

# Clinical Presentation of Patients with Multinodular Goiter at Madina Teaching Hospital

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## Abstract

**Objectives:** To evaluate the different modes of clinical presentation of multinodular goiter, its association with environmental risk factors and outcome of subtotal thyroidectomy in these patients. **Methods:** It was a case series conducted at Madina Teaching Hospital from January 2012 to Dec 2012. All patients presenting in surgical department with multinodular goiter were included in study. Data was analyzed by SPSS version 19. **Results:** Out of 100 patients presenting with multinodular goiter, 59% were in the euthyroid state, 39 % had thyrotoxicosis while only 2 of these had hypothyroidism. Goiter was more common in females (79 %) and between 31 to 40 years of age. Maximum number of patients was from Chiniot (46%). Majority (53%) patients presented with history longer than 5 years. The thyroid function status was not significantly associated with duration of swelling ( $p = 0.290$ ).

Age of the patient was significantly associated with their clinical presentation ( $p = 0.013$ ). Among the 39 26(66%) patients belonged to endemic areas and 12 (33%) patients had history of iodine intake while 15 (38%) patients had family history of Goiter. Most common post operative complication was hematoma formation (6%). **Conclusion:** The increasing evidence of thyrotoxicosis among multinodular goiter patients might be associated with increased intake of iodine in endemic areas for goiter prophylaxis, family history of thyrotoxicosis and delayed presentation. This area needs further research to explore other underlying factors for this changed clinical presentation in different parts of the world. Furthermore, subtotal thyroidectomy is safe surgical option in benign multinodular goiters with low morbidity. **Key Words:** Multinodular Goiter, Thyrotoxicosis, Risk Factors.

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## INTRODUCTION

Thyroid diseases are second most common endocrine disorder after Diabetes Mellitus.<sup>1</sup> Multinodular goiter is the most common cause of thyroid enlargement. Etiology of multinodular goiter is multifactorial including familial

background, iodine deficiency, goiterogens and radioactive exposure.<sup>2</sup> Goiter is common in mountainous areas. World health Organization estimated 5 % of world population being suffering from goiter and 75% of these people live in iodine deficient areas.<sup>3,4</sup> In Pakistan goiter is more common in northern areas situated at the base of Himalayas<sup>5</sup>. The iodine deficient areas in Punjab are situated along the Chenab River where the goiter is endemic. People living in endemic areas usually neglect their signs and present at later stages when they develop complications related to

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large size of goiter. Long standing cases of multinodular goiter develop complications like toxicity, malignancy and pressure symptoms due to huge size.<sup>6</sup>

Clinical Presentation of goiter is with swelling front of neck causing pain or dragging sensation, cosmetic problems, pressure symptoms like dysphagia / dyspnea or with symptoms of toxicity. Multinodular goiter is an irreversible disease and surgery is the treatment of choice, although radioactive iodine is an option in small sized goiters.<sup>7</sup> Surgical options include total and subtotal thyroidectomy. Commonly reported surgical complications are hematoma formation, recurrent laryngeal nerve damage and hypoparathyroidism.<sup>8</sup> Early detection of the disease and identification of etiological risk factors and their correction can decrease the rate of occurrence of the disease and thus lowering the surgical burden in endemic areas.

Keeping in view the huge burden of the disease and rapidly increasing number of patients with multinodular goiter presenting at Madina Teaching Hospital, we conducted this case series to evaluate our patients. This study was designed to evaluate the different modes of presentation multinodular goiter and association of certain environmental risk factors (family history, iodine intake or delayed presentation) with clinical presentation of MNG. Post operative complications were also studied in patients receiving surgical treatment.

#### **PATIENTS AND METHODS**

This was a case series conducted at the surgery department Madina Teaching Hospital during 12 months period starting from January 2012 to December 2012. Sample was collected by convenience sampling.

All patients having multinodular goiter during the abovementioned period were included in the study. Those who had diffuse goiter, solitary nodule or malignancy involving one lobe were excluded from the study. Patients meeting inclusion criteria were evaluated by detailed history, examination and investigations, to find out their mode of presentation. Thyroid scan, x ray soft tissue neck

and thoracic inlet was performed for retrosternal expansion. FNAC performed in suspected malignancies.

Hypothyroidism and hyperthyroid cases were made euthyroid by medical treatment before performing surgery. Subtotal thyroidectomy was performed and postoperative complications were assessed during hospital stay including hematoma formation, hypoparathyroidism, wound infection, and change in voice quality. Patients having change of voice and hypocalcemia were followed up for 3 months.

Data was entered in predesigned proforma and analyzed by SPSS 19. Frequency and percentages were calculated for clinical presentations of multinodular goiter and postoperative complications. Risk factors were evaluated for hypothyroidism and thyrotoxicosis. p value <0.05 was considered significant.

