

Phantom pain

Phantom limb pain's (PLP's) create a unique frustration for amputees. The idea that something which is no longer there can be so painful can be hard to accept. Many people feel they won't be taken seriously if they complain, or have an experience of being treated dismissively by doctors, so keep it to themselves. However recent research indicates that the dismissal "it's all in your head" has some truth. Phantom pain may indeed originate in the head, but that's why it must be taken seriously.

Phantom pain has been known about for centuries. The first medical description dates from the 16th century, the term itself was coined during the American Civil War. The famous British admiral, Lord Nelson was known to have suffered from PLP.

Let's clarify: in phantom limb pain we mean pain which feels like it occurs in the absent body part. Phantom sensations are non-painful feelings in the absent part, while stump pain is pain occurring in the remaining part of the stump.

Who suffers from PLP? Well, almost all amputees do initially. For many this fades over time, but for the majority it may continue on for years. Many people experience frequent phantom sensations, but only intermittent pain. However when it occurs this pain can be severe enough as to be disabling. PLP's can occur from any amputation site and can even relate to internal organs that have been removed. They occur irrespective of age, gender or socioeconomic status.

There are some suggestions that traumatic amputations, or limbs that were painful before the amputation can lead to more persistent PLP's. It is also thought that children suffer less from PLP's, though they are by no means absent, and have been recorded in people with congenitally missing limbs.

So what causes phantom pain? Big question...

It was thought that irritation of the cut nerves in the stump caused the perception of pain in the body part those nerves had serviced. However treating these nerves with local anaesthetic or further surgery often has no effect on the phantom pains or sensations, so there must be more to it. Some people can get relief by rubbing their stump, or find the pain altered by how their prosthesis fits, which suggests these nerves do have some role in phantom pain.

Any nerve injury can increase activity in the spinal cord. This may take the form of increased sensitivity or abnormal spontaneous nerve activity, which might register as PLP. It has also been shown that following these injuries areas near the injured site can refer pain to the phantom part when stimulated.

Another theory is that of cortical remapping. This starts with the knowledge that the body is 'mapped' onto the brain, so all sensory input from a certain body part always goes to the same part of the brain. After an amputation these brain areas stop receiving input from the missing part. Brain areas next to these, now understimulated areas then start to take them over, and in doing so create phantom sensations. Evidence of this comes from the ability to create phantom sensations by stimulating body parts which have an adjacent brain map area. Thus for upper limb amputees touching certain parts of the face can cause phantom sensations, while for lower limb amputees the adjacent brain area is the genitals. This has been confirmed with brain scanning techniques.

However this does not explain why phantom limbs can feel like they are moving, why

congenital amputees sometimes have phantom pain (for their brains have never received input from the missing part), or why the sensations should be painful.

All of these mechanisms seem to contribute something to PLP, but none seem to fully explain it. It has been suggested that all brains contains an imprint of the 'normal' or intact body, and that the loss of part of the body creates all sorts of difficulties in trying to form this image from what is essentially incomplete information.

Some interesting experiments have been done which supports this. Upper limb amputees place their intact arm in a box. The box contains a mirror arranged to create an image of their arm where their amputated arm should be. Some people then felt an almost instant effect, with their phantoms moving, relaxing and their pain decreasing. The theory is that the visual feedback of seeing two intact arms tricks the body into feeling whole again.

So obviously, phantom pain is a complicated syndrome. Stump, spinal cord and brain may all be involved, probably in different combinations for each person. The question now becomes, what do we do about it?

It is better to consult a doctor with experience in PLP rather than a GP who may not appreciate its subtleties. Because of the complex nature of PLP conventional painkillers are usually not effective. In Australia the medications of choice are usually from the anti-convulsant group. These act to decrease nerve excitability. The trick is to decrease the unwanted activity without impairing normal, wanted activity. For this reason some people dislike these drugs, or find them ineffective.

Other treatments include TENS (transcutaneous electrical nerve stimulation), acupuncture, acupressure, massage and warm or cold packs. These again work for some people but not for others, but have the benefit of usually having no side-effects. Always consult your with doctor before beginning a new treatment.

It has also been suggested that decreasing pain in the time leading up to the amputation can lead to less PLP long term. Some studies support this, though not conclusively. In many cases it is also impractical as the surgery must be done urgently.

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Bibliography

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