ORIGINAL ARTICLE

Morbidity in Thyroid Surgery; Comparison between Muscle Cutting and Without Muscle Cutting Technique

ADNAN MAQBOOL[1], ANSAR LATIF[2], ASLAM IQBAL[3], *FAISAL SHABBIR[4], MUHAMMAD QASIM BUTT[5]*

ABSTRACT

Aim: To analyze the complications after muscle cutting and without muscle cutting technique in thyroid surgery being practiced at Allama Iqbal Memorial Teaching hospital, Sialkot.
Study design: Prospective study.
Place & duration of study: Department of General Surgery, Khawaja Muhammad Safdar Medical College, Sialkot from January 2014 to December 2016.
Methods: All patients serially operated in the surgery Department of Allama Iqbal Memorial hospital fulfilling the inclusion criteria were registered. The patients were classed in two groups: Group I undergoing surgery with Muscle cutting technique in which strap muscles(infrahyoid muscles)on one side or both sides were cut en bloc at upper end while Group II without Muscle cutting technique. Minimum of three months of follow up was must for assessment of outcome. Known diabetics were excluded. Data was entered and analysis done by SPSS v 22.
Results: Of the 823 thyroid surgeries done during the period of study, 243 patients were excluded not fulfilling the inclusion criteria. Group I Muscle cutting technique had less morbidity as compare to group II without muscle cutting technique. The main complications encountered were intraoperative hemorrhage and superior laryngeal nerve injury in the Group II, while postoperative pain and difficulty in neck movements in group I.
Keywords: Lobectomy and isthmusectomy, Subtotal Thyroidectomy, Near Total Thyroidectomy,

INTRODUCTION

Thyroid disease is quite prevalent and a large group out of these patients requires surgery for varied indications. Thyroid enlargement i. e. goiter is a frequently encountered problem in surgical outpatients' department. Thyroid surgery was done even before the understanding of its physiology. Its surgery was and is associated with many risks like bleeding, sepsis and injury to important nerves, vessels and viscerae[1]. Now a days surgical technique has been modernized by the invention of Harmonic Technology and this surgery is ranked very safe. Similarly techniques of video assisted and robot assisted surgeries for thyroid are being practiced. Latest techniques have drastically reduced the operating time and blood loss with almost same morbidity and expenses[2].

Fine needle aspiration cytology proven cancers like papillary carcinoma and medullary carcinoma merits total thyroidectomy; hurthle cell or follicular neoplasm is another indication of surgery. Goiters with compressive symptoms of difficulty in breathing, deglutition or changed voice also indicate need of surgery. Cosmetic concerns and uncontrolled toxicity in Grave's disease is also one reason for surgery[3,4,5].

In the past surgeries of minor grade were in vogue like nodulectomies, wedge excision, partial thyroidectomy, hemithyroidectomies and subtotal thyroidectomy but increasing diagnosis of malignancies now merit near total or Total thyroidectomies and beyond[6,7].

Transient hypocalcemia about 5-30%, permanent hypocalcemia secondary to hypoparathyroidism about 0.5- 2%; paresis or paralysis of vocal cords due to affliction of recurrent laryngeal nerve, superior laryngeal nerve damage is a concern for professionals like teachers and singers, neck hematomas and lastly the infections and rarely precipitation of thyroid storm are the associated morbidity in thyroid surgery[8,9,10].

Many surgeons like cutting of strap muscles during surgery by simply dividing and repair at the end of the procedure while others don't like to divide muscles. Morbidity in the postoperative period differs or not is a questionable issue. No work has been done on this topic in this region so: In present study we collected the data of our patients undergoing thyroid surgery and analyzed the morbidity in muscle cutting and non-cutting technique being practiced at Allama Iqbal memorial teaching hospital

PATIENTS AND METHODS

All patients serially operated in the surgery Department of Allama Iqbal Memorial hospital

[1]House Surgeon, Department of Surgery,
[2]Associate Professor Surgery, [3]S R Surgery,
[4]Assistant Professor, Department of Surgery, [5]S R Surgery,
Kh. M. Safdar Medical College/Allama Iqbal Memorial Teaching Hospital, Sialkot
Correspondence to Dr Ansar Latif. Head of Department of Surgery, Email: ansarlatif2013@gmail.com cell: +923217103994.

fulfilling the inclusion criteria were registered. Workup including FNAC, thyroid profile, neck sonography, X-ray cervical spine, thyroid scan in selected cases, indirect laryngoscopy and calcium levels both preoperative and postoperative period was done and written informed consent for anaesthesia and surgery was taken. The patients were classed in two groups: Group I undergoing surgery with Muscle cutting technique in which strap muscles(infrahyoid muscles) on one side or both sides were cut en bloc at upper end while Group II without Muscle cutting technique. All the surgical procedures were done by senior surgeon minimum of Associate Professor. Operation notes of the patients were endorsed with minor details especially handling of the strap muscles. In the operative and postoperative period, the morbidity data was collected and recorded. Mortality is defined as any postoperative death within 30 days postoperatively. Goiter recurrence labeled as the presence of nodular involvement or an enlargement of the residual thyroid tissue. Postoperative bleeding: defined as hemorrhage in postoperative period; it can be minor bleeding like superficial wound hematoma or bruising and no intervention needed; or major bleeding as bleeding requiring intervention. Permanent or transient recurrent laryngeal nerve: RLN palsy during indirect laryngoscopy by an ENT specialist. Permanent RLN palsy: was defined as a vocal cord paresis for more than 3 months after the operation.

