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Peripheral Nerve

Systematic Approach to the Management of Neuropathic Groin Pain: A 20-year Retrospective Cohort Study

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Background: The diagnosis of neuropathic groin pain can be difficult because lumbosacral plexus nerve branches overlap in this anatomically complex region. We reviewed patients over 20 years and present our step-wise approach to the evaluation and management of neuropathic groin pain.

Methods: We retrospectively analyzed adults (18 y or older) evaluated between June 2006 and January 2025 for groin pain localized to 1 or more peripheral nerves: iliohypogastric, ilioinguinal, genitofemoral, lateral femoral, femoral, and obturator. Patients were stratified by (1) physical examination findings, (2) symptom duration, (3) response to image-guided diagnostic and/or therapeutic blocks, and (4) operative treatment. Pain was assessed with the numeric rating scale (0–10) and functional scores on a 0%–100% scale (poor <25%, fair <50%, good 50%–74%, excellent ≥75%). Pre- versus postintervention outcomes were compared. Minimum follow-up was 6 months.

Results: Of 501 patients, 386 (77%) underwent diagnostic blocks, and 291 (58%) proceeded to surgery on 686 nerves (lateral femoral = 209; ilioinguinal = 192; iliohypogastric = 163; genitofemoral = 112; femoral = 8; obturator = 2). Mean numeric rating scale scores decreased from 6.1 ± 1.9 to 1.4 ± 2.1 (P<0.001), and mean functional scores improved 80% from baseline (P< 0.001). At last follow-up (mean 47.9 ± 62.2 mo), functional scores were excellent in 71% of patients, good in 17%, fair in 7%, and poor in 4.8% (P< 0.001).

Conclusions: Neuropathic groin pain is frequently multifactorial, but may be approached systematically with an algorithm consisting of diagnostic and therapeutic nerve blocks. This method enables precise nerve-targeted surgery with selective decompression or neurectomy, decreased pain scores, and increased functional scores with minimal morbidity. *(Plast Reconstr Surg Glob Open 2026;14:e7494; doi: 10.1097/GOX.0000000000007494; Published online 18 February 2026.)*

INTRODUCTION

The groin or inguinal region comprises the anatomic area of the inferolateral abdomen, the upper thigh, and the pubis, with the groin crease occupying its central axis. However, this area lacks defined anatomical boundaries or a consensus among healthcare providers.[1] The groin region may be considered to extend laterally to include the anterior superior iliac crest and medially to the pubic symphysis. Lower abdominal muscles included in the groin are the rectus abdominis, external and internal oblique, and transversus abdominis muscles, whereas thigh muscles include the sartorius, iliacus, psoas, and adductor muscles (adductor brevis, adductor longus, adductor magnus, gracilis, and pectineus). Injury to any of these muscles may result in the sensation of groin pain and must be considered in the differential diagnosis. Injuries to the spine, pelvis, femur, soft tissues, and nerves may also result in groin pain. This review focused solely on the neuropathic etiologies of groin pain, or "groin neuralgia."

Sensory innervation of the groin originates from branches of the lumbar plexus, terminating in the iliohypogastric nerve (IHN), ilioinguinal nerve (IIN), genitofemoral nerve (GFN), and lateral femoral nerve (LFN).[2] However, injuries to branches of the obturator nerve

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(ON) and femoral nerve (FN) may also result in neuropathic groin pain.[2] Cutaneous innervation patterns are relatively consistent, and the location of pain provides reliable clues to specific nerve involvement (Fig. 1). The 4 primary nerves (IHN, IIN, GFN, LFN) consist largely of afferent sensory fibers and do not contribute to motor function or provide erogenous or tactile sensation to the penis or clitoris. Therefore, strategies to decompress or resect these injured nerves can be used without significant consequences.[2] One of the most important issues in the diagnosis and management of neuropathic groin pain is that the anatomical patterns of these nerves are highly variable from their spinal origin to their terminal branches,[3–10] resulting in sensory overlap, spontaneous neuropathies, failures of diagnostic or therapeutic injections, failures of operative interventions, and other complications.[11,12]

The complex anatomy of the groin region and multiple potential causes of groin pain make the management challenging for healthcare providers.[1] Our objective was to evaluate 20 years of referrals for neuropathic groin pain and to present our step-wise approach to its management.

Takeaways

Question: How should neuropathic groin pain be managed?

Findings: An algorithm consisting of diagnostic and therapeutic nerve blocks enables precise nerve-targeted surgery with selective decompression or neurectomy, decreased pain scores, and increased functional scores with minimal morbidity.

Meaning: Neuropathic groin pain is frequently multifactorial, and yet, its management may be approached systematically with a stepwise algorithm.

