

Outcomes of trans-cervical surgical management of massive substernal thyroid goiters

Back ground

A Retrosternal goiter is defined in which at least 50% of the gland is located in the mediastinum as detected by computed tomography (CT) and operative findings. Although extirpation of the gland can be performed via a collar incision, the surgeon should be prepared for a thoracic approach especially in extensive mediastinal thyroid masses. There is no clear distinction for determining preoperatively which cases will require sternotomy versus open thoracic approach. The aim of this study is to analyze the outcomes of 9 patients with retrosternal goiter.

Methods

- i. Retrospective review between 2006 and 2011 (6 years)
- ii. We present 9 cases of massive substernal thyroid goiters surgically treated.
- iii. Chart review included: age, sex, diagnosis, extent of goiter, treatment, diseases status, survival (months), size (gm), complications, and blood lose (ml) (Table 1).
- iv. Comparison with pre and post operative function: breathing, speech, and swallowing was made (Table 2).

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Table 1 Includes age, sex, diagnosis, extent of goiter, treatment, diseases status, survival (months), size (gm), complications, and blood lose (ml)

Pt #	Survival (Months)	Age	Diagnosis	Stage	Left lobe (Grams)	Right lobe (Grams)	Total Wt (Grams)	Pathology
1	18	69	PTC, MG	T1N0	156	95	251	No parathyroid glands, lymph nodes - neg
2	10	44	PTC, MG	T3N1bM0	15	85	100	2 parathyroid glands on each side, LN - 17 +
3	10	52	MNG	Adenomatous thyroid	168.1	184.5	353	no parathyroid glands
4	26	70	MNG	Adenomatous thyroid	114	14	128	no parathyroid glands
5	66	59	MNG	Adenomatous thyroid	113	106	119	no parathyroid glands
6	63	43	MNG	Adenomatous thyroid	NA	NA	179	2 parathyroid glands, no lymph nodes
7	46	86	MNG	Adenomatous thyroid	68	81	147	No parathyroid glands
8	34	45	PTC, MG	T1N0			206	1 parathyroid gland
9	20	64	MNG	Adenomatous thyroid	32	137	169	No parathyroid glands

Table 2 Comparison with pre and post operative function: breathing, speech and swallowing was made

Pt #	Procedure	VC injury	Parathyroid gland function	Extent of dissection thyroid gland into mediastinum	EBL (ml)
1	Total thyroidectomy, upper mediastinal exploration and tumor resect, bilat neck explor	LVC paralysis	Calcium supplementation	Under arch of aorta	50
2	Total thyroidectomy, bilat neck dissection 2-4, central neck diss, mediastinal dissection	None	Calcium supplementation	under arch of aorta to right main stem bronchus	500
3	Total thyroidectomy, mediastinal dissection	LVC paresis	Calcium supplementation	Middle of arch of aorta	300
4	total thyroidectomy, mediastinal dissection	RVC paresis	Okay	Under arch of aorta	50
5	Total thyroidectomy, bilat neck dissection, mediastinal dissection	None	Okay	Middle of arch of aorta	300
6	Total thyroidectomy, mediastinal dissection	None	Calcium supplementation	Middle of arch of aorta	50
7	Total thyroidectomy, mediastinal dissection	None	Okay	Middle of arch of aorta	100
8	Total thyroidectomy, mediastinal dissection	none	Calcium supplementation	Middle of arch of aorta	100
9	Total thyroidectomy, mediastinal dissection	None	Calcium supplementation	Under arch of aorta	50

Results

- a. 9 patients: 2 males and 7 females which 6 had multi-nodular goiters and 3 had goiters with papillary thyroid carcinoma.
- b. Extent of the goiters- 4 cases extended under the aortic arch, 5 cases extended to mid-arch. All compressed the trachea to some extent.
- c. All surgically underwent total thyroidectomy and mediastinal dissection via trans-cervical approach (neck dissections in 3 cases) average gland size was 184 grams
- d. All patients still alive and cancer free at 26.3 months. All returned to normal breathing, speech, and swallowing.
- e. Complications: 1 cases of vocal cord paralysis, 2 cases of vocal cord paresis, 6 cases of long term calcium supplementation
- f. A higher frequency of recurrent laryngeal nerve injury was noted in cancer cases due to tumor invasion (Figures 1-6).

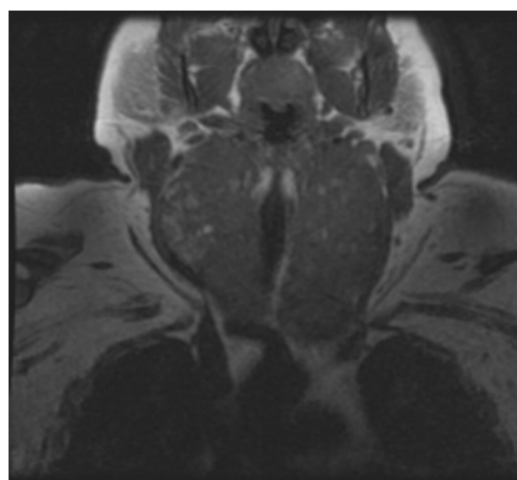


Figure 1 MRI demonstrating goiter extending under aortic arch.



Figure 2 Axial view of mediastinal goiter.



Figure 5 Goiter extending under aortic arch (sagittal view).



Figure 3 Goiter extend below aortic arch to level of carina



Figure 6 Bilateral goiter specimen.

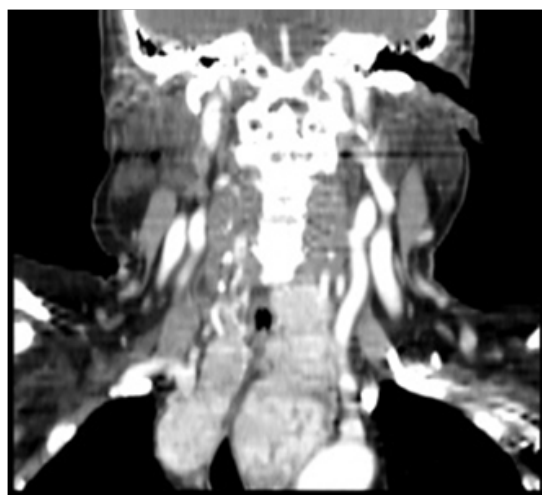


Figure 4 Goiter extending under aortic arch (coronal view).

Conclusion

Massive substernal goiters can be surgically removed via trans-cervical approach, thus avoiding sternotomy. Long term follow up patient needed for future study. Our hospital settings, although not large, is a good representation of potential outcomes in a non-university hospital.

Acknowledgments

None.

Conflicts of interest

The author declares there is no conflict of interest.