



Editorial comment

Important development: Extended Acute Pain Service for patients at high risk of chronic pain after surgery



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In this issue of the *Scandinavian Journal of Pain* Elina Tiippana and her colleagues at the pain research centre and division of anaesthesiology at Helsinki University Hospital in Finland report on their experience two years after they established a bridge between the Acute Pain Service and the chronic pain clinic [1]. The aim of the service termed *Acute Pain Service-Out-Patient Clinic (APS-OPC)* is to reduce the risk of persistent postoperative pain. Their paper raises at least three issues:

1. Pain that continues long after wound-healing: Persistent Postoperative pain (PPP)

Persistent pain after surgery was “discovered” as a major health problem less than 20 years ago [2], occurring after almost any type of surgery, but more often after operations where peripheral nerves are injured (e.g. thoracotomy, radical breast cancer surgery) [3]. PPP is still an unsolved issue [4] despite the advances in organization of Acute Pain Services (APS) in most hospitals and improved pain management [5,6]. After surgery the normal reactions in the body to tissue-injury are activated: a period with a hypersensitive nervous system ensures that the injured part of the body is maintained as much as possible in a protected mode so that the healing process can go on undisturbed by movements, pressures, and tractions. This normal neuroadaptation to tissue injury causes a painful period with hypersensitivity to touch, movements, and cold (mechanical and cold allodynia), it will last a few weeks and is followed by a disappearance of pain and hypersensitivity.

Patients who develop abnormally persistent and intense postoperative pain have exaggerated reactions to tissue trauma: the neuroadaptation fails to bring sensations of pain back to normal. Even following complete wound healing there remains a state of neuropathic pain with both hypo- and hyper-phenomena [7,8].

2. Risk factors for developing new, long lasting pain after an operation and how to reduce the risk

There are at least five documented factors that increase the risk of having a new, long lasting pain condition after surgery, a pain condition that was not present before surgery [9,10]:

- (1) Stressful life-conditions during the 6 months prior to surgery.
- (2) There is preoperative pain in the surgical area.
- (3) The patient has preoperative chronic pain distant from the surgical area.
- (4) The patient shows signs of severe anxiety and a stress reaction right before surgery.
- (5) The average pain score is 5 or more on a 0–10 NRS on days 1–5 after surgery.

The four first aspects can often not be modified and the indication for surgery should be carefully reconsidered if they are present: It is a double tragedy if chronic pain develops after a surgical intervention that was not medically indicated (e.g., breast enlargement, cosmetic surgery).

Abnormally severe acute pain after surgery is a documented risk-factor, however, it is not known for sure until after the fact: Severe acute pain during the first few days after surgery can be due to poor, neglected pain management, but it is more likely a part of the already developing abnormal reactions to the surgical tissue injury [4].

Why will relief of acute pain not reduce the risk: Many of us had the naïve conviction that if we treat acute pain well, the chronic postoperative pain problems would disappear. Unfortunately, there is not much evidence that any specific type of pharmacological pain relief reduces the risk of chronic pain after surgery. A number of analgesic drugs have looked promising in preliminary trials. Unfortunately, there is no convincing evidence for any of them, yet. The reason is mentioned above: It is not the noxious input from the injured tissue per se, but the abnormal neuromodulatory reactions to these nociceptive impulses that may be the culprit.

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Drugs that relieve the acute pain may still beneficially influence the neuromodulatory responses to tissue injury: we should remember, “Lack of evidence of effect does not mean evidence of lack of effect”. An example is perioperative intravenous lidocaine infusion. Already since the early 1980s, we have known that intravenous lidocaine reduces acute postoperative pain. There are also studies suggesting that perioperative intravenous lidocaine may reduce the risk of chronic pain after breast cancer surgery [11,12], but these small studies need to be replicated.

There is at least one theoretical reason why i.v. lidocaine may have an effect on development of persistent pain: Lidocaine not only exerts its pain modulating effect via its voltage-gated Na⁺ ion-channel-blocking action, but possibly also via its metabolite the *N-ethylglycine*. *N-ethylglycine* has been shown to inhibit a glycine-transporter and magnify the action of pain-impulse-inhibitory glycinergic interneurons in the spinal cord dorsal horn (for explanations and references, see [13]). The dosage and duration of lidocaine infusion for this particular action is at present not known.

However, it is still unlikely that the complex pathological neurophysiological reactions in the central and peripheral nervous system, including neuro-inflammatory reactions to peripheral nerve trauma, can be prevented or corrected by any one drug or procedure [4].

3. Focus on an Acute Pain Service-Out-Patient Clinic (APS-OPC) in all hospitals!

The obvious thing to do is what they have done in Helsinki [1]: An extended or transitional Acute Pain Service follows patients who clearly have more “difficult” acute pain after surgery. Tiippana and her colleagues already published a study two years ago showing that by giving special attention to high-risk patients after thoracotomies they were able to reduce the occurrence of chronic pain significantly compare with patients who received “as usual care” (also with epidural analgesia, but for a limited time) [14,15]. In the present publication Tiippana and her co-workers [1] continue this obvious way of giving special attention to patients who clearly have acute or sub-acute pain that is difficult to manage and therefore need continued attention of specially trained nurses and medical doctors from the APS.

Another important message in their paper is that patients who clearly are developing a more persistent pain condition are referred to the chronic pain clinic. This way the unnecessary psychological distress from being on a long waiting-list to be admitted to the pain clinic is reduced.

Tiippana and coworkers report how they have been able to taper and discontinue unnecessary opioid treatment [1]. This effect of a “transitional pain service” is emphasized by publications from North America where too liberal use of potent opioids after surgery is considered to be one reason for the prescription opioid misuse epidemic [16,17].

When nerve damage is present [7] and the patient clearly has a neuropathic component in the new postoperative pain condition, it makes sense to add an antihyperalgesic agent that has been shown to work in neuropathic pain [18].

We congratulate the Helsinki group for being pioneers in the Nordic countries: They are demonstrating a way forward: Persistent postoperative pain is a major health problem that afflicts many

surgical patients. It has to be attacked at the roots: It must be focused on and treated before postsurgical pain has developed into a difficult-to-treat, persistent pain condition with all the comorbid complications on mood, sleep, and psychosocial functions that accompany chronic pain states.

Conflict of interests

None declared.

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