Postoperative CRPS in Inguinal Hernia Patients

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Introduction

Chronic pain is a frequent result after surgical hernia repair and probably the most difficult complication to treat. Whereas we have several excellent options for handling a recurrence, therapy of chronic pain may be frustrating, at least in some patients, and causes a lot of trouble for the surgeon as well as for the patient. Almost the majority of patients report some kind of mild complaints following hernia repair, but some patients suffer considerably. Feeling that they cannot live with this pain, they look for any treatment to get rid of it, and they often undergo one surgical revision after another.

Usually, one of the first options is a revision operation, assuming that some of the local nerves are entrapped in sutures, clips, or scar tissue. In these patients, a neurectomy is usually performed. Although in some cases it may not be possible to identify and resect all three nerves (ilioinguinal nerve, iliohypogastric nerve, and genital branch of the genitofemoral nerve), or the morphological analysis of the nerves may reveal no significant pathology, most patients show complete or partial relief of their complaints. However, in some patients the complaints remain, sometimes even getting worse, starting a series of many fruitless attempts to alleviate the discomfort. If these patients had been treated with adequate neurectomy of all three nerves, what else might be the reason for such failures, and how can we identify those patients beforehand to avoid frustrating operations?

Patients with Neuropathic Pain:
Subgroup with Complex Regional Pain Syndrome Not Responding to Surgical Therapy

There is no doubt that pain is related to nerves and that there are many ways to cause or intensify pain. But apart from technical reasons, which depend on the surgical procedure and the surgeon, patient-related aspects must be considered, too. Several clinical studies have demonstrated that pain is mainly a problem of younger patients and that the risk increases with the number of previous operations and the extent of local scar tissue. Each of these factors or a combination of them may favour the development of pain and, correspondingly, will influence the success of a revision operation. Whereas pain caused by entrapment through a clip may be cured causally by neurectomy [1], pain due to pathology of the wound healing process (involving age, smoking, local nerve regeneration, etc.) is more complex and difficult to address.

Generally, pain is classified as either nociceptive, which represents a physiological signal from injured tissue (= wound pain), or neuropathic, in which a malfunction of a nerve leads to pain signaling to the brain. Whereas the first is assumed to disappear after healing of the wound, it is mainly the latter that is accused of causing chronic pain. Recently, Aasvang et al. [2] demonstrated that large- and small-fibre dysfunction can be detected in all patients following hernia repair but is more profound in pain patients. Correspondingly, some sort of nerve dysfunction seems to be common after surgery in the groin.

However, classification as neuropathic pain seems to be too nonspecific for selecting therapeutic options. In a 1999 review in *Lancet*, Woolf and Mannion [3] stated the following:

- Pharmacotherapy for neuropathic pain has been disappointing.
- There is no treatment to prevent the development of neuropathic pain.
- There is no treatment to adequately, predictably, and specifically control established neuropathic pain.
- There are no predictors to indicate, which patient will develop neuropathic pain.
- As a tool to define treatment strategy, symptoms alone are not useful because they are not equivalent to mechanisms.

Although consideration of neuropathic pain is too inaccurate, this view neglects to account for two different mechanisms that may contribute to neuronal function: either direct damage or pathological triggering by perineural stimuli. In accordance, Aasvang et al. [2], who investigated postoperative complaints after mesh repair of groin hernia, concluded that whether the underlying pathophysiological mechanisms are related to direct intraoperative nerve in-