Nixon-Peña Virtual Debate

Medical science is the study of new knowledge about human anatomy and physiology, as well as the etiology and pathophysiology of diseases, with the goal of preventing and treating them. It differs from non-science in that its claims do not contradict established, proven scientific facts. These claims are derived using scientific methodologies, such as comparison with normative data and the rejection of numerous unverified hypotheses. Medical science also allows for the prediction of new research directions, the achievement of positive treatment outcomes, and adherence to ethical standards. Any scientific research serves as a catalyst for further inquiry in the pursuit of absolute truth. The discussion of scientific ideas is a necessary condition for progress.

In this article I compare the diagnostic and treatment methods of anorectal malformations (ARMs)of two pediatric surgeons – H.H. Nixon (1972) [1] and A. Pena (1982) [2] and I accompany them with my comments from modern scientific positions.

I. Based on X-ray examination and perineal examination, Nixon divides ARMs into 3 groups in accordance with the international classification

(1) **Rectal agenesis** if the bowel ends above the pelvic floor, typically with fistula to prostatic urethra (≈ 40%).

(2) **Ectopic anus** if the bowel traverses the pelvic floor with its crucial puborectalis sling but fails to migrate back to the normal anal site (anterior perineal anus, valvular anus, anovulvar anus, anovestibular anus). Like all ectopic openings these tend to be stenotic.

(3) **"Covered anus"** if the lower end anal canal is near the anal dimple. In such cases, dark meconium can be seen, as, for example, with a fistula under the scrotum. Nixon emphasizes that puborectalis sling is the most important striated muscle involved in continence [1].

II. Peña published an article on the posterior sagittal approach [2] two months after a similar publication [3]. In this new article, the number of patients he operated on increased by 20 compared to the previous report. Moreover, Peña made the following statement without providing any supporting evidence:

(1). Posterior sagittal anorectoplasty (PSARP) is a new technique for the repair of high anorectal malformations [2].

(2). "…a median sagittal incision that runs from the sacrum to the anal dimple, cutting through all muscle structures behind the rectum".

(3). «It was learned through this procedure that the external sphincter is a functionally useful prominent structure. No puborectalis sling, as such, could be identified».

(4). “Since it is impossible to pull the generally ectatic rectum through without destroying the muscle structures present, the rectum must be tapered to allow suturing the muscle behind it”.

(5). “In all these anomalies, the rectum and urethra (or vagina) are very closely joined, sharing a common wall”.

(6). “Colostomy has been closed in 27 patients and fecal continence may be described as excellent, except in those patients with severe sacral anomalies, and unquestionably superior to that obtained by us with other techniques”.

- This article is written by a doctor as if no research had been done before his article. For example, how does this operation differ from the sacral approach as described by Stephans and used by Nixon? [1] There are no anatomical names in his article. He dissects the PRM, the deep and superficial parts of the external anal sphincter, which supposedly surrounds the **rectum**, in order to pull-through the **rectum** (on the place of the rectum?). From then on, the idea of the anal canal disappeared from his articles. So, for example, when describing the augmented-pressure distal colostogram he states: "It is extremely important in this regard to understand that the lowest part of the rectum is usually collapsed from the muscle tone of the funnel-like striated muscle mechanism that surrounds the rectum in 90% of cases. In order to fill the distal rectum and force contrast material through a fistula, it is necessary to exert a significant amount of hydrostatic pressure to overcome the tone of the funnel-like muscle mechanism" [4]. It is known that the distal part of the intestine, located inside the sphincters, due to which it is in constant contraction, ensuring fecal retention, and which opens during the increase in rectal pressure during defecation, is the anal canal. Secondly, the authors do not use hydrostatic, but uncontrolled hydrodynamic pressure, which is dangerous due to intestinal perforation. Thus, Peña calls the anal canal "rectum" to justify the use of posterior sagittal anorectoplasty (PSARP), which destroys the anal canal.

- Peña's claim that during PSARP he was able to detect something that surgeons, anatomists, and histologists had missed before him is outrageous, especially since he failed to identify the PRM, which all pediatric surgeons had visualized to mark the track for the bowel in front of it.

The object of this procedure is to be sure of getting in front of the puborectalis sling with minimal chance of damaging this [1]. Furthermore, Peña's claim that the PRM cannot play a significant role in fecal continence because he did not see it and therefore it crosses it is contrary to all known research. “External anal sphincter (EAS) and puborectalis muscle (PRM) play important role in anal continence function” [5]. There is not a single study in literature where this thesis is disputed by anyone. Cutting these muscles and removing the internal anal sphincter called "fistula" deprives patients of the chances of normal fecal retention. The tearing the rectum from the levator plates, which open the anal canal during defecation to reduce friction, is one of the causes of chronic constipation.