MATERIALS AND METHODS

Study Design and Population

We performed an institutional review board–approved retrospective cohort study. Included patients were aged 18 years or older and presented to a peripheral nerve surgeon for the evaluation and management of neuropathic groin pain between June 2006 and January 2025, with a minimum follow-up of 6 months. Excluded patients had missing outcomes. The Strengthening the Reporting of Observational Studies in Epidemiology guidelines were used for the synthesis of the article.[13] Patients were stratified by physical examination findings consistent with groin pain in specific peripheral nerve distribution(s), duration of symptoms, diagnostic injection blocks, therapeutic injection blocks, and surgical procedures.

Diagnosis of Neuropathic Groin Pain

Patients were assessed with the description of symptoms, injury and surgical history, medical and medication history, and physical examination to develop a hypothesis of specific nerves related to the pain. The physical examination is the most useful tool for diagnosing the origin of neuropathic groin pain by relating the pain with provocative findings of tenderness and the Tinel sign in known areas of sensory nerve distribution (Fig. 1). Anatomical landmarks may be used to identify potential nerves involved (Table 1). X-rays, ultrasound, nerve conduction studies, computed tomography, and

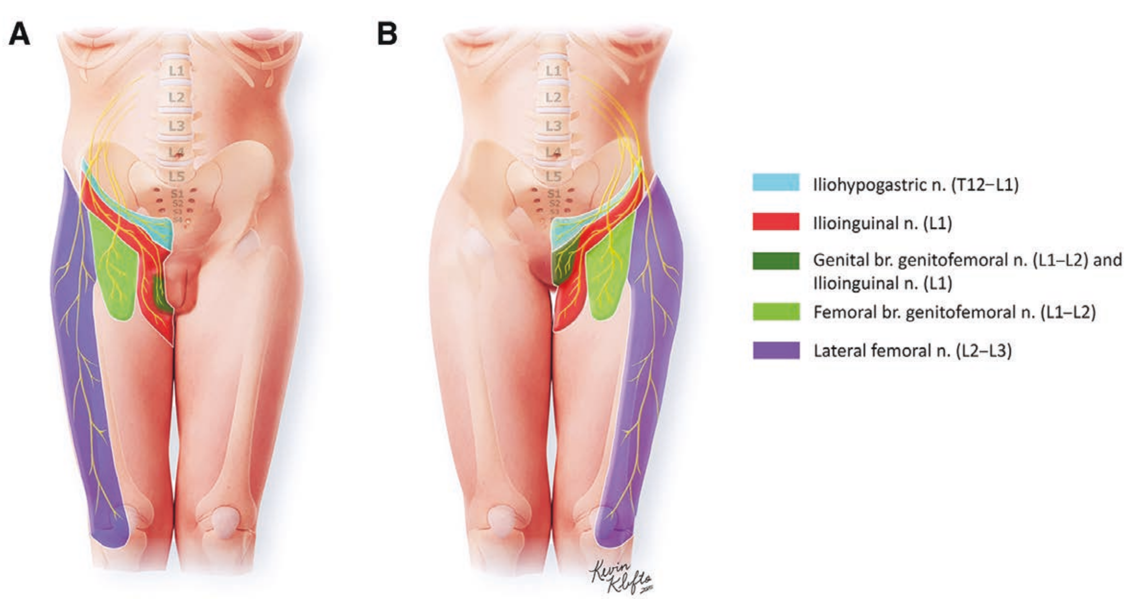

Fig. 1. Cutaneous nerves of the thigh and groin regions that contribute to neuropathic pain. Color legend: the different colors represent anatomic skin innervation areas that most commonly correspond to various peripheral nerves. A, Male anterior view. B, Female anterior view.

Table 1. Anatomical Locations of Groin Nerves Used to Identify Nerves and Specific Levels Contributing to the Pain

Groin Nerve	Usual Location (With Variability)
LFN	1–2 cm medial to ASIS at the inguinal ligament
IIN	1–2 cm above the ASIS
IHN	3–4 cm above the ASIS
GFN	2–3 cm above and slightly lateral to the pubic tubercle, between the internal and external rings
FN	1–2 cm lateral to the femoral artery at the level of the inguinal ligament
ON	1 cm inferior to the pubic tubercle

Ultrasound-guided blocks are performed to confirm these details, and then neurectomy or decompression is subsequently performed at the same locations.
ASIS, anterior superior iliac spine.

magnetic resonance imaging are rarely helpful in this investigation, aside from ruling out other etiologies of pain.

Management Algorithm

Patients were categorized by the duration of symptoms as subacute (≤6 mo) versus chronic (>6 mo).[14–18] Ultrasound-guided blocks were performed by the operative surgeon to target nerve locations proximal to the area of pain or presumed injury. Subacute patients received diagnostic and therapeutic injection blocks consisting of a local anesthetic (0.25% bupivacaine and 1% lidocaine) and a corticosteroid (40 mg triamcinolone), in the anticipation that the steroid could provide long-lasting, noninvasive pain relief. Therapeutic steroid blocks were repeated in subacute patients who had a positive (≥50% reduction in pain) and prolonged (>6–8 wk) response to the initial injections. If symptom relief was less complete or pain recurred before 6–8 weeks, operative intervention was recommended. Chronic patients received only diagnostic local anesthetic blocks, for diagnostic and surgical target acquisition, as their symptom duration was deemed to preclude successful conservative outcomes.

