in a mature, avascular, and acellular scar. The mechanical strength of the scar never achieves that of the uninjured tissue.[34] This balance of collagen deposition and degradation is the ultimate determinant of wound strength and integrity. Marginal basal cells at the edge of the wound lose their firm attachment to the underlying dermis, enlarge, and begin to migrate across the surface of the provisional matrix. Fixed basal cells in a zone near the cut edge undergo a series of rapid mitotic divisions, and these cells appear to migrate by moving over one another in a leapfrog fashion until the defect is covered.[35] Layering of the epithelium is re-established, and the surface layer eventually keratinizes.[36] Re-epithelialization is complete in less than 48 hours in the case of approximated incised wounds.[37,38]

Aim of study is to study the advantage and disadvantage of Michel clips and 2 / 0 nylon subcuticular suture for closure of collar incision following thyroid operation, and to find which of them is more convenient for closure.

PATIENTS AND METHOD

A prospective cohort study was done from 1st of October 2010 to 1st of August 2011 for 200 patients were admitted to Al- Jumhoori Teaching Hospital and underwent thyroid operations, (all the patients had no previous operation in the neck). Their incisions closed by either Michel clips (100 patients 10 of them male) or 2/0 nylon subcuticular suture (100 patients 10 of them male) also. The two groups were well matched for age, ASA grade, systemic disease, diagnosis, wound length, type, and duration of operation. The operations were done under general anesthesia, the patients received 1 g Cefitriaxone vial IV as prophylactic antibiotic. A Kocher 8---9 cm transverse collar incision, is done in or parallel to a natural skin crease 1 cm below the cricoid cartilage and a standardized open operative technique was used for both group. The types of thyroidectomy done are either lobectomy, subtotal, near total, and total are also well matched. The duration of operations, and the time taken to close the skin were measured using hand watch. In all patients redivac drain was inserted under the strap muscle of the neck, and at the end of operation, the length of each wound was measured and recorded to the nearest centimeter, then washed by normal saline 0.9% and closed, application of povidone iodine and dressed by sterile gauze.

Follow up for both groups was done for at least 7 days, for postoperative pain, volume of drain, day of removal of drain, surgical site infection, hematoma, seroma, hospital stay, day of removal, time taken for removal, comfortable at removal of Michel clips or 2 / 0 nylon subcuticular suture, and cosmetic of wound.

The postoperative pain and pain at removal were assessed by using verbal response into four options (no pain, mild pain, moderate pain, and severe pain). The cosmetic appearance of each wound was assessed by the surgeon, and the patient. The patient, and the surgeon, were unaware of each other's grading. Verbal response again was used for grading in four options (poor, fair, good, and excellent).

The data collected and statistical analysis were done.

RESULTS

In this research we study 200 patients admitted to AL-Jumhoori Teaching Hospital and underwent different type of open thyroid operations. Their incisions were closed by either Michel clips (100 patients 10 of them male) or 2/0 nylon subcuticular suture (100 patients 10 of them male) also. The goiter was more common in female than male, and mostly at age 20---45 year. Most of the patients are with ASA grade 1or II, and there are 2 patients with controlled diabetes mellitus in each group as seen in table 1.

Table 1: Number, sex, age, ASA grade and systemic disease.

		Michel Clips	Subcuticular Suture
Number of patients		**100**	**100**
Sex	male	10	10
	female	90	90
Age	< 20 year	1	3
	20 --- 45 year	72	71
	46 --- 59 year	21	19
	60 --- 75 year	6	7
ASA grade	ASA grade 1	52	50
	ASA grade 2	45	46
	ASA grade 3	3	4
Systemic disease	Hypertension	3	1
	Diabetes Mellitus	2	2

Regarding the diagnosis in both groups according to anatomy we found that most of patients had multinodular goiter, and according to the pathology most of patients had cystic colloid, and according to the function most of the patients had euthyroid as seen in table 2.

Table 2: Diagnosis according to thyroid anatomy, pathology, and function.

