Chattagram Maa-O-Shishu Hospital Medical College Journal
Volume 25, Issue 2, July 2026
https://doi.org/10.3329/cmoshmcj.v25i2.94065

Case Report

Complete Disappearance of Low-Risk Papillary Thyroid Microcarcinoma following Microwave Ablation: First Case Report of Any Thermal Ablation from Bangladesh

Muhammed Abu Bakar[1*]
Orcid: org/0000-0003-3127

Shuhang Xu[2]
Orcid: 0000-0002-8619-5376

[1]Department of Endocrinology and Metabolism
Chattagram Maa-O-Shishu Hospital Medical College
Chattogram, Bangladesh.

[2]Department of Endocrinology
Affiliated Hospital of Integrated Traditional Chinese and Western Medicine
Nanjing University of Chinese Medicine
Nanjing, China.

Abstract

Background: *Papillary Thyroid Microcarcinoma (PTMC) is generally associated with an excellent prognosis and surgery remains the standard treatment. However, minimally invasive thermal ablation techniques, including Microwave Ablation (MWA) have emerged as effective alternatives for carefully selected patients with low-risk PTMC who decline surgery. This is the first reported case from Bangladesh describing the successful treatment of PTMC using any thermal ablation technique (Radiofrequency Ablation or Microwave Ablation or Laser Ablation).*

Case Presentation: *A 27-year-old woman with hypertension and subclinical hypothyroidism presented with neck swelling. Neck ultrasonography revealed a 1.03 × 0.94 × 0.97 cm hypoechoic thyroid nodule with microcalcifications (ACR TI-RADS5) in the right thyroid lobe without cervical lymphadenopathy. Fine-needle aspiration cytology performed twice showed benign cytology (Bethesda II) however, core needle biopsy confirmed papillary thyroid carcinoma. After declining thyroidectomy, the patient underwent ultrasound-guided microwave ablation using a trans-isthmic approach with hydrodissection. The procedure was completed successfully without complications.*

Results: *Serial ultrasonography demonstrated an expected transient increase in lesion size immediately after ablation, followed by progressive volume reduction. Complete disappearance of the treated lesion was achieved at 9 months, with no evidence of local recurrence or cervical lymph node metastasis after 2 years 1month of follow-up. Thyroid function remained stable throughout follow-up without increasing the levothyroxine dose, and no procedure-related complications occurred.*

Conclusion: *Ultrasound-guided microwave ablation was safe, feasible and effective in this patient with low-risk PTMC who declined surgery. This case represents the first reported thyroid thermal ablation case from Bangladesh and supports the potential role of MWA as a minimally invasive alternative to surgery in carefully selected patients. Further prospective studies with longer follow-up are needed to establish long-term oncological outcomes.*

Key words: Microwave ablation; Papillary thyroid microcarcinoma; Thermal ablation; Thyroid cancer; Ultrasound-guided ablation; Bangladesh.

INTRODUCTION

Papillary Thyroid Microcarcinoma (PTMC) defined as papillary thyroid carcinoma measuring ≤1 cm in greatest diameter, is the most common subtype of thyroid cancer and is associated with an excellent prognosis, with disease-specific survival exceeding 99%.[1] The widespread use of high-resolution ultrasonography has led to a marked increase in the detection of PTMC over the past two decades, whereas

*Correspondence to:
Dr. Muhammed Abu Bakar
Assistant Professor
Department of Endocrinology and Metabolism
Chattagram Maa-O-Shishu Hospital Medical College
Chattogram, Bangladesh.
Mobile : +88 01829 79 29 22
Email : abubakar.joy@gmail.com

Date of Submission : 26.05.2026
Date of Acceptance : 20.06.2026

www.banglajol.info/index.php/CMOSHMCJ

disease- specific mortality has remained relatively stable.[1,2] Traditionally, thyroid lobectomy or total thyroidectomy has been considered the standard treatment for PTMC. Although surgery provides excellent oncological outcomes, it may be associated with recurrent laryngeal nerve injury, hypoparathyroidism, lifelong thyroid hormone replacement, cervical scarring, and impaired quality of life.[1,3]