Antineuropathic pain medications (gabapentin, pregabalin, duloxetine, amitriptyline, nortriptyline, lidocaine, bupivacaine, capsaicin, ascorbic acid, hydroxyzine, tramadol, tapentadol) were continued if patients were already on these medications before initial evaluations. Such medications were continued through surgery, gradually titrated downward, and discontinued within weeks to months following surgery. If patients were treatment naive to these medications, they were started before surgery, continued postoperatively, and discontinued gradually within weeks to months following surgery. Rates of discontinuation were individualized for each patient.

Peripheral Nerve Surgery

The main decisions for surgical planning involve which nerve(s) to treat, the location of the pathology along the course of the nerve(s), and whether to perform decompression, neuroplasty, or neurectomy.[19,20] In many cases, determining the number of nerves to resect can be complex. Under-resection results in persistent pain, whereas over-resection results in a greater area of numbness and injury to healthy nerves. It is important to understand the mechanism of onset or injury, to listen to the patient's symptoms, and to map the anatomical distribution of their pain. If surgery is pursued, neuromatous nerves should be excised proximal to the neuroma or area of injury. Decompression should be reserved for the LFN and FN. Release of the iliacus muscle (via fasciotomy/myotomy) may be necessary as well to allow for the transposition of the LFN during decompression, thereby allowing for a smoother, more direct course of the nerve. The muscle origins of the adductor muscles can be released and lengthened, depending on coexisting, recalcitrant adductor origin tendonitis or compression. Of the 4 primary nerves considered (IHN, IIN, GFN, LFN), the LFN is typically preserved, and decompression (external neurolysis) is performed at its 3 natural compression points: proximally, the pelvic fascia, under the inferior edge of the oblique muscles and inguinal ligament, and distally in fibrous tunnel(s) in the proximal thigh. If the LFN was previously traumatically injured or already decompressed, then it may be considered for resection.[21] The genital branch of the GFN may be preserved in the absence of testicular or labia majora pain.[10] The IIN and IHN may both be resected safely, with a low recurrence of pain.[22] The degree of anatomical variability and interconnectivity between these 2 nerves makes it challenging to treat these nerves separately, and therefore, they are usually resected together when present individually. Failure to resect both the IIN and IHN may result in persistent pain.

Outcomes

Neuropathic pain is defined as being secondary to a lesion or a disease process involving the peripheral nervous system, resulting in abnormal somatosensory signals.[16] Pain is patient-reported as paresthesias and/or dysesthesias including shooting, stabbing, sharp, burning, tingling, numbness, dullness, throbbing, intermittent, and/or continuous sensations. Pain severity scores were measured using the numeric rating scale (NRS), on a 0–10 scale, with 0 meaning no pain and 10 meaning the worst pain imaginable.[23] A positive response to an intervention (block or operation) was defined as a reduction in pain of 50% or more.[24] Functional scores were recorded with a 0%–100% scale, with 0% relating to no physical function secondary to groin pain, and 100% representing complete functioning, unencumbered by groin pain. Functional scores of less than 25% were considered poor; less than 50%, fair; 50%–74%, good; and 75% or greater, excellent. Pain Disability Index (PDI) scores (Fig. 2) and pain drawings (Fig. 3) were used both to inform the diagnostic workup and to further assess patient outcomes.[25] Patients respond to each category of the PDI by indicating the overall impact of pain in their lives, not just when the pain is at its worst. For each of the 7 categories of life activity, patients select the number on the scale that describes the level of disability they typically experience. A score of "10" in a category signifies that all the activities in that category have been completely disrupted or prevented by groin pain. The minimum follow-up for inclusion was 6 months.

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PAIN DISABILITY INDEX

We would like to know how much your pain is preventing you from doing what you would normally do, or from doing it as well as you normally would. Respond to each category by indicating the **overall impact** of pain in your life, not just when the pain is at its worst.

For each of the 7 categories of life activity listed, please **check the number on the scale** that describes the **level of disability you typically experience.** A score of '10' signifies that all of the activities in which would normally be involved in that category have been totally disrupted or prevented by your pain.

