

The Long-Retained Stent: A Case Report of a 16-Year Unattended Silicone Tube in the Lacrimal System

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ABSTRACT

Dacryocystorhinostomy (DCR) with silicone tube stenting is a widely performed procedure for congenital nasolacrimal duct obstruction (NLDO). Silicone tubing is generally effective, yet extended use may lead to complications, such as cheese wiring and biofilm formation. We report a case of a 30-year female who developed epiphora with discharge 16 years after she underwent DCR with silicone intubation, highlighting the importance of long-term follow-up after surgery to recognise complications that are delayed.

Key Words: *Nasolacrimal duct obstruction, Dacryocystorhinostomy, Silicone intubation, Cheese wiring, Biofilm formation, Granulation tissue.*

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INTRODUCTION

Dacryocystorhinostomy (DCR) with silicone intubation provides an effective means of managing nasolacrimal duct obstruction (NLDO). The silicone tube is typically removed within a few months up to a year after surgery, if clinically permissible. In rare cases, the tube can be retained for a prolonged period, leading to complications such as cheese wiring, biofilm formation, chronic inflammation, and secondary infections. This case highlights the possible long-term effects of an unmonitored silicone tube retained in place for 16 years and reinforces the importance of regular follow-up after surgery.

Silicone stents act as scaffolds in the nasolacrimal system, maintaining patency during the healing process. Nevertheless, various morbid changes may occur if they are left in place for a long period.

The retained tube may act as a chronic mechanical irritant, leading to progressive erosion of the punctum and lacrimal mucosa. Fibrosis and stricture formation may result, at times, worsening epiphora rather than easing it.¹

At first, the silicone's surface is smooth; however, over time, bacteria can colonise it and develop a biofilm. Biofilms are structured communities of microorganisms encapsulated in a protective matrix.

They not only increase the risk of infection and chronic inflammation, but they also cause burdensome infections that are difficult to treat. The most common pathogens include *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Streptococcus* species.²

A foreign body may cause chronic inflammation over time, resulting in excessive formation of granulation tissue around the stent. This can obstruct the lacrimal canal and is likely to cause chronic symptoms.³

Chronic stagnation can trigger recurrent episodes of dacryocystitis while simultaneously causing sinusitis, irritating the nasal mucosa, which creates additional complexities.⁴

CASE REPORT

A 30-year female patient presented with right eye epiphora and purulent discharge for two weeks. Her history indicated management of congenital nasolacrimal duct obstruction with right-sided DCR and silicone intubation 16 years ago. She did not undergo any follow-up after the surgery.

On examination, the slit lamp check revealed a retained silicone tube with some cheese wiring. On nasal endoscopy, biofilm and granulation tissue were noted around the tube in the nasolacrimal duct. The discharge sample was sent for culture and sensitivity, and it confirmed a colonising infection associated with chronic biofilm formation.

This case was diagnosed as chronic biofilm infection with a retained silicone tube along with cheese wiring (Figure 1). The patient's nasal cavity was filled with granulation tissue formation around the silicone tube (Figure 2). The patient underwent surgical debridement of the granulation tissue (Figure 3), and the silicone tube was also removed. In the postoperative period, she was started on oral antibiotics, ciprofloxacin 500mg BD x 7 days,

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oral ibuprofen 400mg TDS x 3 days, xylometazoline nasal spray TDS x 14 days, and moxifloxacin with dexamethasone eyedrops. At two weeks of follow-up, all symptoms had improved.



Figure 1: Punctum was eroded, and there was a significant cheese wiring that a squint hook easily passed through the punctum.



Figure 2: Granulation tissue around the silicone tube and stuffed nasal cavity.



Figure 3: Clear nasal cavity viewed through the nasal speculum after surgical debridement and removal of the silicone tube.

DISCUSSION

Silicone tubes are not typically kept in the lacrimal system for years; retention beyond a decade is rare. The current literature suggests that silicone stents are a safe and viable option for treating lacrimal obstruction; however, extended intubation facilitates a higher risk of complications such as inflammation, granulation tissue formation, and canalculitis.⁵⁻⁷ Lee *et al.* report long-term outcomes of secondary stenting following external DCR, noting that 61.5% of eyes had stents retained, and of those, 34.6% remained symptom-free.⁵ Canalculitis was

the leading cause of extrusions, many of which were related to biofilm formation. Infection and inflammation are associated with tubes left in, with cases of dacryocystitis and tissue contracture reported after intubation for 10-20 years.^{7,8} However, some studies report that elderly individuals with silicone tubing left in for extended periods may experience minimal complications, provided they remain symptom-free.⁸

A case report from Mimura *et al.* demonstrated excellent long-term tolerance of a silicone lacrimal tube *in situ* for 20 years, with only minor structural compromise and reversible complications. Thus, based on these findings, intubation for longer periods may be an option for some patients with proper intubation and aftercare; however, it is questioned based on the risk of infection.⁷ This is supported by the case reported by Li *et al.*, who noted that intubation for over 10 years is extremely dangerous for patients, as chronic inflammation and granulation tissue can occur.⁸ In some cases, silicone tubes are well tolerated, yet prolonged retention without adequate supervision increases the risk of complications. The theory is supported by the notion that removal or replacement is required to preserve the integrity of the lacrimal system once the intended goal has been accomplished.^{5,8}

Literature recommends removing silicone stents within the first 2-6 months to help prevent long-term complications.⁶ This highlights the need for periodic examination and personalised judgements addressing the need for persistent stent placement. The surgeon should weigh the potential benefits of continuing the stent in relation to possible long-term consequences, such as the development of infections, tissue inflammation, and structural damage to the lacrimal system.^{5,8} In conclusion, while silicone stents may be safely retained for an extended period in rare instances, the likelihood of severe problems warrants careful monitoring and timely removal once the stent is no longer needed and all clinical symptoms have improved.⁸

PATIENT'S CONSENT:

Informed consent was obtained from the patient for the publication of this case report and the accompanying images.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

AMN: Designing, writing, and collecting data.

KKS: Writing and analysing references.

ZK: Collecting data and analysing references.

NF: Data collection and analysis.

All authors approved the final version of the manuscript to be published.

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