Juvenile nasopharyngeal angiofibroma (JNA) is the most common benign neoplasm of nasopharynx. However, they are relatively rare tumours (0.05% to 0.5% of all head and neck tumours). JNA is a benign and highly vascular tumour, occurring mainly in adolescent males with a locally aggressive course, and high persistence and recurrence rates. The aim of this paper is to demonstrate our experience in the management of JNA, focusing primarily on surgical approaches.

All male patients. Mean age at diagnosis: 16.1 years;
Most common presenting symptoms: nasal obstruction and epistaxis (Graph 1);
Clinical findings: nasal mass on anterior rhinoscopy and in nasopharynx on posterior rhinoscopy (63%); a mass in nasopharynx (33.3%), a mass in nasal cavity, nasopharynx and oropharynx (3.7%), palatal displacement (18.5%), cheek swelling (11.1%), propotis (11.1%) and otitis media effusion (11.1%);
According to the Radkowski stagint system, one JNA is stage IB, nine stage IIA, six stage IIB, six stage IIC, two stage IIIA and three stage IIB.

**Results**

- Mean intraoperative blood loss was 1429.6 ml;
- Mean hospitalization time was 7 days;
- No deaths, major complications or significant morbidity;
- In 18 patients (66.7%) we achieved complete, macroscopic tumour resection (confirmed during follow up);
- After initial treatment, persistence rate was 18.5% and recurrence rate 14.8%;
- The results and treatments about persistence and recurrence disease are in the table 3.

**Graph 1. Symptoms of the 27 patients with JNA**

- No pre-operative selective embolization or external carotid artery ligation;
- Before 1992: 3 patients underwent paralateral-naso rhinotomy
- After 1992: 23 patients (85%) were submitted to sublabial transnasomaxillary approach (Rouge Denker approach), combined in 19 patients (70.0%) with transpalatine approach (Wilson technique). Endoscopic resection was performed only in one patient stage IB;

<table>
<thead>
<tr>
<th>Surgical Approach According to Radkowski system</th>
<th>Paralateral-rhino notomy</th>
<th>Denker approach</th>
<th>Denker approach combined with Wilson technique</th>
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<tr>
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</tbody>
</table>

| Table 2. Surgical approach for all patients according to Radkowski system (SNES - sinonasal endoscopic surgery) |

**Material and Methods**

Clinical records of 27 patients with JNA who underwent surgical resection without embolization, performed between 1989 and 2017 were reviewed. Clinical extension of tumours was classified based on Radkowski staging system, surgical approaches, blood loss, hospitalization time, complications and persistence and recurrence rates were analysed consulting clinical records. Mean follow-up duration was 60 months, ranging from 32 to 120 months.

**Table 3. Treatment and results of the patients with persistent and recurrent disease**