#### **RESULTS**

In our study, we included total 100 patients presenting with multinodular goiter. Fifty nine percent of the goiter patients were in the euthyroid state, 39 % had thyrotoxicosis while only 2 of them had hypothyroidism. Goiter was more common in females (79 %) in our study and most of the patients were between 31 to 40 years of age. (Table-1). Maximum number of patients was from Chiniot (46%) followed by Jhang (17%). (figure I). Fifteen patients presented from rest of areas of Punjab including Toba tek singh, Layyah, Multan, Sangla hill, Mamoon Kanjan Hafizabad and tandlianwala. Regarding the timing of presentation of goiter, majority (53%) patients presented in outdoor with history of goiter for more than 5 years. The thyroid function status was not significantly associated with duration of swelling (p = 0.290).

Majority of patients (67%) consulted the surgical outpatient department due to cosmetic reasons and vague complaints of neck pain. 31% consulted due to symptoms of toxicity while only four had pressure symptoms. Out of these 4 two patients also had symptoms of hyperthyroidism.

Age of the patient was significantly associated with their clinical presentation (p 0.013) (Table-2).

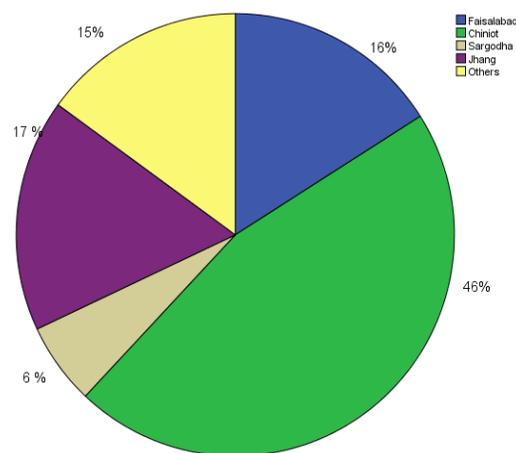
Among the 39 patients presenting with hyperthyroidism, 33 (85%) patients were of age more than 30 years, 26(66%) patients belonged to endemic areas, 12(33%) patients had history of iodine intake while 15(38%) patients had family history of Goitre.

Subtotal thyroidectomy was done in 81 patients and few patients developed postoperative complications. (Table-3).

**Table-1**  
**Demographic Characteristics of Patients (n=100)**

| Demographic Profile      | Frequency | Percentage |
|--------------------------|-----------|------------|
| Age of the patients      |           |            |
| Below 20 yrs             | 3         | 3          |
| 21 –30 yrs               | 14        | 14         |
| 31 – 40 yrs              | 40        | 40         |
| 41 – 50 yrs              | 26        | 26         |
| >50 yrs                  | 17        | 17         |
| Sex of the patients      |           |            |
| Male                     | 21        | 21         |
| Female                   | 79        | 79         |
| Family history of goiter |           |            |
| Yes                      | 38        | 38         |
| No                       | 62        | 62         |
| Iodine intake            |           |            |
| Yes                      | 38        | 38         |
| No                       | 62        | 62         |
| Duration of swelling     |           |            |
| < 1 yr                   | 8         | 8          |
| 1-5yrs                   | 39        | 39         |
| >5 yrs                   | 53        | 53         |

**Figure-1**  
**Area wise Distribution of Patients**



**Table-2**  
**Association of Environmental Factors with Clinical Presentation of Goiter**

| Factors              | Euthyroid State | Hyperthyroid State | Hypothyroid State | P-value |
|----------------------|-----------------|--------------------|-------------------|---------|
| Age                  |                 |                    |                   | 0.013   |
| 16-20 yrs            | 1               | 1                  | 1                 |         |
| 21-30 yrs            | 9               | 5                  | 0                 |         |
| 31-40 yrs            | 19              | 18                 | 1                 |         |
| 41-50 yrs            | 21              | 7                  | 0                 |         |
| >50 yrs              | 9               | 8                  | 0                 |         |
| Sex                  |                 |                    |                   | 0.194   |
| Male                 | 15              | 05                 | 1                 |         |
| Female               | 44              | 34                 | 1                 |         |
| Residence            |                 |                    |                   | 0.127   |
| Faisalabad           | 11              | 5                  | 0                 |         |
| Chinot               | 29              | 16                 | 1                 |         |
| Sargodha             | 1               | 4                  | 1                 |         |
| Jhang                | 11              | 6                  | 0                 |         |
| Others               | 7               | 8                  | 0                 |         |
| Iodine intake        |                 |                    |                   | 0.222   |
| Yes                  | 26              | 12                 | 0                 |         |
| No                   | 33              | 27                 | 2                 |         |
| Family history       |                 |                    |                   | 0.933   |
| Yes                  | 22              | 15                 | 1                 |         |
| No                   | 37              | 24                 | 1                 |         |
| Duration of swelling |                 |                    |                   | 0.290   |
| Less than 1 year     | 4               | 4                  | 0                 |         |
| 1 to 5 years         | 20              | 19                 | 0                 |         |
| More than 5 years    | 35              | 16                 | 2                 |         |

