ENDOSCOPIC MANAGEMENT OF CONGENITAL CHOANAL ATRESIA: SECOND LOOK PROCEDURE IS MANDATORY

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ABSTRACT

Transnasal endoscopic management of posterior choanal atresia represents a significant advancement in choanal surgery. It provides an extremely sharp image with a magnified overview. It enables the surgeon to see the tips of his insruments, so that the bone is removed safely under direct endoscopic vision. A second look procedure on removal of the stent is essencial to assess the neochoana as regard to its wideness, any granulation tissues or polyps.This study included 26 patients divided into 2 groups. Group I included 11 neonates with bilateral choanal atresia. Group II included 15 patients aged 3-32 years. Endoscopic repair of choanal atresia was performed in all cases followed by a second look procedure after 6 weeks. This study was done in ORL surgery depatment, Mansoura University Hospital at the period between 2000 and 2003. W concluded that endoscope is essential for management of congenital choanal atresia also the second look procedure is mandatory.

INTRODUCTION

Surgery of choanal atresia aims at complete removal of the atretic plate and assurance of long term wide patency. This entails proper preoperative assessment and good intraoperative visualization. Many approaches have been advocated, including transpalatal, transnasal, transseptal and transantral (Kamel, 1994). The transpalatal approach has proved to be a popular technique for reasons of easy surgical exposure, short term stenting, good postoperative results, lack of significant complications and muco-

sal flaps can be easily developed. Also the transpalatal approach allows good visualization of the operative field preventing disorientation of the surgeons operating transnasally with possible damage to the skull base or the posterior pharyngeal wall and spinal cord. (Hengerer and Strome, 1982)

Recent advances in the field of computed tomography and nasal endoscopic surgery led to the suggestion of the transnasal endoscopic approach in the newborns, as well as inn adults infants (Stankiewicz,1990)

The transnasal endoscopic approach is believed to be the most direct approach to this area and is performed completely under strict visualization. It helps to preserve most of mucosa and avoid injury to nearby important structures. It is performed as a same day surgery and revision surgery is possible. After surgery, endoscopic follow up helps to detect and treat any mucosal adhesions, granulations and crusting inorder to ensure choanal patency. (Kamel, 1994)

Crocket et al, 1987 said that carbon dioxide laser has been recommended for removal of bony obstruction due to its hemostatic effect, rapid reepithelization and precise removal. Technical advances and experience in endoscopic nasal surgery have provided the opportunity to use the transnasal endoscopic approach for repair of congenital choanal atresia in both neonates and adults. Our aim is to present our experience with this technique and to evaluate the importance and the need for the second look procedure.

PATIENTS AND METHOD

This study included 26 patients divided into two groups. Group I: 11 neonates with bilateral choanal atresia. They were 8 females and 3 males. Their ages ranged between 1-12 days. Group II: 15 patients with unilateral choanal atresia. They were 10 females and 5 males. Their ages ranged between 3-32 years. All cases were performed in the department of ORL surgery of Mansoura University Hospital, at the period between Jan 2000 to May 2003 with a follow up period ranged between 6 to 30 months. All neonatal cases were diagnosed clinically and referred by the attending and treating pediatrician. Childhood and adult cases came to out patient ORL clinic with nasal

symptoms. Careful history was taken from the parents and patients. Complete otolaryngological examination was conducted. All cases in both groups had CT scane to confirm the diagnosis and evaluate the type and thickness of the atresia plate. CT scaning was examined to detect any associated abnormalities in the septum and lateral nasal wall. Complete blood count and bleeding profile were performed in all cases especially children which my require blood transfusion.

