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### VENTILATION TUBES (GROMMETS) A guide for Mr Watson's patients



During your consultation with Mr Watson, the contents of this pamphlet will be discussed. Reading this pamphlet in your own time will allow you to further understand your condition and the option of grommets, as well as the risks and benefits of this procedure. If, after reading this pamphlet (also obtainable from Mr Watson's website), you do not understand all the risks of your impending operation, please make another appointment with Mr Watson so your questions may be further discussed and clarified prior to proceeding.

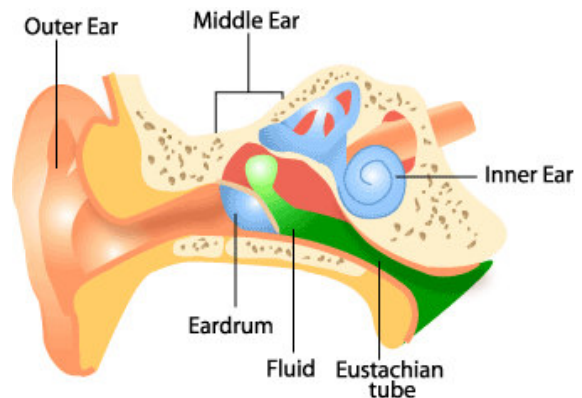
#### **Grommets (Ventilation Tubes)**

A grommet is a small piece of an inert material approximately 3mm in diameter inserted into the eardrum.

It acts as a window (air vent) between the middle ear and outside environment.

It is a temporary solution until the child's middle ear begins to function on its own.

Grommets usually stay in the eardrum for 6-12 months duration.



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## Anatomy of Ear

The ear itself is divided into three parts:

### Outer Ear

The outer ear comprises the ear lobe that leads into an ear canal. This is a dead end canal with the end being the eardrum. The eardrum is semi-transparent like Gladwrap. Wax is made within the ear canal and eventually falls out of the ear canal. Wax acts as a cleaning agent to the ear canal trapping dirt and debris. Cotton buds should never be used in the ears. Ear canals are self cleaning and cotton buds will simply push wax into the ear canal and it will be retained within the canal. The wax therefore becomes dirty in the depth of the ear canal.

### Middle Ear

The middle ear is a bony space (room) behind the eardrum. This room has its own air vent which leads to the back of the nose (eustachian tube). This air vent opens and closes with changes in altitude and pressure. This air vent often does not function well in children as it does in adults. Usually by the approximate age of ten it has improved to normal functioning. The middle ear also contains three small ear bones (Ossicles), which together with the eardrum act as an amplifier of sound presented to the ear.

### Inner Ear

The inner ear has two components, one the cochlear for hearing and secondly the semi-circular canals for balance control.

## Reasons for Grommets

For many reasons, the eustachian tube may not always function well. This especially occurs in children. Most commonly as adults, we experience this during a common "cold". As the "cold" improves usually so do the ears. A stuffy blocked nose associated with a "cold" such as presence of large adenoids, hayfever, sinusitis etc causes ongoing eustachian tube dysfunction. When the eustachian tubes are blocked, the middle ear cannot equalise. Negative pressure is generated within this space (middle ear) and suctioning inwards of the eardrum occurs. The eardrum stretches and as a result ear pain may occur and the patient's hearing is reduced as the drum stretches. As the negative pressure continues to increase, the middle ear fills with fluid. When there is fluid within the middle ear, it may also become infected which is called Otitis Media. If ongoing for more than three months, chronic Otitis Media occurs and possible permanent damage may result with the eardrum and the Ossicles (ear bones). Permanent hearing loss may therefore occur.

Even temporary or fluctuating hearing loss will affect speech and language development and general School performance. Behavioural problems may also occur in children with these problems. Common signs in children include fever, pain, irritability and pulling on the ears.

They may also wake from sleep and have loss of balance, hearing loss, discharge via the ear canal and sometimes, febrile convulsions. Most children will have an ear infection at some time during their life. Conservative treatment is generally provided initially, such as antibiotics, medications for pain and decongestion, however if problems are ongoing then grommets are warranted.

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Grommets as mentioned are a temporary solution until the child's ears become healthy again. In this way the above complications are avoided until the child eustachian tube functions again. As mentioned, by about the age of ten, the child usually has normal functioning eustachian tubes. For this reason, some children need more than one set of ventilation tubes inserted. The tubes are therefore inserted until the child (grows out of their problems). There is no way of predicting which child will need to have more than one set of grommets.

## Air Travel

Air travel relies on functioning eustachian tubes. Children are often heard crying on air flights especially on the planes descent. Sucking a bottle or swallowing helps to open the eustachian tube and hence ease the pain. If ventilation tubes (grommets) are within the eardrum, then this solves the problem of pressure equalisation. Ventilation tubes therefore may be required in situations of severe eustachian tube dysfunction where air travel is planned.

## Operation of Ventilation Tubes

The operation is a short procedure done under a general anaesthetic (patient asleep), as a day case. A small cut is made in the eardrum. Any fluid within the middle ear is suctioned out and then the grommet inserted. A flange of the grommet sits on each side of the eardrum holding it in place. The grommet now acts as an air vent. The grommet is inserted into the drum to keep the hole open otherwise if a cut is made in the drum, then over the next few days it will heal. The grommet therefore prevents this from occurring and maintains the air vent within the drum. The grommet will eventually fall out of the eardrum into the external ear canal and this usually takes six to twelve months after its insertion. The grommet is therefore a temporary solution until the child's own air vent (eustachian tube) begins to function properly again. This procedure may need to be done repetitively in some children until the child's own air vent (eustachian tube) starts to work efficiently (that is the child grows out of their problem).

