RESULTS: There were 64 patients in the study. Thirty-seven (37) underwent closure with nasal lining flaps while 27 underwent closure using traditional techniques. The rates of alveolar fistula formation were 3% (1/37) and 30% (8/27), while the rates of non-alveolar fistula formation were 16% (6/37) and 15% (4/27), respectively. The lower rate of alveolar fistula formation in the group that underwent closure with the nasal lining flaps was statistically significant (p=0.003, Fisher’s exact test). There was no statistically significant difference in rates of non-alveolar fistula formation (p=1, Fisher’s exact test).

CONCLUSION: The nasal lining flaps have multiple advantages. This technique closes the nasal floor at the time of primary lip repair, when visualization is easiest. The repair is simple to perform and has a high success rate. Closure of the alveolar region with soft tissue likely improves quality of life by preventing fluid or food regurgitation into the nose. The nasal floor closure does not prevent the need for bone grafting, but can make the surgery easier since the nasal side is already closed.

Maternal Tobacco Exposure and Risk of Orofacial Clefts in the Child

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INTRODUCTION: While a relationship between maternal tobacco exposure and development of orofacial clefts in the child has been established for some time, the actual degree of risk conferred is not well quantified. A better understanding of this risk would benefit prenatal specialists in the counseling of prospective parents. The purpose of this study was to quantify the risk for cleft lip and/or cleft palate (CLP) associated with maternal tobacco exposure.

METHODS: A case-control study was conducted at the Cleft Hospital and the Bashir Hospital in Gujrat, Pakistan from December 2015 to December 2016. All new cases of CLP at the Cleft Hospital were included in the study. Infants and children of three years of age or less at the Bashir Hospital were concurrently chosen to serve as control cases if they had no congenital malformations, were born or living in the same area as the patients in the study with CLP, and were of comparable socioeconomic standing to those patients. Bivariate analyses were performed to identify risk factors associated with CLP. These variables were then included alongside maternal tobacco exposure (whether one or both parents smoke) in a multiple logistic regression to calculate the adjusted odds ratio of developing CLP associated with tobacco exposure.

RESULTS: A total of 329 patients with CLP and 131 controls were included in the study. Upon bivariate analysis, the following factors were associated with CLP: maternal tobacco exposure (p<0.001), complications during pregnancy (p<0.001), maternal hypertension (p=0.01), mother not on any medications (p<0.001), mother not receiving vaccinations (p<0.001), and lower socioeconomic status (p<0.001). After adjustment for these variables, having a smoking parent was associated with a 2.09 times increased odds of the child developing CLP (95% CI 1.22–3.58). Complications during pregnancy (OR=2.38, 95% CI 1.45–3.90), mother receiving vaccinations (OR = 0.32, 95% CI 0.16–0.64), and higher socioeconomic status (OR = 0.15, 95% CI 0.04–0.63) were also associated with CLP.

CONCLUSION: While previous studies have consistently shown maternal tobacco exposure to be associated with development of orofacial clefts in the child, this study identifies and accounts for possible confounding variables in a case-control design, thereby providing a quantified estimate of the risk conferred by maternal tobacco exposure. This finding will be of value to providers in the context of perinatal counseling.

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Diagnosis, Treatment, and LONG-TERM Speech Outcomes of Occult Submucous Cleft Palate-Associated Velopharyngeal Insufficiency

**Presenter:** Jack Brooker, MB BChir

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**INTRODUCTION:** Overt submucous cleft palate (SMCP) is characterized by Calnan’s triad of bifid uvula, hard palate notch and zona pellucida. Because occult SMCP (OSMCP) lacks this triad, diagnosis is challenging and treatment (if indicated by the presence of velopharyngeal insufficiency [VPI]) is delayed. This study discusses diagnosis, treatment, and long-term outcomes of OSMCP.

**METHODS:** A retrospective chart review was performed for all patients presenting to the Cleft-Craniofacial Center of Children’s Hospital of Pittsburgh who were surgically treated for SMCP between September 2004 to September 2015. Patients with any one of Calnan’s triad were excluded from analysis. The primary outcome was the requirement of secondary speech surgery due to persistent VPI. To evaluate long-term speech outcomes, postoperative follow-up was required to be >3 years for study inclusion. Speech was evaluated over time using Pittsburgh Weighted Speech Scores (PWSS).

**RESULTS:** 317 SMCP patients underwent surgical treatment for VPI, 41 patients were diagnosed with OSMCP (mean age at surgery 6.7 years). Furlow palatoplasty was performed for all patients (mean follow-up: 5.5 years). Diagnostic techniques for OSMCP: 1) intraoral physical examination demonstrating vaulted V-shaped palatal elevation with gag or phonation in 87.8% (36/41) of patients; 2) MRI demonstrating sagittally oriented levator palatini muscles in 19.5% (8/41) of patients; and 3) videofluoroscopy to evaluate palatal kinetics in 65.8% (27/41) of patients. Secondary speech surgery was performed on 39.0% (16/41) of patients. 55.6% of patients (5/9) with VCFS underwent secondary surgery (p>0.05). Patients undergoing secondary surgery had a significantly lower change in PWSS (postoperative PWSS minus preoperative PWSS) compared to those who did not (4.4 and 10.0; p=0.022). Using videofluoroscopy, patients who required secondary speech surgery had lateral wall motion with 53.6% closure compared to 74.3% closure for those who did not (p=0.11). No oronasal fistulae developed. Posterior pharyngeal flap (PPF) was performed in 87.5% of patients as the secondary speech surgery. Two of these patients (14.2%) developed obstructive sleep apnea (OSA) and required PPF takedown.

**CONCLUSION:** Patients with VPI and no overt signs of SMCP often have delayed diagnosis and incorrect clinical management. Accurate diagnosis of OSMCP is imperative to guide appropriate surgical treatment. Furlow palatoplasty is an important procedure for patients with OSMCP-associated VPI. This shows promising outcomes in patients with OSCMP and limits the risk of PPF-related OSA.

A Comparative Analysis of rhBMP-2/Dbm Vs. Icbg for Secondary Alveolar Bone Grafts in Patients with Cleft Lip and Palate: Review of 501 Cases

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**INTRODUCTION:** Alveolar cleft reconstruction using iliac crest bone graft (ICBG) is considered standard of care for children with complete cleft lip and palate at the time of mixed dentition.