Simultaneous Posterior Pharyngeal Flap and Tonsillectomy

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Posterior pharyngeal flap (PPF) construction in patients with hypertrophied tonsils raises a significant concern for adequate airway maintenance. Most often, tonsillectomy, as a separate procedure, is done first. The authors have preferred to do both the PPF and the tonsillectomy simultaneously. Twenty consecutive cases are reviewed retrospectively to determine whether this has increased morbidity.

All patients underwent posterior pharyngeal flaps for correction of velopharyngeal incompetence (VPI). Postoperative fevers that resolved without specific treatment occurred in four patients. Three patients experienced postoperative bleeding problems, but only two were of tonsillar origin. No patient developed immediate airway obstruction, although a single patient was observed overnight in the intensive care unit. Another developed sleep apnea several months after the operation, which required that the posterior pharyngeal flap be taken down. This patient had an unusual amount of hypertrophic scar in the nasopharyngeal area, but not in the oropharynx. No other operative or postoperative complications were experienced. The average hospitalization was 4.2 days.

It is concluded that simultaneous tonsillectomy and PPF construction may be performed safely in patients who need both procedures.

The posterior pharyngeal flap operation was first proposed and performed by Schoenberg in 1875 (Trier, 1986). Since that time, it has attained critical importance in the treatment of velopharyngeal incompetence. The key concern for these patients in the immediate postoperative period is the maintenance of an adequate upper airway (Millard, 1980). By the nature of its design, the flap obstructs the central portion of the pharyngeal airway. In patients with hypertrophied tonsils (Fig. 1), construction of such a flap may seriously compromise the airway if a tonsillectomy is not also performed. This was the case in a previously reported patient who developed upper airway obstruction immediately following a posterior pharyngeal flap (Graham et al, 1973). Although we were prepared to perform a tracheostomy in this child, a tonsillectomy alone relieved the airway obstruction.

Frequently, tonsillectomy is performed prior to the posterior pharyngeal flap as a separate procedure. However, it has been the preference of the authors to perform both operations simultaneously. The question arises as to whether a combined procedure can be performed safely,

FIGURE I Hypertrophied tonsils partially obstructing the airway of a child about to undergo posterior pharyngeal flap construction.
TABLE 1  Palatal Pathology of Patients Undergoing Simultaneous Posterior Pharyngeal Flap Operation and Tonsillectomy

<table>
<thead>
<tr>
<th>Palatal Pathology</th>
<th>Patients (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft palate cleft</td>
<td>15</td>
</tr>
<tr>
<td>Submucous cleft</td>
<td>1</td>
</tr>
<tr>
<td>Noncleft palate</td>
<td>4</td>
</tr>
</tbody>
</table>

without increasing the incidence of perioperative complications. The present study was undertaken to address this question.

RESULTS

Charts of patients treated through the Cleft Palate Clinic of The Children’s Hospital of Philadelphia were reviewed retrospectively. Since 1972, 20 patients have undergone simultaneous tonsillectomy and posterior pharyngeal flap operation. At the time of operation, their ages ranged from 2 to 16 years with a median age of 5 years.

All patients were being treated for velopharyngeal incompetence, which was evidenced by the presence of hypernasality or nasal escape. Sixteen patients had both hypernasality and nasal escape as noted by the speech pathologist. Two patients had just nasal escape. One patient had severe hoarseness with radiologic evidence of velopharyngeal incompetence. One patient had a severe congenitally short palate with poor motion in the palate and inability to impound air orally at the age of 2 years.

The majority of patients had clefts of the soft palate (Table 1). A submucous cleft was diagnosed in one patient. The remainder had noncleft palates, which were either congenitally short or moved abnormally and inadequately (confirmed by radiography). All soft palate clefts had been closed primarily by 18 months of age.

Tonsillectomies were uniformly performed because of concern about possible airway compromise. This was planned preoperatively in 13 patients. In the other seven, the need for tonsillectomy was not appreciated until the time of the posterior pharyngeal flap operation. No problems were encountered from the intraoperative decision to proceed with tonsillectomy. The operation was done after discussion with the parent.

The majority of flaps were wide and based superiorly. However, in three cases, inferiorly based flaps were lined with palatal mucosa. The tonsillar beds were not sutured closed. Some patients had a 3–0 or 4–0 chromic catgut ligature or suture ligature of the inferior tonsillar vessels. The donor site for the posterior pharyngeal flap was routinely closed. "Lateral port control" (Hogan, 1973) was not used.

Most patients also underwent additional procedures at the time of operation (Table 2). Placement of myringotomy tubes, closure of palatal fistulas ("palatal surgery"), and nasal surgery were the most common additional procedures. Four patients did not have additional procedures.

Although no intraoperative complications were encountered, eight patients had postoperative complications (Table 3). Four patients developed fevers during the first 48 hours following operation, which resolved without treatment prior to their discharge.