I. ***Family/Home Responsibilities:*** (Housework, yard work, drive kids to school)

No Disability	0	1	2	3	4	5	6	7	8	9	10	Total Disability

II. ***Recreation:*** (Hobbies, sports, and other similar leisure activities)

No Disability	0	1	2	3	4	5	6	7	8	9	10	Total Disability

III. ***Social Activity:*** (Parties, movies, concerts, eating out with friends, etc)

No Disability	0	1	2	3	4	5	6	7	8	9	10	Total Disability

IV. ***Occupation:*** (Performing your job, volunteer work or housewife)

No Disability	0	1	2	3	4	5	6	7	8	9	10	Total Disability

V. ***Sexual Behavior:*** (Frequency and quality of one's sex life)

No Disability	0	1	2	3	4	5	6	7	8	9	10	Total Disability

VI. ***Self-Care:*** (Showering, driving, dressing, etc)

No Disability	0	1	2	3	4	5	6	7	8	9	10	Total Disability

VII. ***Life Support Activity:*** (Eating, sleeping, breathing, etc)

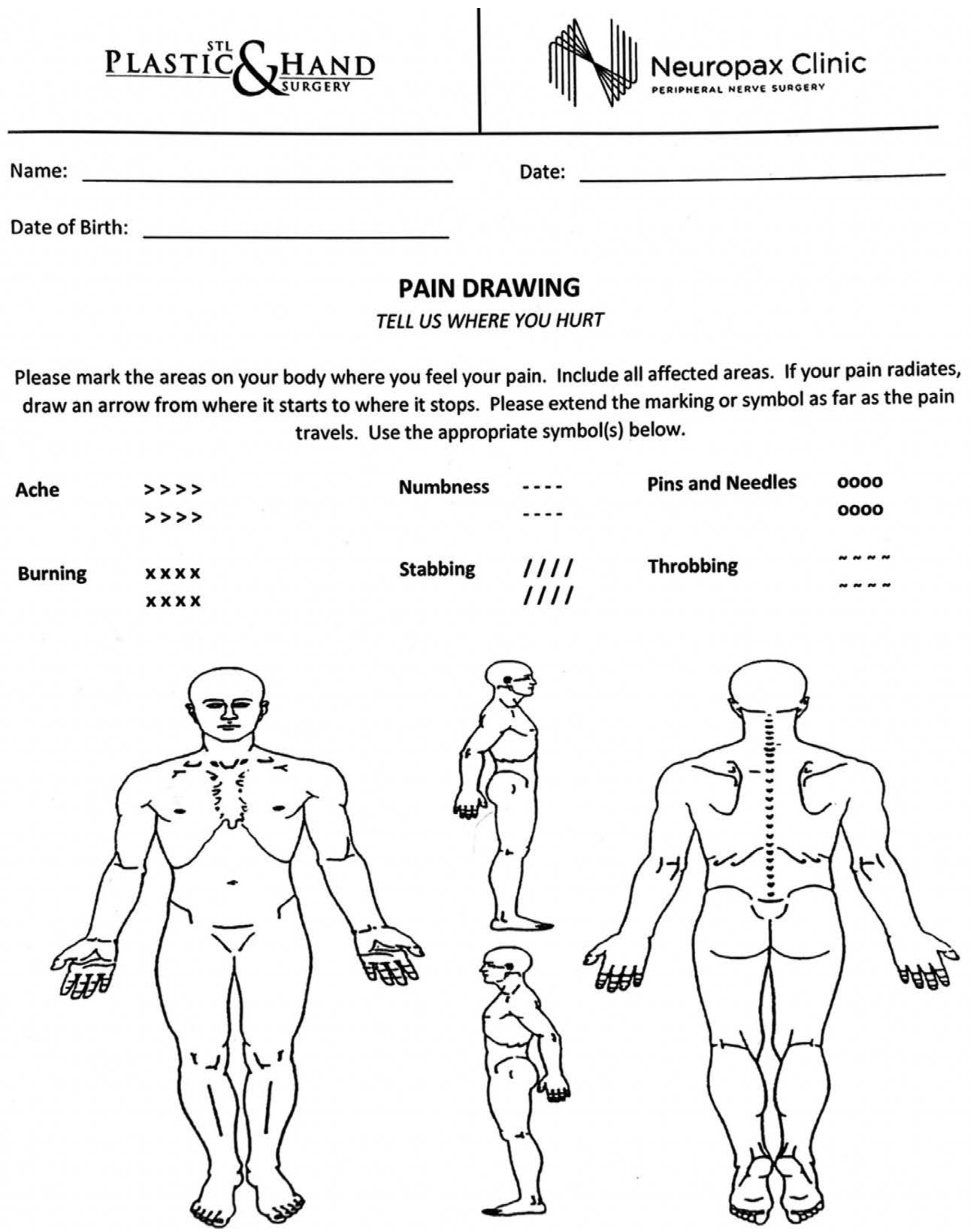
No Disability	0	1	2	3	4	5	6	7	8	9	10	Total Disability

Total Score: __________ /70 possible

Fig. 2. Pain Disability Index.

Statistical Analyses

Descriptive statistics were tabulated for study variables. Individual patients were used to tabulate frequencies rather than the number of operations or injections to avoid artificially inflating population statistics. Means, medians, SDs, minimums, and/or maximums were reported for outcomes of interest based on the distribution of study data. Frequencies were used to structure the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Name: ______________________ Date: ______________________

Date of Birth: ______________________

PAIN DRAWING

TELL US WHERE YOU HURT

Please mark the areas on your body where you feel your pain. Include all affected areas. If your pain radiates, draw an arrow from where it starts to where it stops. Please extend the marking or symbol as far as the pain travels. Use the appropriate symbol(s) below.

