

Simple Multinodular Goiter: A Ten – Year Experience in a Developing Country

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Abstract- Background: The normal thyroid gland is a fairly homogenous structure, but nodules often formed within its substance these nodule may be the growth and fusion of localized colloid – filled follicles, or discrete adenomas, or cyst. The terms adenomatous goiter, simple multi nodular goiter, non toxic nodular goiter, and colloid nodular goiter are used interchangeably as descriptive terms when a multi nodular goiter is found. This study reviewed our ten - year experience with management of multi nodular goiter in a developing country **Patient and Methods:** The study reviewed all patients diagnosed and managed with simple multi nodular goiter between January 2005 and December 20014 . All patients had open subtotal thyroidectomy. Surgery was under general anesthesia with endotracheal intubation. Prophylactic antibiotic (ceftriaxone) was given at induction. All patients had subtotal thyroidectomy with post operative drain placed within thyroid bed and removed on the second postoperative day. Skin flaps were approximated using vircryl 2/0 suture to reduce the dead space while the skin was closed using Mitchell’s clips. **Results:** A total of 248 patients were analyzed, with a female to male ratio of 6.75:1. Age ranged from 16 to 76 years with a mean of 42.86years and SD of 11.23. The peak age group was 30 – 39 years accounting for 30.65%, with 82.77% of the patients below the age of 50 years. The indications for surgery were cosmetics in 85.08%, and pressure symptoms in 30.65%. . The histology revealed multi nodular colloid goiter in 76.21%, and multi nodular colloid with adenomatous hyperplasia in 23.79%. Associated findings were cystic degeneration in 9.27%, and foci of incidental follicular carcinoma in 1.21%. The postoperative complications were transient hypocalcaemia in 7.66%, respiratory obstruction in 10.89% (laryngeal edema in 8.47%, hematoma in 1.61%, and transient recurrent laryngeal nerve injury in 0.81%). **Conclusion:** Simple multi nodular goiter is common and patient present late with large goiters posing surgical challenges. Subtotal thyroidectomy is still a formidable option in the management of multi nodular goiter especially in developing countries where thyroxine is not readily available or expensive.

Index Terms- Simple multi Nodular goiter, Management outcome, developing Country.

I. INTRODUCTION

The incidence of goiter, diffuse and nodular, is very much dependant on the status of iodine intake of the population. In areas of iodine deficiency goiter prevalence may be very high, and a goiter of longstanding multi nodularity develops frequently. The first comprehensive theory about the

development of multi nodular goiter was proposed by David Marine¹ and studied further by Selwyn Taylor² and can be considered one of the classics in this field. Nodular goiter may be the result of any chronic low – grade, intermittent stimulus to thyroid hyperplasia. David Marine first developed the concept, that in response to iodide deficiency, the thyroid first goes through a period of hyperplasia as a result of TSH stimulation, but possibly because of iodide repletion or a decrease requirement for thyroid hormone, enters a resting phase characterized by colloid storage and the histological picture of a colloid goiter. Repetition of these two phases of the cycle result in the formation of non toxic nodular goiter, by the time the goiter is well developed TSH production and serum TSH are usually normal or even suppressed³. In general, in iodine sufficient countries the prevalence of multi nodular goiter is not higher than 4% while in country with previous deficiency that was corrected by universal salt iodination, elderly subjects may have an incidence of 10%, attributed to lack of nutritional iodine in early life⁴. In Africa goitrogens of note include thioyanates that are found in poorly detoxified cassava, a staple food. Selenium deficiency has also being reported to be a contributory factor in the occurrence of endemic goiter in Africa or persistence of endemic goiter in iodine deficient areas even after correcting iodine deficiency⁵⁻⁷. Endemic goiters are seen in both mountainous (Guinea) and non mountainous region of Africa (Cameroun, Northern Zaire, Central African Republic, Uganda, and Rwanda)⁸. This study reviewed simple multi nodular goiter presentation and management outcome over a ten year period in a developing country.

