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# Review of survival rates 20-years after conservative surgery for papillary thyroid carcinoma☆,☆☆

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**KEYWORDS**
Thyroidectomy;
Thyroid neoplasms;
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**Abstract**
*Introduction:* A less extensive thyroidectomy could be used for patients in the low risk group.
*Objective:* To perform a critical follow-up after lobectomy with isthmusectomy for the treatment of papillary thyroid carcinoma in patients with a single nodule limited to the periphery of the lobe.
*Methods:* Thirty-one patients with thyroid papillary carcinoma operated on till 1993 were selected. They had undergone lobectomy with isthmusectomy. This is a retrospective cohort study in which the oncological outcome (contralateral and regional recurrence) and the reoperation complications (recurrent nerve paralysis/paresis and hypoparathyroidism) were evaluated. Descriptive analysis was employed.
*Results:* In the last decade (2003–2013), 6 (20%) contralateral recurrences were observed in the remaining lobe and in 1 of these cases (3%), contralateral lymph node metastases were noted. A completion thyroidectomy plus lymphadenectomy was performed, without modification of global survival.
*Conclusion:* Because of the rate of 20% of contralateral recurrence after a 20-year follow-up, we suggest modification of the surgical paradigm for total thyroidectomy as an initial therapy.


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**PALAVRAS-CHAVE**
Tireoidectomia;
Neoplasias da glândula tireoide;
Glândula tireoide;
Carcinoma papilar

**Revisão dos resultados de sobrevida a 20 anos da cirurgia conservadora no carcinoma papilífero da tireoide**

**Resumo**
*Introdução:* Uma cirurgia menos extensa da glândula tireoide poderia ser utilizada em pacientes do grupo de baixo risco.
*Objetivo:* Realizar seguimento crítico após hemitireoidectomia para tratamento do carcinoma papilífero de tireoide em casos de nódulo único limitado à periferia do lobo.
*Método:* Foram selecionados 31 pacientes portadores de carcinoma papilífero de tireoide operados, até 1993, por lobectomia mais istmectomia. Trata-se de um estudo retrospectivo de coorte sendo avaliados o resultado oncológico (recidiva contralateral e regional) e complicações de reoperação (paralisia/paresia de nervo recorrente e hipoparatireoidismo). Utilizou-se análise descritiva.
*Resultados:* Na última década, foram observados 6 (20%) casos de recidivas contralaterais (lobo remanescente) sendo que, em um caso, estava acompanhado de metástases linfonodais contralaterais (3%), sem impacto na sobrevida dos pacientes reoperados.
*Conclusão:* A ocorrência de 20% de recidiva contralateral após uma média evolutiva de 20 anos sugere revisão do paradigma conservador para a totalização imediata da tireoidectomia.


## Introduction

The definition of the therapeutic paradigm for differentiated thyroid cancers still remains a challenge for experts. Historically, the low aggressiveness of these lesions, which present slow growth, has led clinicians to adopt a more conservative approach in patients with a single nodule located on the periphery of the thyroid lobe, oncologically justifying the conservation of the remaining lobe; this usually was sufficient tissue to maintain function, without the need for hormone replacement and also help maintain the regulation of thyroid-stimulating hormone (TSH). Along with these facts, in principle, the clinical and histological absence of metastatic regional lymph nodes did not justify elective procedures, since lymph node metastases are staging findings, but are not prognostic in the short and medium term.[1–4] Another consideration is that a partial resection decreases the potential for iatrogenic complications (especially recurrent nerve injury and hypoparathyroidism), which, although uncommon, do occur.

The literature reveals that patients with papillary carcinoma undergoing total lobectomy and isthmectomy have equivalent overall survival compared to patients treated by total thyroidectomy.[5] Currently, over 70% of patients with papillary carcinoma of thyroid are treated with total thyroidectomy. However, many patients are initially treated by lobectomy. In these patients, most clinicians would favor a total thyroidectomy, in face of risk of disease in the contralateral lobe.[6] The survival of patients with low-risk tumors is excellent, regardless of the extent of their thyroidectomy. Thus, it is suggested that a less extensive surgical approach, such as a lobectomy plus isthmectomy, could be used in patients at low risk, rather than the systematic recommendation for total thyroidectomy. Unfortunately, no randomized clinical trials comparing the effectiveness of these two forms of surgical approaches have been published; thus, surgeons must select which procedure to use, based on their own opinion and from the evidence of retrospective studies.[7]

In this sense, during the period from 1977 to 1997, with a 10–15-year follow-up, there were no incidents of contralateral or lymph node recurrence until 2003.[8] However, the facts observed in our study indicate a need for reflection on the indication to adopt a more aggressive initial therapy. The question that remains relates to the possibility that a second resection, performed decades after the first, may be necessary in adverse clinical conditions, as a result of any comorbid condition that would be affecting these patients, along with possible iatrogenic complications resulting from the handling of the previously treated operative field.[9]

This study aimed to evaluate the survival results 20 years after lobectomy plus isthmectomy for patients with papillary thyroid carcinoma.

