

# Prospects for the use of induction chemotherapy at the first stage in the complex treatment of patients with cancer of the paranasal sinuses and nasal cavity.

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## Relevance:

The malignant tumors of paranasal sinuses and nasal cavity are quite rare, and account for approximately 1.4% of all malignant neoplasms and 3% of head and neck cancers. About 600 new cases are detected annually in Russia. However, there are no randomized trials in patients with paranasal sinus cancer and no definitive conclusions can be drawn about the impact of induction chemotherapy. Since 2012, 21 patients with locally advanced cancer of paranasal sinuses and nasal cavity were treated in our center and received 3-drug induction chemotherapy.

## Objective:

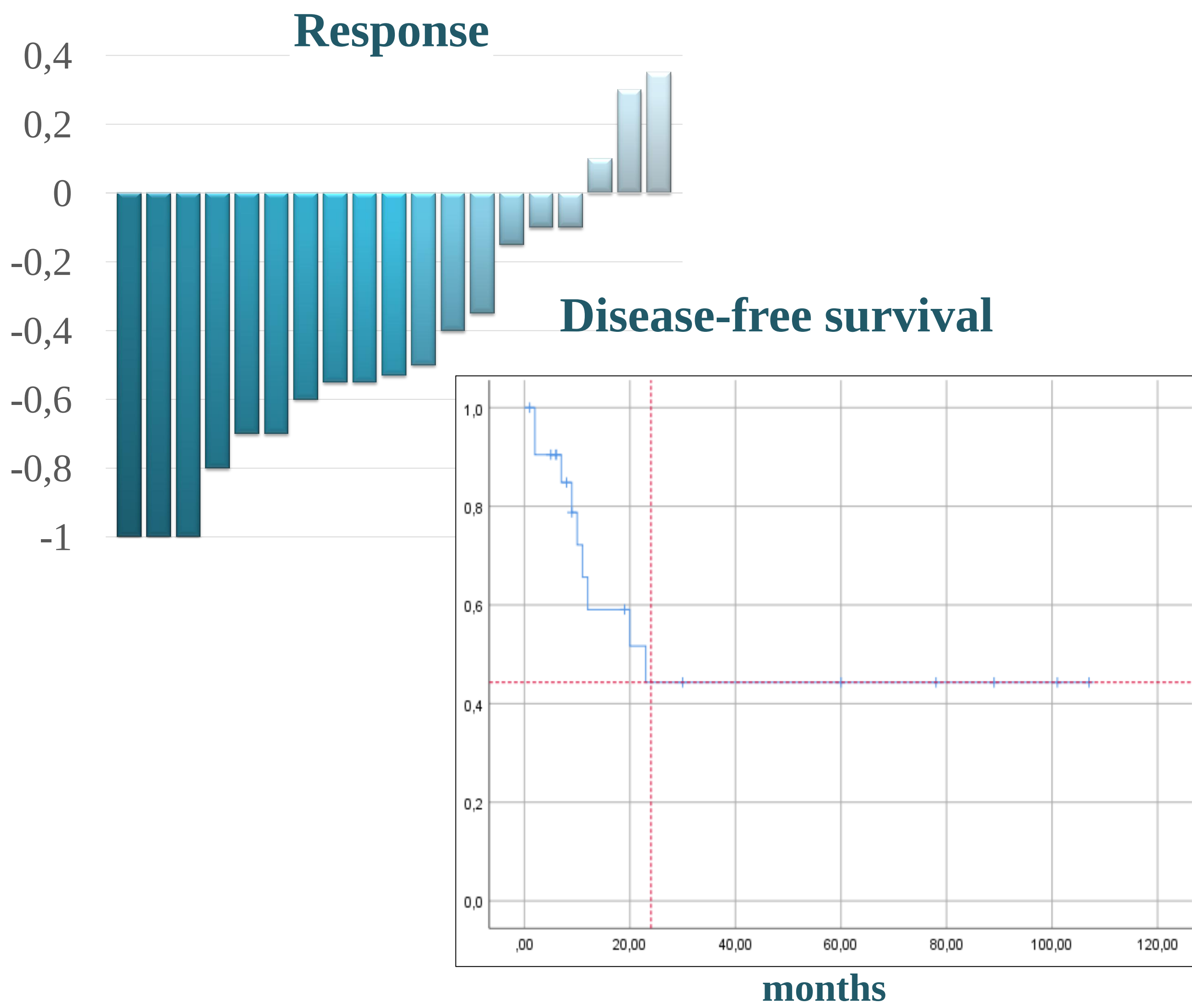
To improve the cosmetic results and survival outcomes in patients with locally advanced squamous cell carcinoma of paranasal sinuses and nasal cavity.

