Despite the many possible shortcomings, we believe there is value in the present report. Herein, we have demonstrated a reproducible, accurate, fast method of appraising a prenatal HN dataset, which is applicable in everyday clinical use, with deployment of a key that can be introduced in webpages or applications, thus offering a predictive tool that could be employed and validated worldwide. The same techniques we have described could be used to predict other important outcomes (such as UTI risk and likelihood or timing of spontaneous resolution) in this population of infants, which is the matter of ongoing research efforts at our centers.

**CONCLUSION**

This powerful, cloud-based, ML technology allows easy building, deployment, and sharing of predictive analytics solutions. Using PHN as an example, we propose an opportunity to address current challenges with data analysis, with a creative solution that moves beyond the current standard, allowing for the creation and updating of predictive models based on large amounts of information.

**References**


**EDITORIAL COMMENT**

The authors report a thought-provoking, preliminary exploration of the application of artificial intelligence (AI) and machine learning (ML) to predict the need for surgical intervention in children with prenatally-detected hydronephrosis.

The growing potential for AI applications in medicine is a reality. Nonetheless, a careful assessment of the AI literature in healthcare will reveal an almost exclusive focus on diagnostics; in other words, AI and ML are usually employed to advance interpretation, improve accuracy and outreach of diagnostic tests. The examples cited by the authors in the "discussion" section illustrate this point well.

With that in mind, the main question that arises is: what is the role of AI in treatment-related decisions, particularly those involving surgery? As the authors correctly mention, the indication for surgery in patients with prenatal hydronephrosis and possible ureteropelvic junction obstruction (UPJO) is not clear-cut and significant controversy still exists. In that way, single-center validation of ML as presented might pose a problem; as long as there is minimal consistency amongst practitioners working as part of the same group, indications for surgery "learned" by the model may prove to be faulty when applied to other institutions that follow a different set of criteria to operate. In this setting, a step where multicentric validation is performed is clearly needed.
The burden to generate good-quality evidence and establish best practices in the management of patients with prenatally-detected hydronephrosis is on our community of pediatric urologists; through careful study design and robust analysis procedures, we will hopefully have the ability to identify the variables that will populate future generalizable AI tools. This article is a great first step in that direction and the authors should be congratulated for it.

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AUTHOR REPLY

We sincerely appreciate the thoughtful comment accompanying our manuscript. We wholeheartedly agree that this is an exciting time for medicine, with sophisticated technology becoming more and more user friendly as well as increasingly accessible.

As highlighted, choosing an outcome such as surgical intervention may be perceived as surgeon or institution dependent. Nevertheless, we feel that our surgical indications, especially for pyeloplasty, are similar to many other pediatric institutions. We acknowledge that surgical indications may vary, as can be seen with related conditions such as uretero-vesical junction obstruction or vesicoureteral reflux. It is unlikely that advanced analytics will be able to standardize the multifactorial decision to proceed with surgery in the near future. It can, however, risk stratify patients while taking into account variability between providers or institutions. As models are perfected and databases grown, so will our ability to harness this technology to improve patient care.

We are grateful for the opportunity to publish this experience as one of the first in our sub-specialty. We hope that this information will spark interest in this technology and actively engage other in exploring further, introducing more sophisticated tools and fostering collaboration between experts in computer science and the growing artificial intelligence field with clinical experts in pediatric urology and radiology. While this technology can never replace informed clinical decision-making by experienced clinicians, we hope to be able to enhance patient, family and health care provider experience by fine tuning and training user-friendly models capable of consuming and quickly analyzing vast amounts of valuable clinical data to ultimately assist real-time decisions in everyday practice.

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