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# SURGICAL APPROACHES FOR PUDENDAL NERVE RELEASE: A SYSTEMATIC REVIEW

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## HYPOTHESIS / AIMS OF STUDY

Pudendal nerve entrapment (PNE) is a condition characterized by compression or irritation of the pudendal nerve, resulting in an ipsilateral neuropathic-like pain to the pelvic region. The symptoms of PNE can include chronic pain, numbness, tingling, or burning sensations in the perineum, rectum, or genitals. Patients with PNE may also experience difficulty with bladder and bowel control or even sexual dysfunction, leading to a reduced quality of life. A set of diagnostic criteria established by Labat et al. in 2008[1], known as The Nantes criteria, represent the standard for diagnosis. Yet, a consensus about the management of this syndrome has not been reached. Conservative treatment options for PNE include pelvic floor physical therapy, medication, and nerve blocs. Surgical intervention is often considered for patients who do not respond to these treatments. Various surgical approaches for pudendal nerve decompression have been reported in the literature but the optimal approach remains unclear. The efficacy and safety of different surgical procedures have not been systematically evaluated, and the literature on this topic is limited to case series and small retrospective studies. This systematic review of the available evidence aims to provide a comprehensive understanding of the benefits and risks of the different surgical approaches.

## STUDY DESIGN, MATERIALS AND METHODS

A comprehensive search of PubMed, Google Scholar and Web of Science was conducted to identify studies between 1990 and march 2023. References were analyzed from included studies, and additional relevant articles were obtained for inclusion. Inclusion criteria were (1) adults > 18 years old (2) diagnosis based on physical exam findings with or without confirmation by electromyography (EMG), and (3) a definitive well described surgical strategy was identifiable for pudendal nerve release. Animal studies or case reports were excluded. The inclusion process followed the PRISMA guidelines.

## RESULTS

Twenty-one articles with a total of 889 patients surgically treated (524 females and 159 males) were included. Among these patients, 459 underwent a perineal release including a subgroup through the trans-ischio-rectal fossa, 311 underwent a transgluteal approach, endoscopic or open release and 119 underwent a laparoscopic transperitoneal release with one prospective cohort using robotic assistance and including 32 patients (table 1). The diagnostic criteria were not limited to the Nantes criteria. The definition of the primary outcome included a median duration of follow-up of 6 months (3-43 months). Regarding the reduction of pain, defined by a decrease of at least 30% for all the articles included, it was reported in 754 patients of whom 551 showed improvement (73.08%). Complication rates were reported in 62 of a total of 757 patients (8.2%), the majority of which were Clavien-Dindo 1 complication including numbness or transient faecal or urinary incontinence.

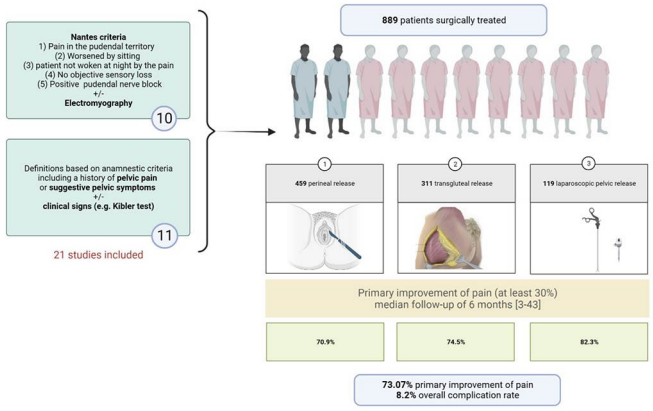
## INTERPRETATION OF RESULTS

This systematic review, summarized in Figure 2, is the first to include all recent data regarding the different surgical approaches to pudendal nerve release. Ten of the 21 articles defined pudendal neuralgia based on the Nantes criteria, and 11 had varying definitions combining chronic pelvic pain with clinical signs such as the Kibler test. Electromyographic examination was also used as a diagnostic criterion in 10 articles, but its sensitivity and specificity were limited [2]. Concerning the surgical technique used, 3 approaches were mainly described, the perineal, transgluteal and transperitoneal laparoscopic approach, which in one study was assisted by a robot. No randomized controlled study has been found comparing the different techniques, and the choice obviously remains based on the surgeon's experience. Improvement of pain, the main symptom strongly affecting quality of life in this context, was assessed in only 747 of the 889 patients included, with a primary outcome definition ranging from a simple improvement of 30% to 90%, with a median of 50%. An overall rate of improvement was noted in 73.08% of patients with rates ranging from 70.09% for the perineal approach, 74.5% for the transgluteal approach and 82.3% for the laparoscopic transperitoneal approach. The follow-up period was also limited, with a median of 6 months. It is also important to underline the temporal character where we see in the last ten years an increase of publications on the transperitoneal approach with recent implementation of robot assistance. Complications have not been reported in all the series. Although minor in the majority of cases, others remain serious, such as lesions of the pudendal artery during the operation or false aneurysms compromising the long-term functional results.

## CONCLUDING MESSAGE

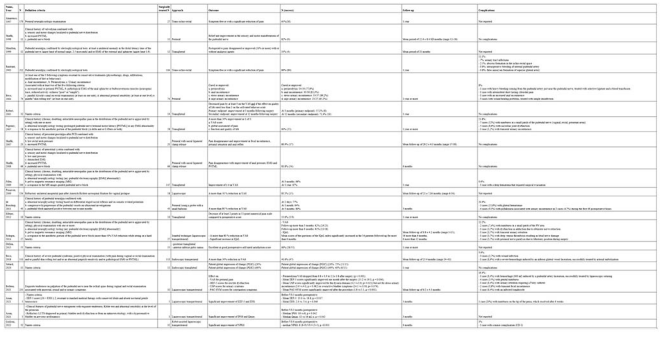
This systematic review has certain limitations that should be taken into consideration. Firstly, the definition of pudendal neuralgia (PNE) used in the observational series analysed was highly heterogeneous. While the criteria of Nantes for defining PNE are statistically validated, their implementation in clinical practice is still limited. Additionally, there was significant variation in the definition of clinical improvement, as well as in the follow-up protocols, with follow-up periods of only up to 4 years. As a result, the current medical literature only provides level 4 evidence for surgical treatment of PNE, based on 21 case-series or prospective series with 3 different approaches with a recent trend of the laparoscopic transperitoneal. Furthermore, without direct comparison of the different surgical modalities and non-invasive treatments, it is difficult to determine the place of surgery and the effectiveness and safety of each approach. The potential benefits of robotic assistance in this context, including cost-effectiveness, have yet to be evaluated. Future well-designed and focused studies are necessary to assess patients' quality of life, functional outcomes, and costs.

**FIGURE 1**




**systematic review; surgical management of PNE syndrome**

**FIGURE 2**



**summary table of the included studies**

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**Funding** NONE **Clinical Trial** No **Subjects** None

**Continence 7S1 (2023) 100929**
**doi:** 10.1016/j.cont.2023.100929