## Possible Complications of this Surgery

All surgical procedures have possible complications. General problems of surgery include pain and discomfort, nausea and vomiting and possible reaction to the anaesthetic medications provided. Other potential problems are associated with healing and infection, particularly in patients with other problems such as Diabetes.

## Specific Risks of Ventilation Tube Insertion

Specific complications of ventilation tubes most commonly involve a discharge from the ear canal. Pus that is sometimes smelly may come from the ear canal. The child itself is usually not bothered by the discharge and it is more concerning for the parents, school or childcare teachers. This usually results from dirty water entering the middle ear through the grommet after the child has put their head under water in a bath or whilst swimming. Soapy water is worse as it lowers the surface tension of water, that is it makes water "slippery", and flows easier. Bacteria on the child's body therefore can enter the middle ear and produce the pus which then flows through the grommets to the external ear canal. This is treated with eardrops (Ciproxin).

Sometimes the ear may need to be cleaned by Mr Watson to allow the drops to treat the infection more efficiently. For this reason, it is advisable to try to keep water out of the external ear canals (especially soapy water). Cotton wool dipped in olive oil to waterproof the cotton wool, placed in the ear canal generally stops water from getting in. Ear wraps whilst swimming are also very useful. Showers rather than baths are often better when grommets are in place.

Sometimes blood comes from the ear canal and this may be associated with infection around the tube (Granuloma). Once again this is treated with eardrops (Ciproxin).

Uncommonly once a tube falls out of the eardrum, as it is expected to do, the drum itself may not heal. Therefore a hole is left within the drum. The intention of a grommet is to prevent the closure of the hole of which is made by the surgeon. In this way the middle ear is ventilated over a six to twelve month period whilst the ventilation tube is in place. If when the grommet falls out of the drum into the external ear canal, the drum itself does not heal (approximately up to 4%), then a subsequent later procedure may be required to fix the hole (Myringoplasty).

Rarely on insertion or when the tube falls out of the drum, will it fall into the middle ear instead of the outer ear canal. This generally causes no problems to the patient whatsoever and can be left in place.

Rarely some degree of hearing loss may occur with insertion of a grommet, although rare, this hearing loss may be permanent.

Grommets uncommonly may block with dry mucus debris or blood before they are due to fall out naturally. Mucus or blood of which occurs within the small grommet opening may block it as it dries. Sometimes this can be cleared otherwise the grommet may need to be reinserted if it occurs and if the child's eustachian tube continues to be non-functional.

Other complications such as tinnitus (noise heard in the ears) and dizziness are extremely rare.

## Post Operative Care

- The procedure is carried out as a day case. Please arrange for someone to take you home after your operation. You will not be able to drive.
- Ear pain is usually mild. Panadol (as per age or weight) is required usually on the day or the day after the procedure.
- Avoid rigorous nose blowing, coughing or sneezing for about one week after the operation.
- The child may return to school, or adult to work within a 48 hour period after the operation. Eat normally after the operation and take care, as after the operation there may be some nausea.
- You may travel on an aeroplane the day following the operation.
- Never use cotton buds within the ears. The ears are self cleaning and all that is required is a tissue or flannel to wipe the outer ear canal. Anything further is dangerous.
- Swimming should be avoided for a two week period after the operation. It is best to keep the head above water whenever possible. Ear wraps are available through Mr Watson's rooms to try to assist in keeping the water out of the ear canals. Ear plugs may be worn for additional water protection. A good ear plug is cotton wool dipped in olive oil, as the commercial over the counter ear plugs tend not to fit the size of a child's ear canal and are meant for reducing noise rather than for prevention of water in the ear.

Contact your surgeon or doctor if your child becomes unwell after the procedure, for example, ongoing pain, fever greater than 38° or a persistent discharge (pus) from the ear canal. Note: a discharging ear is treated with ear cleaning and eardrops, not in general oral antibiotics.

Should you require eardrops, there is a technique to allow the eardrop to enter down into the end of the ear canal. If there is any pus, wipe this clean with a tissue. Thereafter insert about three drops into the ear canal at the back wall of the ear canal so that it runs down the back wall of the ear canal into the depths of the canal. After this has been done, massage or wiggle the ear to allow the drops to enter into the deep aspect of the canal. If this is not done then the surface tension of the eardrops prevent the drops going into the depths of the canal and tend to sit in the outer canal only and therefore will not work. When standing upright the drops will now naturally run out of the ear however, the surface tension will hold a layer of the ear drops within the ear canal allowing the antibiotic within the ear drop to do their work.

An appointment will be made to see Mr Watson at approximately four weeks after the operative procedure. Thereafter Mr Watson would like to see his patients who have had ventilation tubes inserted on a twelve monthly basis. This is best done until the child grows out of their ear problems.

Please read this entire document carefully and if there is anything which is not understood, then Mr Watson would like you to reschedule another appointment with him to discuss your concerns or questions.

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