Upper airway problems were encountered in two patients. Because of the possibility of partial airway obstruction, one child was observed in the intensive care unit overnight but required no other treatment. The other child developed partial upper airway obstruction presenting as sleep apnea several months postoperatively secondary to a most unusual and intense hypertrophic scarring of the palate and nasopharynx.

TABLE 2  Additional Procedures Done at the Time of Simultaneous Pharyngeal Flap Operation and Tonsillectomy

<table>
<thead>
<tr>
<th>Additional Procedures</th>
<th>Patients (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myringotomy tubes</td>
<td>11</td>
</tr>
<tr>
<td>Palatal surgery</td>
<td>6</td>
</tr>
<tr>
<td>Nasal surgery</td>
<td>5</td>
</tr>
<tr>
<td>Teeth extraction</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
</tbody>
</table>
TABLE 3 Postoperative Complications After Simultaneous Pharyngeal Flap Operation and Tonsillectomy

<table>
<thead>
<tr>
<th>Postoperative Complications</th>
<th>Patients (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>4</td>
</tr>
<tr>
<td>Bleeding</td>
<td>3</td>
</tr>
<tr>
<td>Airway problems</td>
<td>2</td>
</tr>
</tbody>
</table>

This did not appear to be precipitated by, or related to, the tonsillectomy. Ultimately, the flap was taken down, and subsequent nasopharyngeal dilations were required to maintain this child’s airway.

Three patients developed bleeding complications, two of which occurred during the immediate postoperative period. One of these patients, who also underwent closure of the hard palate, required only the transfusion of a single unit of blood. The other patient was returned to the operating room from the recovery room for control of persistent bleeding from the palate. The only case of secondary hemorrhage occurred on the tenth postoperative day. This patient required hospital readmission and a suture ligation in one tonsillar bed. There were no long-term complications from the bleeding in any of these patients.

Average hospitalization was 4.2 days with a range of 3 to 6 days. All patients have been followed through the Cleft Palate Clinic by both speech pathologist and surgeon to determine the quality of postoperative speech. Normal speech was observed in five patients. Thirteen patients had moderate or marked improvement in their speech, with elements of residual, intermittent nasal escape, hypernasality, or hoarseness. Two patients had poor speech and might require further intervention. However, one of these was the patient who required the take down of the flap because of hypertrophic palatal scarring and partial airway obstruction.

**DISCUSSION**

When a posterior pharyngeal flap is required in a patient with significant tonsillar hypertrophy, tonsillectomy should also be performed to avoid upper airway obstruction postoperatively (Randall, 1979). Although tonsillectomy performed first, as a separate procedure, is preferred by most surgeons, simultaneous tonsillectomy and a posterior pharyngeal flap have the advantage of requiring a single hospitalization and a single anesthetic. In addition to simplifying patient care, this lessens the potential for anesthesia-related complications. It appears that a combined procedure may be carried out without a serious increase in the postoperative complications.

Though multi-view videofluoroscopy and nasendoscopy have improved our diagnostic abilities, these were not all available in our clinic 6 to 14 years ago. The occasional case, recently described, where hypertrophic tonsils seem to contribute to velopharyngeal incompetence, was also not appreciated until the last few years. In severe VPI, it seems unlikely that tonsillectomy alone would correct the condition, although nasendoscopy would be helpful in making this determination. In our hands, nasendoscopy on 2-, 3-, and 4-year-old children has been almost impossible.

No patient suffered airway obstruction in the immediate postoperative period that required intubation, surgical intervention, or any procedures other than observation. The only long-term complication resulted from an idiosyncratic type of hypertrophic scarring, which ultimately did cause partial airway obstruction requiring the flap to be taken down. This complication appeared to be unrelated to the tonsillectomy.

For reasons that are not apparent in this series, the incidence of bleeding complications was slightly higher than might have been expected (Capper, 1984; Carmody, 1982). It is possible that a more complex operation has increased the incidence of postoperative bleeding more than might have been anticipated from either procedure undertaken separately. Alternatively, the small sample size may be insufficient to establish accurately the incidence of bleeding complications.

The anticipated result of this operation is improved speech. All but two patients were able to achieve normal or considerably improved speech once the palate had healed and speech therapy continued. Thus, it appears that the addition of a tonsillectomy to the posterior pharyngeal flap operation does not adversely affect the primary purpose of improved speech.

Additionally, deciding to perform tonsillectomy intraoperatively (with appropriate parental permission) did not substantially complicate the operation.

**CONCLUSION**

A tonsillectomy should be performed in patients requiring a posterior pharyngeal flap, when
significant tonsillar hypertrophy exists, in order to avoid airway obstruction in the immediate postoperative period. Both procedures may be performed simultaneously, safely, and without early or long-term side effects or alterations in the ultimate outcome of the patient’s speech. The decision to proceed with tonsillectomy need not be made preoperatively, but can be determined at the time of operation.

REFERENCES


