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# Tinnitus and disorders of the temporo-mandibular joint (TMJ) and neck

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This leaflet has been written to help you understand more about the jaw joint (temporo-mandibular joint or TMJ), and how problems with it or the neck may affect tinnitus.

## Introduction

There is a close relationship between certain problems with the jaw joint (temporo-mandibular joint or TMJ) and tinnitus. Scientific studies have shown that people with TMJ problems are more likely to suffer from tinnitus. Similarly, some individuals who have sustained an injury to their neck may also suffer from tinnitus. Some people with either TMJ problems or neck problems are able to alter the intensity of

their tinnitus by moving their mouth, jaw, face and neck. Successful treatment of the underlying problem can be associated with an improvement of tinnitus symptoms.

## What is the temporo-mandibular joint (TMJ)?

The TMJ is a complex joint as it has to allow for side-to-side and front to back movements that take place during chewing. The muscles that make the jaw move are some of the most powerful in the body. This means that quite large forces have to act through the TMJ. As a result, the joint is at risk of damage just as much as any other weight-bearing joint in the body. TMJ problems can be due to trauma, such as a 'pulled muscle' or a dislocation to the

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fibrous disc that sits in the hinge joint. Other TMJ problems may be due to longer-term problems such as arthritis within the joint.

## What are the symptoms of TMJ problems?

The usual symptoms of TMJ problems are pain, which may be felt as earache, clunking of the jaw, or limitation of movement, causing difficulty in opening the mouth. Other symptoms that may arise are swelling of the joint, headaches, neck pain and tinnitus. Some people notice that when stressed, they grind their teeth - particularly at night - and this can put pressure on the TMJ.

## How does the TMJ affect tinnitus?

There are three main theories behind why problems with the TMJ may cause tinnitus, or make it worse. Firstly, the chewing muscles are near to some of the muscles that insert into the middle ear and so may have an effect on hearing, and so may promote tinnitus. Secondly, there can be a direct connection between the ligaments that attach to the jaw and one of the hearing bones that sits in the middle ear. Thirdly, the nerve supply from the TMJ has been shown to have connections with the parts of the brain that are involved with both hearing and the interpretation of sound. The general discomfort associated with TMJ problems

can also aggravate any pre-existing tinnitus.

## How can TMJ problems be diagnosed?

Your dentist can often diagnose TMJ problems on clinical examination. If necessary, the dentist will refer you for further tests. Disorders of the TMJ may be investigated with Magnetic Resonance Imaging (MRI) scans and even, on occasion, by arthroscopy, which is a small procedure where a tiny camera is inserted into the joint.

## What can be done about it?

A variety of treatments are available to treat TMJ disorders. If your tinnitus is related to your TMJ problem, the tinnitus may improve as the TMJ problems get resolved.

There are some simple measures that can help TMJ problems, such as a change to a soft diet, jaw muscle exercises or the use of anti-inflammatory medicines and painkillers. For people who grind their teeth or clench their jaw, a bite-appliance may be made which corrects the way in which the jaw works and reduces the stresses and loads on it. This can be disposed of when normal function is restored. In exceptional cases a specialist dentist, known as a maxillo-facial surgeon, may be required to perform surgery on the TMJ.

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# How can neck problems affect tinnitus?

Long-term pain and discomfort from conditions in the neck can also aggravate tinnitus in the same way TMJ problems do. Studies have shown that patients who have suffered an injury to the head and neck region, such as from a car accident, or who have neck pain or stiffness for other reasons, such as arthritis, are more likely to experience tinnitus.

Furthermore, there is some scientific evidence to support how the nerve endings in the neck make connections in the hearing centres of the brain, explaining how neck problems may affect tinnitus. Quite often the tinnitus associated with neck injuries may be more severe, and can be combined with other symptoms such as headache, depression, and problems with memory and concentration.

Treatment generally depends on the cause of the neck problem, but the results from treating the underlying neck problem are often good. Treatment options can be discussed with your family doctor, who in some cases will recommend simple measures such as the use of painkillers and physiotherapy. Some people are able to modify their tinnitus by moving their neck. Recently, it has been suggested that in a minority of these individuals, TENS (Transcutaneous Electrical Nerve Stimulation) can help them with their tinnitus.

## References

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## Alternative formats

This publication is available in large print on request.

## For further information

Our helpline staff can answer your questions on any tinnitus related topics on 0800 018 0527.

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# BTA publications

Our information leaflets are written by leading tinnitus professionals and provide accurate, reliable and authoritative information which is updated regularly. Please contact us if you would like to receive a copy of any of our information leaflets listed below, or they can be downloaded from our website.

- All about tinnitus
- Balance and tinnitus
- Complementary therapy for tinnitus: an opinion
- Drugs and tinnitus
- Ear wax removal and tinnitus
- Flying and the ear
- Food, drink and tinnitus
- Hearing aids and tinnitus
- Hyperacusis
- Information for musicians
- Musical hallucination (musical tinnitus)
- Noise and the ear
- Otosclerosis
- Pulsatile tinnitus
- Relaxation
- Self help for tinnitus
- Sound therapy

- Sources of mutual support for tinnitus
- Supporting someone with tinnitus
- Taming tinnitus
- Tinnitus and disorders of the temporomandibular joint (TMJ) and neck
- Tinnitus and sleep disturbance
- Tinnitus and stress
- Tinnitus services

## Leaflets for children:

- Ellie, Leila and Jack have tinnitus (for under 8s)
- Tinnitus (for 8-11 year olds)
- Tinnitus (for 11-16 year olds)

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