

Oral Abstracts

preserved tissue using the Maxwell DX system (Promega). Primers for the fungal ITS and bacterial 16s conserved region were used to amplify a 300–400bp amplicon in a twostep PCR reaction totaling 50 cycles. Ion Torrent adapters were incorporated into PCR primers of the second round of PCR. Amplicons were purified and sequenced on Ion Torrent PGM using the 400bp sequencing kit with a total yield of ~100,000 reads per sample. Reads were analyzed using Qiime scripts to generate annotated OTU tables of all samples.

Results: The patients' age at thoracoscopic removal ranged between two and three months. CPAM was confirmed in all cases by standard HE histology. Analysis of the internal transcribed spacer of the ribosomal RNA gene (fungal ITS) revealed colonization with *Pneumocystis jirovecii*, mostly known from immunosuppressed patients, and *Preussia* sp. in one patient. In one other specimen we were able to find 16s sequences of *Streptococcus* sp., matching equally on *Streptococcus salivarius* and *Streptococcus thermophilus*. The remaining 5 patients showed neither fungal nor bacterial DNA in this analysis.

Conclusion: For the first time ever this SPAM project reveals genetic footprints of *Pneumocystis jirovecii*, *Preussia* sp. and *Streptococcus* sp. before the age of 5 months in 2/7 infants with CPAM. These unusual species found in CPAMs call for broader investigations. We invite more centers to participate in our SPAM project aiming for an "age-dependent microbial mapping". Such data could support pediatric surgeons when counselling parents for the optimal age to perform thoracoscopic resection of CPAMs.

(S011) EVOLUTION OF RESPIRATORY SYMPTOMATOLOGY FOLLOWING LAPAROSCOPIC NISSEN FUNDOPLICATION IN CHILDREN Carlos García-Hernández, Dr, Lourdes Carvajal-Figueroa, Dra, Sergio Landa-Juárez, Dr, Hospital Infantil Privado

Background: There is a direct relationship between gastroesophageal reflux and reactive respiratory diseases. Typical symptoms of gastroesophageal reflux tend to be absent in patients where both this ailment and reactive respiratory diseases are present. In contrast, issues such as coughing, bronchospasms or bronchitis are usually evident in these cases. A number of studies suggest a surgical approach to control these symptoms is more effective than conventional treatment.

Objective: To determine the effectiveness and convenience of performing laparoscopic Nissen fundoplication in patients with gastroesophageal reflux that exhibit respiratory symptomatology.

Methodology: This is a retrospective cohort study through a 16-year timespan of pediatric patients that manifested esophageal reflux and respiratory symptoms. Patients in the cohort were subjected to a laparoscopic Nissen fundoplication after previously being treated via medical means. Follow-up took place one year after the surgery in most patients, and five years after in a limited portion of the cohort. Statistical analysis was a purely descriptive approach.

Results: A total of 2293 patients were treated. 1215 out of 1537 that presented respiratory symptomatology were included. The age group that exhibited the highest frequency was patients between 2 and 6 years (41.63%). The respiratory symptomatology was divided in high (20.9%), and low (76.7%). 90.46% were subject to a bronchoscopy with lipid laden macrophages in 56.99%. The pH metrics practiced to 27% was abnormal in 29.39%. An impedanciometry was practiced in 38.52%, 82.26% evinced abnormalities. Respiratory symptoms, disappeared or improved within one month in 63.53%, within 6 months in 85.33% and in 12 months in 87.8%. Follow up was possible after 5 years to 65.67%. Of this group, in 91.73% of subjects the symptoms improved or disappeared. In the follow up to a year from the surgery the symptoms disappeared and improved in the 92.16% of the patients between 1 and 24 months of age, 93.44% between 2 and 6 years of age, 87.65% from 6 to 12 years and 75.89% between 12 to 18 years.