## Materials and methods:

Since 2012, 21 patients were included in the analysis. The main site of the tumor was the maxillary sinus (12 pts). Sixteen patients had T4aN0M0 disease. The remaining 5 patients with T3N0M0 refused surgery due to disabling outcome. All of them received from 3 to 6 cycles of induction chemotherapy according to the TPF scheme: cisplatin 75 mg/m<sup>2</sup> + docetaxel 75 mg/m<sup>2</sup> + 5-fluorouracil 1000 mg/m<sup>2</sup>/day 96 hours infusion every 21 days. Tumor response was assessed according to the RECIST criteria (version 1.1). The disease-free survival curve was estimated using the Kaplan-Meier method.

## Results:

A total of 79 chemotherapy cycles were conducted. One patient is in the process of therapy, one dropped out of the analysis due to comorbidity. An intermediate result was evaluated in 19 patients (90%). Complete response was achieved in 3 patients (15.7%), partial response - 10 patients (52.6%), stable disease - 4 (20.7%), and progressive disease - 2 patients (11%). Thirteen patients (with complete and partial response) subsequently underwent RT 40-70 Gy, which made it possible to avoid surgery in 7 of them. Four patients underwent electrosurgical resection of the maxilla due to a suspected residual tumor. Two of them had pathologically complete response. Currently, 6 patients remain disease-free from 3 months to 9 years. The loco-regional recurrence was identified in 4 patients. The median disease-free survival was 23 months, 2-year DFS-rate was 44.3%. In the subgroup analysis, 62.9% patients with complete and partial response were disease-free at 2 years vs 0% patients who did not respond to induction chemotherapy.



## Conclusions:

Induction chemotherapy appears to be effective in patients with paranasal sinus cancer. It can help to avoid disabling surgery for some patients, improve survival outcomes and requires further investigation.

## Clinical example:

A 45-year-old female presented with nasal obstruction and bleeding from right nasal cavity with 6-month duration. The MRI scan showed the tumor in the right maxillary sinus (5.1x8.1x4.4cm). (Figure 1). The biopsy from nasal mass was reported as a low-grade squamous cell carcinoma with extensive necrosis zone.

From 03/07/12 to 10/27/12 the patient received 6 cycles of chemotherapy according to the TPF. According to the control examination, a partial response of the tumor was recorded. MRI on 11/01/12: the general linear dimensions of the tumor was 1.7x1.8 cm, length up to 2.0 cm. Medium and the upper parts of the right maxillary sinus were free from tumor mass. The medial wall of the right maxillary sinus was destroyed; however, the nasal cavity was free (Figure 2) Patient further received conformal radiotherapy from 11/26/12 to 12/26/12 with unconventional fractionation: 3 sessions of 4 Gy, followed by sessions of 2 Gy (total dose is 50 Gy) (Figure 3).

