



Endoscopic assisted antral window approach for type III nasopharyngeal angiofibroma with infratemporal fossa extension

Mohamed A. Khalifa, Sameh M. Ragab *

Department of Otolaryngology and Head & Neck Surgery, Tanta University Hospitals, Egypt

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KEYWORDS

Nasopharyngeal
angiofibroma;
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Midfacial degloving;
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Summary

Objectives: To assess the efficacy and safety of endoscopic assisted antral window approach in advanced nasopharyngeal angiofibroma with infratemporal fossa extension.

Materials and methods: Sixteen cases diagnosed as juvenile nasopharyngeal angiofibroma type III with infratemporal fossa extension were surgically managed using endoscopic assisted antral window approach (group A) and compared with another group of similar number that were managed using endoscopic assisted midfacial degloving (group B). Inclusion criteria were type III JNA with infratemporal fossa extension and a minimum follow-up of 2 years. Operative time, blood loss, adverse events and recurrences were recorded in all cases.

Results: The amount of blood lost in group A was significantly less than group B. The operative time of group A was significantly less than group B. No major complications were seen in both groups. Twenty-eight patients showed complete tumor clearance. Four recurrences were seen: two in group A and two in group B.

Conclusion: Endoscopic assisted antral window approach provides a safe, reliable, effective and minimally invasive technique in management of type III JNA with infratemporal fossa extension. Preoperative embolization is a safe measure in the experienced hands that helps to reduce intraoperative blood loss and improves the quality of the surgical field.

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1. Introduction

Juvenile nasopharyngeal angiofibroma (JNA) is a relatively rare tumor occurring mainly in adolescent

* Corresponding author at: P.O. Box 66482, Bayan 43755, Kuwait.

E-mail address: sragab@doctors.org.uk (S.M. Ragab).

boys. It accounts for 0.5% of all head and neck tumors. It originates from the posterolateral wall of the nasal cavity at the vicinity of the sphenopalatine foramen. Typically, patients present with unilateral nasal obstruction and recurrent epistaxis. As the disease advances facial deformities, proptosis, blindness and cranial nerve palsies may occur. The diagnosis of JNA is based on a careful history, and nasal endoscopic examination, supplemented by imaging studies using computed tomogram (CT) and magnetic resonance imaging (MRI). Biopsies to establish histological diagnosis are contraindicated. Diagnostic angiography helps to localize the tumor-feeding vessels [1,2].

Surgery is the mainstay of treatment JNA. Advanced types of JNA are usually managed with extensive external surgical approaches including lateral rhinotomy, midfacial degloving and craniofacial resection. Though, the risk of bleeding, complications and recurrences were reported to be the highest among these groups [3–5]. Therefore, thorough search for a less invasive surgical approach to control such extensive tumors with less bleeding, morbidities and recurrences has become a major interest for most surgeons. This study was designed to introduce and evaluate the efficacy and safety of endoscopic assisted antral window approach in advanced nasopharyngeal angiofibroma with infratemporal fossa extension.

2. Materials and methods

Sixteen cases diagnosed as juvenile nasopharyngeal angiofibroma type III with infratemporal fossa extension were surgically managed using endoscopic assisted antral window approach (group A) in our institution since January 2000. These cases were prospectively followed and compared with the last consecutive 16 cases of JNA with the same type and extension that were managed using an endoscopic assisted midfacial degloving approach (group B) before January 2000. All patients were males with a mean age of 14 ± 3 years and a range of 8–19 years. The protocol of the study and the methods of consent had been approved by the ethics Committee. Fisch [5] staging of JNA, revised by Andrews et al. [6], was used for classification of JNA in this study (Table 1). Inclusion criteria were type III JNA with infratemporal fossa extension and a minimum follow up of 2 years. Contrast enhanced CTscans and MRI were performed in all the cases. Operative time, blood loss, adverse events and recurrences were recorded in all cases. Follow-up of the patients was done monthly in the first 6 months, every 3 months up to 2 years and yearly after that. Nasal and

Table 1 Andrews staging of angiofibroma.

<i>Stage I:</i> Tumor limited to the nasal cavity and nasopharynx
<i>Stage II:</i> Extensions into pterygopalatine fossa, maxillary, sphenoid, ethmoid sinuses
<i>Stage IIIa:</i> Extensions into orbit or infratemporal fossa without intracranial extensions
<i>Stage IIIb:</i> Stage IIIa with small extradural intracranial involvement
<i>Stage IVa:</i> Large extradural intracranial or intradural extensions
<i>Stage IVb:</i> Involvement of the cavernous sinus, pituitary, or optic chiasm

nasopharyngeal endoscopy was performed during these visits. MRI was obtained routinely after 6 and 18 months or if a recurrence was suspected. Fig. 1 shows MRI of type III JNA with infratemporal fossa extension before and after endoscopic assisted antral window resection.

2.1. Surgical procedures

2.1.1. Group A

All patients were performed under general hypotensive anesthesia. Preoperative arteriography with embolization of feeding vessels and tumor bed was done in all cases one day before surgery. After routine preparation as in endoscopic sinus surgery, the uncinate process was removed. The maxillary sinus ostium was identified and widened to obtain a wide exposure of the posterior wall of maxillary sinus. Maxillary sinus ostium was widened up to the orbital floor, inferiorly to the inferior turbinate and posteriorly to posterior wall of the maxillary sinus. An incision was made in the gingivobuccal sulcus and the periosteum over the anterolateral wall of maxillary sinus elevated. The anterolateral and posterior walls of the maxillary sinus were removed. The lateral extension of tumor in the infratemporal fossa was exposed, mobilized from the surrounding soft tissue and pushed medially to be removed transnasally. The procedure was continued endoscopically and the tumor was freed from the ethmoid, sphenoid sinus, medial pterygoid plate, and nasopharynx. Drilling medial pterygoid plate and vertical plate of palatine bone was performed for good exposure and clearance. The tumor was delivered through the nose or pushed down into the pharynx and removed transorally. The rest of the surgical cavity was meticulously examined and cleared using different angled endoscopes. In cases where the lateral extension is very large, the tumor was divided at the sphenopalatine foramen, being the narrowest part, and the lateral extension was delivered through the

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