informedhealthonline.org
INDEPENDENT, OBJECTIVE AND EVIDENCE-BASED

Complications after surgery: Can quitting smoking before surgery reduce the risks?

Nicotine replacement therapy started one or two months before planned surgery could halve the risk of complications like poor wound healing.

IQWiG

Nicotine replacement therapy started one or two months before planned surgery could halve the risk of complications like poor wound healing.

People are often nervous before surgery, so quitting smoking might be the last thing on their minds. Even thinking about quitting might be stressful. However, people who smoke have a higher rate of complications after surgery (post-operative complications), particularly with wound healing.

There are thought to be several reasons why smoking could affect recovery from surgery. When you smoke, the amounts of carbon monoxide and nicotine in your blood increase. This reduces the amount of oxygen that is available to reach the tissues throughout your body. Oxygen is essential to help wounds heal. Further, nicotine makes the heart work harder, partly because it increases the blood pressure and pulse rate. Anaesthetic and surgery also place a greater strain on circulation and oxygen supply, and this might be worse for people who smoke.

Quitting smoking even only a short time before surgery could at least increase the amount of oxygen available to the tissues. Nicotine and the extra carbon monoxide from smoking already start disappearing from the blood after 24 hours without cigarettes. Lung function starts to improve after about 2 months of quitting smoking.

However, quitting smoking is difficult – especially in times of stress. One of the more common ways to try to quit is to use nicotine replacement therapy to help reduce the withdrawal symptoms when you stop smoking. Nicotine replacement therapy includes the nicotine patch and nicotine chewing gum. There is less nicotine in replacement therapy than there is in cigarettes and – unlike cigarettes – nicotine therapy does not increase carbon monoxide.

Trials show that starting to quit smoking 4 weeks before surgery can reduce complications

Researchers from university hospitals and research centres in Copenhagen looked for randomised controlled trials of what happened when people were encouraged to quit smoking before surgery. In randomised controlled trials to help people quit smoking, volunteers are usually asked to either go into the quit programme or they receive the usual treatment at the hospital (such as getting brochures about quitting smoking). This is the best way to find out whether trying to quit smoking can really influence the outcomes of surgery. You can read more about why studies are done in this way here (URL: http://www.informedhealthonline.org/index.61.en.html) .

The Danish researchers found 11 trials involving almost 1,200 people who smoked. These people were having different kinds of surgery, including hip or knee replacement, breast surgery, bowel surgery or gynaecological surgery. The trials did not cover all forms of surgery. Very few of the people were having heart surgery, and none were having lung surgery. However, there was still enough information on how smoking affects general common complications, like problems with wound healing.

The strongest evidence about complications after surgery came from 4 trials where people had weekly counseling sessions and nicotine replacement therapy starting at least 4 to 8 weeks before surgery. For them, the rate of wound complications dropped from close to 28% down to around 14%. In other words, out of every 100 people who used nicotine replacement therapy and were counseled before surgery, only about 14 people (14%) had complications after surgery. By comparison, out of every 100 people who did not have this counseling and therapy, 28 (28%) had complications.

Information or counseling alone without nicotine replacement therapy has not been proven to be enough to reduce the rate of complications. Some of the people who quit smoking before surgery were still not smoking months after the surgery, but some started smoking again later. Although it might still be possible to get a benefit from quitting smoking closer to the date of surgery, the researchers concluded that it seems that at least 4 weeks may be necessary to reduce the risk of post-operative surgical complications.

You can find out more about nicotine replacement therapy here (URL: http://www.informedhealthonline.org/quit-smoking.311.56.en.htm
.

Author: German Institute for Quality and Efficiency in Health Care (IQWiG)

Created at: 09/02/2009 | Last update: 07/23/2010

Glossary

evidence

Evidence is what we call scientific proof from well-conducted, good-quality scientific trials that have been carefully designed to answer specific questions. Depending on the types of questions, different scientific research methods (types of study) are most appropriate to find reliable answers to these questions. Randomized controlled trials (RCTs), for example, are the best way to get reliable evidence on the effectiveness of medical treatments (interventions). This type of study, however, is not the best form of evidence for all possible questions, and does not provide the best answers to all kinds of questions, either. Epidemiological studies, for example, are very suitable for establishing well-founded proof for the spreading of a disease in the population.

Created at: 09/02/2009 | Last update: 07/23/2010

Sources

IQWiG health information is based on research in the international literature. We identify the most scientifically reliable knowledge currently available, particularly so-called "systematic reviews". These summarise and analyse the results of scientific research on the benefits and harms of treatments and other health care interventions. This helps medical professionals and people who are affected by the medical condition to weigh up the pros and cons. You can read more about systematic reviews and why these can provide the most trustworthy evidence about the state of knowledge here (URL: http://www.informedhealthonline.org/index.61.en.html) . The authors of the major systematic reviews on which our information is based are always approached to help us ensure the medical and scientific accuracy of our research summaries.

Thomsen T, Tønnesen H, Møller AM. Effect of preoperative smoking cessation interventions on postoperative complications and smoking cessation. *British Journal of Surgery* 2009; 96: 451-461. [PubMed summary (URL: http://www.ncbi.nlm.nih.gov/pubmed/19358172?ordinalpos=abstract)]

Created at: 09/02/2009 | Last update: 07/23/2010

The German Institute for Quality and Efficiency in Health Care (IQWiG)

The German Institute for Quality and Efficiency in Health Care (IQWiG) was established by legislation to provide evaluations of the effectiveness, quality and efficiency of healthcare services. This includes the assessment of medicines as well as the publication of health information for consumers and patients.

Evidence basis of our health information

Our information is based primarily on systematic reviews of the effects of health care. Systematic reviews are necessary to gain an objective picture of health care. In order to do this, a clear question is formulated. Researchers then find all the relevant studies that could answer this question. They then evaluate those studies.

You can find a list of the evidence and other scientific literature on which this information is based at **www.informedhealthonline.org**

Disclaimer

This information was prepared and published by the German Institute for Quality and Efficiency in Health Care (IQWiG). It is based on the evidence and other scientific literature available at the time of publication. The information is intended for the use of patients in Germany. It is not intended to for use to diagnose illnesses and the information is not intended to substitute for medical advice.

Created at: 09/02/2009 | Last update: 07/23/2010