



Chronic Pain after Breast Cancer Surgery

By Professor Julie Bruce

Breast cancer is the most common cancer affecting women, and surgery – either to the breast and/or the underarm area – is the main treatment.¹ There are two main types of breast operation: a mastectomy (removal of the whole breast) or a lumpectomy (removal of the cancerous lump) which is a breast-conserving surgery. The lymph nodes in the armpit can also be affected and it is common for women to also have a procedure for partial or complete removal of lymph nodes.

How common is pain after surgery?

One of the first UK studies of chronic pain after mastectomy was conducted in Scotland in 1999. Over 400 women were surveyed at three years after their breast cancer surgery and 43 per cent still reported pain in the chest and upper arm.² Many women reported problems with everyday activities, such as lifting bags, turning the steering wheel when driving and doing household tasks. For some women, the painful symptoms had started fairly soon after their operation; for others, symptoms had started later, possibly relating to radiotherapy and chemotherapy treatments.

Six years later, the same women reporting painful symptoms were resurveyed to find out whether they had recovered. About half of the women with pain at three years were, by then, pain-free; the other half still had pain (on average seven to nine years after their mastectomy). Of those still with pain, the women reported that they had 'learned to live' with their painful symptoms – many had tried alternative therapies.³

The researchers then conducted another study across Scotland to understand more about the type of pain experienced both before and after breast cancer surgery. They assessed another 400 women *before* their breast cancer operation and very few reported chronic pain in the breast and upper body. After surgery, over half of the women reported moderate- to severe-intensity acute pain in the first week after surgery. Based on the 'before' findings, this pain was not a continuation of any existing pain. The researchers found that, of the 400 women surveyed, those who had more severe acute pain after surgery were more likely to have chronic pain at four and nine months after their

¹ Breast cancer (female) – Treatment, NHS Choices: www.nhs.uk/Conditions/Cancer-of-the-breast-female/Pages/Treatment.aspx

² See Smith WC, Bourne D, Squair J, Phillips DO, Chambers WA. A retrospective cohort study of post mastectomy pain syndrome. *Pain*, 1999; 83: 91-5.

³ See Macdonald L, Bruce J, Scott NW, Smith WC, Chambers WA. Long-term follow-up of breast cancer survivors with post-mastectomy pain syndrome. *British Journal of Cancer*, 2005; 92: 225-30.

operation.⁴ This suggests that if healthcare professionals could better control and treat pain immediately after the operation, they may reduce the proportion of women going on to suffer with chronic painful symptoms.

Nerve and phantom pains

Women with neuropathic pain (nerve pain) use terms such as ‘stabbing’, ‘burning’, ‘tingling’, ‘shooting pain’ or ‘numbness’ to describe their symptoms. Surgeons may have to dissect branches of the main nerve running through the underarm when removing the tumour and surrounding tissue – this is unavoidable, but may be partly responsible for some symptoms.

Although neuropathic pain is the most common type of pain reported after breast cancer surgery, some women also experience phantom breast pain. Phantom pain is pain that seems to come from an amputated limb, breast or other body part. Phantom sensations after mastectomy might not involve pain, but there are reports of 17 per cent of women up to six years after surgery having phantom breast pain.⁵

What are the risk factors?

Certain groups of women may be more at risk from chronic pain after their breast surgery than others.

Firstly, younger women do seem to be at greater risk of chronic pain than older women – this has been found after many different operations.⁶ This finding might be partly explained by the fact that younger people are often more active and are working, thus having persistent pain could have a greater impact on their daily life compared to older people who are perhaps less active. Or it may relate to nerve and tissue changes (how the body reacts to pain) as we get older.

