Laparoscopic management of pudendal pain different endopelvic etiologies in 134 consecutive patients

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Introduction

Perianal and perineal pain is a frequent complaint usually as a result of common and easily recognizable organic disorders such as anal fistula, thrombosed haemorrhoids or anorectal cancer, but can also occur under circumstances in which no organic cause can be found: The three most common functional disorders causing anorectal and perineal pain are levator ani syndrome, coccygodynia and proctalgia fugax (1) but the Alcock’s canal syndrome is also responsible for pain in these areas; The Alcock’s canal syndrome is also responsible for pain in these areas and is well known by physicians and patients as it is accessible not only by symptomatic treatments but also by etiologic surgical treatment (2). However the pudendal neuropathy (Alcock’s canal syndrome) is only one etiology for perineal and perianal pain; Endopelvic stimuli to the endopelvic portion of the pudendal nerve or to the sacral nerve roots contains pudendal afferents (S2/3/4) can also induce such perineal or perianal pain. However such endopelvic lesions are less well known as their diagnosis is difficult and surgical approach to this nerves remained difficult an invasive. Thus such endopelvic etiologies are often included in the cathegory of the “non-organic” etiologies and are thren managed by symptomatic treatments. This now has to change as laparoscopy offer a minimal invasive, safe and reproductible acces to all pelvic nerves for both the diagnosis and the treatment of pelveo-abdominal neuralgia (3): In this paper we shall describe our experience with the laparoscopic management of “refractory” perianal and perineal pain.

Material and methods

134 patients were referred to us between 2004 and 2007 for laparoscopic management as the last therapeutical option because of “refractory” unilateral perianal and/or perineal pain. In each patients, examination of the
perineum, anal canal and rectum released eventually neurologic troubles such as hypoesthesia, hyperalgia or allodynia in the dermatomes S3 and/or S4 but no any lesion such as herpes, abscess, fistula or any other organic pathology cause for the pain could be found. Presentation of the patients to orthopedists and neurologists enabled exclusion of spinal lesions and lesions of the central nerve system. The motivation of the patients or of the colleagues for laparoscopic exploration of the pelvic nerves were influenced by factors such as the combination of the perineal/perianal pain with pelveo-abdominal pain, dysmenorrhea or dyspareunia in women in a reproductive age, the apparition of the pain after pelveo-perinal surgery or a delivery, but also the desperation because of failure of all the tested treatments (all patients had gabapentin lyrica) and/or the unacceptable side effects of medical treatments with dramatic consequences in private and professional life (table 1). Preoperative anamnesis and neurological examination as well as laparoscopic surgery in all patients was performed by the author MP. A graduated scale from 0 „no pain“ to 10 „worst pain imaginable“ was used for standardisation (Visual Analog Scale – VAS) to quantify the pain. Patients were requested to describe their pain with the use of the Mainz Pain Centre Questionnaire (4) and to keep a record of their consumption of analgesics.

Laparoscopic management of perianal and/or perineal pain consists of two operative possibilities: The first procedure focused on the endopelvic etiologies with the elective exploration of the entire sacral plexus extending from the dissection of the endopelvic portion of the sciatic and of the pudendal nerves to the full dissection of the endopelvic sacral nerve roots. The second procedure focused more on the extrapelvic etiologies and is limited to the elective dissection of the pudendal nerve from it emergence out of the sacral plexus up to the Alcock’s canal. Decision to perform one or the other procedure or both is strongly depended on the preoperative anamnesis: Apparition of the pain after a pelveo-abdominal surgical procedure, combination of the perianal/perineal pain with pelveo-abdominal pain or other pelvic neuralgia such as sciatica, neuralgia of the inferior gluteal nerve or of the obturatoric nerve, the characteristic “cyclical” of the pain in women (= apparition or significant inceasing of the pain during the mens bleeding) especially in combination with further symptoms typical for endometrisis such as cyclical dyschesia, dysmenorrhoe or dyspareunia are all situations leading to begin the procedure with the primary dissection of the sacral plexus and to reserve the dissection of the pudendal nerve only when no any endopelvic etiologies is found. On the contrary, the dissection focused on the elective exposure of the pudendal nerve when the pain appeared after a vaginal delivery or after a infrapelvic surgical procedure such as a sacrospinous fixation by Amreich Richter. Our technique of laparoscopic dissection of the pelvic somatic nerve, has been previously reported (5); Full exposure of the pudendal nerve begins with the exposure of it’s endopelvic segment followed by the transsection of the sacrospinous ligament which permits the further
dissection of the nerve downwards until the Alcock’s canal. The functional integrity of all exposed motoric nerves is assessed before and after dissection/decompression of the nerves using intraoperative laparoscopic electrostimulation according to the LANN technique (6).

