Original Article

Total Thyroidectomy in Benign Multinodular Goitre

Muhammad Faisal Bilal Lodhi, Sumaira Kanwal, Muhammad Akram, Dur-e-Chaman,Yawar Saeed, Riaz Hussain

ABSTRACT

Introduction: Total thyroidectomy is the standard surgical procedure for thyroid malignancy. Many surgeons do not perform total thyroidectomy in cases of Benign Multinodular Goitre (BMNG) owing to the fear of recurrent laryngeal nerve (RLN) damage and postoperative risk of hypoparathyroidism. Long term thyroxin therapy with its side effects is an additional factor. We conducted this study to assess total thyroidectomy as a safe option for managing BMNG. **Setting**: Surgical Unit-I and Surgical Unit-III, Allied Hospital, a tertiary care hospital affiliated with Punjab Medical College, Faisalabad. Duration of study was two years from January 2008 to January 2010 **Material and Methods**: A total number of 196 consecutive patients undergoing total thyroidectomy (TT) for BMNG were included in this study. Patients with thyroid malignancy or suspicion of malignancy were excluded. Preoperative assessment included baseline biochemical workup and thyroid function tests. Preoperative serum calcium and indirect laryngoscopy (IDL) was performed in all the patients. Postoperative assessment included serum calcium estimation after 24 hrs and 07 days of TT. IDL was considered in any patient with suspected RLN palsy. Drain output was recorded at 24 hrs after TT. **Results**: Total number of 196 patients were included with 49 male and 147 female (male to female ratio of 1:3). Age ranged from 14-60 yrs (mean:37 yrs). One thirty six patients undergoing TT had Non-Toxic MNG while 60 patients had Toxic MNG controlled on antithyroid drugs. Drain output ranged from10-100 ml in 24 hrs. No patient developed permanent RLN palsy. Seven patients (3.5%) had temporary unilateral RLN palsy. Fifty six patients (28.5%) developed temporary hypocalcemia. None of the patients developed permanent hypocalcemia. Two patients developed seroma formation which was aspirated with wide bored needle. Two patients got superficial wound infection which recovered with oral antibiotics. Postoperative hemorrhage requiring re-exploration did not occur in any patient. Postoperative stay ranged from 2-4 days. Most of the patients were discharged 48 hrs after surgery. There was no postoperative mortality. **Conclusion**: Total Thyroidectomy is a safe method for treating Benign Multinodular Goitre in experienced hands with low postoperative complications and morbidity.

Key words: Total Thyroidectomy, Benign Multinodular Goitre

INTRODUCTION

Benign multinodular Goitre (BMNG) is one of the commonest endocrine surgical diseases. Its surgical management is still debatable. Many surgeons do not perform total thyroidectomy (TT) in cases of BMNG owing to the fear of recurrent laryngeal nerve (RLN) damage and postoperative risk of hypoparathyroidism. Long term thyroxin therapy with its side effects is an additional factor.

Last decade has shown that total thyroidectomy is an appropriate operation for the management of multinodular Goitre. In BMNG the entire gland is involved. TT in these cases precludes patients from requiring further surgery for recurrent disease, with its high associated risks. It must be emphasized, however, that protection of the recurrent laryngeal nerve and parathyroid glands is of paramount importance in surgical management of benign thyroid disease.

On the other hand, re-operation for recurrent disease carries a very significant risk of damage to both the recurrent laryngeal nerves and the parathyroid glands.

We conducted this study to assess total thyroidectomy as a safe option for managing BMNG.

MATERIAL AND METHODS

This study was conducted in surgical Unit-I & III, Allied Hospital, Faisalabad, a tertiary care hospital affiliated with Punjab Medical College. Duration of study was two years from January 2008 to January 2010. All the adult patients with benign multinodular Goitre (BMNG) were included in the study. Patients

with toxic Goitres were controlled on antithyroid drugs and beta blockers preoperatively. Patients with thyroid malignancy or suspicion of malignancy and those with recurrent Goitre were excluded. Preoperative assessment included baseline biochemical workup and thyroid function tests. Preoperative serum calcium and indirect laryngoscopy (IDL) was performed in all the patients.

