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TRENDS IN PEDIATRIC APPENDECTOMY OUTCOMES

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Childhood appendicitis is a common surgical emergency in industrialized countries with a reported annual incidence of 37.2 per 10,000 American children aged 0-14 years based on Bickler and DeMaio's [1] interpretation of data from a five-year epidemiology study [2]. Advances in laparoscopy, imaging and interventional radiology continue to change the management for this disease in the United States. Therefore the manuscript by Drs. Jen and Shew presenting a seven-year retrospective study of the outcomes for open and laparoscopic pediatric appendectomies (OA vs. LA) using a state-wide database from California is a welcome addition to the field. The study encompassed over 95,000 children with no significant comorbidities. The median follow-up for the patients was three years.

Not unsurprisingly, given the increasing role of laparoscopy in general, Jen and Shew noted that the annual percentage of LA performed increased from 19% to 52% from 1999–2006. The authors also determined that 4.9% of LA when performed for perforated appendicitis required subsequent drainage for intra-abdominal abscesses versus 3.8% in the comparable OA group. They reported a similar trend for non-perforated appendicitis (0.65% vs. 0.3% LA vs. OA). Based on their multivariate regression, Jen and Shew reported an increased relative risk for postoperative abscess drainage of 1.81 for LA vs. OA. Using hospital length of stay data, the authors determined that the increased incidence of intra-abdominal abscesses associated with LA does not increase hospital utilization compared to the OA group.

This study nicely presents how large databases can be used to evaluate outcomes. However, careful interpretation is always needed with large database studies. Indeed a recent article by Grunkemeier and colleagues points out the danger of how large sample sizes can generate statistical significance for any small difference (which may be clinically unimportant) [3]. In addition, we are not given the R^2 adjusted to assess the goodness of fit or the F-statistic to judge the significance of the p-value for the multivariate regression. In fairness these statistics appear to be often overlooked in the medical literature. Finally, the authors note that even with this robust database, only 55% of the children were able to be followed-up. Jen and Shew are to be complemented for attempting to control for this last factor by comparing the in-hospital outcomes for the initial admission for appendicitis between the children with follow-up and those children who were unable to be followed.

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Despite the challenges of large database studies such as this one, Jen and Shew have added additional support to the current management of appendicitis in children who are otherwise healthy. Their data support the conclusion that early diagnosis and prompt treatment of appendicitis (i.e., at the initial hospital where the patient presents) is associated with a decreased risk for intra-abdominal abscess formation. At least in the state of California the racial and socio-economic status of the patient as well as the hospital were not associated with post-operative abscess formation. Whether or not the small difference in percentages for LA vs. OA intra-abdominal abscess formation is truly clinically significant will always depend on the individual surgeon and patient's course in the disease process which is the art of medicine. What is clear is that laparoscopic appendectomy is a viable approach for appendicitis in children with respect to the outcomes reported. Hopefully future longitudinal studies of this nature will continue to improve management for surgical problems in general.

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