Ache	>>>> >>>>	**Numbness**	---- ----	**Pins and Needles**	oooo oooo
Burning	xxxx xxxx	**Stabbing**	//// ////	**Throbbing**	~~~~ ~~~~

Fig. 3. Pain drawing. Patients mark the areas on the body where they feel pain. Symbols are used to differentiate different pain sensations. If the pain radiates, an arrow is drawn from where it starts to where it stops.

systematic approach to the diagnosis and management of neuropathic groin pain. Patients were only included if they had a complete record of outcomes without missing data. NRS pain scores and functional scores were compared between preoperative and postoperative outcomes at final follow-ups using paired-samples *t* tests for paired parametric continuous variables, McNemar tests, or Wilcoxon signed-rank tests for paired nonparametric continuous and ordinal variables. All statistical tests were 2-tailed, with the threshold for statistical significance set at an α value of 0.05. Analyses were performed with IBM SPSS Version 30.0.0.0 (IBM Corporation, Armonk, NY).

RESULTS

Systematic Approach to the Management of Neuropathic Groin Pain

Over the roughly 20-year time interval, 501 patients presented with a chief complaint of groin pain (Fig. 4). Number variations in Figure 4 were due to patients being excluded from the algorithm for loss to follow-up and not undergoing surgery when it was recommended at various stages. Number totals may not add up from each group depending on the number, laterality, and types of nerves involved. Of these 501 patients, 45 patients were excluded from the study after initial evaluation led to a diagnosis and referral for nociceptive pain or a spine-related neuropathic origin. Four hundred fifty-six (n = 456) patients were diagnosed with neuropathic groin pain and underwent evaluation to determine the involvement of specific nerves. The prevalence of each peripheral nerve suspected in physical examination findings of neuropathic groin pain was 61.4% for LFN, 59% for IIN, 49.8% for IHN, 30.5% for GFN, 3.7% for FN, and 3.7% for ON (Table 2).

Pain Duration: Subacute Versus Chronic

A total of 386 patients (n = 386 of 456; 84.6%) received nerve blocks (by the surgeon) to delineate specific nerve involvement. Patients were initially stratified and treated according to the chronicity of their pain. Shorter pain duration was felt to be potentially treatable with direct steroid administration to calm inflammation and reduce swelling. Therefore, 120 patients (n = 120 of 386; 31.1%) received combined diagnostic and therapeutic blocks (local anesthetic and steroid) due to subacute symptoms (≤6 months), whereas 266 patients (n = 266 of 386; 68.9%) initially received diagnostic blocks (local anesthetic) only due to chronic duration symptoms (>6 mo). Thirty-six of the total patients (n = 36 of 386; 9.3%) did not have an initial positive response to diagnostic and therapeutic injections and were referred to specialists for nociceptive or central nerve system/spine-related neuropathic pain. Twenty subacute patients (n = 20 of 120; 16.6%) had a positive and prolonged response to the combined diagnostic and therapeutic blocks and did not require surgery. Fifty-three chronic patients (n = 53 of 266; 19.9%) had a positive response to the diagnostic injections but did not follow up for recommended surgical intervention.

Peripheral Nerve Surgery

A total of 291 patients (n = 291 of 456; 63.8%) underwent surgery on 686 peripheral nerves for groin pain (LFN = 209; IIN = 192; IHN = 163; GFN = 112; FN = 8; ON = 2). Forty-two patients (n = 42 of 291; 14.4%) did not have a nerve block before surgery, whereas 24 patients (n = 24 of 291; 8.2%) had a prior successful block from an outside provider without a repeat block. One hundred forty-three (n = 143 of 266; 53.7%) patients had diagnostic blocks before surgery, whereas 80 patients (n = 80 of 120; 66.6%) had surgery following successful diagnostic but unsuccessful therapeutic blocks. Surgery was performed on the right side of the body in 148 patients (n = 148 of 291; 50.8%), left side of the body in 111 patients (n = 111 of 291; 38.1%), and bilaterally in 32 patients (n = 32 of 291; 10.9%). Nerve resection was performed in 187 patients (n = 187 of 291; 64.2%), and nerve decompression was performed in 176 patients (n = 176 of 291; 60.4%). Additional areas of pain, which were unmasked following initial operations, were diagnosed in 27 patients (n = 27 of 291; 9.2%). Nineteen patients with unmasked pain (n = 19 of 27; 70.3%) underwent reoperation on different nerves in the groin. Reoperations were performed in 4 patients (n = 4 of 291; 1.3%) for 5 complications. One patient had 2 complications (infection and hematoma). Complications requiring reoperation included infection (n = 1 of 5; 20%), hematoma (n = 2 of 5; 40%), wound dehiscence (n = 1 of 5; 20%), and seroma (n = 1 of 5; 20%). Reoperations were performed on 37 patients (n = 37 of 291; 12.7%) for persistent pain, which included the same nerve (n = 23 of 37; 62.1%), a different nerve (n = 19 of 37; 51.3%), and muscle lengthening (n = 5 of 37; 13.5%).