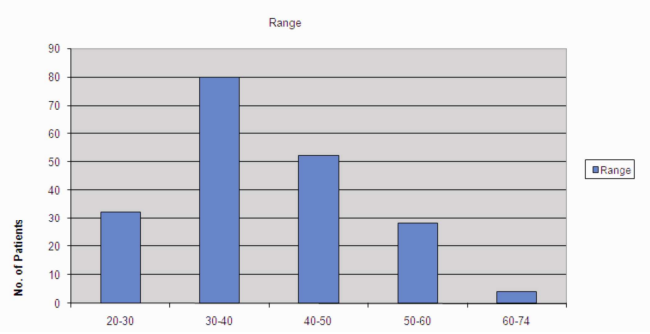
Surgical technique: Total thyroidectomy was performed using standard procedure under general anesthesia with muscle relaxation. Strap muscles were divided only where needed due to huge size of the lobe. Superior thyroid pedicle was double ligated (first transfixation stitch and second ligature locking the transfixation stitch). Recurrent laryngeal nerves were positively identified during the course of dissection and saved under vision in all the cases(Pic 1,2). Individual branches of the inferior thyroid artery supplying the lobe were ligated at the capsule with preservation of blood supply to parathyroids. All the parathyroid glands which were encountered during dissection were carefully preserved without damaging their blood supply (Pic 1,3). Whole specimen of thyroid was removed (Pic 4,5) and careful hemostasis performed. A suction drain was placed in all the cases.

Postoperative assessment included serum calcium estimation after 24 hrs and 07 days and 6 months of TT. Damage to parathyroid gland was considered permanent if hypocalcemia persisted for more than 6 months. IDL was performed in any patient with suspected RLN palsy. Drain was removed after 24 hrs. Follow up of the patients was done for 6 months.

RESULTS

Total number of 196 patients were included with 49 male and 147 female (male to female ratio of 1:3). Age ranged from 14-60 yrs (mean: 37 years) (Fig.1, 2). 136 patients undergoing TT had Non-Toxic MNG while 60 patients had Toxic MNG controlled on antithyroid drugs. Drain output ranged from10-100 ml in 24 hrs. No patient developed permanent RLN palsy. Seven patients (3.5%) had temporary unilateral RLN palsy. Fifty six patients (28.5%) developed temporary hypocalcaemia which was corrected by giving supplemental calcium. None of the patients developed permanent hypocalcaemia. Oral thyroxin was started on discharge and its dose was adjusted according to subsequent level of TSH. Two patients developed seroma formation which was aspirated with wide bored needle. Postoperative hemorrhage requiring re-exploration did not occur in any patient. Two patients got superficial wound infection which recovered with oral antibiotics (Fig.3, 4). Postoperative stay ranged from 2-4 days. Most of the patients were discharged 48 hrs after surgery. There was no postoperative mortality.

Figure 1
Age Wise Distribution of Patients



Age Range (Year)

Figure 2
Male & Female ratio

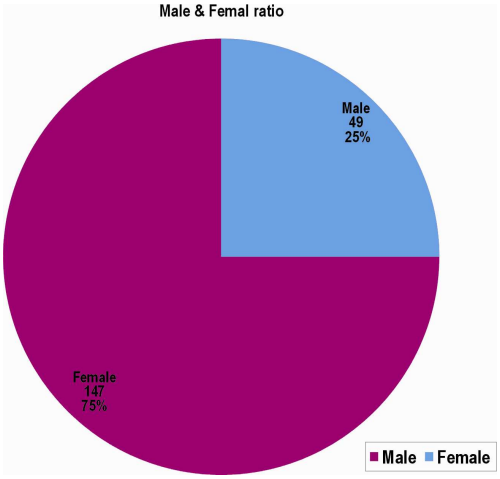
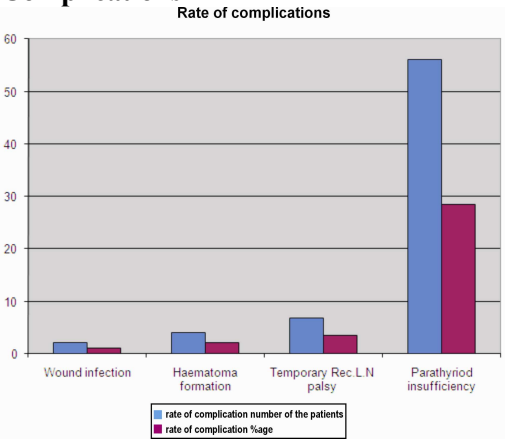
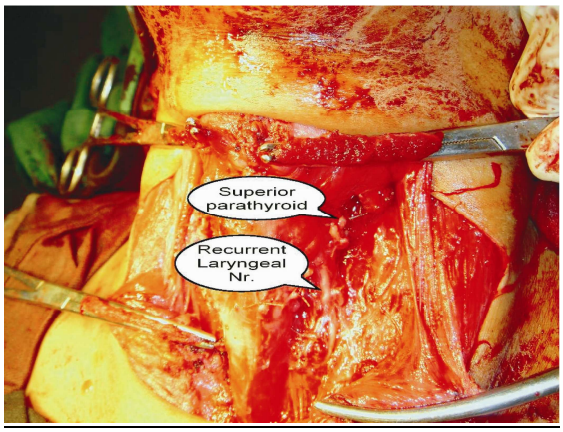