## Methods

This study was approved by the Ethics Committee on Research of the institution in which it was conducted, under No. 222.

One hundred and five medical records of patients with papillary thyroid carcinoma submitted to surgery before the year 1993 were analyzed. Of these, 31 cases which clinically and ultrasonographically presented a node limited to a gland lobe were selected; these patients had a minimum of five years follow-up and were submitted to an ipsilateral lobectomy together with an isthmectomy. Thus, this was a cohort (with follow-up) study of patients submitted to a hemithyroidectomy for papillary thyroid carcinoma. The effects studied were: oncological outcome, through the occurrence of contralateral and regional recurrence and, in

**Table 1** Patient distribution according to gender and age.

| | Male | Female | Total |
|---|---|---|---|
| ≥45 years | 3 (21%) | 11 (79%) | 14 (45%) |
| <45 years | 4 (23%) | 13 (77%) | 17 (55%) |
| Total | 7 (22%) | 24 (78%) | 31 (100%) |

**Table 2** Patient distribution according to tumor size.

| Diameter (cm) | Number (%) |
|---|---|
| <1 | 3 (9) |
| 1–2 | 15 (48) |
| >2 | 13 (41) |

those cases of reoperation, potential complications (paralysis/paresis of recurrent nerve and clinical and laboratory hypoparathyroidism) were evaluated. Descriptive statistics were applied.

## Results

Of the 31 patients, seven (22%) were male and 24 (78%) female, ranging between 16 and 79 years. Seventeen patients (55%) belonged to a group under 45 years and 14 (45%) were over 45 years (Table 1).

The nodes had a size between 1 cm and 5 cm in their longest axis. Nodes with a mean diameter of 2.2 cm (Table 2) prevailed. Six patients (19%) of this series showed metastatic cervical lymph node enlargement, and underwent functional neck dissection in association with thyroidectomy. All patients are alive; in six (20%) relapse occurred in the residual lobe, followed by surgical rescue, with 100% survival.

Regarding complications, one patient (3%) had transient dysphonia, with unilateral vocal fold paresis, which resolved spontaneously. There were no cases of transient or permanent hypoparathyroidism.

Mean follow-up was 20 years. Ten patients (32%) were monitored between 10 and 15 years, 10 (32%) had follow-ups over 15 years, and 11 (37%) over 20 years. There were no cases of local or regional recurrence or of distant metastasis, with all patients asymptomatic and without the disease.

## Discussion

Because of the difference of opinion, the hypothesis that treatment outcomes are comparable with both methods, but with fewer complications for partial thyroidectomy (lobectomy plus isthmectomy),[10] for many years the authors' clinical reasoning spoke in favor of the latter conduct in this service. However, it was decided to review this series of papillary thyroid carcinoma limited to only one lobe and treated by partial thyroidectomy, with a minimum evolution of five years, and to check the incidence and location of recurrences and distant metastases, postoperative complications, and survival results after five, 10, 15, and 20 years.

Disagreements do not occur when facing locally advanced tumors with infiltration of adjacent tissues and/or with regional or distant metastases.[11] The problem occurs in that group of patients considered as low risk cases. No objection has been found to the statement that the treatment of differentiated thyroid carcinoma is primarily surgical – what is under discussion is the extent of the surgical approach to this gland and lymph nodes, and hence the ramifications related to the monitoring of these patients.[12]

In the initial cases, each node measured 1–5 cm in its longest axis, with a mean diameter of 2.2 cm. Six patients (19%) had metastatic cervical lymph node enlargement and underwent functional neck dissection plus a partial thyroidectomy. Even though there were nodes up to 5 cm in size observed at the time of the procedure, in cases of papillary carcinoma the incidence of distant metastasis is minimal, allowing the selection of the partial procedure as first choice. The use of iodine $I^{131}$ is questionable because, in these patients, distant dissemination usually does not occur; therefore, this practice is still considered controversial.[13,14] The fact that six patients (19%) had cervical metastasis without capsular rupture makes the functional neck dissection a perfectly acceptable procedure. But the emphasis of this study was in the assessment of long-term results.