Outcomes

Twenty-five patients (n = 25 of 456; 5.4%) were lost to follow-up (following first office visit = 6; following injection = 13; following repeat injection = 3; following surgery = 1; following evaluation by other provider = 2). Two hundred thirty-five patients (n = 235 of 291; 80.7%) had a positive response to surgery and followed up as needed. The remaining 56 patients (n = 56 of 291; 19.2%) were reevaluated to identify previously masked sources of nociceptive or neuropathic pain, anatomical nerve branch variations of the groin, or residual/recurrent neuropathic groin pain. Diagnostic and therapeutic blocks were reperformed, as indicated. A negative response to the repeat block was observed in 19 patients (n = 19 of 56; 33.9%), and treatment failure was observed.

Comparisons were performed between preoperative and postoperative surgical outcomes at final follow-up for neuropathic groin pain (Table 3). Average NRS pain scores decreased from 6.1 ± 1.9 to 1.4 ± 2.1 ($P < 0.001$). Average functional scores increased by 80% from baseline following surgery ($P < 0.001$). Mean follow-up was 47.9 ± 62.2 months (median = 9 mo; range, 6–227 mo).

DISCUSSION

Our nearly 20-year experience with the evaluation and treatment of neuropathic groin pain offers a systematic

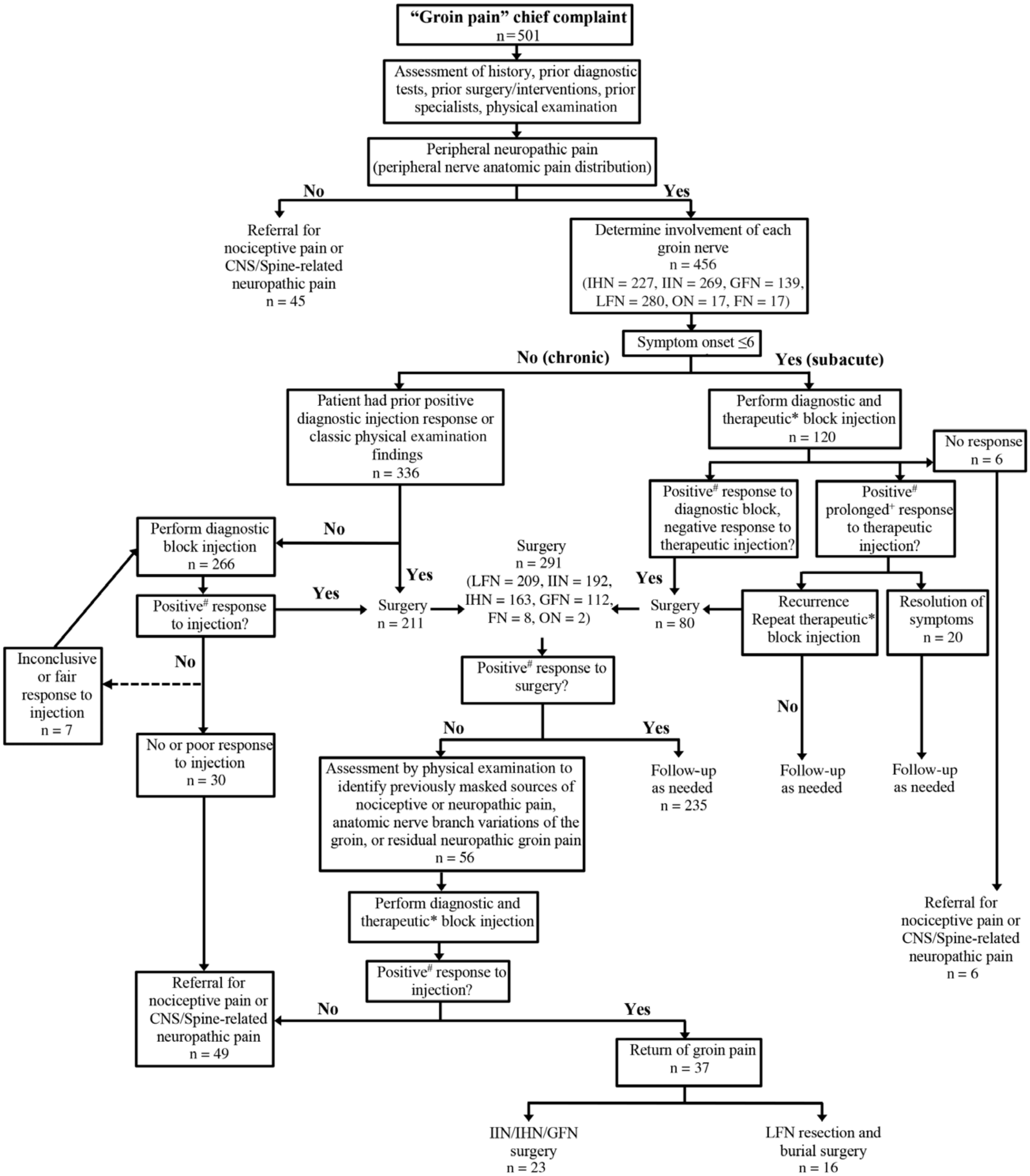

Fig. 4. Algorithm for the management and treatment of peripheral neuropathic "groin pain." n, number of patients. *Therapeutic aesthetic injection includes a corticosteroid. #Positive response includes 50% or more reduction in symptoms. +Prolonged response includes 6–8 weeks of a positive response.

algorithm that links symptom duration, targeted diagnostic/therapeutic blocks, and graded surgical interventions to aid in the diagnosis and management of neuropathic groin pain (Fig. 4). Three key findings emerged from this review: (1) the LFN and IIN account for the majority of cases; (2) early anesthetic block-guided therapy aids in the diagnostic, therapeutic, and surgical management of groin pain; and (3) when surgery is required, selective decompression versus neurectomy yields reproducible pain control with low morbidity.

Prevalence of Groin Nerve Involvement

The 61% prevalence of LFN involvement we observed surpasses historical estimates but mirrors contemporary surgical series in which the nerve was implicated in 55%–75% of meralgia paresthetica cases and responded well to neurolysis alone (Table 2).[26] Recent analyses likewise reported meaningful improvement after decompression with the preservation of sensation.[21,27] Conversely, true FN or obturator nerve contributions remained uncommon, supporting earlier cadaveric and clinical observations that these branches are less often compressed unless prior pelvic or hernia surgery has occurred.[28,29]

Etiologies of Neuropathic Groin Pain

