

Successful Multimodality Management of Advanced Acinic Cell Carcinoma of The Parotid Gland: A Case Report

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Abstract.

Background Acinic cell carcinoma (ACC) is a rare malignant salivary gland tumor that predominantly arises in the parotid gland. Although generally considered a low-grade malignancy, locally advanced or recurrent disease presents significant therapeutic challenges because of its infiltrative behavior and the absence of standardized treatment strategies. **Case Presentation:** A 56-year-old man presented with a recurrent painful left submandibular mass three years after previous surgical excision. Magnetic resonance imaging demonstrated a large left parotid tumor with mandibular erosion. The patient underwent neoadjuvant transarterial chemoembolization (TACE), followed by wide tumor excision, radical neck dissection, and immediate deltopectoral flap reconstruction. Histopathological examination confirmed acinic cell carcinoma of the parotid gland with a pathological stage of ypT4aN0M0 (Stage IVA). The postoperative course was uneventful, with satisfactory wound healing and viable flap reconstruction. A second-stage flap division was successfully performed without complications.

Conclusion: This case demonstrates that multimodality management incorporating

neoadjuvant TACE, radical surgical resection, and reconstructive surgery can

provide favorable short-term oncologic and functional outcomes in selected patients

with advanced recurrent acinic cell carcinoma of the parotid gland.

Multidisciplinary collaboration remains essential for individualized treatment

planning in this rare malignancy.

Keywords: Acinic Cell Carcinoma; Parotid Gland; Transarterial

Chemoembolization; Radical Neck Dissection an Case Report.

I. INTRODUCTION

Acinic cell carcinoma (ACC) is a rare malignant epithelial neoplasm of the salivary glands, accounting for approximately 6–10% of all salivary gland malignancies [1]. The tumor predominantly arises from the parotid gland and is generally considered a low-grade malignancy with a relatively favorable prognosis [2]. Nevertheless, a subset of patients presents with locally advanced disease characterized by extensive soft tissue invasion, involvement of adjacent structures, local recurrence, or distant metastasis, all of which significantly complicate treatment and worsen clinical outcomes [3]. Although surgery remains the cornerstone of management, advanced cases often require a multidisciplinary approach to achieve optimal oncologic control while preserving function and quality of life [4].

The management of advanced or recurrent ACC remains challenging because of its rarity and the limited availability of high-level evidence to guide treatment decisions [5]. Current therapeutic strategies may include surgery, radiotherapy, systemic chemotherapy, and more recently, locoregional interventions such as transarterial chemotherapy or chemoembolization in selected patients [6]. However, there is no standardized treatment algorithm for locally advanced ACC, particularly in patients with recurrent tumors involving critical anatomical structures. Consequently, individualized treatment planning through multidisciplinary collaboration is frequently necessary, integrating surgical oncology, medical oncology, radiology, pathology, and reconstructive surgery to maximize treatment efficacy and minimize postoperative morbidity [7], [8].

Neoadjuvant transarterial chemotherapy has been increasingly explored as a therapeutic option for selected head and neck malignancies because it enables the delivery of high local concentrations of chemotherapeutic agents while reducing systemic toxicity [9]. In patients with bulky or hypervascular tumors, this approach may reduce tumor burden, improve resectability, and facilitate subsequent radical surgery [10]. Nevertheless, the clinical experience regarding its application in parotid gland ACC remains extremely limited, with only a small number of published reports describing its role within a multimodality

treatment strategy [11]. Furthermore, extensive tumor resection frequently necessitates complex reconstructive procedures, such as pedicled or free flap reconstruction, to restore soft tissue coverage and maintain postoperative function [12].

A case of locally advanced recurrent acinic cell carcinoma of the parotid gland successfully managed through a multimodality treatment approach consisting of neoadjuvant transarterial chemoembolization, radical surgical excision with neck dissection, and deltopectoral flap reconstruction [13], [14]. This case highlights the feasibility of combining locoregional chemotherapy, radical oncologic surgery, and reconstructive techniques to achieve favorable clinical outcomes in a challenging presentation of advanced ACC. We also discuss the clinical decision-making process and review the current literature regarding multimodality management of this uncommon salivary gland malignancy.