II. PATIENTS AND METHODS

The study reviewed all patients diagnosed and managed with simple multi nodular goiter between January 2005 and December 20014. Permission for the study was granted by the Hospital Ethical and research committee. A written informed consent was obtained from all patients. Information was extracted from patients clinical and laboratory notes and data analyzed using SPSS version 16. The diagnosis was made from clinical evaluation supported by laboratory and imaging investigations. The investigations done included full blood count, urinalysis, blood chemistry, soft tissue x-ray of the neck and thoracic inlet where necessary. Others were ECG, thyroid function test, blood grouping, and indirect laryngoscopy. All patients had open subtotal thyroidectomy (Thin thyroid tissue left to protect the parathyroid glands, with no attempt at identifying recurrent laryngeal nerves). Surgery was under general anesthesia with endotracheal intubation. Prophylactic antibiotic (ceftriaxone) was

given at induction. All patients had subtotal thyroidectomy with post operative drain placed within thyroid bed and removed on the second postoperative day. Skin flaps were approximated using vircryl 2/0 suture to reduce the dead space while the skin was closed using Mitchell's clips. Patients were monitored postoperatively and followed up on outpatient basis.

III. RESULTS

A total of 248 patients were analyzed, 216 were females and 32 males with a female to male ratio of 6.75:1. Age ranged from 16 to 76 years with a mean of 42.86years and SD of 11.23. The peak age group was 30 – 39 years accounting for 76(30.65%), with 82.77% of the patients below the age of 50 years **table 1**. The indications for surgery were cosmetics in 211(85.08%), pressure symptoms in 76(30.65%), and pain /discomfort in 47(18.95%). The histology revealed multi nodular colloid goiter in 189(76.21%), multi nodular colloid with adenomatous hyperplasia in 59(23.79%). Associated findings were cystic degeneration in 23(9.27%), areas of hemorrhage in 13(5.24%), foci of thyroiditis in 5(2.02%), and foci of incidental follicular carcinoma in 3(1.21%). The postoperative complications were transient hypocalcaemia in 19(7.66%), respiratory obstruction in 27(10.89%) comprising of laryngeal edema in 21(8.47%), hematoma in 4(1.61%), and transient recurrent laryngeal nerve injury in 2(0.81%). Hematoma in 1(0.40%) patient had to be evacuated. We had no course to transfused blood in this series. The mean hospital stay was 5 days with follow up period of 3 – 25 months.

IV. DISCUSSION

The current study found mean age, and female to male ratio of 6.75:1 similar to previous study⁹. Supporting that goiter is commoner in females. The age range and peak age group for colloid goiter were 16 – 76 years, and 30 -39 years respectively in this study which is comparable to the 19 – 89 years and 31 – 49 years found in a earlier study¹⁰. Multi nodular goiters by their nature of progressive growth, owing to their location expand to jeopardize neighboring structures leading to compression symptoms some of which are potentially fatal¹¹. The most common are tracheal and esophageal followed by recurrent and superior venacaval syndrum¹². These in addition to multi nodular goiters of considerable size are themselves cosmetically unsightly are the main indications for surgery. The current study was in agreement with these indications, as cosmetic, and pressure symptoms accounted for 85.08%, and 30.65% respectively as motivation for surgery. The current global practice support total thyroidectomy for multi nodular goiters¹³⁻¹⁴ with thyroxine replacement for life. Thyroxine is not readily available in most part of developing countries; where available it is expensive and therefore not affordable to our patients. Moreover the higher morbidities associated with total thyroidectomy are difficult to contend with in resource – limited centres. This study found postoperative complications of transient hypocalcaemia, respiratory obstruction (laryngeal edema, hematoma, and unilateral recurrent laryngeal nerve palsy), in 7.66%, and 10.89% respectively in keeping with

similar findings of subtotal thyroidectomy in a comparative study of total versus subtotal thyroidectomy¹⁵ that found transient hypocalcaemia in 9.5%, and a higher recurrent laryngeal nerve palsy in 6.3%. The same comparative study found recurrent laryngeal nerve palsy in 9.3% and hypocalcaemia in 11.4% in the total thyroidectomy patients. This confirmed the notion of higher morbidity in total thyroidectomy when compared to subtotal thyroidectomy patients. The mean hospital stay was longer in the total thyroidectomy group. The mean hospital stay in our series was 5 days.

V. CONCLUSION

Simple multi nodular goiter is common and patient present late with large goiters posing surgical challenges. Subtotal thyroidectomy is still a formidable option in the management of multi nodular goiter especially in developing country where thyroxine is not readily available or expensive to offer total thyroidectomy. Iodine supplementation as a public health policy will reduce the prevalence of multi nodular goiter.

TABLES 1: Age distribution

Age (Years)	No	%
<20	08	03.23
20 – 29	62	25.00
30 – 39	76	30.65
40 – 49	58	23.89
50 – 59	29	11.69
60 – 69	11	04.44
70 – 79	04	01.61
Total	248	100.00

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