

## EARLY POSTOPERATIVE COMPLICATIONS AND DURATION OF HOSPITAL STAY AFTER PRIMARY PALATOPLASTY

Sheeja Rajan T. M<sup>1</sup>, Krishnakumar K. S<sup>2</sup>

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**ABSTRACT: BACKGROUND:** The optimum period of hospitalization following primary palatoplasty is a balance between patient safety on discharge, the possibility of iatrogenic or cross infections as well as the total treatment costs. There is a worldwide consensus that the optimum period of hospitalization after palatoplasty is 5 days. In many cases, occurrence of early postoperative complications may increase the period of postoperative hospital stay, which in turn might make these patients more susceptible to hospital acquired infections. **AIMS:** In this study we have aimed at elucidating the factors affecting morbidity of primary palatoplasty patients in the early postoperative period which has resulted in the prolongation of hospital stay. **SETTINGS AND DESIGN:** A Case series study of 70 consecutive patients admitted for primary cleft palate surgeries was conducted. **METHODS AND MATERIAL:** Assessment of the incidence of early postoperative complications and their influence on prolongation of hospital stay was done in the 70 consecutive patients by retrospective analysis of medical records. **STATISTICAL ANALYSIS USED:** Data was entered into SPSS statistical package and analyzed using appropriate statistical methods. **RESULTS AND CONCLUSIONS:** 26 patients were found to suffer from early postoperative complications of a general nature unrelated to surgery. Most common causes for prolongation of hospital stay after palatoplasty were identified to be upper respiratory infection in 40%, lower respiratory infections (25%) and acute diarrheal disease (18%). Due to the predominantly nosocomial nature of the complications, recommendations for postoperative isolation, earlier discharge and revision of antibiotic policy were suggested.

**KEYWORDS:** Complications, Hospital stay, Nosocomial infections, Palatoplasty.

**INTRODUCTION:** With the improvements in surgical technique and the quality of pediatric anesthesia, there is considerable safety in executing palate repairs at an earlier age. Our department has set rigorous standards to assure patient safety in the pre-operative period and has perpetually attempted to analyze and improvise on patient care by performing audits. The optimum period of hospitalization is a balance between patient safety on discharge, the possibility of iatrogenic or cross infections as well as the total treatment costs. Though each Cleft centre follows its own protocol, there is a worldwide consensus that the optimum period of hospitalization after palatoplasty is 5 days. In this study we have attempted to determine the factors affecting morbidity of primary palatoplasty patients in the early postoperative period which results in prolongation of hospital stay.

**PATIENTS AND METHODS:** A retrospective study of 70 consecutive primary cleft palate surgeries, performed over an 8 month period was conducted by evaluation of medical records.

# ORIGINAL ARTICLE

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Our focus was on analyzing the occurrence of early postoperative complications requiring interventions or pediatric consultations and their influence on the duration of total period of hospitalization. By international norms, the optimum period of hospitalization is accepted as 5 days. Our aim was to identify the causes as well as the factors affecting morbidity in patients who required prolongation of hospital stay beyond 5 days.

The pre-operative management protocol for primary palatoplasty patients in our centre is as follows. All the patients are admitted on the preoperative day evening and undergo a pre-anesthetic workup. Preoperative preparation consists of withholding milk for 6 hours and clear fluids for 3 hours prior to surgery. All patients receive a dose of parenteral antibiotic (Amoxicillin with clavulanic acid) half hour before surgery. All procedures are performed under general anesthesia. Average duration of surgery is 120 minutes for incomplete clefts and 180 minutes for complete clefts. All patients are retained in the postoperative ICU overnight and encouraged to have liquid feeds on full recovery from anesthesia. They are shifted into the general pediatric ward on the first postoperative day and receive oral preparations of antibiotic for 5 days and analgesics (syrup Paracetamol) for 3 days. Pack removal is undertaken at 72 hours after surgery and observed for bleeding. All patients are discharged on the fifth postoperative day if deemed fit.