In recent years, image-guided thermal ablation techniques-including Radiofrequency Ablation (RFA) Microwave Ablation (MWA) and laser ablation-have emerged as minimally invasive alternatives for carefully selected patients with low-risk PTMC who refuse surgery or are unsuitable surgical candidates.[3-5] MWA produces rapid coagulative necrosis by delivering electromagnetic energy, achieving effective local tumor control while preserving normal thyroid parenchyma. Increasing evidence demonstrates substantial tumor volume reduction, frequent complete disappearance of the ablated lesion, preservation of thyroid function, excellent cosmetic outcomes, and low complication rates following MWA.[5-10]

Recent international expert consensus recommends ultrasound-guided thermal ablation as an alternative treatment for carefully selected patients with solitary intrathyroidal T1N0M0 low-risk PTMC without evidence of lymph node or distant metastasis, particularly when surgery is declined, contraindicated or when patients prefer a minimally invasive approach after informed discussion.[9] Furthermore, a recent propensity-matched cohort study demonstrated that ultrasound-guided MWA achieved recurrence-free survival and complication rates comparable with surgery in patients with low-risk solitary PTMC, supporting its role as a safe and effective treatment option in appropriately selected patients.[10]

Despite the growing evidence supporting thermal ablation for low-risk PTMC, published experience from South Asia remains scarce, and no previous case of thermal ablation for thyroid malignancy has been reported from Bangladesh. We report the case from Bangladesh of low-risk papillary thyroid microcarcinoma successfully treated with ultrasound-guided microwave ablation, resulting in complete disappearance of the lesion without recurrence after 2 years and 1 month of follow-up.

CASE PRESENTATION

27 years old young lady with Hypertension and Sub-clinical hypothyroidism was referred to endocrine clinic National Hospital and Diagnostic Ltd Chattogram, Bangladesh on 25th April 2024 with the complaints of neck swelling. On ultrasonography of neck there is a hypoechoic nodule with micro-calcification measuring 1.03x0.94x0.97 cm (0.47 ml):ACR-TIRADS-TR5 in right lobe near to isthmas and there is no Lymphnodes enlargement in neck.Thyroid function test was normal with replacemen of 25ugm thyroxine daily, TSH 2.042 uIU/ml, FT-4 0.69 ng/dl,Thyroid autuantibidies was negative; Anti TPO Ab 16.7 IU/ml, Anti TG Ab 31.50 IU/ml, FNAC from Suspected nodule in two different times showed Benign cytology: Bethasda-II.Due to suspicious ultrasound findings core Needle Biopsy was taken from the nodule and found Papillary Thyroid Carcinoma. Patient was counsel for surgery but she denied to do Thyroidectomy and as alternative she had choosen microwave ablation.

Pre Ablation Screening

All relevant preablation screening tests was normal results (blood count, coagulation tests, ECG,Chest X-Ray, screening tests for sexually transmitted diseases and Hepatitis B).

Microwave Ablation Procedure

Patient had underwent to Microwave Ablation on 14th June 2024. After all asceptic precaution local Anasthesia done with 1% lidocaine in thyroid capsule along the nodule and ablation port site.Initially Hydrodissection in posteromedial and antero lateral surface of right lobe near thyroid nodule was done with 15 ml 0.9% normal saline and 3 ml Sodium Hyalurinate. Trans-Isthemic Ablation port was made with 15G needle and a 16G antenna (ECO-100A13) was inserted.Ablation has done in moving shot technique with the power of 30 watts and total ablation time was 1 minute 08 seconds.Beyond thyroid nodular margin was ablated. Post ablation color doppler ultrasound was checked and there was absence of vascularity in ablated area.There was no complications during operation.Patient was discharged from hospital 2 hours after the procedure with oral antibiotic and NSAIDs.

Follow Up

Patient was in regular follow up with thyroid function tests and ultrasound. Gradual reduction of size was observed with complete disappearance of nodule occured after 9 months. With further follow up with ultrasound there is no evidence of reappearance in further follow-up till 14th July 2026 (2 years 1 month) . Thyroid function was normal with replacement of 25ug levothyroxine and there was no need of increase the dose of thyroxine.

Patient was in monthly follow up with recording of Ultrasonographic changes and thyroid function tests (Table I).