Diagnosis		Michel Clips	Subcuticular Suture
Anatomy	Single nodule	**3**	**5**
	Multinodular	**91**	**87**
	Diffuse	**6**	**8**
Pathology	Cystic	**93**	**93**
	Inflammatory	**7**	**5**
	Neoplastic	**0**	**2**
Function	Euthyroid	**97**	**96**
	Hyperthyroid	**3**	**4**
	Hypothyroid	**0**	**0**

The wound length in all patients is 8--9 cm. The of most common type of thyroidectomy is subtotal, near total, lobectomy and the least type is total in both groups. The duration of operation in both groups mostly 90--120 minutes, and there is no significant difference in time taken for closure of skin using Michel clips or subcuticular suture because the duration of skin closure is mostly 60--120 seconds in both groups as seen in table 3.

Table 3: Wound length, type of open thyroidectomy, duration of operation, and the time for closure of skin.

		Michel Clips	Subcuticular Suture
Wound length	8--- 9 cm	**100**	**100**
Type of operation	Lobectomy	**15**	**13**
	Bilateral subtotal	**55**	**62**
	Near total	**23**	**19**
	Total	**7**	**6**
Duration of operation	< 90 minute	**13**	**15**
	90 --- 120 minute	**87**	**85**
Time for closure	60 --- 120 second	**89**	**82**
	> 120 second	**11**	**18**

We found there is no significant difference for postoperative pain in both groups because most patients had mild pain; there is no significant difference in volume of drain in both group because the volume of drain mostly is about 50—99 ml.; also there is no significant difference in day of removal of drain because the drain was removed mostly at 1st postoperative day as seen in table 4.

Table 4: Postoperative pain, volume of drain, and day of removal of drain.

		Michel Clips	Subcuticular Suture
Postoperative pain	No pain	3	5
	Mild	59	64
	Moderate	37	31
	Severe	1	0
Volume of drain	50 --- 99 ml	52	61
	100 --- 149 ml	30	26
	150 --- 199 ml	14	10
	> 199 ml	4	3
Removal of drain at	1st postoperative day	84	97
	2nd postoperative day	16	3

In addition, there is no significant difference in hospital stay because most of patients discharged at the 2nd day of their admission and also there is no in significant difference in day of removal of Michel clips or subcuticular suture, because both mostly were removed at 4th--7th postoperative day. We found 4 patients one of them male had surgical site infection, and 2 patients had hematoma in Michel clips group while no infection or hematoma in subcuticular suture group as seen in table 5.

Hospital stay, the day of removal, infection, hematoma, and seroma.

		Michel Clips	Subcuticular Suture
Hospital stay	1 day	18	15
	2 day	73	78
	3 day	9	7
Day of removal of at	4th postoperative day	49	43
	7th postoperative day	51	57
Infection		4	0
Hematoma		2	0
Seroma		0	0

We found a high significant difference in the time taken for removal of Michel clips and subcuticular suture (P value 0.0001) because the time taken for removal of Michel clips 120 –180 seconds in 68 patients, and more 180 seconds in 32 patients, while time for removal of subcuticular suture is less than 10 seconds for all patients, so subcuticular suture takes a shorter time for removal. Pain at removal of Michel clips is mild in 5, moderate in 87, severe in 8 patients, while for subcuticular suture no pain in 35, mild in 62, moderate in 3 patients, so Michel clips removal is more painful. According to surgeon assessment, cosmetic of wound at removal of Michel clips is poor in 35, fair in 52, good in 8, and excellent in 5 patients while for subcuticular suture is poor in 0, fair in 9, good in 30, and excellent in 61 patients. The patient assessment for cosmetic of wound is nearly similar to surgeon assessment so subcuticular suture is more cosmetic at removal than Michel clips as seen in table 6.

Table 6: Time taken for removal, patient comfortable, and cosmetic of wound.