Permanent or transient hypoparathyroidism as hypocalcaemia (i.e., a total serum calcium level less than 2.0mmol/L in either asymptomatic or symptomatic patients), perioral or fingertip paraesthesia or numbness, tetany, or positive Chvostek sign. Minimum of three months of follow up was must for assessment of outcome. Known diabetics were excluded, patients lost during follow up were excluded. Data was entered and analysis done by SPSS version 22.

RESULTS

The basic demographic data of our patients is shown in Table I. Statistics of the surgical technique and the procedures done in the two groups is shown in Table II. The complications noted preoperative and postoperative period are shown in Table III.

Table I: General data

Total no of patients in study	580	100%
Age	21-62 years	Mean age 42.13 years
Gender	M:F(57:523)	(1: 9.17)
Group I: Muscle cutting	113	
Group II: without muscle cutting	467	

Table II: operative procedures

	Group I: Muscle cutting (n=113)	Group II: without Muscle cutting (n= 467)
Lobectomy and isthmusectomy	16(14.15%)	27(5.78%)
Subtotal Thyroidectomy	31(27.43%)	211(45.18%)
Near Total Thyroidectomy	39(34.51%)	188(40.25%)
Total Thyroidectomy	18(15.92.%)	41(8.77%)
Thyroidectomy with central neck dissection	09(14.15%)	-

Table III- Morbidity

	Total (n=580)	**Group I: Muscle cutting (n=113)**	**Group II: without Muscle cutting (n=467)**
Haemorrhage .major	10(1.72%)	3(2.65%)	7(1.49%)
Operative Time		120-200mins(mean 140+20)	101- 189 mins (mean 123+ 25)
Permanent Recurrent Laryngeal nerve injury	12(2.06%)	1(0.88%)	11(2.35%)
Transient recurrent laryngeal nerve injury	34(5.86%)	6(5.30%)	28(5.99%)
Postoperative pain	20(3.44%)	13(11.50)	7(1.49%)
Permanent hypoparathyroidism	12(2.06%)	2(1.76%)	10(2.14%)
Transient hypoparathyroidism	52(8.9%)	9(7.96%)	43(9.20%)
Painful movements Neck	21(3.62%)	16(14.1%)	5(1.07%)
Wound infection	15(2.58%)	4(3.53%)	11(2.35%)
Seroma formation	12(2.06%)	2(1.76%)	10(2.14%)
Chylous fistula	1(0.17%)	1(0.88%)	-
Mortality	-	-	1(0.21%)
Goiter recurrence	59(10.1%)	10(8.84%)	49(10.49%)
Hoarseness of voice	20(3.44%)	13(11.50)	7(1.49%)

DISCUSSION

There were 3(2.65%) and 6(1.28%) patients with permanent recurrent laryngeal nerve injury (PRLNI) in muscle cutting and without muscle cutting respectively with total incidence of 9(1.55%). 11(9.73%), 23(4.92%) patients with transient recurrent laryngeal nerve injury (TRLNI) in muscle cutting and without muscle cutting respectively with total of 34(5.86%) in our study while studies by Pappalardo et al[11], Giles et al[12], Yang et al[13] and Barczynski et al[14] shows incidence of PRLNI and TRLNI as 1.4%, 0%, 0%, 1.6% and 2.8%, 0.9%, 1.8%, 7.9% respectively. This difference can be attributed to sample size discrepancy.

There were 1(0.88%) and 0% patients with chylous fistula in muscle cutting and without muscle cutting respectively with total incidence of 1(0.17%) in our study while study of Crumley et al[15] shows incidence of chylous leak of 1-2%. Chyle fistula formation occurs rarely by injury to thoracic duct or right lymphatic duct during neck surgery. It is reported to occur in neck dissections but also in penetrating neck trauma, cervical node biopsy, and cervical rib resection.

There were 2(1.76%) and 10(2.14%) patients with permanent hypoparathyroidism in muscle cutting and without muscle cutting respectively with total incidence of 12(2.06%). While 9(7.96%) , 43(9.20%) patients with transient hypoparathyroidism in muscle cutting and without muscle cutting respectively with total of 52(8.9%) in our study while studies by Pappalardo et al[11], Giles et al[12], Yang et al[13], and Barczynski et al[14] shows incidence of permanent hypoparathyroidism and transient hypopara-thyroidism as 2.1%, 0%, 0%, 0.2% and 26.2%, 1.4%, 5.9%, 5.8% respectively.

There were 3(2.65%) and 7(1.49%) patients with major haemorrhage in muscle cutting and without muscle cutting respectively with total incidence of 10(1.72%). While studies by Shaha et al[16] show incidence of post operative Hematoma that required re-exploration of about 1.16%. Rosenbaum et al[17] shows incidence of 0.6.Goiter recurrence was lower for total thyroidectomy compared to subtotal thyroidectomy (with a possible range of 1 to 19) for total thyroidectomy. There was no clear benefit or harm of either surgical technique for reoperations.

In the short-term period after surgery no deaths were reported for both total thyroidectomy and subtotal thyroidectomy groups, however longer-term data on all-cause mortality were not reported.

CONCLUSION

Sternothyroid muscle division is occasionally employed during thyroidectomy to gain superior pedicle exposure. Division of this muscle does not appear to be associated with adverse functional voice outcome, and should be utilized at surgeon discretion during thyroidectomy.

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