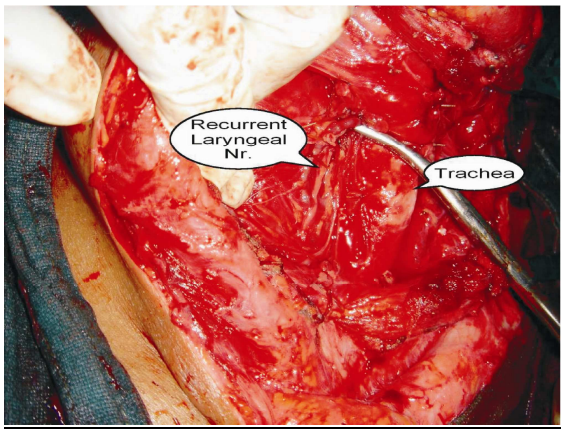
Figure 3
Complications



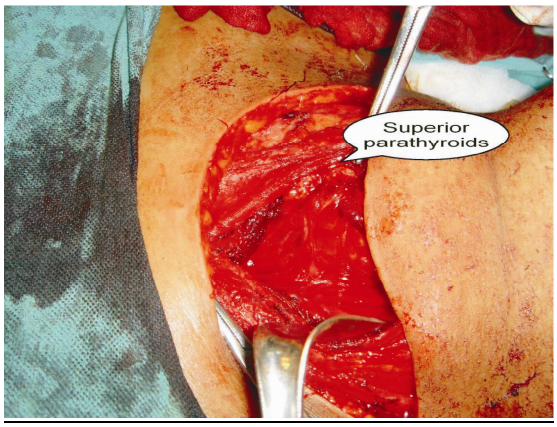
Picture 1
Operative Picture Showing Parathyroid Glands & Recurrent Larangeal Nerve



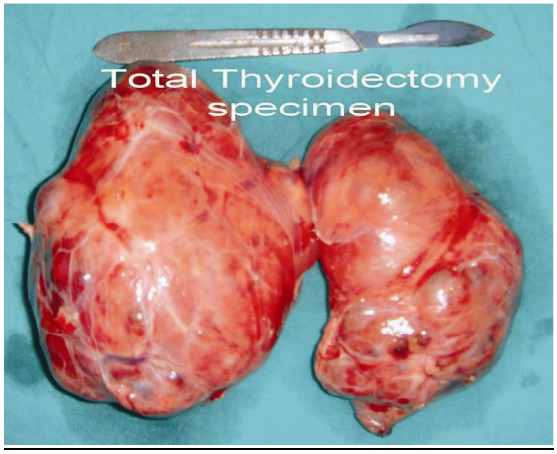
Picture 2
Operative Picture Showing Recurrent Larangeal Nerve



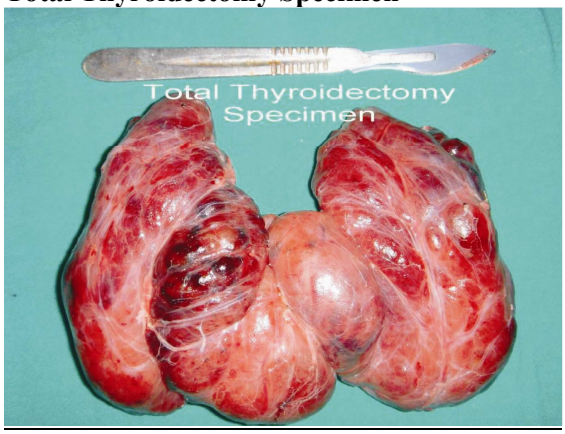
Picture 3
Operative Picture Showing Parathyroid Gland