II. CASE REPORT

Clinical Presentation

A 56-year-old Indonesian man was referred to Prof. Dr. R. D. Kandou General Hospital, Manado, with a progressively enlarging mass in the left submandibular region accompanied by persistent pain. The mass had initially appeared approximately three years earlier as a small nodule and gradually increased in size. The patient had previously undergone surgical excision at the same anatomical site, followed by local recurrence. He had also received chemotherapy prior to referral. The patient denied weight loss, dyspnea, dysphagia, fever, or other constitutional symptoms. On physical examination, the patient was in moderate general condition and fully conscious. A large, firm, tender, and fixed mass measuring approximately 10 × 10 cm was observed in the left submandibular region. No clinically palpable cervical lymphadenopathy was identified. The initial clinical appearance is presented in Figure 1.



Fig. 1. Initial clinical appearance demonstrating a large fixed mass involving the left submandibular and upper cervical

region at the time of presentation. The lesion had progressively enlarged over three years following previous surgical excision, consistent with locally recurrent disease. Physical examination revealed a firm, tender, and fixed mass measuring approximately 10 × 10 cm before initiation of multimodality treatment.

Radiological Evaluation

Histopathological examination performed in 2022 had initially suggested secretory carcinoma of the parotid gland with acinic cell carcinoma as the differential diagnosis. A contrast-enhanced MRI of the neck

performed on 18 November 2025 using multiplanar T1-, T2-, STIR-, DWI-, and pre- and post-contrast T1-fat-suppressed sequences demonstrated a heterogeneous iso- to hyperintense lobulated mass with relatively well-defined margins in the left upper cervical region, originating from the left parotid gland. The lesion measured approximately $5.8 \times 7.0 \times 5.6$ cm and caused erosion of the left mandibular bone. The mass compressed the left submandibular gland without definite evidence of direct invasion. No significant cervical lymphadenopathy was identified. The MRI findings are shown in Figure 2.

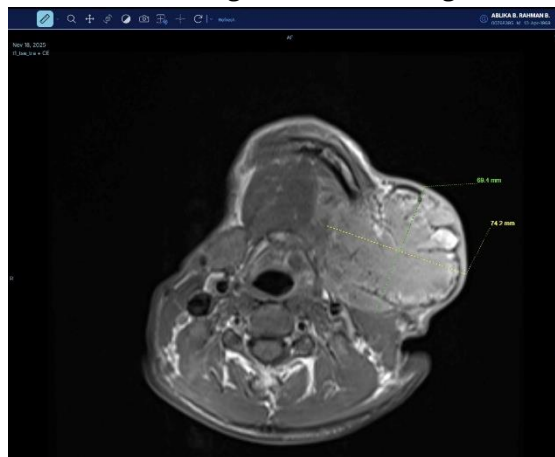


Fig. 2. Contrast-enhanced MRI of the neck demonstrating a heterogeneous lobulated mass arising from the left parotid gland, measuring approximately $5.8 \times 7.0 \times 5.6$ cm, with erosion of the left mandibular bone and compression of the ipsilateral submandibular gland.

Neoadjuvant Transarterial Chemoembolization

Given the large recurrent tumor and its locally advanced characteristics, a multidisciplinary treatment strategy incorporating neoadjuvant transarterial chemoembolization (TACE) was selected before definitive surgery. The patient received three cycles of transarterial chemotherapy and embolization. Each cycle consisted of:

- Docetaxel 93.9 mg
- Cisplatin 41.75 mg
- 5-Fluorouracil (5-FU) 417.5 mg

The first TACE was performed on 5 January 2026. At this stage, the clinically documented mass measured approximately 10×10 cm. The second TACE was performed on 5 February 2026. Clinical evaluation following the second treatment demonstrated that the patient remained clinically stable, although the cervical mass was still present. The third TACE was subsequently performed on 2 March 2026. Serial clinical photographs obtained before and after the three TACE procedures demonstrated the evolution of the tumor and are presented as Figure 3.



