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Comparative Effectiveness of Imaging Modalities for Preoperative Assessment of Anorectal Malformation in the Pediatric Population

Dear Editor,

We read with interest the article by Y. Zhan, J. Wang and W. Guo "Comparative Effectiveness of Imaging Modalities for Preoperative Assessment of Anorectal Malformation in the Pediatric Population" *Journal of Pediatric Surgery*, <https://doi.org/10.1016/j.jpedsurg.2019.08.037> [1].

The article deserves some important comments:

This retrospective article aims to compare MRI with X-ray and colostography/fistulography.

The technique used by the authors for the colostography/fistulography is obviously inadequate. The authors report that they use an 8 Fr catheter into the "anastomosis of the rectum" (can authors explain what they mean?). They obtained X-ray images "10 min after the patient was inverted to make sure the distal rectal pouch was full of gas" (?). We believe this refers to an invertogram [2], a technique described in 1930 by Wangsteen and Rice that is no longer used.

There is a basic conceptual error in the interpretation of the author's findings. Ninety percent of cases of anorectal malformations have the distal rectum surrounded by a striated sphincter mechanism. An invertogram will not show the most distal part of the rectum owing to the muscle tone of the sphincter. In cases of newborns with anorectal malformation and severe abdominal distention, the high intraluminal-rectal pressure makes it possible to see the most distal end of the rectum. When a patient already has a colostomy, the contrast material will never show the most distal part of the rectum just by placing the patient upside-down. This is the reason why the correct study is called "high pressure distal colostogram". In order to be able to generate enough hydrostatic pressure to demonstrate the most distal portion of the rectum, it is necessary to use a Foley catheter introduced through the mucous fistula, inflate the balloon, and pull the catheter to allow the balloon to act as a plug. The contrast should be injected by hand, under fluoroscopy guidance, until enough pressure is generated to define the anatomy [3].

Unfortunately, the paper fails to show an image of their colostography/fistulography. It is well known that a technically incorrect done high-pressure distal colostogram will yield the wrong diagnosis [4]. It seems like the authors compared the MRI with a technically incorrect colostogram.

The authors included 84 patients: 47 rectoperineal fistula, 14 imperforate anus, 12 rectovestibular, 5 rectobladder neck fistula, 2 rectourethral

bulbar, 2 cloacal malformation, and 1 anal stenosis. Interestingly, patients with rectoperineal fistula and rectovestibular fistula do not need any imaging modality to determine the location of the fistula, because it can be seen on physical exam. In this reported series, if the author's "imperforate anus" patients represent the anorectal malformation without fistula, their incidence of 16% is higher than any other series in the literature.

Authors need to explain how the "MRI can help surgeons to reconstruct the anal canal and suture the bowel wall to the sphincter muscle complex and skin". By definition, patients with anorectal malformation do not have an anal canal.

The most concerning portion of the study is when the authors conclude that MRI is more accurate than X-ray and colostography/fistulography in discerning fistula anatomy and detecting associated anomalies. When we analyzed the associated anomalies presented in Table 1 we realize that many of them could not have been diagnosed with an X-ray or colostography/fistulography such as: tethered cord, syringomyelia, anterior meningocele, fatty filum, spinal lipoma, hydronephrosis, renal dysplasia, isolated kidney, ectopic kidney, renal fusion; making the comparison invalid.

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