Discussion: The relationship between respiratory diseases and gastroesophageal reflux is well documented. In our study, as many as 70% of patients concurrently evidenced reflux and respiratory disorder. The injury mechanisms conducive to these conditions can be related to aspiration or vagal responses. The morbidity rate of the laparoscopic procedure is low and the benefits associated to the control of respiratory symptoms is evident, as significant improvements or total healing of these ailments ensued a year after the surgery took place in as many as 80% of cases considered. We note these improvements are not usually immediate and, in fact, tend to be more noticeable six months after the surgical procedure took place. It is also worth stressing patients aged 2–6 exhibited the most significant improvements, a fact that is most probably related to pulmonary damage being practically nonexistent in infants of this age group.

Conclusion: laparoscopic Nissen fundoplication is a safe and effective procedure for the optimal control of respiratory manifestations associated with gastroesophageal reflux in pediatric patients that do not evidence neurological damage.

(S012) SMALL BOWEL OBSTRUCTION FOLLOWING OPEN OR LAPAROSCOPIC SURGERY IN INFANTS AND CHILDREN: A SYSTEMATIC REVIEW AND META-ANALYSIS.

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AIM OF THE STUDY: Post-operative peritoneal adhesions are fibrous bands that form as a result of abdominal and/or pelvic surgery and, sometimes, may result in post-operative small bowel obstruction (SBO). Although laparoscopy has been reported to be associated with a reduced risk of SBO in comparison to open surgery, the accumulated evidence to support this concept in children is lacking. The aim of the present study was to determine whether laparoscopy reduced the risk of SBO in children.

METHODS: Using a defined search strategy (PubMed, Medline, OVID, Embase, Cochrane databases), two investigators independently identified all comparative studies reporting the incidence of SBO following open or laparoscopic procedures in infants and children. Case reports and opinion articles were excluded. Both the systematic review and the meta-analysis were conducted according to the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The meta-analysis was conducted using RevMan 5.3. A sub-analysis was made to compare procedures performed on the upper abdominal quadrants versus those performed in the lower ones. The present study was registered on PROSPERO – international prospective register of systematic reviews.

MAIN RESULTS: Systematic review – Of 11,653 titles or abstracts screened, 280 full-text articles were analyzed. Fifty-one comparative studies (9,628 children) reported an overall incidence of post-operative SBO in 217 patients (2.25%). The meta-analysis showed that the incidence of SBO was significantly lower after laparoscopy (53/5190, 1.02%) than after open procedures (164/4438, 3.69%; $p < 0.00001$, odds ratio (OR) 0.35, 95% confidence interval (CI) 0.26 to 0.47, $I^2 = 0\%$; Figure). Twenty-five of the 51 studies compared laparoscopic versus open appendectomy. Our meta-analysis revealed that laparoscopic appendectomy was associated with a lower rate of SBO (42/4158, 1.01%) compared to open appendectomy (90/3072, 2.93%; $p < 0.00001$, OR 0.39, 95% CI 0.27 to 0.57, $I^2 = 0\%$). Interestingly, the advantage of laparoscopy in reducing the risk of SBO was more noticeable for procedures performed in the upper abdomen (laparoscopy: 0.24%, open surgery: 2.23%; $p < 0.05$, OR 0.27, 95% CI 0.08 to 0.86, $I^2 = 48\%$). Nonetheless, laparoscopy was also advantageous in procedures performed in the lower abdomen (laparoscopy: 1.09%, open surgery: 3.88%; $p < 0.00001$, OR 0.36, 95% CI 0.26 to 0.49, $I^2 = 0\%$).

CONCLUSIONS: Laparoscopic surgery reduces the risk of post-operative SBO in infants and children. This reduction is observed following all types of operations in both upper or lower abdomen. SBO is extremely rare after laparoscopic procedures in the upper abdomen, possibly due to absence of bowel manipulation. By reducing the risk of SBO, laparoscopic surgery can improve clinical outcome and overall cost.