SURGICAL TECHNIQUE

In Group I :

General anaesthesia with oral tube. Application of decongestant nasal drops. We used storz rigid endoscopes 18 cm long, 2.7 and 4.0 mm external diameter with 0, 30 and 120 degree deflection angles. The endoscope was passed first into the nasal cavity to evaluate the size of the atresia plate and to examine the nasopharyngeal surface of the plate (by the 120 angled telescope). The nasal mucosa over the atretic plate was infilterated with adrenaline 1:100,000 and lignocaine 2%. Incision was made longetudinally over the posterior septum just anterior to the plate using sickle knife and in some cases by radiofrquency needle. The incision was extended from its upper and lower ends horizontally over the atretic plate laterally. The mucosa was dissected from on the posterior septum and the atretic plate laterally. The same was performed on the other side, thus burring the vomer and the atretic plate on both sides as much as possible. The posterior bony septum was partially removed by dissector and Blakesley forceps, to make a common posterior opening. An extralong burrs of a microdrill was passed along the floor of the nose to the level of the occluding plate. Since the atretic plate is, almost always, thinnest and weak at the junction of the floor of the nose and posterior end of the septum (Cinnamond, 1987), the burr should be hinged at that point. The perforating force should be safly directed downwards and medially, away from the basisphenoid. The bone of the atretic plate was removed under endoscopic vision using curettes and back biting forceps. Take care to avoid injury to the posterior pharyngeal wall and the cervical spine. If the nasopharyngeal mucosa on the posterior surface of the obstruction remained intact, it was incised in a stellate fashion by the sickle knife. The nasal mucosal flap was rotated posteriorly to cover the

raw area left by removel of the obstructing bone. Stenting was performed using an endotracheal tube (Portex Ltd., Kent, UK) that approximated the diameter of the external nares (4.5mm inner diameter) and was inserted through the nasal cavity into the nasopharynx. Its length was adjusted by measuring the distance between the anterior naries and the neochoana by using a strait dissector as an indicator. Its anterior end was sutured to the membranous part of the septum, behined the columella, it was left in place for 6 weeks. Cases were admitted in the neonatal intensive care unit for 1 day. Feeding was usually initiated soon after surgery.Suction was performed several times, and antibiotics were administered until removal of the stent. The parents were trained to use suctioning with sterial disposable catheter with saline drobs many times daily. The neonate was seen once weekly till stent removal. Stent was kept for 6 weeks. A second look procedure was performed on stent removal in order to remove the stent, granulations, polyps and evaluate the neochoana which may require rewidening.

In Group II

Surgeries were performed under general anaesthesia. We followed the same surgical steps as in the first group but on one side. The surgery was easier as their ages (3-32years). Unilateral portex tube was applied. Also a second look procedure was performed on removal of the stent under general anaesthesia in 9 cases (3- 14 years) and local anaesthesia in 6 cases (15-32 years).

RESULTS

Group I

Eight females and three males of neonates were included in this group. Immediate air way placement, CT scan, bleeding profile and examination for other congenital anomalies were mandatory in all cases. Second look procedure was performed in all cases after 6 weeks except in one patient who died 10 days after the operation by nasocomial blood stream infection, with following results: granulation tissues were detected in three cases around the tube at the edges of the neochoanae they were removed and cauterized the edges by bipolar electrocautary, polyps in one case where it was removed, narrow choanal opening in one case which required removal of excess bone by micro drill with re-insertion of the portex tube for further two weeks, and

posterior pharyngeal wall ulcer in one case where we cauterized the edges. Through the follow up period all cases remained patent except one (other than the case discovered at the second look procedure) developed restenosis after 6 months and required revision surgery with the same surgical steps as in the primary surgery, where adequate bone from the vomer and the remnants of the atresia plate were removed with reinsertion of new portex tube.

Group II

10 females and 5 males were included in this group. Second look procedures were performed in all cases under general anesthesia in children and local anesthesia in adults. Granulation tissues were discovered in 6 cases which removed and electro cauterized, polyps were detected in another two cases which were removed, and inadequate choanae were detected in two cases which necessitated removal of bone by micro drill and reinsertion of portex tubes for additional two weeks. One patient developed posterior pharyngeal wall ulcer from contact with the portex tube, it was healed spontaneously. Through the follow up period all cases were patent except three cases, one case had restenosis (not the case detected during the second look procedure) discovered after 8 months where revision surgery was performed with adequate bone removal and restenting, and two cases had nasal adhesions which need division and insertion of internal nasal splint for 3 weeks.