Neuropathic groin pain may arise from a variety of etiologies secondary to trauma or iatrogenic injury from surgery, direct mechanical compression, and/or metabolic injury to the lumbar plexus or its distal branches. Trauma to the groin region, including pelvic fractures, dislocations of the hip joint, and soft tissue injuries from sports activities, can result in inflammation and nerve entrapment.[12] External compression may occur from tight clothing such as corsets, belts, or tight waistbands.[30] Pregnancy may exacerbate compressive neuropathy by increasing pressure on pelvic and groin nerves.[31] Obesity has been associated with higher intra-abdominal and pelvic pressures that may predispose to groin nerve compression and neuropathy through metabolic changes.[32] Systemic medical conditions such as diabetes mellitus are well-recognized causes of sensory nerve injury and should be considered in the differential diagnosis.[26] Degenerative spinal disease and lumbar disc herniation may cause proximal impingement of the lumbar plexus.[33]

Table 2. Prevalence of Each Peripheral Nerve Involved in the Diagnosis of Neuropathic Groin Pain

Groin Nerve	n (%)
LFN	280 (61.4)
IIN	269 (59.0)
IHN	227 (49.8)
GFN	139 (30.5)
FN	17 (3.7)
ON	17 (3.7)

Management Algorithm

Our algorithm's emphasis on symptom duration–based care (≤6 versus >6 mo) is supported by literature showing that selective IIN blocks accurately predict surgical success and may reduce the development of chronic pain when administered within the first 6 months of symptom onset.[34] One theory is that early blockade may "reset" ectopic neuronal firing before central sensitization is established. Advanced image-guided techniques, including computed tomography– or ultrasound-assisted transpsoas blocks of the GFN, have further improved diagnostic specificity and therapeutic efficacy.[35,36] These modalities complement the algorithm's early decision model (Fig. 4) and likely account for the high concordance (84%) between positive blocks and definitive operative candidacy in our cohort.

When surgery was performed, mean NRS pain scores decreased from 6.1 to 1.4 and function increased by 80%, paralleling published long-term results of selective IIN neurectomy in which 67% of patients reported complete or substantial relief.[34] Decompression of the LFN alone was successful in 77% of cases in other studies and performed better than combined neurolysis/neurectomy strategies, supporting our preference for nerve preservation whenever feasible.[26] Triple neurectomy remains a salvage option documented in small series, with pain relief reported after laparoscopic transection of the IHN, IIN, and GFN.[37] Data pooling from 25 studies (670 patients) support our findings, demonstrating overall complication rates less than 5% and reoperation rates less than 15% for surgery, metrics similar to the 13% reoperation rate (largely for newly unmasked nerves) seen in our cohort.[20,38]

Importantly, Figure 4 illustrates that about two-thirds of evaluated patients ultimately required operative management, underscoring the value of administering our own serial therapeutic injections. Among surgical patients, staged nerve-specific interventions proved prudent: 9.2% developed pain in a second nerve distribution after the index procedure but targeted reexploration restored satisfactory outcomes in nearly all patients. This highlights potential plexiform overlap among lumbar plexus branches.

