



A PROSPECTIVE COMPARATIVE STUDY ON RESPIRATORY FUNCTION IN HYPERTHYROID AND EUTHYROID PATIENTS UNDERGOING TOTAL THYROIDECTOMY AND ITS REVERSAL

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INTRODUCTION

- Hyperthyroidism causes respiratory dysfunction which can be demonstrated by simple non invasive pulmonary function tests (PFTs).
- The impact of hyperthyroidism on pulmonary function and its outcome after total thyroidectomy is not much studied.
- In this study we aim to evaluate pulmonary function in patients with hyperthyroidism compared to euthyroid patients.

MATERIALS AND METHODS

- Patients were divided into 2 groups

GROUP A(20)

- Biochemically hyperthyroid patients were included
- PFTs performed - At diagnosis, the day before surgery (after attaining euthyroidism), 1 week, 2 weeks, 1 month, 3 months post surgery and repeated at 6 months/more if needed.

GROUP B(20)

- Non toxic Euthyroid patients planned for surgery were included.
- PFTs performed- Day before surgery and post surgery same as group A
- Patients with cardiovascular diseases, respiratory diseases, History of smoking, recurrent laryngeal nerve palsy were **excluded**.

GROUP A

- 17/20(85%) patients showed restrictive pattern on PFT at diagnosis, among which 15 (88.2%) patients had statistically significant increase in parameters 15 days after total thyroidectomy with mean difference in FVC of 0.9, FEV1 - 1.4, FEV1/FVC - 11.7, FEF(25 75) - 1.2, PEF - 1.1 and continued to improve and reached baseline in (16/17)94.1% of patients at 1 month post surgery.

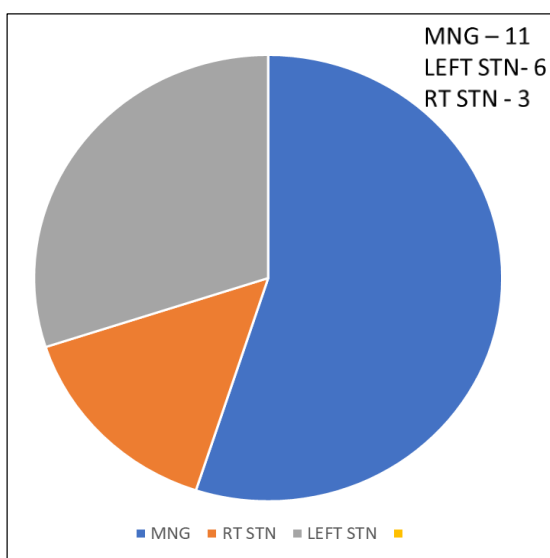
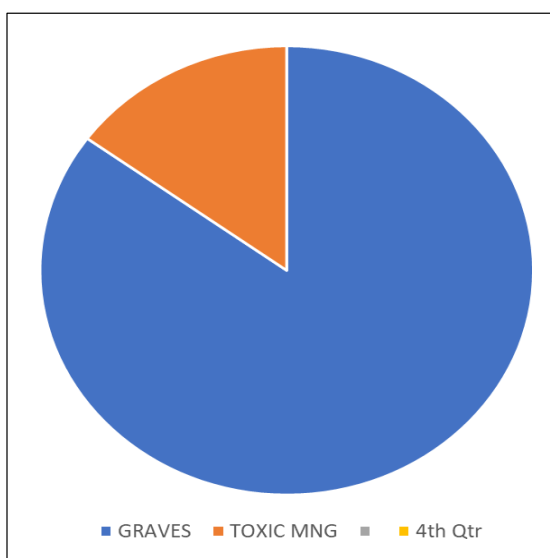
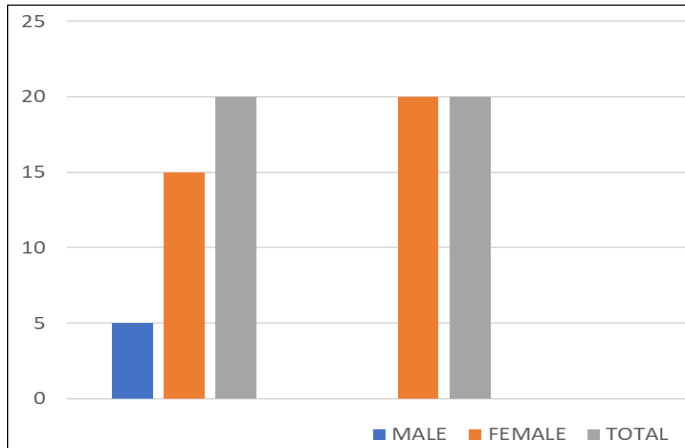
GROUP B

- 3/20(15%) had mild obstructive pattern, 4/20(20%) had mixed pattern, 13/20 (65%) had normal PFT. All 7/20 patients showed improvement after 15 days with mean difference in FVC-0.4, FEV1-0.35, FEV1/FVC-3.6, FEF (25 75)-0.35, but were not significant. 18/20(90%) reached baseline at 1 month post surgery
- Neither improvement nor derangement was noted at 3 months follow up
- 1/20 and 2/20 patients in group A and group B showed persistent abnormal PFT even at 3 months post surgery and were on follow up.