DISCUSSION

Congenital choanal atresia was first described by Roader in 1755 (Cumber Worth et al. 1995) Choanal atrsia occurs in 1/1000- 1/8000 births of these cases 45 % bilateral. Recent CT and histopathological studies showed evidence of higher incidence of mixed bony and membranous anomalies (70 %) and pure bony atresia 30 % with no pure membranous anomalies (Brown et al. 1996). A recent survey of the american sociaty of pediatric otolaryngology (ASPO) members revealed that, endoscopic approaches are favored but only slightly over transpalatal repair (Park et al. 2000). The rigid endoscope in choanal surgery provided an extremely sharpe image, with high resolution and bright illumination. It ensured greater precision in flap preservation. Endoscopic approach allows for ealy recovery and short hospitalization.

Basic quesions about mucosal flaps and need for and duration of stenting remained to be answered. The literature on optimal stent duration and material is scrce or nonexistent (Park et al. 2000). Stents are useful in stabilizing the nasal airway in the postoperative period and to prevent the development of stenosis by maintaining alumen (Brown et al. 1996). Many types of stents have been suggested; Bartal, (1988) recommened the use of a foley catheter , Lazar and Younis, (1995) reported excellent results using a polyvinyl stents and Singh, (1990) reported good results with soft stent (Portex). In our cases we used portex tubes with good results. Most studies agreed that the stent should stay in place for 6-12 weeks. Lazar and Younis, 1995 stated that the duration of the stent should be individualized and left in place till mucolization of the neochoana. Josephson et al, (1998) advised 3 weeks for unilateral cases and 6 weeks for bilateral cases. In all our cases we applied stenting for 6 weeks. Second look procedure was a mandatory step in managing congenital choanal atresia in neonates, children and adults to ensure complete patency of the choanae and to remove any granulations, polyps during removal of the stents. Also the second look enabled us to evaluate the size of the neochoana and removal of excess bone if needed in orde r to decrease the incidence of restenosis, where most revision cases were due to inadequate bone removal.

CONCLUSION

Endonasal route is the most direct approach to the choanal atresia. The use of endoscope in choanal surgery is effective and excellent with good visualization of both the atretic plate and the tips of instruments working under illumination. The use of endoscope also make a second look procedure more easy, which is mandatory especially in neonates and young children in order to assure complete patency of the neochoanae, removal of any granulations and to drill excess bone in narrow choanae, thus decreasing the incidence of restenosis.

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علاج الانسداد الخلقى لفتحة الأنف الخلفية بواسطة المنظار الضوئى : إجراء الفحص الثانى يكون ضرورياً

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إن علاج الانسداد الخلقى لفتحة الأنف الخلفية بواسطة المنظار الضوئى تعتبر من الطرق الجديدة فبواسطة المنظار تكون الرؤية واضحة ومباشرة مما يسهل إجراء هذه العمليات .

فى هذا البحث قمنا بإجراء العمليات على ٢٦ مريضاً مقسمين على مجموعتين : المجموعة الأولى : تشمل ١١ مولودا تتراوح أعمارهم بين ١-١٢ يوما وتضم ٨ أنثى و٣ ذكر. المجموعة الثانية : تضم ١٥ مريضاً تتراوح أعمارهم ٣-٣٢ سنة وتشمل ١٠ إناث و ٥ ذكور تمت إجراء العمليات بقسم عمليات الأنف والأذن والحنجرة بمستشفى جامعة المنصورة وذلك فى الفترة من سنة ٢٠٠٠ إلى ٢٠٠٣. وقد أجريت العمليات بواسطة المنظار الضوئى وتركيب أنبوبة تخدير بورتكس فى الفتحة الجديدة لمدة ٦ أسابيع. وقد قمنا بفحص ثان لجميع الحالات تحت تأثير التخدير العام فى حالات المجموعة الأولى ومرضى المجموعة الثانية أقل من ١٤ سنة، أما الباقى تحت تأثير التخدير الموضعى. وقد دلت النتائج على أن منظار الأنف الضوئى مهم جدا فى عمليات إصلاح فتحة الأنف الخلفية. كما أن طريقة الفحص الثانى بعد ٦ أسابيع مهمة جدا حيث يتم إعادة فحص فتحة الأنف الخلفية من الاتساع وتكوين زوائد لحمية مما يكون سبباً فى إنسداد الفتحة وضيقها. كما أن الفحص الثانى يعطينا الفرصة لإعادة توسيع فتحة الأنف الخلفية .