Neuromodulation is indicated after failure of medical and failure of a surgical decompression of the pudendal nerve and the sacral plexus or when during the laparoscopic exploration no any lesions to the nerves could be found (as in patients with multiple sclerosis). We then used the “sacral LIONprocedure” which consists of the laparoscopic implantation of one multiple channel electrode perpendicular and in direct contact to the sacral nerve roots S2, S3 and S4/5 on the side of the pain (7). Before the decision of implanting the permanent stimulator, the patient undergoes a test phase of several days (3-7 days) with alternating of neuromodulation and non-neuromodulation periods and implantation is performed only when a constant reduction of pain of at least 50% is obtained.

All patients were clinically evaluated at the time of discharge and on a two-months basis for the first 6 months following surgery. Thereafter they were followed up every 6 months. Patients living abroad were followed up by telephone or by mail.

**Results**

In 18 patients with Alcock’s canal syndrome, subsequent to sacrospinal fixation for vaginal prolapse, laparoscopic decompression with transposition of the nerve, the procedure resulted in disappearance of pain in 15 [mean follow-up was 21 months (±7.04, 6 -34 months)] (figure 1). Of the 3 patients who had no improvement one had a subsequent unilateral LION procedure to the sacral plexus which produced significant improvement.

The other 109 patients had endopelvic lesions which also affected the root of the sacral nerve (table 1). Fifty three of these had postsurgical nerve damage secondary to pelvic surgeries not only radical procedures to the parametria such a radical hysterectomy, radical prostatectomy of resection of deep infiltrating endometriosis but also “non-radical procedures” such as simple hysterectomy or prolaps surgery; laparoscopic neurolysis of the sacral nerve root was performed in addition to the surgical excision of the diseased tissues (figure 2). The by far more difficult procedure was then laparoscopic decompression of the nerves in patients after pexy-procedures with mesh-material and clip/agaffes to the sacral bone. A reduction of pain of at least a 50% was obtained (VAS score) in 62% of the patients (follow-up mean 17 months, 3- 39 months). Eight of these patients underwent secondarily because of failure of the laparoscopic neurolysis, a unilateral sacral LION procedure (figure 3); Five of them had at least 50% decreases in pain VAS. Fifty further patients had endometriosis: complete removal of
endometriosis could only be obtained with a combination of the decompression of the nerves with further surgical procedures to endopelvic organs (table 1). A reduction of pain of at least a 50% was obtained (VAS score) in 78% of the patients (mean follow-up 21 months, 2-42 months). 6 patients with vascular entrapment of the sacral nerve roots were cured.

The remaining 7 of this series had a LION procedure for pain resulting from various etiologies (table 2). A reduction of pain of at least a 50% was obtained (VAS score) in 4 of them.

Discussion

The field of gynecology & obstetrics is one of the major producers of pudendal neuralgia with etiologies such as the compression of the nerves through a postpartal haematoma/fibrosis of the ischiorectal fossa, the stretching of the nerve during delivery or its lesion during colpo-sacrospinal fixation by Amreich-Richter. However in our series, the most frequent etiologies for perineal and perianal pain were endopelvic endometriotic lesions or surgical damages to the sacral plexus. Therefore, the symptoms of perineal and perianal pain were mostly just a part of the complaints: The radiation of the pain into a partial sciatic distribution (sciatica, neuralgia of the inferior gluteal nerve), together with the slight sensory disturbance in the sacral dermatomes suggests that the disorders represent a form of radiculopathy due to sacral nerve root lesions (8).

