



London Ophthalmology + Ophthalmic Plastics

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Dacryocystorhinostomy (DCR)

1.1. How do tears normally drain away from the surface of the eye?

The tear film is formed of three specific components: a surface 'oil' layer, to reduce evaporation, the aqueous ('water') layer itself, and a layer of mucous which helps the tear film to adhere to the surface of the eye. Tears wash away debris from the eye and are drained away into the nose via two small drainage ports (or 'punctae') in the inner corner of the upper and lower eyelids. The punctae each lead to a short horizontal drainage canal (the canaliculus) which themselves lead to a drainage sac deep under the skin at the inner corner of the eye. Finally, this sac drains downwards (via the nasolacrimal duct), through the bone of the side of the nose into the nasal passage itself.

1.2. What happens when there is a narrowing of the tear ducts?

Any narrowing, irregularity, or obstruction of these drainage ducts may lead to a wet or watery eye, either in specific conditions (such as cold, windy weather), or on a more constant basis. Frequently, a narrowing in the nasolacrimal duct may also lead to enlargement of the sac which lies immediately above. This may cause a build-up of mucous in the sac, which may either discharge back onto the eye (causing smeary vision, 'gummy' eyelids, or repeated eye infections), or infection of the sac itself (dacryocystitis)

1.3. What is a dacryocystorhinostomy (DCR)?

A DCR operation essentially creates a bypass under the skin of the inner corner of the eye to allow the tears to drain more directly into the nasal passage. A DCR thus creates a short-cut between the lacrimal sac (which lies under the skin in the very corner of the eyelids) and the adjacent nasal space, with a channel created in the bone to allow the connection between these two structures. In doing so, any blockage or narrowing of the nasolacrimal duct is completely bypassed. DCR surgery will often also be advised in the context of canalicular obstruction, a more complex type of obstruction, in which setting the success rate of DCR surgery can be lower but still an important step in the management of this condition.

1.4. What happens when if I need surgery?

Initially a thorough review is required by Dr Koutroumanos to determine the nature of the symptoms and to undertake an ocular and lacrimal examination. This is necessary because there are many different reasons for a watery eye which do not involve blockage of the ducts, and these must all be excluded first. Subsequent tests include gentle syringing of a very small amount of salty water through the tear ducts to identify any narrowing or blockage of the tear drainage passages. The severity of symptoms and the clinical findings determine the most appropriate treatment, which may not necessarily include surgery. Indeed, many patients may respond to conservative measures even when there is clinical evidence for obstruction of tear outflow. The 'success' of lacrimal surgery depends on the severity and position of the blockage, and in no case can be guaranteed. Nevertheless, surgery for patients troubled with significant mucus discharge, or gumminess of the eyelids, has a very high success rate (reduction of symptoms in at least 95% of individuals). Among those with watering only, an operation carries a lower success rate (~ 85%) even if

surgery is successful in creating this channel. This is because (i) there may be subtle undetected causes for over production of tears, (ii) impairment of the natural 'pumping' mechanism of tears in the inner angle of the eyelids, and/or (iii) unusually viscous mucus in the tear channels or the nose. If an operation is advised, a date will be arranged, and a pre-operative assessment with the anaesthetist a week or two before proposed surgery may also be required. Medications either containing, or being similar to, Aspirin, need to be stopped two to three weeks before surgery. If you have been prescribed these or any other blood-thinning drugs (such as Warfarin or Clopidogrel), your GP, or Hospital Doctor (or anti-coagulation clinic) will need to be contacted to determine if it is reasonably safe to discontinue these medications prior to surgery. These medications should be stopped for 2-3 weeks before surgery to reduce the risk of bruising and post operative nose bleed, which, although rare, can be severe.

1.5. Endonasal vs External DCR Surgery?

Depending on your individual case, Mr Koutroumanos will advise between scarless endonasal (or keyhole) DCR surgery or via an external approach DCR surgery. External DCR surgery involves a 1cm incision through the skin on the side of the nose, where a pair of glasses would normally rest. In the vast majority of individuals, this heals very well, leaving only a fine pale line. A dressing is placed over the eye to remain on overnight, and an appointment made for one week later when the skin stitch is removed. Finally, a thin silicone 'string' (or stent) is left high up in the nose, this usually passing unnoticed by the patient until its removal six weeks later in the clinic (similar to removing a stitch). The success rate and recovery following endonasal and external DCR surgery are almost identical, however there are some cases where the endonasal approach is not indicated. In all cases where the success rate is not considered compromised, a scarless endonasal DCR approach will be offered

1.6. What type of anaesthetic is necessary?

The operation takes about one hour and can be performed under a general anaesthetic (fully asleep) or under a local anaesthetic with intravenous sedation. With a local anaesthetic, the nose and tissues around the inner corner of the eye are "frozen", and although this will sting for about half a minute, there is unlikely to be any further discomfort. During surgery there is some noise and a feeling of 'pressure', as the fine bone lying around the sac is removed. Elderly patients, or those having a general anaesthetic in the evening, are advised to stay in hospital over-night.