Fig. 3. Clinical evolution of the left submandibular tumor following three cycles of transarterial chemoembolization.

(A) Before TACE 1, with a clinically documented tumor size of approximately 10×10 cm; (B) after TACE 2;

and (C) after TACE 3, demonstrating progressive clinical reduction of the tumor mass.

Post-TACE Imaging Evaluation

Following the third TACE, contrast-enhanced CT of the neck was performed to reassess the tumor before definitive surgery. The CT demonstrated a lobulated hypodense lesion in the left cervical region measuring approximately 7.9×7.8 cm, with peripheral rim enhancement. No obvious destructive bone lesion was identified on the CT examination, and the visualized thoracic structures showed no pulmonary nodules or pleural effusion. Compared with the clinically documented mass measuring approximately 10×10 cm before treatment, the post-TACE CT demonstrated a smaller documented tumor dimension of approximately 7.9×7.8 cm. Although the measurements were obtained using different assessment modalities and therefore should not be interpreted as a formal volumetric response assessment, the findings demonstrated a clinically and radiologically smaller tumor burden following three cycles of TACE. The post-TACE CT findings are shown in Figure 4.

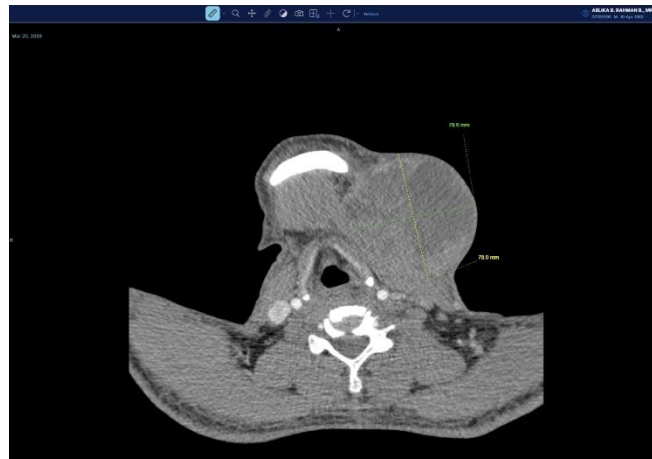


Fig. 4. Contrast-enhanced CT of the neck following three cycles of TACE demonstrating a lobulated hypodense lesion

measuring approximately 7.9×7.8 cm with peripheral rim enhancement in the left cervical region.

Definitive Surgical Management

Following completion of three TACE cycles and subsequent radiological reassessment, the patient underwent definitive surgical treatment on 9 April 2026. Wide tumor excision and radical neck dissection were performed under general anesthesia. The surgical procedure included extensive resection of the tumor and involved surrounding tissues, followed by reconstruction of the resulting soft-tissue defect using a pedicled deltopectoral musculocutaneous flap. The intraoperative findings and surgical procedure are shown in Figure 5.



Figure 5. Intraoperative management of the recurrent left parotid tumor. (A) Tumor exposure; (B) wide tumor excision; (C) design of the deltopectoral flap incision on the anterior chest wall; and (D) final postoperative appearance

following the first operation with tumor resection and deltopectoral flap reconstruction.

Histopathological Findings and Reconstruction

The resected specimen was submitted for histopathological examination. The final pathological diagnosis confirmed acinic cell carcinoma of the parotid gland. The tumor was staged as ypT4aN0M0, Stage IVA, following neoadjuvant transarterial chemotherapy and embolization. Immediate reconstruction was performed using a pedicled deltopectoral flap. The flap demonstrated good viability during postoperative follow-up, and the surgical wound healed without evidence of infection, wound dehiscence, or flap necrosis. Approximately six weeks after the initial reconstruction, the patient underwent elective division of the deltopectoral flap pedicle. Intraoperative examination demonstrated no gross residual tumor in the flap. Additional tissue from the flap margin was submitted for pathological examination. The reconstructive procedure and subsequent flap division are presented in Figure 6.