To treat pudendal neuralgia, Robert has described the transgluteal approach for neurolysis of the pudendal nerve at the infrapiriform canal and transection of the sacrospinal ligament to free the nerve from the tension of the ligament (9). His experience has lead him to consider the fascia in the posterior half of the Alcock’s canal and the fascia around the inferior rectal nerve as important but secondary sources for pain. Shafik on the other hand has attempted to decompress the pudendal nerve by following a perineal para-anal pathway. His dissection follows the inferior rectal nerve to the Alcock’s canal (10) and focused on the Alcock’s canal itself. The laparoscopic transperitoneal approach to the pudendal nerve focuses mainly on its proximal and medial portions and obviously required a more invasive dissection for the same dissection results. Thus for surgical treatment of a Alcock’s canal syndrom, the perineal and transgluteal approaches appears to be more appropriate than the laparoscopic transperitoneal approach but both perineal and transgluteal approaches can not offer a appropriate approach to the entire sacral plexus: As no any classical surgical approach to the pelvic nerves could permit diagnosis, all our patients were primarily send for medical treatment while an „organic“ etiology existed. All patients were referred from one specialist to another and a variety of different but ineffective treatments were attempted. As the development in videoendoscopy and microsurgical instruments, laparoscopy
offers a unique and reproducible surgical approach to all pelvic nerves that could never be reached by classical open, perineal or transgluteal approach and permit:

(i) The diagnosis of endopelvic situations or pathologies responsible for the pelvic neuralgia. In our series, all patients had undergone extensive diagnostic including electrophysiologic exploration of the pudendal nerve and imagery (CT-scan, MRI...) of the pelvis, but in no patient with an endopelvic lesions, an exact and correct diagnosis could been made before laparoscopic exploration. Thus in our series, laparoscopic exploration of the pelvic nerves permitted confirmation of suspected diagnosis such as extensive endometriosis or a postsurgical fibrosis of the retroperitoneal space, but also permitted discovery of anatomical situations never suspected before such as the compression of the sciatic nerve by an atypical superior gluteal vein, the entrapment of the sacral nerve root S2 between the inferior gluteal vessels or an isolated endometriosis inside the sciatic nerve (11).

(ii) A possible etiologic treatment of pelvic neuropathies: Endometriosis of the retroperitoneal space was the second most frequent etiology for lesion of the sacral plexus, but such types of deep infiltrating endometriosis of the pelvic nerves is usally just a part of the disease (12); Simple removal of the endometriosis affecting the nerves without any further surgical treatment of the rest of the pelveo-genital endometriosis would then expose the patient to a higher if not a sure risk of recurrence and therefore the necessity of further surgical procedures. As demonstrate in our series, the laparoscopic approach to the pelvis offers the concomitante treatment of possible associated painful pathologies such as a pelveo-abdominal adhesions.

Another therapeutic option to control perianal/perineal pain that needs to be discussed is the sacral neuromodulation. Until now neuromodulation has not been considered to be a real therapeutic option for pudendal neuralgia or for treatment of perianal/perineal pain in international medical literature (13, 14, 15). The essential difference between all these different techniques of implantation and the LION procedure is that the laparoscopic technique of implantation is the only which permit the elective neuromodulation of all pudendal afferents fibers together with just one electrode; Our preliminary results are encouraging but since our series involves only a small number of patients, we will report on it separately in a future paper.

The main value of our manuscript is to demonstrate that some patients with seemingly inexplicable “refractory” perineal/perianal pain have correctable findings that can be identified and eventually treated by laparoscopy. In situation who the classical laparoscopic neurosurgical techniques such as neurolysis, decompression has failed, the sacral LION procedure has then to be considered as the last option; However it is
beyond discussion that further prospective data and long term follow-up are needed to evaluate this new technique on long term. Thus for the laparoscopic management of prematurely labelled “refractory” perineal/perianal pain, two laparoscopic therapeutical procedures are available and the major difficulty is to know when a lesion of the nerve is found if the laparoscopic decompression/neurolysis of the nerve will be enough for cure the patient or if a implantation of electrode will be trotzdem necessary in order to avoid a two step surgical management; May be introduction of intraoperative neuro-physiological assessment of the pelvic nerves wellknowed by neurologist will eventually permit in the future to make the intraoperative dicision easier and appropriate.

References

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