CONCLUSION

- Hyperthyroidism can cause unmanifested respiratory dysfunction in significant number of patients when compared to euthyroid patients which can be detected on PFTs and this dysfunction is improved after total thyroidectomy.

RESULTS



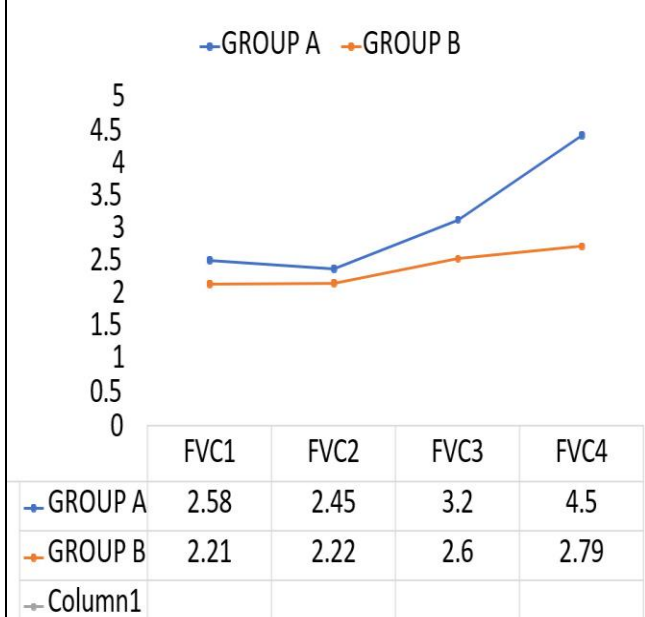
GROUP - A

| PARAMETER | PRE DICTED | AT DIAGNOSIS (MEAN ± SD) | P VALUE | DAY BEFORE SURGERY (MEAN ± SD) | P VALUE | 1 WEEK AFTER SURGERY (MEAN ± SD) | P VALUE | 2WEEKS AFTER SURGERY (MEAN ± SD) | P VALUE | 1 MONTH POST SURGERY | P VALUE |
|-------------|------------|--------------------------|---------|--------------------------------|---------|----------------------------------|---------|----------------------------------|---------|----------------------|---------|
| FVC | 3.3±1.37 | 2.3±0.76 | 0.006 | 2.58 ± 0.67 | 0.07 | 2.45±0.61 | 0.4 | 3.2±0.87 | 0.001 | 3.37±1.29 | 0.002 |
| FEV1 | 2.97±1.4 | 1.9±0.51 | 0.002 | 2.27 ± 0.71 | 0.06 | 2.34±0.62 | 0.01 | 2.51±0.61 | 0.001 | 3.02±1.37 | 0.001 |
| FEV1/FVC | 82.26±8.6 | 74.3±13.22 | 0.02 | 81.5±11.57 | 0.6 | 79.14±12.33 | 0.2 | 86.07±11.5 | 0.004 | 86.66±8.3 | 0.001 |
| FEF (25 75) | 3.4±1.64 | 2.0±1.09 | 0.02 | 2.1±1.14 | 0.77 | 3.03±1.38 | 0.8 | 3.26±1.59 | 0.01 | 3.53±1.59 | 0.001 |
| PEF | 4.51±1.74 | 4.69±2.36 | 0.9 | 4.84±2.17 | 0.8 | 5.48 ± 2.1 | 0.8 | 5.77±2.19 | 0.01 | 5.92±1.2 | 0.04 |