None of our patients receive routine pediatric consultations after surgery. The indications for pediatric consultations in the postoperative period are:

- i. Fever persisting beyond 48 hours
- ii. Mucopurulent nasal discharges
- iii. Cough in the postoperative period

All patients with prolongation of hospital stay beyond 5 days were evaluated in this study for possible postoperative complications. For ease of description, the early postoperative complications were classified into

- i. Life threatening
- ii. Local –associated with surgery
- iii. General – without relation to surgery

The variables analyzed were age, sex, type of cleft palate, surgical technique used, preoperative morbidity, postoperative complications, average hospital stay and causes for prolongation of hospital stay.

**RESULTS:** Total number of patients included in the study was 70, of whom, 38 were males and 32 were females. The mean age was noted to be 15 months (+/- SD 3). 41 out of 70(58.6%) patients had complete clefts of Nagpur classification - CFC group III and 29 (41.4%) had incomplete clefts of CFC group II variety. Surgical techniques employed were two flap palatoplasty in 41(58.6%) patients, Veau Wardill Killner technique in 25 (35.7%) and Dorrance palatoplasty in 4(5.7%) cases. Perioperative events were noted such as Pierre Robin sequence (4), Down's syndrome without any cardiac anomalies (1) and atrial septal defect.<sup>1</sup> ASD was operated under appropriate endocarditis prophylactic cover. All our patients had hematocrit at or

## ORIGINAL ARTICLE

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above 10grams and a body weight above 5 kilograms. None of them required blood transfusions in the peri operative period.

Our study showed that of the 70 operated patients, none suffered from any life threatening complications or from local complications pertaining to palatoplasty. However, 26 patients (37.1%) had complications of a general nature, without direct relation to surgery. Major morbidity noted was upper respiratory infection (42.3%), followed by antibiotic induced diarrhoea (11.5%), acute infective diarrhoea (7.7%), oral thrush (7.7%) and lower respiratory infections (6.9%). Drug hypersensitivity reactions and acute otitis media occurred in 3.8% of subjects. [Table 1]. All these patients were successfully managed with pediatrician's intervention and restored to health at discharge.

Among the 70 operated patients, 28 required prolongation of hospital stay beyond 5 days [Table 2]. Most frequent causes for prolonged post-operative hospital stay were upper respiratory infection (39.2 %), lower respiratory infection (25%) and acute diarrheal disease (17.9%) [Table 3]. These patients were managed with systemic antibiotics, nebulization and appropriate feeding instructions. We also found that parents of 5 patients were unwilling to get their children discharged on the fifth postoperative day due to personal inconveniences and had to be included as a separate category.

**DISCUSSION:** Primary palatoplasty is a surgical procedure that can be undertaken with considerable safety with current improvements in technique as well as pediatric anesthesia. Though current literature suggests that the optimum age for primary palatoplasty is 11 to 18 months, there is an inclination for most surgeons to perform palatoplasties at an earlier age with improvements in quality of speech and reduction in sequels like recurrent ear infections. The mean age of our study subjects fits the optimum age category for palatoplasty. Wilhelmsen and Musgrave<sup>1</sup> found that a body weight of more than 5 kg, hemoglobin of more than 10 g dl-1 and additionally a white blood count of less than 10000  $\mu$ l-1 was associated with less risk of complications to the factor of 5. This finding gets substantiated in our study as we follow similar guidelines in order to minimize perioperative complications. Several authors including Musgrave and Bremmer (1960) and later, Wray et al (1979)<sup>2</sup> have analyzed the complications associated with palatoplasties. Moore et al<sup>3</sup> have done a twenty year review on complications of palatoplasty (1988) at North Carolina Memorial hospital in 196 patients. They have taken into consideration, several variables including age, weight, hematocrit, history of otitis media, tympanostomy placement, type of anesthesia and surgical technique, use of epinephrine and perioperative antibiotics on the occurrence of immediate and late complications like palatal fistulas. Detailed evaluation of complications like death, malignant hyperthermia, aborted procedures, re exploration for bleeding, aspiration, feeding difficulties, pneumonia, URI, airway difficulties, oropharyngeal infections and otitis media have been performed. In our series, there were no incidence of mortalities or serious intraoperative complications of bleed or aspiration, probably due to the credit of improvements in anesthetic monitoring, but it reflects post-operative incidence of respiratory infections as well as otitis media. Though 7 of our patients, who were preoperatively diagnosed to have secretory otitis media received tympanostomy tube placement

# ORIGINAL ARTICLE

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along with palatoplasty, the number is insignificantly small to comment on correlation with the incidence of postoperative otitis media.