This series demonstrated that 80% of patients had nodes larger than 1 cm, and 22% had histologically positive cervical metastases, treated by neck dissection. All patients were followed for over five years, and more than 60% of the cases were followed for over ten years. There was no local or regional recurrence.

Tumor size is considered an important indicator of risk for recurrence in the contralateral lobe, as well as the involvement of a regional lymph node and distant metastasis. However, microcarcinomata with clinical manifestations, that is, the presence of regional or distant metastasis, are more aggressive compared to asymptomatic microcarcinomata, which tend to have a good outcome with conservative treatment.[15]

Over the past ten years, the presence of contralateral recurrence was found in six patients (all with more than 20 years of follow-up), which represents 20% (6/31). Although the survival rate was 100% (thanks to surgical rescue), a 20% recurrence rate suggests a rethinking of the procedures adopted in the first period of this study. Thus, in view of the need for a complete thyroidectomy, we wanted to revisit the initial plan of performing the hemithyroidectomy as the first therapeutic approach and have come to consider total resection of the thyroid gland from the beginning. We combine this with hormone therapy in young patients who, due to their expected long survival, might need a second surgery because of local recurrence in the event of a less than complete thyroidectomy.

Lymph node metastases, can be detected early with the imaging methods now available, more recently by positron emission tomography/computed tomography at the regional level and, more rarely, for distant manifestations. However, in the initial cases of the six patients with recurrence in the contralateral lobe (the emphasis of the authors' previous study),[8] only in one were contralateral lymph nodes in levels IV–V detected. The development of these recurrences was accompanied by a slight increase in thyroglobulin, despite being usually valued as the marker of recurrence.[16–19] In contrast to other head and neck cancers, the various surgical therapeutic approaches for differentiated thyroid cancer have good survival results, with some exceptions, regardless of the approach performed.

Epidemiological data suggest the existence of regional and international differences with respect to tumor biology. While U.S. studies could not demonstrate the advantages of a total thyroidectomy and of neck dissection, compared to less extensive procedures, especially in T2/T3 cases,[20] European studies show an increase in survival rates when lymphadenectomy was performed in addition to the total thyroidectomy.[21] Regarding multicentric foci, it is known that the potential for existence of tumor foci in a remaining contralateral lobe is variable. Autopsy studies have detected microscopic foci of papillary thyroid carcinoma as incidental findings in more than 25% of patients killed by other diseases, reaching up to 90% of cases in different centers. However, the authors of this study have always reported bilateral rates lower than those for local recurrence. This means that the presence of a contralateral microscopic tumor is not an indication that there will necessarily be a clinical manifestation of this residual tumor through local recurrence; and if this does happen, that there will be a higher rate of death from cancer.

Nonetheless, the fear of multicentric foci should be included among the reasons for routinely performing a total thyroidectomy in patients with papillary thyroid carcinoma, since it could cause recurrence and death; the risk of a transformation of a non-resected microscopic tumor to an anaplastic malignant form; and the opportunity to monitor thyroglobulin, a marker of recurrence of this disease.[22]

The rates of thyroidectomy complications have been reduced by improvements in surgical technique and the experience of specialized centers. Nevertheless, temporary paresis of the recurrent nerve and hypoparathyroidism are the main complications in patients treated with total thyroidectomy. Thus, when comparing complications in the groups who underwent primary total thyroidectomy versus total thyroidectomy as a secondary procedure for a well-differentiated thyroid carcinoma, no significant difference was noted, except for a transient recurrent paresis, which occurred more often in the second group.[23] Thus, this does not seem to be a criterion for decision making.

Previously, this service's surgical preference was lobectomy plus isthmectomy in patients with papillary carcinomas limited to a glandular lobe, with a virtually nonexistent complication rate. However, the long term contralateral recurrence rate of 20% of led us to revise this, in favor of a initial total thyroidectomy. For the specialist who treats patients with thyroid cancer, it is critical to take into account the experience of specialized centers, thus building his/her own experience, since the completion of randomized prospective studies although a desirable practice, has questionable feasibility.

## Conclusion

The occurrence of 20% contralateral recurrence after an average of 20 years of evolution suggests review of the conservative paradigm for immediate completion of thyroidectomy.

## Conflicts of interest

The authors declare no conflicts of interest.

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