Fig. 6. Deltopectoral flap reconstruction and postoperative outcome. (A) Intraoperative design and elevation of the deltopectoral flap from the anterior chest wall; and (B) postoperative appearance following deltopectoral flap reconstruction.

Following comprehensive clinical evaluation, the patient underwent a stepwise multidisciplinary treatment strategy consisting of supportive management, neoadjuvant transarterial chemoembolization (TACE), definitive surgical resection, and staged reconstructive surgery. Throughout the treatment course, serial clinical, radiological, and pathological assessments were performed to guide therapeutic decision-making and evaluate treatment response. The chronological sequence of the patient's clinical course, interventions, and outcomes is summarized in Table 1.

Table 1. Timeline of Clinical Course

Date	Clinical/Radiological Findings	Intervention	Outcome
2022	Initial histopathology suggested secretory carcinoma of the parotid gland, with acinic cell carcinoma as differential diagnosis.	Previous surgical excision	Local recurrence subsequently developed.
18 Nov 2025	MRI showed a heterogeneous lobulated left	Radiological assessment	Locally advanced

	parotid mass measuring $5.8 \times 7.0 \times 5.6$ cm, with erosion of the left mandible.		recurrent parotid tumor.
21 Jan 2026	Large firm and fixed left submandibular mass, approximately 10×10 cm, associated with cancer-related pain.	Supportive management	Patient prepared for neoadjuvant treatment.
5 Jan 2026	Large recurrent tumor, clinically approximately 10×10 cm.	TACE 1: Docetaxel 93.9 mg + Cisplatin 41.75 mg + 5-FU 417.5 mg	Treatment tolerated.
5 Feb 2026	Persistent left cervical mass.	TACE 2: Docetaxel 93.9 mg + Cisplatin 41.75 mg + 5-FU 417.5 mg	Clinical condition remained stable.
2 Mar 2026	Persistent but clinically reduced tumor burden.	TACE 3: Docetaxel 93.9 mg + Cisplatin 41.75 mg + 5-FU 417.5 mg	Completed three cycles of neoadjuvant TACE.
Mar 2026	CT showed a lobulated lesion measuring approximately 7.9×7.8 cm with rim enhancement.	Post-TACE CT evaluation	Smaller documented tumor dimension; surgery planned.
9 Apr 2026	Locally advanced recurrent tumor requiring extensive resection.	Wide excision + radical neck dissection + deltopectoral flap reconstruction	Successful tumor resection and reconstruction.
Postoperative	Histopathology confirmed Acinic Cell Carcinoma of the Parotid, ypT4aN0M0, Stage IVA.	Postoperative monitoring	Viable flap and satisfactory wound healing.
21 May 2026	Stable postoperative condition.	Deltopectoral flap division	Successful second-stage reconstruction.

The table presents the clinical timeline of a patient with a recurrent parotid gland tumor whose diagnosis shifted from a preliminary suspicion of secretory carcinoma in 2022 to stage IVA acinic cell carcinoma (ypT4aN0M0) postoperatively. Following the detection of significant local tumor enlargement via MRI and CT scans between late 2025 and early 2026, the patient underwent three cycles of neoadjuvant Transarterial Chemoembolization (TACE) (January–March 2026) using a combination of Docetaxel, Cisplatin, and 5-FU, which successfully reduced the tumor burden. This successful chemical intervention was followed in April 2026 by wide excision, radical neck dissection, and deltopectoral flap reconstruction; the procedure was finalized with flap division in May 2026, resulting in a stable and well-healed postoperative wound.

