Pudendal neuropathy revisited

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WHAT HAVE I TAKEN ON?
“The more I learn, the more I realize how much I don't know.”

– Albert Einstein
Going back many years all you get is **pudendal neuralgia**
“Care must be taken to preserve the branches of the pudendal nerves as they enter into the muscle posteriolaterally”
Evidence of pudendal neuropathy in patients with perineal descent and chronic straining at stool

E S KIFF, P R H BARNES AND M SWASH
From St Mark's Hospital, London GUT 1984

In 17 women with chronic constipation, and abnormal perineal descent on straining at stool, there was more severe neurogenic damage to the external anal sphincter muscle and to its pudendal innervation in those patients with a long history than in those with a short history. These results suggest that recurrent trauma to the pudendal nerves can occur during perineal descent, and that this can lead to denervation and weakness of the external anal sphincter muscle.
Effect of vaginal delivery on the pelvic floor: A 5-year follow-up
S. J. SNOOKS, M. SWASH, S. E. MATHERS AND M. M. HENRY
From St Mark's Hospital, London BJS 1990

Study of the pelvic floor musculature and its innervation in 14 multiparous women
5 developed clinical symptoms of stress incontinence 5 years later
2 had had a further uncomplicated vaginal delivery during this time
There was manometric and neurophysiological evidence of weakness because of partial denervation of the pelvic floor striated sphincter musculature, with pudendal neuropathy, more marked in those women with incontinence
These findings provide direct evidence for the hypothesis that pudendal neuropathy due to vaginal delivery persists and may worsen with time
Anal sphincter trauma during instrumental delivery.
Sultan AH, Kamm MA, Bartram CI, Hudson CN. 

Anal pressures were lower in those who developed a sphincter defect (P < 0.00001). PNTML was not significantly altered by the mode of delivery.
Relationship of symptoms in faecal incontinence to specific sphincter abnormalities.


The clinical classification of faecal incontinence into passive and urge incontinence relates to specific patterns of abnormality of the internal and external anal sphincters.
Pudendal nerve latency. Does it predict outcome of anal sphincter repair?

Anterior anal sphincteroplasty in patients with unilateral or bilateral prolonged pudendal nerve terminal motor latency can provide significant improvement in continence with minimum morbidity.
By 1998 we decided to stop doing PNTML measurements

and the pudendal nerve went out of fashion....

(1998 is as far away as 2032)
We are left with our clinical impression of the ability of the patient to effect a satisfactory anal squeeze as a measure of pudendal nerve function. But there can be loss of voluntary squeeze function in the absence of a vaginal delivery, prolapse, straining or anal surgery.
The pudendal nerve can still play a significant role in medicolegal cases with obstetric damage.

Most are about missed 3rd ° tears and the possible outcome had the patient had a primary repair.
And the French brought the nerve back into the news with their pudendal nerve entrapment surgery.
Important warning: This is an extremely rare disorder. It was described by a 2010 paper as “an uncommon cause of pain in the pelvic floor”. Please read our in-depth warning about surgery offered for this condition. The surgery to alleviate it should not be entered into lightly. Many people who have “decompression of the pudendal nerve” surgery are still in great pain years later. Some are in worse pain than before the operation, and a significant percentage develop Sacroiliac Joint Dysfunction (SIJD) and pelvic instability due to the severing of the sacrotuberous and sacrospinous ligaments (leaving them unable to play sport, lift weights etc). Only a small handful of doctors in the world will do this operation. It is not mainstream medicine.
PUDENDAL NEURALGIA?
KEEP CALM AND IT'S NOT ENTRAPMENT
New, Simple Approach for Maximal Pudendal Nerve Exposure
Anomalies and Prospects for Functional Reconstruction
Austin O'Bichere, F.R.C.S., Colin Green, Ph.D., D.Sc., F.R.C.Path., F.R.C.S.,
Robin K. S. Phillips, M.S., F.R.C.S.

Figure 1. Surface landmarks for pudendal nerve exposure.

Figure 2. Exposure of gluteus maximus muscle.

Figure 3. Exposure of sacrotuberous ligament.

Figure 4. Maximal exposure of pudendal neurovascular bundle.
Then there was the injectable pudendal nerve stimulator ....
Charged by a booster seat!
Percutaneously inserted Pudendal Nerve Stimulation

Stimulating electrode being guided towards the ischial spine

Finger *per-rectum* used to guide the electrode
Both have now lost their CE mark

"CE"  "CE"  "China Export"
Figure 5. Classical pudendal nerve anatomy and Type 1 and Type 2 anomalies.
Sensation

penis / clitoris
posterior scrotum / labia
anal canal

Responsible for the afferent component of penile erection and clitoral erection
It is also responsible for ejaculation

Motor

bulbospongiosus and ischiocavernosus muscles
levator ani muscle
external anal sphincter
external urethral sphincter
Pudendal nerve stretch during vaginal birth: a 3D computer simulation

Lien KC, Morgan DM, Delancey JO, Ashton-Miller JA
Department of Mechanical Engineering, University of Michigan, Ann Arbor 48109-2125, USA. kclien@umich.edu
The more proximal the nerve fixation point, the greater the nerve strain.

The inferior rectal branch exhibited the maximum strain, 35%, and this strain varied by 15% from the scenario with the least perineal descent to that with the most perineal descent. The strain in the perineal nerve branch innervating the anal sphincter reached 33%, while the branches innervating the posterior labia and urethral sphincter reached values of 15% and 13%, respectively.
CONCLUSION:

During the second stage:

(1) nerves innervating the anal sphincter are stretched beyond the 15% strain threshold known to cause permanent damage

(2) the degree of perineal descent is shown to influence pudendal nerve strain.
Experimental models of neuropathic fecal incontinence: an animal model of childbirth injury to the pudendal nerve and external anal sphincter

Healy CF, O'Herlihy C, O'Brien C, O'Connell PR, Jones JF
Dis Colon Rectum. 2008 Nov;51(11):1619-26

Group A – controls - bilateral inferior rectal nerve crush
Group B - prolonged intrapelvic retrouterine balloon inflation
  simulated the pelvic compressive forces of labor

Both groups had significant atrophy of the external anal sphincter (P = 0.002) and electromyographic evidence of reinnervation at one week

External anal sphincter muscle mass recovered after four weeks in Group B
Studies on the brain in relation to the pudendal nerve are difficult as the area of representation of the anal canal in the brain is extremely small.
The pudendal nerve section is actually extremely small with no really interesting passages