**Table-3**  
**Frequency of Complications after subtotal thyroidectomy (n=81)**

| Complications                 | Frequency | Percentage |
|-------------------------------|-----------|------------|
| Seroma Formation              | 4         | 4.9        |
| Hematoma formation            | 5         | 6.0        |
| Transient hoarseness of voice | 3         | 3.7        |
| Long term hoarseness          | 1         | 1.2        |
| Low pitch voice               | 2         | 2.4        |
| Transient Hypocalcaemia       | 1         | 1.2        |
| Long term hypocalcemia        | 1         | 1.2        |

## DISCUSSION

We studied various environmental risk factors for multinodular goiter. In our study maximum number of patients was between 31-40 years, two

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studies from Pakistan reported the mean age of multinodular goiter to be  $35 \pm 15$  years and 36.<sup>9,12</sup> Females were more in number, male to female ratio being 1: 3.76 which is comparable to another study conducted in Karachi.<sup>9</sup> Two other studies conducted in Pakistan reported male to female ratio 1:4 and 1:6.19 while Godara from India observed it to be 1:10.1.<sup>8,10,11</sup>

39% of patients in our study presented with thyrotoxicosis while 59 % had euthyroid status. Khadim Q in a local study conducted in Peshawar, found 6.6% cases of thyrotoxicosis out of 300<sup>13</sup>, While Saaq M. et al in a study of 527 cases cited 11.9% patients having hyperthyroidism.<sup>14</sup> As compared to other local studies, we have found a much higher rate of toxic MNG in our study. We also evaluated different risk factors associated with toxicity like family history, increased intake of iodine and delayed presentation.

Family history of goiter was observed in few patients presenting with multinodular goiter (38%) and only 15 of them were thyrotoxic. A study conducted by Manji N. et al showed that family history of hyperthyroidism was strongly associated with autoimmune causes of thyrotoxicosis.<sup>15</sup>

Sixty nine percent of patients having thyrotoxicosis in our study belonged to endemic area belt situated along river Chenab. T longvah in a study on endemic areas of India showed that iodine content of water & foods in endemic areas is quite less than that of non-endemic areas.<sup>16</sup> People of endemic areas usually start using iodinated salts without any consultation for prophylaxis against goiter. This increased iodine might be associated with toxicity in these areas. In Tasmania 1966, potassium iodide was added to bread as prophylaxis against endemic goiter. After this the incidence of thyrotoxicosis at the two thyroid clinics on the island became more than double.<sup>17</sup> Thirty three (33%) of toxic patients had history of iodine intake in our study which was not statistically significant. (p 0.222).

In patients undergoing surgical management i.e., subtotal thyroidectomy, 4 patients (4.9%) developed postoperative hoarseness of voice. Three of them improved within three months while one (1.2%) had long term hoarseness. 2.4% patients had low pitched voice due to external laryngeal nerve damage. Hoarseness that continued for more than 3 months was considered as long term hoarseness. This is comparable with other local and foreign studies. Saaq M. had 0.37%<sup>14</sup>, Khadim Q had 1%<sup>13</sup>, Jawaid M 0.5%<sup>8</sup>, Karamanacos SN 0.85%<sup>18</sup> and Khanzada TW 1.4%<sup>19</sup> patients with long term hoarseness of voice in subtotal thyroidectomies.

Postoperative hypocalcaemia can be a significant clinical problem, which may delay patients discharge and require a considerable postoperative care in immediate postoperative period. Hypocalcemia was observed in two (2.4%) of our patients. One of them recovered in first 3 months while other had long term problem. Other studies showed a range of this complication between 1.4% to 2.2% in cases of subtotal thyroidectomies much less than in total thyroidectomy.<sup>20,21,22</sup>

Postoperative bleeding into the wound is a serious complication of thyroidectomy. When bleeding and haematoma occur deep to the strap muscles, the situation can rapidly develop into life threatening emergency because of associated airway obstruction. In this study, 5 (6%) patients had postoperative hematoma. Only one (1.2%) patient had serious haemorrhage and needed re-exploration, others were treated by conservative management & aspiration of hematoma. Other studies quote different frequencies of haemorrhage like Khadim Q 2.3%<sup>13</sup>, Khanzada 1.4%<sup>19</sup> and Jaawed 1.6%.<sup>8</sup> Our study had a seroma formation rate of 4.9 % which is slightly higher than other studies.<sup>13,19</sup> Not a single patient in our study had other complication like tracheomalacia, thyroid crisis & no mortality was there as well. In our study, the indications for surgery were dominated by vague neck pain & cosmetic symptom.s followed by pressure

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symptoms. Mujeeb R in a study in Peshawar mentioned cosmetic & pressure symptoms as main indications of surgery.<sup>23</sup>

## CONCLUSION

Multinodular goiters are common in endemic areas. Commonly affected population is middle age females. Certain risk factors like increased iodine supplementation, family history need to be explored further to find their association with toxicity in multinodular goiter. Normal healthy people may avoid unsupervised and unnecessary iodinated salt as prophylaxis. Subtotal thyroidectomy is a safe option in our setup with low morbidity, short hospital stay and no in-hospital mortality in cases of benign multinodular goiters.

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