- After the successful division of the cloaca and the formation of the urethra, vagina and anal canal, each channel has its own wall even though they are difficult to separate from each other. The claim of a single wall is contrary to the basics of science.

- The statement about remarkable results after PSARP in comparison with previous operations is not true, since Peña, firstly, freely manipulates the number of operations performed (+20 patients in 2 months). Secondly, the number of high types is 12 times higher than perineal, compared to numerous statistical studies. Thirdly, if Peña does not know about the role of PRM and does not refer to the surgical treatment methods that he allegedly performed, then how can we trust a “scientist” who has not published a single scientific article? Fourthly, it is known that after PSARP the results are far from excellent. For example, a systematic review by Rigueros Springford et al showed the range of long-term active problems was as follows: fecal incontinence, 16.7% to 76.7%; chronic constipation, 22.2% to 86.7%; urinary incontinence, 1.7% to 30.5%; ejaculatory dysfunction, 15.6% to 41.2%; and erectile dysfunction, 5.6% to 11.8% [6].

Thus, from a theoretical point of view, PSARP is not a scientifically sound method.

III. Comparison of the results of treatment of ARMs with visible fistulas (anal stenosis, perineal and vestibular ectopia of the anus).

Nixon used the simple cutback to make the imperfect anus large enough to work where it lies. The procedure consists of inserting one branch of the scissors into the ectopic opening towards the coccyx and cutting all the tissue to the anal dimple. It is most unwise to delay it as it leads to rectal distension. The cutback results in the fact that in females the ectopic anus in the vestibula is located close to the neoanus, i.e., it has the appearance of a both barrels alongside, but they are normally functioning [1]. He recommends delayed perineal transplantation to

correct the cosmetic defect. After this operation there is never any fecal incontinence, and constipation, which is caused by late correction, soon disappears [7]. В 1977 году Nixon and Puri пришли к заключению, что «The long-term results of low anomalies are excellent, as expected, whether primarily treated by cutback or transplantation» [8].

The Krickendeck classification was adopted at an international conference in 2005 by a vote of the 26 participants invited by Peña. By this time, Peña had published 42 articles on ARM, while only three (Holschneider, Iwai and Rintala) had 2-3 articles each that were indirectly related to the problems of ARM. For example, Holschneider et al (1996) concluded that the recommendation to use the distal rectal pouch and fistula portions in the reconstruction of anorectal malformations should be revised, since abnormal innervation patterns were found in 96% of cases [9]. They did not know that the anal canal does not have an intermuscular plexus. Peña managed to convince the participants that PSARP is an ideal method for all types of ARMs, so there is no point in dividing them into high and low. Thus, the concept of an anal canal disappeared.

As shown in the article by Schmiedeke et al, after PSARP complete continence was found in 40% of perineal fistula. The statement of constipation (67%) was validated with the latest clinical findings, showing coprostasis in 46%, "Not suffering constipation" was confirmed in 61% and falsified in 29%.[10], i.e., 60% had fecal incontinence, and most patients had constipation, which from the point of view of objective assessment by Stephens is a bad result and never occurs after cutback [7]. According to Lombardi et al, after PSARP for vestibular fistulas seem to have the highest rate of constipation (not less than 61.4%) [11].

The treatment results after PSARP with invisible fistulas are worse, the higher the location of the ectopic anus, but they are significantly worse than after pull-through via the puborectalis sling. For example, according to Swain and Tucker (1962), after pull-through via PRM in patients with a high type of ARM, a poor result (lacked control with soiling) was in 19% of patients [12], which is significantly less than according to Rigueros Springford et al [6].

Conclusion.

1. Disregard for scientific evidence that ARMs have a functioning anal canal and the PRM plays an important role of in fecal continent led to destruction of the anal canal and transection of the PRM in PSARP. This is the cause of poor functional outcomes.

2. Peña used patently false success rates to promote PSARP as the ideal surgery, although he never compared the results to anal-preserving operations. Forty years he hindered publications, that proved the existence of the anal canal with ARMs, and the importance of PRM. This is a deliberate lie, not an honest mistake, that has caused harm in the treatment of patients with ARMs.

3. By all accounts (theoretical, practical, ethical and creative), Peña's activities are not science. Patients with ARMs should not be subject to surgical treatment, the results of which are worse than other known methods.

I believe that the American Pediatric Surgical Association has an obligation to organize an open discussion on surgical treatment options for ARMs.

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