Otherwise, the patient is usually discharged from hospital on the same day, although travel home should be with an able-bodied friend or relative. Note, the patient should not drive home him -or herself.

1.7. What happens after surgery?

After a DCR procedure Mr Koutroumanos generally advises patients not to fly for one week if possible. Patients should not undertake strenuous exercise for at least ten days. After surgery, to reduce the chance of a nose-bleed, hot drinks are avoided for 24 hours, and nose blowing should be avoided for a week. If sneezing is unavoidable, pressure should not be allowed to build up in the nose. It is advisable to sleep on an extra pillow or two for the first few nights, and driving (including operating heavy machinery), alcohol, and sedative drugs should all be avoided for 24 hours. If the eye pad has not been removed in the hospital then it should be removed in the morning at home. Normal washing is permissible, with care taken to avoid rubbing the eye. The wound should be kept dry and uncovered. Discomfort after surgery is usually readily controlled with paracetamol or codeine (not Aspirin or Ibuprofen, which increases the risk of bruising and nose bleeds). In order to avoid medication containing Aspirin, the information leaflet accompanying any analgesia should be checked. Sometimes the skin over the fine skin suture can become a little scabbed, and the inner corner of the eyelids occasionally feels itchy due to the very fine elastic 'string', or 'stent' which is placed in the operative site and which is removed after about 4 weeks. Frequently, due to the presence of this 'stent' the eyes can feel more watery in the first few weeks after surgery. Many patients continue to have a watery eye for some weeks after surgery until the swelling and inflammation settles, and the silicone 'string' in the nose is removed. Although the skin incision heals over a few weeks, internal (unseen) swelling and healing may take months to settle, and thus some occasional watering can persist for several months after surgery.

1.8. What are the main complications following a DCR?

Nose bleed:

After surgery, a small nose bleed – or passage of old clots – may sometimes occur. This usually settles after a few hours, and may be helped with application of an ice pack to the bridge of the nose and sitting forward. Apply the ice packs over the bridge of the nose, changing the packs every 10 – 15 minutes or so, with ice-free intervals of 5 – 10 minutes to allow the skin to warm again. A more severe nose-bleed may occur

in up to 2% of patients within the first 10 days after surgery. Although in most cases the bleeding will stop spontaneously, if it continues for more than half an hour, or is very heavy, you should attend the Accident and Emergency Department at your nearest hospital, where nasal packing may be required. In the first instance, at home you should sit upright and you should apply ice packs as above.

Swelling:

The degree of swelling over the inner corner of the eyelids after surgery can vary markedly, some reporting little or none, and others experiencing some swelling and bruising which takes up to a week to settle (the latter being unusual). In the unlikely event that the oedema is marked, cold compresses over the bridge of the nose (in the form of ice packs twice or thrice daily) can also help.

Infection:

Infection after DCR surgery is very uncommon, and all patients are given antibiotics during the surgery, with tablets after the surgery in those with infection preoperatively, or where both sides are operated on at the same time. All patients are also given antibiotic eye drops as a precautionary measure for 2 weeks after the surgery.

Internal healing with blockage (membrane formation):

Rarely, the normal healing reaction in the nose can lead to the formation of a fine membrane across the internal opening, with recurrence of the original watering symptoms. Over half of such patients respond to removal of the membrane and reinsertion of the silicone 'string' in the nose under a brief general anaesthetic.

Further surgery:

In other patients (and especially if there has been previous trauma, or disease of the inner eyelids), the surgery described above is inadequate to allow tears to drain into the nose. In this situation, the only way to drain the tears is to insert a small, smooth, glass drain (known as a "Jones tube") through the inner corner of the eyelids to the nose (without any further skin incision) under a brief general anaesthetic. This tube remains permanently in place, although can move freely with the tissues, and requires periodic cleaning and 'flushing' in clinic 6 – 9 months; this takes a few minutes and is not uncomfortable.

1.9. What is the follow-up schedule?

The first review with Mr Koutroumanos occurs 1-2 weeks after surgery, when the skin stitch is removed and the eye examined. At the second clinic visit a month later the silicone stent is removed and no further routine review is necessary in most cases.

However, a further appointment can easily be arranged if any further ocular or lacrimal symptoms occur.

What is the success rate of DCR surgery?

The success rate depends very much on the nature of the underlying causes of watering. In general, the likelihood of a cure from troublesome stickiness and discharge from the eye is in the region of 95% (+). However, the success rate for cure of all watering (note, watering may occasionally occur in healthy individuals) depends on the degree of blockage pre-operatively, and where the blockage occurs, but in general is in the region of 80 – 85%. These points will be discussed in detail with every patient before any proposed operation.

