Choanal atresia: endoscopic trans-nasal approach


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Abstract

The objective of this study is to present our experience in the endoscopic management of the choanal atresia and evaluate the effectiveness of the diode laser employment in the trans-nasal surgery of this rare congenital malformation. A retrospective review of children treated at the Airway Endoscopic Surgery Unit of Padua Hospital for unilateral and bilateral choanal atresia was made. From 1985 up to 2000, 43 children affected by this malformation were treated in our department. All the patients underwent a trans-nasal approach. In 33 children, a trocar was used in order to perforate the bony atresia. A contact-diode laser was employed to enlarge the choanal lumen after trocar surgery in four cases, whereas six patients underwent the section of the atresia only by laser. In 32 patients, an intranasal stent (Portex endotracheal tube) has been positioned. Forty patients are, at the present time, asymptomatic with satisfied choanal patency. In conclusion, we can state that the transnasal endoscopic approach provides a minimally invasive method to treat unilateral and bilateral choanal atresia. Furthermore, the employment of diode laser improves the outcome by reducing the intraoperative risk, postoperative complications and recurrences.

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Keywords: Choanal atresia; Endoscopic surgery; Diode laser

1. Introduction

Choanal atresia is a rare congenital malformation that occurs approximately in 1:8000 live births. In about 40% of cases, it is bilateral and, very frequently, can be associated to other major craniofacial anomalies or visceral malformations as in the so-called CHARGE syndrome [1,2]. In the newborn, the clinical manifestations of choanal atresia consist of respiratory distress strictly related to the entity of nasal obstruction [3,4]. The surgical
treatment employed in choanal atresia consists of both the trans-nasal and trans-palatal approach [5–8]. The objective of this study is to present our experience in the endoscopic management of the choanal atresia and evaluate the effectiveness of the diode laser employment in the trans-nasal surgery of this congenital malformation.

2. Cases

From 1985 up to 2000, 43 children affected by choanal atresia were treated at the Airway Endoscopic Surgery Unit of Padua Hospital. Of these patients, 21 were males and 22 were females, with ages ranging from 1 day to 6 years (mean 10.2 months). In 34 cases (79%), the malformation was bilateral. We have observed associated anomalies in 10 patients (23.2%). Six of these presented a clinical picture of CHARGE association.

3. Materials and methods

A retrospective review of children treated in our department for unilateral and bilateral choanal atresia was made. Following an endoscopic assessment with Hopkins telescope (video 1) and a CT study, all the children were treated with a trans-nasal approach under general anaesthesia and endoscopic control. In 33 patients, in the first 10 years of our experience, a trocar was used in order to perforate the bony atresia. From 1995 a contact-diode laser was employed in the treatment of this malformation (video 2), though in four cases, this laser was used to enlarge the choanal lumen after trocar surgery. Six patients, with a prevalent membranous plate, underwent the section of the atresia only by contact-laser [9,10]. In 32 patients out of 43, all affected by bilateral atresia, an intranasal stent (Portex endotracheal tube) has been positioned and maintained from 3 to 6 weeks [11,12]. In the patients treated only with laser, the use of an intranasal stent was not considered necessary [13].

4. Results

All the patients of our series were followed up for at least 24 months. Of the patients treated only by trocar, 14 (42.4%) developed partial recurrences that were solved in six cases by progressive dilations and in eight cases by diode laser. Only 2 (20%) of the children treated from the beginning with diode laser required a subsequent session to overcome a partial and unilateral recurrence. Forty patients are asymptomatic with satisfied choanal patency (video 3). Two patients are still in treatment. One patient dropped out.

5. Conclusion

The transnasal endoscopic approach provides a minimally invasive method to treat unilateral and bilateral choanal atresia by offering an excellent visualization of the plate. In
particular, it is useful in emergence surgery during the first days of life. The employment of diode laser improves the outcome by reducing the intraoperative risk and postoperative complications. Moreover, it is very effective to manage the recurrences.

References