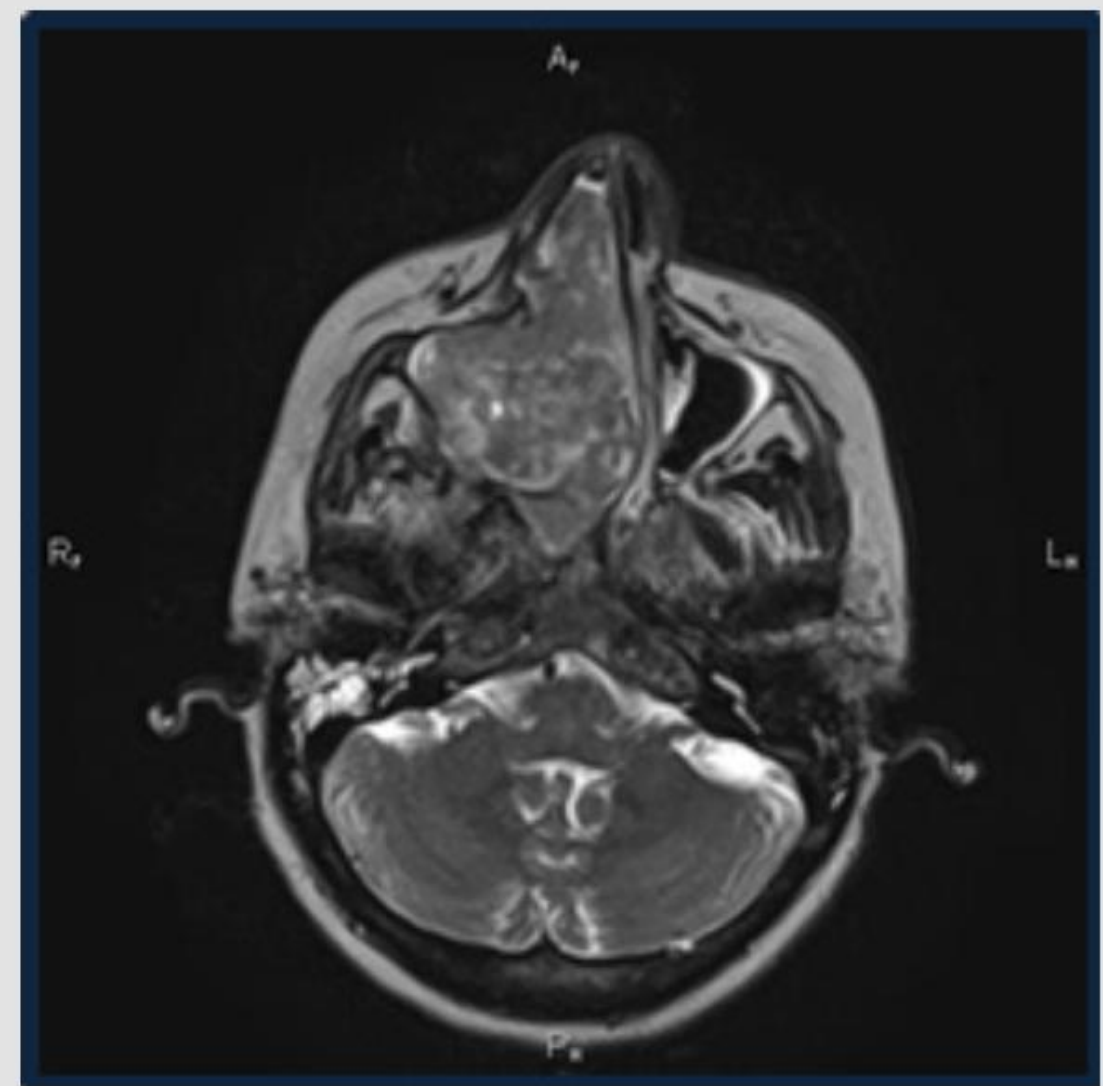


Figure 1: (left) – CT paranasal sinuses before treatment.