III. DISCUSSION

Acinic cell carcinoma (ACC) is an uncommon malignant epithelial neoplasm of the salivary glands that predominantly arises in the parotid gland. Although ACC is generally considered a low-grade malignancy, recurrent and locally advanced tumors may demonstrate more aggressive behavior and present substantial therapeutic challenges, particularly when the tumor involves adjacent anatomical structures. In the present case, the patient had a history of previous surgical excision followed by local recurrence and subsequently developed a large, firm, and fixed left submandibular mass measuring approximately 10×10 cm on clinical examination. Pre-treatment magnetic resonance imaging (MRI) demonstrated a heterogeneous lobulated mass arising from the left parotid gland, measuring approximately $5.8 \times 7.0 \times 5.6$ cm, with erosion of the left mandibular bone and compression of the ipsilateral submandibular gland. These findings indicated a locally advanced recurrent tumor requiring an individualized multimodality treatment strategy.

Another important consideration in this case was the diagnostic challenge. The initial histopathological examination had suggested secretory carcinoma of the parotid gland with acinic cell carcinoma as a differential diagnosis, whereas the final postoperative histopathological examination confirmed acinic cell carcinoma of the parotid gland. The distinction between these entities can be challenging because of overlapping morphological features, particularly in limited or previously treated specimens. Accurate pathological diagnosis is important because it provides the basis for definitive diagnosis, staging, prognostic assessment, and subsequent treatment planning. In this patient, the final

pathological diagnosis of ACC and pathological staging of ypT4aN0M0 (Stage IVA) provided confirmation of the locally advanced nature of the disease after neoadjuvant treatment.

The most distinctive aspect of this case was the use of three consecutive cycles of neoadjuvant transarterial chemoembolization (TACE) before definitive surgery. TACE was selected as a locoregional treatment strategy because of the large recurrent tumor and its locally advanced characteristics. Each treatment cycle consisted of docetaxel 93.9 mg, cisplatin 41.75 mg, and 5-fluorouracil (5-FU) 417.5 mg. The first cycle was administered on 5 January 2026, followed by the second cycle on 5 February 2026 and the third cycle on 2 March 2026. The repeated administration of the same regimen provided a sequential treatment approach before definitive surgical intervention. Although the evidence supporting TACE in salivary gland malignancies remains limited, its potential value in selected locally advanced tumors lies in the ability to deliver chemotherapy directly through the tumor arterial supply while simultaneously performing embolization. A previous report has described the use of TACE in recurrent parotid carcinoma, supporting the feasibility of this approach in selected cases of advanced salivary gland malignancy [14].

An important finding in the present case was the decrease in the documented tumor size following three cycles of TACE. Before treatment, physical examination documented a large left submandibular mass measuring approximately 10 × 10 cm. Following the third TACE cycle, contrast-enhanced CT demonstrated a lobulated lesion measuring approximately 7.9 × 7.8 cm with peripheral rim enhancement. Thus, the documented tumor dimension was smaller after completion of three TACE cycles. However, because the initial measurement was obtained clinically whereas the post-treatment measurement was obtained by CT, these values should not be interpreted as a formal volumetric response rate. Nevertheless, the sequential clinical and radiological findings suggested a reduction in the documented tumor burden following the three-cycle TACE regimen. This reduction was clinically relevant because it provided an opportunity to proceed to definitive surgical management in a patient who initially presented with a very large recurrent tumor.

The response observed after three cycles of TACE also supported the role of neoadjuvant locoregional treatment as part of a multimodality strategy rather than as definitive therapy. In this patient, TACE was followed by wide tumor excision and radical neck dissection, allowing definitive local treatment of the recurrent disease. The use of TACE in this setting should therefore be interpreted as an adjunct to surgery rather than a replacement for complete surgical resection. Evidence regarding neoadjuvant TACE in salivary gland malignancies remains limited, and much of the established evidence for TACE comes from other tumor types. Therefore, the present case should be regarded as a clinical experience demonstrating the feasibility of this approach rather than evidence of a standardized treatment protocol. Further studies are required to determine which patients with advanced salivary gland malignancies are most likely to benefit from transarterial treatment.