Taken together, data support a tiered paradigm wherein (1) meticulous examination and image-guided blocks localize the offending nerve; (2) early-stage symptoms are managed with corticosteroid-containing injections; (3) decompression is favored over neurectomy for the LFN; and (4) neurectomy is reserved for irreversible injury or block-confirmed, long-standing pain. Resected

Table 3. Preoperative Versus Postoperative Surgical Outcomes at Final Follow-up for Neuropathic Groin Pain

Outcome	Preoperative	Postoperative	*P*
Average NRS, mean ± SD; median (range)	6.1 ± 1.9; 6 (0–10)	1.4 ± 2.1; 0 (0–10)	<0.001
Functional scores, mean ± SD; median (range)	0 ± 0; 0 (0)	80 ± 29.9; 95 (−75 to 100)	<0.001
Excellent, n (%)	0 (0)	207 (71.1)	<0.001
Good, n (%)	0 (0)	49 (16.8)	
Fair, n (%)	0 (0)	21 (7.2)	
Poor, n (%)	291 (100)	14 (4.8)	

Functional scores less than 25% were considered poor, less than 50% were considered fair, 50%–74% were considered good, and 75% or greater were considered excellent. Positive responses were scores 50% or greater. Preoperative scores of "0" were designated as baseline scores. Postoperative scores were calculated in reference to preoperative scores of "0." Negative values for postoperative scores indicate worsening functional status. *P* values were less than 0.001 for both parametric and nonparametric tests.

nerves retract under tension between the muscles of the abdominal wall to inhibit axonal sprouting.[39] Our approach minimizes sensory loss and phantom dysesthesias while preserving strong functional gains.

Diagnosis of Neuropathic Groin Pain

Clinical diagnosis remains the primary method of diagnosing neuropathic groin pain. Electrodiagnostic studies are rarely useful in these situations.[40] High-resolution magnetic resonance neurography allows direct visualization of the lumbosacral plexus and peripheral nerve branches relative to surrounding structures.[41] It can be useful in select cases to identify precise areas of injury or compression, which may aid in surgical planning.[42]

Therapy and Exercises

Therapy for neuropathic groin pain relies on 3 main principles: (1) avoid further compression/stretching of the affected nerve, (2) improve mobility in surrounding tissues without aggravation, and (3) maintain or restore core and hip stability. Compression may be addressed by avoiding tight garments, prolonged static positions, and repetitive deep hip flexion and extension straining.[30] Neurodynamic techniques with gentle nerve gliding exercises and short oscillatory movements may improve nerve mobility.[43] Progressive hip and deep core strengthening, combined with pelvic floor therapy, may restore pelvic mechanics and correct musculoskeletal imbalances.[44,45]

Limitations

The retrospective design of this study invites referral bias toward refractory cases, potentially inflating both surgical rates and patient complexity. Pain and function were assessed with the NRS and functional percentage scales. These instruments, although practical in the clinic, lack the psychometric rigor of Patient-Reported Outcomes Measurement Information System or Neuropathic Pain Symptom Inventory. The 20-year timeline allowed for a large sample size; however, practice patterns and assessment measures likely changed subtly with more experience to optimize patient outcomes. PDI scores (Fig. 2) and pain drawings (Fig. 3) were introduced over time. Approximately 12% of patients with positive diagnostic blocks failed to return for definitive care, so our success rates may over- or underestimate true effectiveness. Follow-up was heterogeneous (median 9 mo; mean ≈ 4 y), potentially underestimating late failures. The minimum follow-up duration was 6 months. Generally, 6- to 12-month follow-ups are accepted for evaluating sensory recovery nerve outcomes. However, once a patient had resolution of groin pain symptoms, we advised them to follow up if any concerns arose, to reduce the burden on patients.

Prospective multicenter validation of this algorithm, ideally incorporating high-resolution magnetic resonance neurography, Patient-Reported Outcomes Measurement Information System instruments, and health-economic endpoints, is warranted. Randomized trials comparing decompression versus neurectomy for LFN entrapment, or evaluating the additive value of muscle-tendon lengthening during nerve transposition, could further refine care pathways.[46] Nevertheless, the current data suggest that a duration-based, nerve-specific strategy can reliably demystify neuropathic groin pain and provide symptom relief with minimal morbidity (Fig. 4).

CONCLUSIONS

Neuropathic groin pain is frequently multifactorial, yet it can be systematically approached with a duration-based diagnostic block algorithm. In our 20 years of experience, this approach enabled precise nerve-targeted surgery that decreased pain scores and increased functional scores with minimal morbidity and reproducible success rates.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

PATIENT CONSENT

Informed consent was obtained from all patients included in the study.

ETHICAL APPROVAL

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Declaration of Helsinki of 1975, as revised in 2008. Approval was obtained from the University of Missouri institutional review board (no. 2101886).

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