Table I Changes in Volum e Reduction Rate (URR) after Microwave Ablation (MWA) Papillary Thyroid Microcarcinoma (PTMC) with Changes in Thyroid Profile in Two Years Followup

	Before MWA (Baseline)	10 days after MWA	1 month after MWA	2 months after MWA	4 months after MWA	5 months after MWA	6 months after MWA	9 months after MWA	1 year 4 months After MW	2 years 1 months after MWA
Size & volume of nodule with change in percentage of										
Volume in right sided	1.03x0.94x 0.97 cm,	1.95x1.51x 1.33 cm,	1.70x1.50x 0.82 cm,	1.15x1.55x 0.63 cm,	1.31x0.94x 0.24 cm,	1.12x0.19x 0.63 cm,	Very tiny linear scar	Disappearance of nodule.	No reappearance	No reappearance
PTMC (T1N0M0)	0.47 ml	1.96ml, VRR 316.99%	1.05 ml, VRR 122.65%	0.56 ml, VRR 23.39%	0.15 ml, VRR 68.5%	0.07 ml, VRR 85.73%	in ablation area		of nodule	of nodule
Microcalcification	Present in Left Thyroid nodule Absent in Right Thyroid nodule	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
Abnormal lymph nodes	No	No	No	No	No	No	No	No	No	No
Color Doppler Study	Increased vascularity in Right thyroid nodule and Normal color flow within Right nodule	Decreased color flow within the nodule	Decreased color flow within the nodule	Decreased color flow within the nodule	Decreased color flow within the nodule	Decreased color flow within the nodule	Decreased color flow within the nodule	Nodule is absent	Nodule is absent	Nodule is absent
TSH (0.35-5.50 uIU/ml)	2.042 uIU/ml	0.664 uIU/ml	2.36 uIU/ml	2.80 uIU/ml	2.66 uIU/ml	1.529 uIU/ml	2.83uIU/ml	3.46 uIU/ml	3.13 uIU/ml	2.45 uIU/ml
FT3 (3.5-6.5 pmol/l)		3.83 pmol/l	3.64 pmol/l	4.86 pmol/l	4.06 pmol/l	4.13 pmol/l	4.23 pmol/l	3.95 pmol/l	3.83 pmol/l	3.28 pmol/l
FT4 (11.5-22.7 pmol/l)	14.34 pmol/l	20.46 pmol/l	13.60 pmol/ml	13.97 pmol/l	16.25 pmol/l	21.83pmol/l	18.23 pmol/l	15.36 pmol/l	16.83 pmol/l	15.32 pmol/l
Anti TPOAb (<60 IU/ml)	23.56 IU/ml	13.16 IU/ml	<2 IU/ml	61.26 IU/ml	43.25 IU/ml	19.37 IU/ml	28.25 IU/ml	18.65 IU/ml	23.36 IU/ml	19.28 IU/ml
Anti TG Ab (<4.5 IU/ml)	12.25 IU/ml	18.25 IU/ml	45.79 IU/ml	<2 IU/ml	23.53 IU/ml	13.74 IU/ml	18.53 IU/ml	22.35 IU/ml	16.36 IU/ml	18.75 IU/ml