Following completion of the three TACE cycles, the patient underwent wide tumor excision and radical neck dissection on 9 April 2026. Because of the extensive postoperative soft-tissue defect, immediate reconstruction using a pedicled deltopectoral musculocutaneous flap was performed. The flap remained viable during postoperative follow-up, and satisfactory wound healing was achieved without major wound complications. Approximately six weeks later, flap division was performed successfully. This sequence illustrates the importance of integrating oncologic resection with reconstructive surgery in patients with extensive head and neck tumors. In this case, the combination of neoadjuvant locoregional therapy, definitive surgery, and staged reconstruction allowed treatment to address both oncologic control and restoration of the resulting soft-tissue defect.

The clinical course also highlights the importance of multidisciplinary decision-making in the management of advanced recurrent ACC. The patient's treatment required integration of radiological assessment, transarterial intervention, surgical oncology, pathology, and reconstructive surgery. Rather than relying on a single treatment modality, the therapeutic strategy was adapted according to the tumor's clinical and radiological characteristics and its response during treatment. This approach was particularly relevant because there is no established standardized treatment algorithm for recurrent, locally advanced ACC treated with TACE. Multidisciplinary assessment therefore played an important role in determining the timing of definitive surgery following neoadjuvant treatment.

The main clinical lesson from this case is that three-cycle neoadjuvant TACE may be a feasible component of multimodality management for selected patients with bulky, recurrent, and locally advanced parotid ACC. In this patient, treatment with docetaxel, cisplatin, and 5-FU administered through three TACE procedures was followed by a documented reduction in tumor size from an approximately 10×10 cm clinically measured mass to a 7.9×7.8 cm lesion on post-third-cycle CT, after which definitive radical surgery was performed. Although the difference in measurement modalities limits direct quantification of treatment response, the sequential clinical and radiological findings provide a clinically relevant observation. The successful subsequent resection and reconstruction further demonstrate the potential value of incorporating locoregional therapy into an individualized treatment strategy for advanced recurrent ACC.

Overall, this case demonstrates the potential feasibility of multimodality management centered on three cycles of neoadjuvant TACE followed by radical surgical resection and deltopectoral flap reconstruction in advanced recurrent acinic cell carcinoma of the parotid gland. The observed reduction in documented tumor burden after TACE supported progression to definitive surgery, while reconstruction enabled satisfactory postoperative soft-tissue coverage. Because experience with TACE for parotid ACC remains limited, this case contributes clinically relevant information regarding the use of repeated transarterial chemotherapy and embolization as a neoadjuvant strategy. Further clinical studies and additional case series are needed to establish its efficacy, optimal regimen, treatment interval, and appropriate patient selection.

IV. CONCLUSION

Advanced recurrent acinic cell carcinoma of the parotid gland presents a significant therapeutic challenge, particularly in the setting of a bulky recurrent tumor with local invasion. In this case, a multimodality treatment strategy consisting of three cycles of neoadjuvant transarterial chemoembolization (TACE) using docetaxel, cisplatin, and 5-fluorouracil, followed by radical surgical resection, neck dissection, and deltopectoral flap reconstruction, was successfully implemented. Following three cycles of TACE, the documented tumor size decreased from an approximately 10×10 cm clinically measured mass to 7.9×7.8 cm on post-TACE computed tomography, although these measurements were obtained using different modalities and should not be interpreted as a formal volumetric response assessment. The subsequent definitive resection and successful reconstruction resulted in satisfactory short-term postoperative outcomes. This case highlights the potential role of neoadjuvant TACE as a component of individualized multimodality management for selected patients with bulky, recurrent, and locally advanced parotid acinic cell carcinoma. Further studies are warranted to clarify the efficacy, optimal regimen, and patient selection criteria for TACE in salivary gland malignancies.

V. ACKNOWLEDGMENTS

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