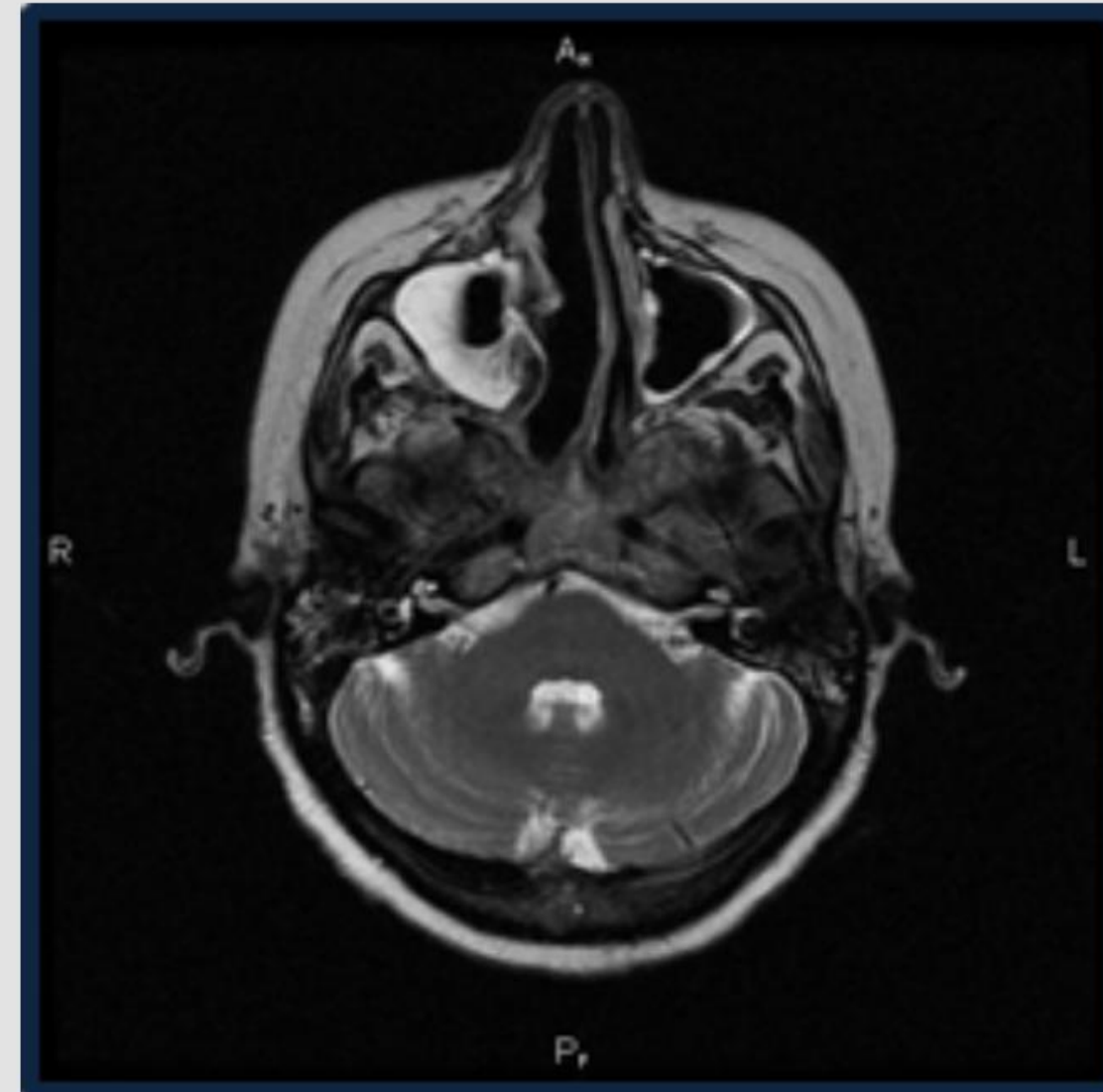


Figure 2: (right) – CT paranasal sinuses after treatment.