https://doi.org/10.3329/cmoshmcj.v25i2.94065 Volume 25, Issue 2, July 2026

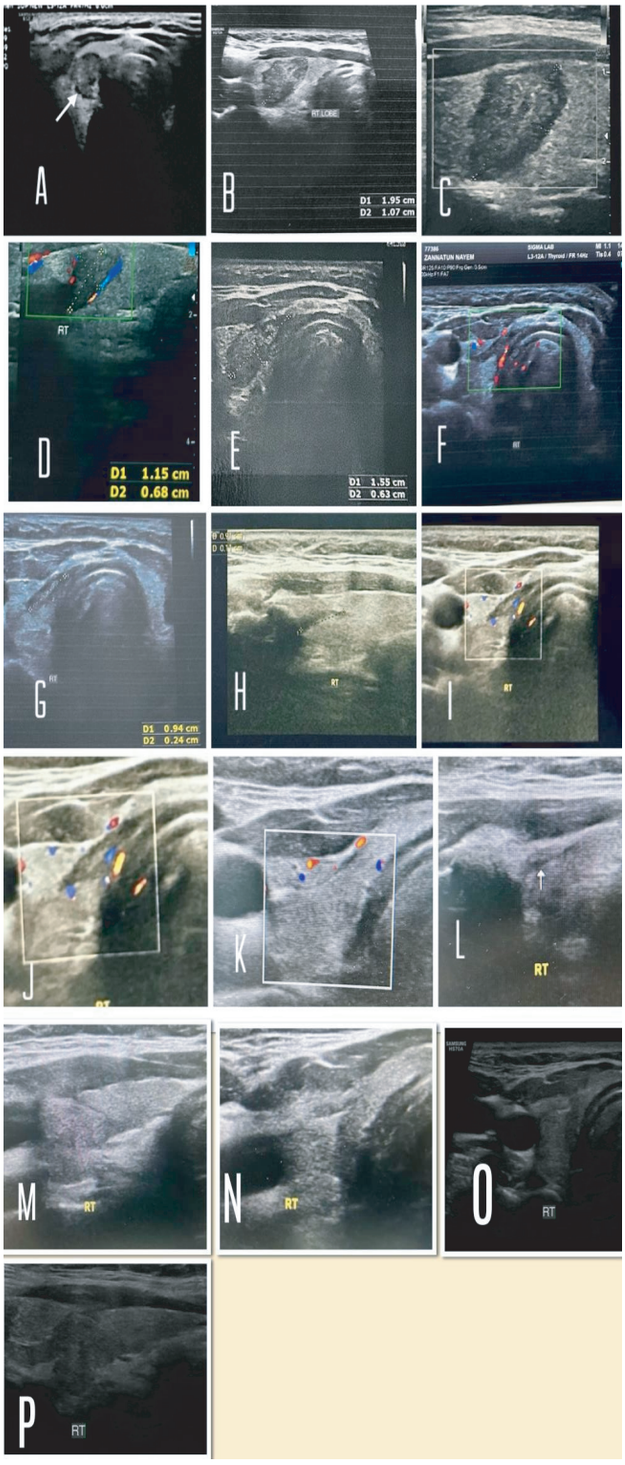


Figure 1 A:Before Microwave Ablation (MWA), B&C:1 week after MWA, D&E:2 months after MWA, F&G:4 months after MWA, H,I&J: 5 months after MWA, K : 6 months after MWA, L:9 months after MWA, M&N: 1 year 4 months after MWA, O & P After
2 years 1 months of MWA

DISCUSSION

Microwave ablation has emerged as a promising minimally invasive treatment for carefully selected patients with low-risk papillary thyroid microcarcinoma. Compared with surgery, MWA offers several potential advantages, including avoidance of general anesthesia, preservation of normal thyroid tissue, minimal scarring, shorter recovery time and a lower risk of recurrent laryngeal nerve injury and hypoparathyroidism.[3,4,9] These benefits make MWA an attractive option for patients who decline surgery or have contraindications to thyroidectomy.

The growing body of evidence supporting MWA has recently been strengthened by a propensity-matched cohort study comparing ultrasound-guided MWA with surgery in patients with low-risk solitary PTMC. The study demonstrated similar recurrence-free survival and complication rates between the two treatment modalities, suggesting that MWA may represent an effective alternative to conventional surgery in appropriately selected patients.[10]

In the present case, the patient refused surgery and underwent ultrasound-guided microwave ablation. Follow-up ultrasonography demonstrated an initial increase in lesion size immediately after ablation, which is an expected consequence of post- ablation edema and inflammatory changes rather than disease progression. Subsequently, progressive reduction in lesion volume was observed, culminating in complete disappearance of the treated lesion by 9 months, with no evidence of recurrence after 2 years and 1 month of follow-up. These findings are consistent with previous reports demonstrating progressive absorption of the ablated lesion, durable local tumor control, and excellent long-term oncological outcomes following MWA.[5-8,10]

The procedure was well tolerated, and no complications such as recurrent laryngeal nerve injury, hematoma, infection, skin burns, or deterioration of thyroid function were observed. Thyroid hormone levels remained stable throughout follow-up without requiring an increase in levothyroxine dosage, and serial ultrasonography showed no abnormal cervical lymph nodes. These findings are in agreement with systematic reviews and recent comparative studies showing that MWA preserves thyroid function while maintaining a low complication rate comparable with surgery.[6,7,10] Appropriate patient selection remains essential for successful thermal ablation. Recent international expert consensus recommends ultrasound-guided thermal ablation for patients with solitary intrathyroidal T1N0M0 low-risk PTMC after careful pre-procedural evaluation to exclude lymph node or distant metastasis and emphasizes standardized procedural techniques and structured follow-up to optimize oncological outcomes.[9] Similarly, recent reviews have highlighted the importance of meticulous preoperative assessment, including high-resolution ultrasonography, cytological confirmation,

https://doi.org/10.3329/cmoshmcj.v25i2.94065

molecular testing when appropriate, and long-term surveillance following treatment.[11] Our patient fulfilled these selection criteria and achieved an excellent structural and biochemical outcome, supporting the feasibility of this approach in appropriately selected patients.