Fillies et al<sup>4</sup> in their study on peri operative complications of infant cleft repair, have suggested that the risk of complications was found to be directly correlated to the body weight at the time of the surgery. Most of the problems appeared intra operatively, but they were also followed by complications immediately after the extubation. Complications were found in 54% of patients weighing between 4 and 6 kg. The incidence of complications in patients with a bodyweight of more than 8 kg was found to be 26%. In our series, the median weight was 5 Kilograms (range- 4.5 kg to 5.5 kg).

Pena M et al<sup>5</sup> in their study on perioperative airway complications following pharyngeal flap surgery have suggested that the spectrum of airway complications, ranging from fatal apnea and asystole to aspiration and subsequent pneumonia are the most significant complications of palatoplasty. Though 7 of our patients had developed lower respiratory infections, none had prior history of aspiration as a causal factor. Antony et al<sup>6</sup> and Cohen<sup>7</sup> are other major investigators into the incidence of perioperative airway complications, mostly on anesthetic complications during palatoplasties. Though Roselle Percy et al<sup>8</sup> consider bleeding as a significant complication following palatoplasty, none of the patients in our series had any such incident, probably because of the use of epinephrine as well as the series included only infants and no adult palatoplasties.

DeMey et al<sup>9</sup> on early postoperative complications of cleft lip and palate surgery have classified them into those of life threatening, local, and general nature. They found that in 17%, a general complication, mostly cross infections, not directly related to the operation was observed. This finding is similar to our observation with a higher proportion (37%), developing general complications like upper and lower respiratory infections as well as diarrheal disease, probably due to cross infections during hospital stay in the pediatric ward as well as related to medications like antibiotic induced diarrhoea, oral thrush and drug hypersensitivity. Occurrence of such complications was associated with prolongation of hospital stay beyond 5 days in 28 patients, which again makes them even more susceptible to nosocomial infections.

Based on these observations, we suggest that, the period of hospitalization after palatoplasty should be optimized such that there is no compromise in patient safety but with a reduction of the morbidity due to cross infections. We would also recommend postoperative isolation, revision of antibiotic policy and an earlier discharge to avoid the incidence of such complications.

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## ORIGINAL ARTICLE

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Complications	Patients
Upper respiratory infection	11 (42.3 %)
Lower respiratory infection	7 (26.9 %)
Acute otitis media	1 (3.8 %)
Acute diarrhoea	5
-Infective	2 (7.7 %)
-Antibiotic induced	3 (11.5 %)
Oral thrush	2 (7.7 %)
Drug hypersensitivity	1 (3.8 %)

**Table 1: General Complications following Palatoplasty**

Average hospital stay	Patients
5 days	42
5-7 days	23
More than 7 days	5

**Table 2: Average hospital stay following palatoplasty**

Complications in the postoperative period	Patients
Upper respiratory Infection	11 (39.2 %)
Lower respiratory Infection	7 (25 %)
Acute Diarrhoeal disease	5 (17.9 %)
Others	5 (17.9 %)

**Table 3: Causes for prolongation of hospital stay in the postoperative period following palatoplasty**

# ORIGINAL ARTICLE

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**AUTHORS:**

1. Sheeja Rajan T. M.
2. Krishnakumar K. S.

**PARTICULARS OF CONTRIBUTORS:**

1. Assistant Professor, Department of Plastic Surgery, Calicut Medical College, Kerala.
2. Senior Consultant Plastic Surgeon & Director of Smile Train Programme, Department of Plastic Surgery, Baby Memorial Hospital, Calicut, Kerala.

**NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Sheeja Rajan T. M,  
Shairang, P. O. Chevayur,  
Calicut - 673017, Kerala.  
E-mail: sheejarajantm@gmail.com  
rajshee@sify.com

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