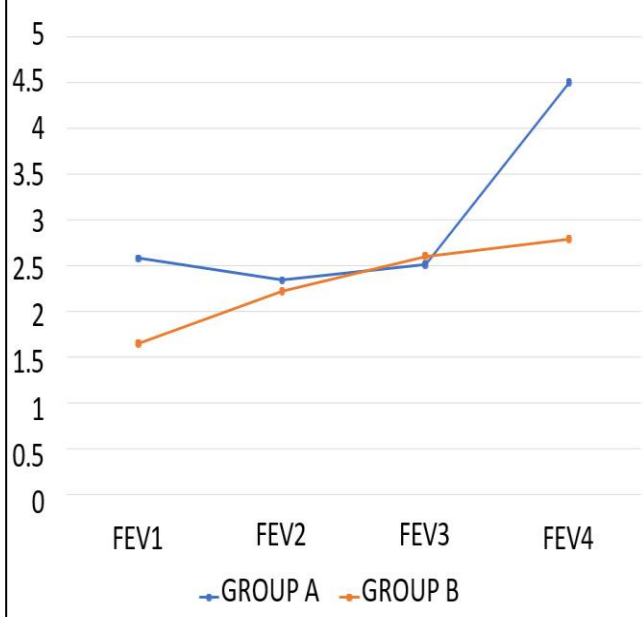
GROUP - B

| PARAMETER | PRE DICTED | DAY BEFORE SURGERY (MEAN ± SD) | P VALUE | 1 WEEK AFTER SURGERY (MEAN ± SD) | P VALUE | 2 WEEKS POST SURGERY | P VALUE | 1MONTH AFTER SURGERY | P VALUE |
|------------|------------|--------------------------------|---------|----------------------------------|---------|----------------------|---------|----------------------|---------|
| FVC | 2.61±0.8 | 2.21±0.6 | 0.35 | 2.22±0.47 | 0.9 | 2.6±0.52 | 0.03 | 2.79±0.56 | 0.003 |
| FEV1 | 1.8±0.5 | 1.65±0.58 | 0.38 | 1.93±0.6 | 0.1 | 2.02±0.6 | 0.05 | 2.25±0.6 | 0.002 |
| FEV1/FVC | 80.67±11.3 | 75.4±11.3 | 0.1 | 77.02±10.8 | 0.2 | 79.02±10.2 | 0.2 | 81.57±10.11 | 0.07 |
| FEF(25 75) | 2.2±0.9 | 1.63±0.9 | 0.05 | 1.9±0.9 | 0.3 | 1.98±0.8 | 0.2 | 2.3±0.7 | 0.08 |
| PEF | 4.3±1.8 | 3.09±1.53 | 0.02 | 3.0±1.42 | 0.8 | 3.2±1.2 | 0.8 | 3.9±1.4 | 0.08 |

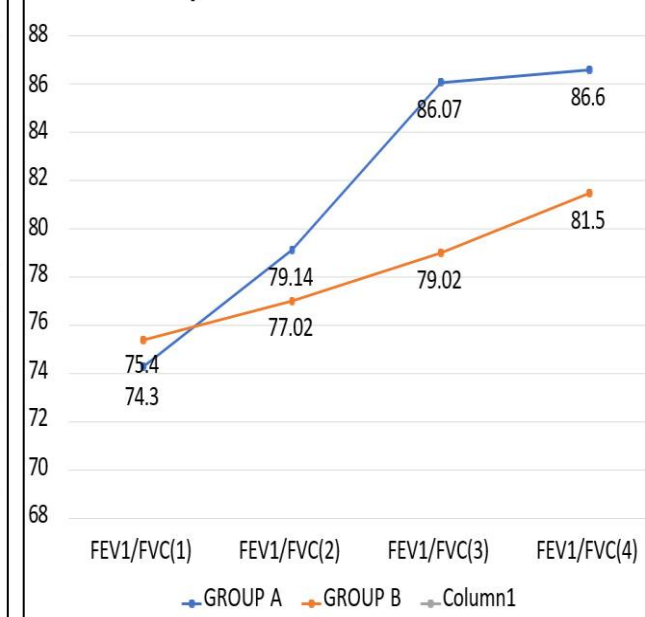
FVC - AT VARIOUS POINTS



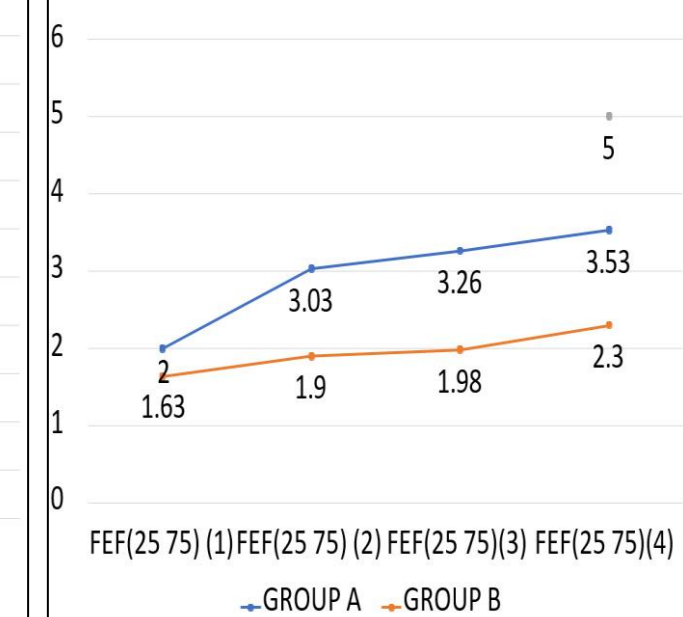
FEV1 - AT VARIOUS POINTS



FEV1/FVC - AT DIFFERENT POINTS



FEF25 75 - AT VARIOUS POINTS



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