To our knowledge, this is the first reported case from Bangladesh describing successful treatment of papillary thyroid microcarcinoma using a thermal ablation technique.

This case demonstrates that ultrasound-guided microwave ablation is feasible, safe and effective in the local healthcare setting. Together with accumulating international evidence and recent expert consensus supporting thermal ablation as an alternative to surgery for selected patients with low-risk PTMC, this report provides preliminary evidence supporting the introduction of this minimally invasive treatment modality in Bangladesh. Larger prospective studies with longer follow-up are required to evaluate long-term oncological outcomes and further define the role of thermal ablation in the management of low-risk PTMC.

CONCLUSION

This case demonstrates that ultrasound-guided microwave ablation is a safe, feasible, and effective treatment option for carefully selected patients with low-risk papillary thyroid microcarcinoma who decline surgery. Our patient achieved complete disappearance of the lesion within 9 months, maintained normal thyroid function, experienced no procedure-related complications and showed no evidence of recurrence after 2 years 1month of follow-up. To our knowledge, this is the first reported case from Bangladesh describing successful treatment of papillary thyroid microcarcinoma using a thermal ablation technique. This report highlights the potential role of microwave ablation as a minimally invasive alternative to surgery in appropriately selected patients. Nevertheless, larger prospective studies with longer follow-up are needed to establish its long-term oncological efficacy and safety in the Bangladeshi population.

DISCLOSURE

Both the authors declared no competing interest.

REFERENCES

1. Haugen BR, Alexander EK, Bible KC, Doherty GM, Mandel SJ, Nikiforov YE et al. 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer. Thyroid. 2016;26(1):1–133.
2. Ito Y, Miyauchi A, Kihara M, Higashiyama T, Kobayashi K, Miya A. Patient age is significantly related to the progression of papillary microcarcinoma of the thyroid under observation. Thyroid. 2014;24(1):27–34.
3. Orloff LA, Noel JE, Stack BC Jr, Russell JO, Angelos P, Baek JH, et al. American Thyroid Association Statement on Thermal Ablation for Benign Thyroid Nodules, Recurrent Thyroid Cancer, and Primary Papillary Thyroid Microcarcinoma. Thyroid. 2023;33(4):406–427.
4. Mauri G, Hegedüs L, Bandula S, Cazzato RL, Czarniecka A, Dudeck O, et al. European Thyroid Association Clinical Practice Guideline for Image-Guided Ablation in Benign Thyroid Nodules and Selected Thyroid Cancers. Eur Thyroid J. 2020;9(4):172–185.
5. Yue W, Wang S, Wang B, Xu Q, Yu S et al. Ultrasound-guided microwave ablation for papillary thyroid microcarcinoma: Long-term outcomes. Eur Radiol. 2021;31:904–913.
6. Kim JH, Baek JH, Lim HK, Ahn HS, Baek SM, Choi YJ et al. Efficacy and safety of thermal ablation for small papillary thyroid carcinoma: A systematic review. Int J Hyperthermia. 2022;39:1–10.
7. Cho SJ, Baek JH, Chung SR, Choi YJ, Lee JH et al. Long-term outcomes of thermal ablation for low-risk papillary thyroid microcarcinoma: A systematic review and meta-analysis. Thyroid. 2024.
8. Zhang M, Luo Y, Zhang Y et al. Five-year outcomes of microwave ablation for low-risk papillary thyroid microcarcinoma. Front Endocrinol (Lausanne).2023;14.
9. Zhao ZL, Wang SR, Kuo J, Çekiç B, Liang L et al. 2024 International Expert Consensus on US-guided Thermal Ablation for T1N0M0 Papillary Thyroid Cancer. Radiology. 2025;315:e240347.
10. Ren Y, Li Y, Chu X, Chen G, Han X, Zhao Y et al. Ultrasound-guided microwave ablation versus surgery for low-risk solitary papillary thyroid microcarcinoma: a propensity-matched cohort study. Endocrine Connections. 2025;14:e240366.
11. Ren Y, Lu C, Xu S. Ultrasound-guided thermal ablation for papillary thyroid microcarcinoma: the devil is in the details. Expert Review of Endocrinology & Metabolism. 2023;18(6):421–431.

https://doi.org/10.3329/cmoshmcj.v25i2.94065 Volume 25, Issue 2, July 2026