There is recent evidence to show that women with other chronic pains are at greater risk of having chronic pain after their breast cancer surgery. This may include people who suffer from such conditions as chronic low back pain, irritable bowel syndrome, migraine, fibromyalgia and perhaps several other conditions as well.⁷ Changes in the nervous system may well lie behind many of these conditions. The field of pain genetics has also suggested that some people may be more susceptible to pain conditions than others.⁸

It is entirely expected that women will be worried and fearful of their future when faced with a cancer diagnosis and impending surgery. Women who are very anxious and worried about their operation are at higher risk of both acute and chronic pain after surgery – so *excessive* worry and

⁴ See Bruce J, Thornton AJ, Powell R, et al. Psychological, surgical and sociodemographic predictors of pain outcomes after breast cancer surgery: a population-based cohort study. *Pain*, 2014; 155: 232-43.

⁵ Kroner K, Knudsen UB, Lundby L, Hvid H. Long-term phantom breast syndrome after mastectomy. *Clinical Journal of Pain*, 1992; 8: 346-50.

⁶ See reference 3. McDonald et al. 2005.

⁷ See reference 4. Bruce et al. 2014.

⁸ Denk F, McMahon SB, Tracey I. Pain vulnerability: a neurobiological perspective. *Nat Neuroscience*, 2014; 17: 192-200.

anxiety is a risk factor.⁹ This has been found with other operations, not just breast cancer surgery. It is important that support and information are offered to patients to help manage these feelings.

Preoperative preparation is vital; for example, a clear explanation about the operation and recovery process setting out the risks (and benefits) should be undertaken as standard practice.

Finally, one of the strongest and most consistent risk factors for chronic pain after surgery is the severity of acute pain in the days and weeks after an operation. **Treatment and adequate control** of acute pain immediately after surgery is very important and may 'dampen' the pain response, preventing longer term symptoms.¹⁰ Again, there is emerging evidence to suggest that women reporting pain with neuropathic characteristics (such as stabbing, tingling and numbness) in the early period after surgery may be at greater risk of having these symptoms persist in the longer term.

Treatment

Long-term pain after breast cancer surgery is treated in much the same way as other postsurgical pain. Some pain-relieving drugs may not be suitable if women are taking long-term hormone treatment. Refer to the leaflet 'Chronic Pain after Surgery' for more details.

Better understanding

An earlier version of 'Chronic Pain after Surgery' reported widespread misdiagnosis of pain after breast surgery.¹¹ There are now many hundreds of articles from around the world reporting that painful symptoms after breast cancer surgery are common, disabling and can be challenging to treat. More is known about the types of surgery that may increase the risk of post-operative chronic pain e.g. surgery to remove all the lymph nodes under the arm (axilla).

Research studies now include larger numbers of patients than the early surveys. One of the largest studies ever conducted was undertaken in Denmark, where almost every breast cancer surgery patient in the country was followed-up two years after their operation.¹² The research team found that out of over 3200 women, half still had pain in more than one area related to their operation, and 58 per cent reported sensory disturbances, such as numbness or sensitivity to touch. Overall 25 per cent of women had moderate to severe pain two years after their surgery. The study also revealed that many women suffering symptoms were under-treated and had poor pain relief and symptom control. This was a hugely important study and was published in the *Journal of the American Medical Association (JAMA)*, one of the highest ranking medical journals. This publication has helped to increase recognition and raise awareness of the condition amongst doctors and healthcare professionals.

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⁹ Theunissen M, Peters ML, Bruce J et al. Preoperative anxiety and catastrophizing: a systematic review and meta-analysis of the association with chronic postsurgical pain. *Clin J Pain*, 2012; 28: 819-41.

¹⁰ Katz J, Seltzer Z. Transition from acute to chronic postsurgical pain: risk factors and protective factors. *Expert Review Neurotherapy*, 2009; 9: 723-44.

¹¹ See W. A. Macrae, "Chronic Pain after Surgery," *British Journal of Anaesthesia* 87, no. 1 (July 1, 2001): 88-98, doi:10.1093/bja/87.1.88.

¹² See Gartner R, Jensen et al. Prevalence of and factors associated with persistent pain following breast cancer surgery. *Journal of the American Medical Association*, 2009; 302: 1985-92.

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