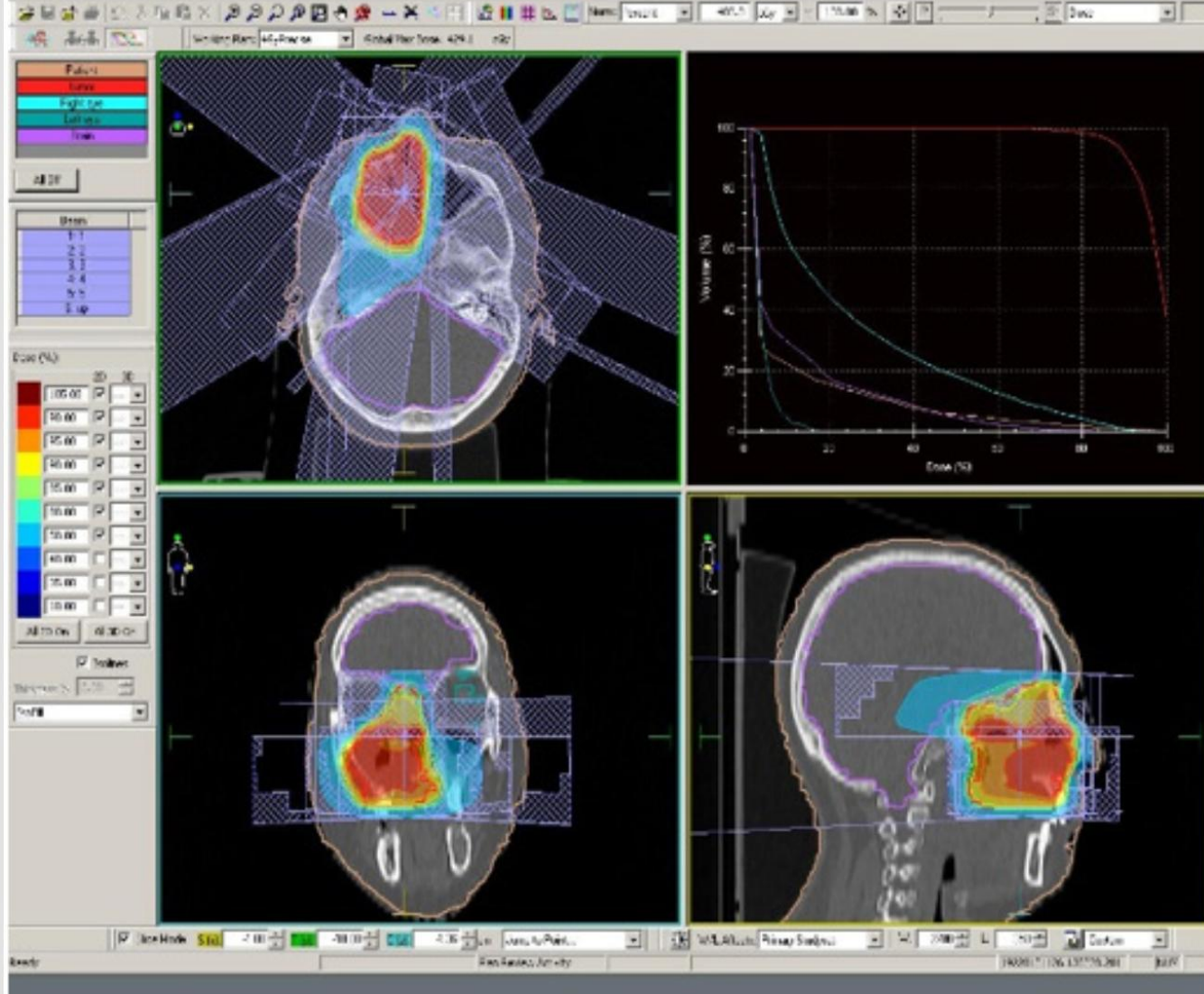


Figure 3: Conformal radiotherapy plan.

In January 2013, there was resection of the upper jaw on the right with Radiofrequency Ablation (RFA). Despite the fact that the dose of radiotherapy was only 50 Gy, pathologically complete response was achieved. At the time of the case report (May 2021), the patient is still on the regular follow up and remains disease-free for more than 8 years duration. The patient's appearance is in the photo (Figure 4).



Figure 4: The patient's appearance after treatment.

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