		Michel Clips	Subcuticular Suture	P- value
Time taken for removal	10 second	0	100	0.0001
	120 ---180 second	68	0	0.0001
	> 180 second	32	0	0.0001
Pain at removal	No pain	0	35	0.0001
	Mild	5	62	0.0001
	Moderate	87	3	0.0001
	Sever	8	0	0.001
Surgeon assessment for cosmetic at removal	Poor	35	0	0.0001
	Fair	52	9	0.0001
	Good	8	30	0.0001
	Excellent	5	61	0.0001
Patient assessment for cosmetic at removal	Poor	31	0	0.0001
	Fair	55	12	0.0001
	Good	11	35	0.0001

Excellent	3	53	0.0001

DISCUSSION

In general, endoscopic thyroidectomy and open thyroid surgery also require meticulous surgical dissection, absolute hemostasis, en bloc tumor resection, and adequate visualization of the operative field. Large thyroid tumors cannot be removed by cervical access or minimally invasive video-assisted thyroidectomy (MIVAT).[39,40] In fact, cervical approaches can easily cause visible scars on the neck.[41] The aim of any skin closure technique is to precisely oppose the skin edges without tension for sufficient time to allow for 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. Many of these factors become especially significant when considering cervical collar incisions.[42] Cosmoses is particularly important to all persons as well as younger women, who constitute a large proportion of patients affected by thyroid diseases. Because the anterior neck is a prominent, constantly exposed part of the body, an unsightly scar can prove very distressing for the patient and for the surgeon.[43,44] The use of skin staples continues to generate debate and a considerable number of randomized clinical trials have failed to demonstrate a consistent benefit of this method of skin closure over sutured techniques. Though rapid to apply, the overwhelming consideration must be for patient comfort, satisfaction, cosmoses and functional outcome, and no study has reported staples to be superior to other methods of skin closure using these outcome measures. Indeed, recent studies have implicated skin staples with increased rates of wound complication and infection compared with subcuticular suturing.[45]

In this research we study 200 patients were admitted to AL- Jumhoori Teaching Hospital and underwent open thyroid operations, their incisions closed by either Michel clips (100 patients 10 of them male) or 2/0 nylon subcuticular suture (100 patients 10 of them male); while M L Nicholson et al reaserch, studied only 80 patients, 38 of them closed by Michel clips (7 patients of them male) and 42 closed by 3/0 prolene subcuticular suture (6 patients of them male).

Regarding the diagnosis in our study we found 91 of 100 patients (91%) had multinodular goitre in Michel clips group, with 87 of 100 patients (87 %) had multinodular goitre in subcuticular suture group while in M L Nicholson et al study 8 of 38 patients (21%) had multinodular goiter in Michel clips group, with 8 of 42 patients (19%) had multinodular goiter in subcuticular suture group.

In this study the wound length in all patient is 8-9 cm as in M L Nicholson et al study.

In this study the most common type of thyroidectomy is subtotal 55 of 100 patients (55%) in Michel clips group, 62 of 100 (62%) in subcuticular suture group, then near total 23 of 100 patients 23% in Michel clips group, 19 of 100 patients (19%) in subcuticular suture group then lobectomy then total, while in ML Nicholson study the most common type of thyroidectomy is lobectomy 18 of 38 patients (47%) in Michel clips group, and 22 of 42 patients (52%) in subcuticular suture group, then subtotal 4 of 38 patients (10.5%) in Michel clips group, 5 of 42 (12%) in subcuticular suture group, then total thyroidectomy and no near total thyroidectomy was done. This difference in type of operation is because in our study we found multinodular goiter the most common of goitre in our locality.

This study agrees with M L Nicholson et al study in that placement of a subcuticular suture probably requires more technical expertise than the placement of Michel clips. It might be expected that Michel clips are quicker to use than subcuticular suture, but there were no significant differences in the time taken to close wounds using these two methods,[42] because the time taken for closure of skin is 60 – 120 sec. in 89 of 100 patients (89%) patient in Michel clips group, 82 of 100 patients (82%) in subcuticular suture group, and more than 120 sec. in 11 of 100 patients (11%) in Michel clips group, 18 of 100 patients (18%) in subcuticular suture group, nearly as in M L Nicholson et al study where the average time for closure by Michel clips is 270 sec. and by subcuticular suture is 280 sec. but in both groups the skin was closed faster than M L Nicholson et al this may be due to large number of operations done in our locality.