Picture 4
Total Thyroidectomy Specimen



Picture 5
Total Thyroidectomy Specimen



DISCUSSION

Total thyroidectomy for benign diseases of the thyroid has been a controversial issue due to its associated complications. In BMNG the entire gland is diseased. Bilateral subtotal thyroidectomy in these cases only reduces the bulk of the diseased tissue[1]. Subtotal thyroidectomy is a less satisfactory procedure with a long-term recurrence rate as high as 45% that is not influenced by thyroxin therapy. Moreover, there are increased risks of re-operation when both sides have been previously operated[2]. When dealing with multinodular Goitre the surgeon commonly finds that there is no apparently normal thyroid tissue remaining. Leaving a small portion of diseased gland is unlikely to prevent the need for long-term thyroxin replacement therapy,

whereas attempts to suppress regrowth of that remaining gland by thyroxin do not guarantee success[3]. Benign multinodular Goitre is one of the most common endocrine surgical problems. Female population is more at risk of developing multinodular Goitre [4, 5]. Our study has shown a male to female ratio of 1:3.

One thirty six patients undergoing TT had non-toxic MNG while 60 patients had toxic MNG. Patients with toxicity were controlled with a combination of beta blockers and neomercazole before admission for surgery.

Permanent recurrent laryngeal nerve palsy is a rare phenomenon, with an overall risk of 0-1.4%, in expert hands if standard surgical practice of thyroid dissection is followed[6,7, 8]. None of our patients developed permanent RLN palsy. It is due to the fact that recurrent laryngeal nerves were positively identified and saved under vision in all the cases. Seven patients (3.5%) had temporary unilateral RLN palsy. It recovered within 4-6 weeks after thyroidectomy and all the patients regained normal voice. Literature shows an incidence of 1-10% of temporary RLN palsy in TT [7,8,9, 10].

Fifty six patients (28.5%) developed temporary hypocalcaemia. Different studies show different rate (range from 7.3-35%) of postoperative temporary hypocalcaemia[7,9,10,11,12,13]. None of the patients developed permanent hypocalcaemia. This is because of the fact that the parathyroid glands were identified during surgery and saved carefully with their intact blood supply. We never ligated the main trunk of inferior thyroid artery in order to conserve the blood supply to the parathyroid glands.

Securing of the superior pedicle with double ligature using the technique described and prompt care of hemostasis was paid special attention. Postoperative hemorrhage requiring re-exploration did not occur in any of our patients. Drain output ranged from10-100 ml in 24 hrs. Drain was removed in all the patients 24hrs after thyroidectomy.

Postoperative stay ranged from 2-4 days. Most of the patients were discharged 48 hrs after surgery. Study by Ian R and David Wilkinson has shown that length of stay varied from 1 to 62 days, including patients with co-morbidities, and averaged 3.8 days for total thyroidectomy[5].

There was no postoperative mortality.

In this study have shown that total thyroidectomy for multinodular Goitre can be performed with minimal complications. We believe that this results from the use of the technique of thyroidectomy as described, whereby dissection and ligation of the multiple vessels on the thyroid capsule preserve the blood supply of the parathyroids

and positive identification and preservation of recurrent laryngeal nerve minimizes inadvertent injury to this vital structure.

CONCLUSION

Total Thyroidectomy is a safe method for treating Benign Multinodular Goitre in experienced hands with low postoperative complications and morbidity.

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AUTHORS

- **Dr Muhammad Faisal Bilal Lodhi**
  Associate Professor Surgery,
  Punjab Medical College, Faisalabad
  iamfaisallodhi@live.com
- **Dr Sumaira Kanwal**
  Senior Registrar Surgery
  Allied Hospital, Faisalabad.
- **Dr. Muhammad Akram**
  Assistant Professor Surgery
  Allied Hospital, Faisalabad
- **Dr. Dur-e-Chaman**
  Senior Registrar Surgery
  Allied Hospital, Faisalabad
- **Prof. Dr. Yawar Saeed**
  Incharge Surgical Unit-III,
  Allied Hopspital, Faisalabad
- **Prof. Dr. Riaz Hussain**
  Professor of Surgery
  Principal
  Punjab Medical College, Faisalabad