Post-operative chronic pain following inguinal hernia surgery
DEFINITION and TERMINOLOGY

**CHRONIC PAIN** as a pain lasting for >3 months after the injury (International Association Study of Pain)


**CHRONIC POST-HERNIORRHAPHY NEUROPATHIC PAIN** is a pain arising as a direct consequence of a nerve lesion or a disease affecting the somatosensory system, in patients who did not have groin pain before their original hernia operation, or, if they did, the post-operative pain differs from the pre-operative pain


Clinically significant moderate to severe pain affecting physical activity, social interactions, health care utilization, employment, and productivity occurs in *6% to 8%* of patients and represents a tremendous individual and societal burden

COMMON SOURCE of PAIN

1. hernia recurrence
2. nociceptive problems (tissue inflammation, foreign material, meshoma)
   NOCICEPTIC PAIN which is due to tissue injury or an inflammatory reaction
3. neuropathic causes (direct nerve injury or perineural scarring)
   NEUROPATHIC PAIN is a pain caused by direct nerve injury characterized by various types of sensory dysfunction (hyperalgesia, hypoesthesia, allodynia, etc.) in the surgical area

POST-HERNIORRHAPHY INGUINODYNIA is a debilitating complication caused by a combination of NOCICEPTIVE (tissue injury/inflammation) and NEUROPATHIC (direct nerve entrapment/irritation) factors

...a predominantly continuous development of persistent pain, since patients who have significant pain 1 and 4 weeks postoperatively have A THREE- TO TEN-FOLD HIGHER RISK, respectively, of continuing into persistent pain

INCLUSION CRITERIA

required chronic groin pain due to suspected nerve injury present for a minimum of 6 months

Cross-sectional imaging using:

1. **Computed Tomography**
2. **Magnetic Resonance**
3. **Ultrasonography**

was performed to evaluate for prostatitis, epididymitis, osteitis, degenerative disk disease, and musculoskeletal or ligamentous injury.

All patients had been evaluated and treated by a **PAIN MANAGEMENT SPECIALIST** and received regional or paravertebral nerve blockade for diagnostic and therapeutic purposes as well as unsuccessful non-operative pharmacologic, behavioral, and procedural interventions.

Pain after inguinal hernia repair

- Pain < 3 months: expectative with basic analgesics
- Pain > 3-6 months:
  - No clinical recurrence: Ultrasonography
    - Meshoma: NO recurrence
      - Meshoma removal by herniologist: Cured
      - Insufficient effect: TRIPLE NEURECTOMY by herniologist: Cured
      - Therapy resistant
    - NO recurrence
      - MRI scan abdominal wall
      - NO recurrence
      - PAINTEAM
      - TRIPLE NEURECTOMY by herniologist: Cured

- Clinical recurrence: Preoperative consult PAINTEAM
  - OPERATIVE CORRECTION
    - Cure

- Excruciating pain not responding to analgesic: SURGICAL RE-EXPLORATION

The recommended timing for surgical treatment of chronic postherniorrhaphy pain not responding to nonsurgical management is 6 months to 1 year after the original inguinal hernia repair.


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PATIENTS WERE EXCLUDED:

1. comorbidity (ASA≥4)
2. primary orchialgia
3. non neuropathic pain
4. hernia recurrence
5. pain unrelated to prior surgical intervention
6. meshoma pain
7. pain outside the expected distribution of the inguinal nerves
8. multifocal pain syndromes
9. histologically confirmed prior triple neurectomy

Identification and preservation of all three inguinal nerves during open inguinal hernia repairs (with or without mesh) reduces chronic incapacitating groin pain to less than 1%; the mean incidence of chronic pain was 0.8% (range 0–1.6%).


Triple neurectomy of ilioinguinal nerve (IIN), iliohypogastric nerve (IHN), and genitofemoral nerve (GFN), has been well established and arguably represents the gold standard for operative management of refractory neuropathic inguinodynia, with response rates of 85% to 97%.

Laparoscopic triple neurectomy is a minimally invasive 1-stage approach to the main trunks of the IIN, IHN, and GFN in the lumbar plexus, allowing access proximal to all potential sites of peripheral neuropathy in the prior surgical field.

TERMINOLOGY
CUTTING or DIVIDING A NERVE means interrupting the continuation of a nerve.
RESECTION OF A NERVE or NEURECTOMY means removing a segment of a nerve along the inguinal canal.

TROUBLESHOOTING
Triple neurectomy is usually performed as an open anterior operation (Selective IIN, IHN, and GFN neurolysis or neurectomy, removal of mesh and fixation material, and revision of the prior herniorrhaphy).

The open approach is limited by:
1) the need to reoperate through the previously scarred field,
2) the difficulty of identifying the 3 inguinal nerves in the reoperative inguinal canal,
3) the challenge of accessing the nerves in altered tissues,
4) the potential to disrupt the prior hernia repair,
5) pain from reoperation in an already hypersensitive location,
6) the increased risk of injury to the spermatic cord and testicle.
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...it is critical to manage patient expectations and clearly explain potential benefits and consequences of this operation.

In addition to the usual operative risks, **SPECIFIC CONSIDERATIONS** include:

- permanent numbness
- the inability to access or identify 3 nerves
- abdominal wall laxity from partial denervation of the oblique muscles
- testicular atrophy
- numbness in the labia in females that can interfere with sexual sensation
- loss of a cremasteric reflex in male patients

THANKS FOR THE ATTENTION

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