In this study the duration of operation was less than 90 minutes in 13 of 100 patients (13%) in Michel clips group, 15 of 100 patients (15%) in subcuticular suture group and 90- 120 minutes in 87 of 100 patients (87%) in Michel clips group, 85 of 100 patients (85%) in subcuticular suture group.

In this study there is no significant difference in postoperative pain, volume of drain, day of removal of drain, hospital stay in both groups as in M L Nicholson et al study.

In this study we had 2 patients with controlled diabetes mellitus in each group so the risk of infection due to this disease can be excluded in both group, but we found 4 patients had surgical site infection at 5th -7th postoperative day, 3 of them were female and one of them was male while no infection occur in subcuticular suture group, so our study agrees with J E Nicholl et al study in that skin staples may increase rates of wound complication and infection compared with subcuticular suturing.[45]

In this study we remove both Michel clips and subcuticular suture at 4th-7th postoperative day, while in M L Nicholson et al study the time is earlier (which is at 2nd postoperative morning) for skin clip or suture removal than in traditional. A subcuticular suture is removed much more quickly than Michel clips and this may prove to be an important advantage in the rare case of a deep cervical haematoma causing airways obstruction.[42]

In this study there is a high significant difference in the time taken for removal of Michel clips or subcuticular suture (P value 0.0001) because the time taken for removal of Michel clips 120 –180 seconds in 68 patients, and more 180 seconds in 32 patients, while time for removal of subcuticular suture is less than 10 seconds for all patients, which is not much different from the results of M L Nicholson et al study because they found the time for removal of Michel clips 204 sec. while for subcuticular suture is 6 sec. (the P value is 0.0001), so subcuticular suture removal takes a shorter time.[42]

In this study we found removal of Michel clips caused patients more discomfort than removal of a subcuticular suture because in Michel clips group none of them had no pain, 5 of 100 patients (5%) had mild pain, 87 of 100 patients (87%) had moderate pain and 8 of 100 patients (8%) had severe pain, while in subcuticular suture group 35 of 100 patients (35%) had no pain and 62 of 100 patients (62%) had mild pain, 3 of 100 patients had moderate pain, and non of them had severe pain, so we agree with M L Nicholson et al study because they found in that in Michel clips group 13 of 38 patients (34%) had pain at removal while in subcuticular suture group only 3 of 42 patients (7%) had pain in subcuticular suture group.

The final cosmetic appearance of a neck wound is of great importance to patients as the wound is likely to be permanently on view.[42]

In this study the surgeon and the patient agree that the wound is less cosmetic in Michel clips group because we found that the cosmetic of wound in Michel clips is poor for 35 of 100 patients (35%), fair for 52 of 100 patients (52%), good for 8 of 100 patients (8%), and excellent for 5 of 100 patients (5%), while for subcuticular suture group none of their wound is poor, but fair in 9 of 100 patients (9%), good in 30 of 100 patients (30%), and excellent for 61of 100 patient (61%), so we agree with the result in M L Nicholson et al study because they found that the wound in Michel clips is more cosmetic in 18 of 38 patient (47%) while for subcuticular suture group is 32 of 42 patient (76%).

A subcuticular suture produced a superior cosmetic result at the time of discharge. The early difference is likely to be owing to the heaped up appearance of a wound which has been closed with clips in comparison with the flatter appearance of a sutured wound.[42]

In the final analysis, this study agrees with the M L Nicholson et al study in that the subcuticular suture can be removed more quickly and cause less discomfort and more cosmetic than Michel clips. We believe that these advantages are enough to tilt the balance in favor of subcuticular suture for closure of collar incision following thyroid operation.

Picture 1: Collar incision of a patient her wound closed by 2 / 0 nylon subcuticular suture.

Picture 2: Collar incision of a patient her wound closed by Michel clips.

CONCLUSION

There is no significant difference in the time taken for closure of collar incision by Michel clips or subcuticular suture. Subcuticular suture is less painful, takes shorter time for removal, and more cosmetic at removal. Subcuticular suture is more convenient than Michel clips for closure of collar incision following thyroid operation.

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