Approach to the Patient with Chronic Groin Pain

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KEYWORDS

• Chronic pain • Inguinodynia • Chronic postoperative inguinal pain • Inguinal hernia • Neurectomy

KEY POINTS

- Chronic postoperative inguinal pain has become a primary outcome parameter after elective inguinal hernia repair; hernia recurrence rates have decreased owing to tension-free mesh-based repairs.
- A thorough and systematic preoperative workup is imperative to identifying the most likely cause(s) of pain.
- A multidisciplinary approach to pain management is important, using a combination of behavioral, topical, pharmacologic, and interventional modalities.
- Triple neurectomy is the most widely accepted and effective surgical treatment of neuropathic inguinal pain refractory to conservative measures.
- Hernia recurrence, meshoma, and postherniorrhaphy orchialgia may be addressed in the same operation for triple neurectomy using an open, laparoscopic, or hybrid approach.

INTRODUCTION

Chronic postherniorrhaphy inguinal pain is a potential cause of postoperative morbidity after inguinal hernia repair. For the most part, inguinal hernia repair is a routine procedure with a short period of convalescence and minimal long-term complications.[1] However, given that more than 20 million patients worldwide undergo inguinal hernia surgery annually, any, even rare, long-term complication can be of significant impact.[2] The hernia recurrence rate, which had historically been the most important outcome parameter, has decreased dramatically with the advent of tension-free techniques and the routine use of prosthetic mesh material.[2] Chronic pain, however, remains a persistent challenge and is emerging as arguably the most patient-centered outcome affecting patient productivity, employment, and quality of life.

Chronic postoperative pain is defined as pain that develops after a surgical procedure lasting more than 2 months, excluding other causes of pain.[3] For pain after hernia

Disclosure Statement: The authors have nothing to disclose.
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Surg Clin N Am ■ (2018) ■–■
https://doi.org/10.1016/j.suc.2018.02.002 surgical.theclinics.com

repair, the definition for chronicity is extended to 3 to 6 months to allow postoperative mesh-related inflammatory processes to subside. The reported incidence of postherniorrhaphy pain varies according to the literature owing differing definitions, endpoints, and methodologies from 0% to 63%, but the estimated risk of moderate to severe chronic pain is 10% to 12%, with a smaller percentage (0.5%–6.0%) affecting activities of daily life or employment.[4–7]

PATHOPHYSIOLOGY

The pathophysiology underlying the development of inguinodynia is complex and variable depending on the specific types of pain, including somatic, neuropathic, nociceptive (inflammatory nonneuropathic) and visceral pain. Somatic pain, sometimes referred to as periostitis pubis, is localized to the pubic tubercle and is typically caused by damage to the periosteum of the pubic tubercle from a deep medial anchoring suture.[8] Neuropathic pain is thought to arise from injury to the inguinal nerves resulting in pain in the sensory distribution of the affected nerves. Most commonly, the involved nerves include the ilioinguinal nerve, iliohypogastric nerve, and genital branch of the genitofemoral nerve. With laparoscopic approaches, the femoral branch of the genitofemoral nerve or the lateral femoral cutaneous nerve may also be involved. Rarely, the femoral nerve may be injured with lateral fixation with open repairs or overdissection and penetrating fixation with laparoscopic techniques, leading to motor deficits. The nerve injury can occur intraoperatively or postoperatively, and the mechanisms include indirect or direct structural damage and entrapment injuries, caused by suture or fixation devices, folded mesh or meshoma, or perineural inflammation and scarring.[7,9] Nociceptive pain is the result of tissue injury and the local inflammatory reaction, and is mediated by endogenous inflammatory mediators acting on nociceptors.[9,10] Finally, visceral pain is experienced with intestinal or spermatic cord or other periurethral structure involvement.[7,9] It is, however, important to note that these pain classifications are not discrete categories but exist on a spectrum with extensive overlap, making diagnosis and management a challenging clinical dilemma (**Table 1**).

RISK FACTORS

Young age, female gender, and high preoperative and postoperative pain levels have been identified as risk factors for the development of chronic pain after inguinal hernia repair.[11] One study showed that the results from preoperative pain tests may predict 4% to 54% of the variance in postoperative pain experience and may be helpful in the preoperative stratification of patients into low- and high-risk groups.[12] Psychological and social factors such as depression have been well-demonstrated to contribute to chronic postoperative pain, but have not been well-studied in chronic postherniorrhaphy pain.[13] Genetic research has also identified potential genetic polymorphisms that may contribute to an individual's susceptibility to the generation and experience of pain.[10]

The development of chronic pain is independent of surgical technique. Although there is evidence to suggest that laparoscopic approaches may result in less postoperative pain, the incidence of significant pain equilibrates over time.[5,7,9] Regardless of the specific technique, the careful identification and protection of the inguinal nerves is of utmost importance, and evidence suggests that chronic pain can be reduced to less than 1% with proper handling of the nerves.[6] In terms of the type of mesh material, lightweight mesh in open repairs has been shown to be associated with a lower risk of chronic pain compared with heavy-weight mesh, possibly owing to greater biocompatibility and elasticity.[14] The evidence for mesh fixation techniques is mixed, with some showing potentially decreased pain with glue fixation and others showing a