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Two Cases of Accidental Dislocation of the Silicone Sleeve of an Extrusion Cannula into the Vitreous Cavity

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Key Words

Silicone sleeve · Intraocular foreign body · Extrusion cannula · Vitrectomy

Abstract

Background: Fluid-air exchange during vitreoretinal surgery is often used as a tool for subretinal fluid endodrainage. Soft-tipped flexible extrusion cannulas are commonly used to aspirate the posterior subretinal fluid.

Methods: This is an observational two-case series describing two patients who underwent 20-G pars plana vitrectomy complicated by the accidental fall of the silicone sleeve of a soft-tipped extrusion cannula into the vitreous cavity. In the first case, the cannula had inadvertently been subjected to sterilization process.

Results: While withdrawing the soft-tipped extrusion cannula from the eye, following internal drainage of transvitreal and subretinal fluid, the loose silicone sleeve probably got entangled at the inner lip of the sclerotomy and finally fell on the retinal surface. In both cases, the silicone sleeve was held and removed with an intraocular forceps.

Conclusions: This rare complication has been reported in the literature only once previously. Sterilization of disposable subretinal fluid cannulas is not advisable because of the risk of dislocation of the silicone sleeve into the eye. Besides this, it is important to check the integrity of the silicone sleeve before and after surgery.

Introduction

Fluid-air exchange during vitreoretinal surgery is often used as a tool for subretinal fluid endodrainage in the surgical treatment of rhegmatogenous retinal detachments (RRD) and macular holes. The surface tension for this air/water interface is such that subretinal fluid can be hydraulically removed as air is pumped into the eye. While this maneuver is usually simple and effective, complications of fluid-air exchange are well-known and may lead to cataract and retinal injury [1, 2].

We report our experience with two patients who underwent 20-G pars plana vitrectomy (PPV) complicated by the accidental fall of the silicone sleeve of an extrusion cannula into the vitreous cavity. This rare but possible complication of any vitreoretinal surgery has been reported in the literature only once previously [3].

Material and Methods

This article is an observational two-case series, including two cases of accidental fall of the silicone sleeve of a soft-tipped extrusion cannula into the vitreous cavity.

Case 1

While withdrawing the soft-tipped extrusion cannula from the eye following internal drainage of transvitreal and subretinal fluid, the loose silicone sleeve probably got entangled at the inner lip of the sclerotomy and finally fell on the posterior pole. The soft-tipped extrusion cannula employed was a BD Visitec™ subretinal fluid cannula 6 mm 20 G × 1⁵/₁₆ in (0.90 × 34 mm), whose flexible tip extends 6 mm beyond end. This cannula is commercially manufactured by Becton Dickinson Visitec, 7575 Commerce Cove, Sarasota, FL 34243, USA, and has consistent, smooth, well-rounded edges, and securely mounted silicone tubing overmounts to avoid the risk of dislodgement of the silicone sleeve into the vitreous cavity or in the subretinal space during the drainage procedure. The external segment of the metal cannula is vapor blasted to facilitate a secure friction fit of the silicone. However, despite being a single-use disposable device, the cannula had been inadvertently subjected to 1 and 2 ethylene oxide resterilization cycles. The silicone tubing was held and removed with intraocular forceps ([fig. 1](#)).

Case 2

The subretinal cannula employed is commercially manufactured by Sharpoint™, a trademark of Surgical Specialties Corporation, 100 Dennis Dr, Reading, PA 19606, USA (Sharpoint® Subretinal Fluid Cannula 6 mm 20 G × 1³/₈ in (0.90 × 35 mm)). A 12-mm silicone tube 20 G is mounted over the distal metal segment of a 20-G extrusion cannula thus enabling a 'silicone only' protrusion of approximately 6 mm. The silicone sleeve was held with intraocular forceps and easily removed ([fig. 2](#)).

Results

Case 1

An otherwise healthy 48-year-old man underwent RRD repair in his left eye. A 360° scleral buckle procedure combined with a standard 20-G three-port PPV, complete fluid-air exchange and laser endophotocoagulation around the retinal break was performed. To further assure reattachment, an internal drainage of subretinal fluid through the peripheral retinal tear responsible for the detachment was made. When the flexible extrusion cannula was removed from the eye its loose sleeve fell accidentally into the vitreous cavity.

Case 2

A 66-year-old woman underwent standard 20-G three-port PPV in her right eye to repair a macular hole. Air-fluid exchange was then performed, and a flexible soft-tipped extrusion cannula was used for drainage of the subretinal fluid at the margin of the macular hole. At the end of surgery the cannula was accidentally retained in the vitreous cavity.

Discussion

Since Flynn et al. [4, 5] described the soft-tipped extrusion cannula in 1987, it has commonly been used to drain subretinal fluid. Later, sophisticated cannulated extrusion needles, with straight and curved designs, have been developed for the same purpose [6, 7]. They can be used by being attached to a flute handle or alternatively in conjunction with an automated suction device. The soft tip consists of a flexible silicone tubing attached to the end of a tapered extrusion needle which enables the retinal surgeon to atraumatically aspirate fluid accumulated in the subretinal space. The soft sleeve permits a delicate entry through pre-existing retinal holes and tears, or through retinotomies performed during vitreoretinal surgery.

We report two cases with an unusual complication: the silicone sleeve of the soft-tipped extrusion cannula accidentally fell into the vitreous cavity during a vitrectomy procedure. Agrawal et al. [3] reported the only case of vitreoretinal surgical procedure complicated by dislocation of a silicone sleeve into the vitreous cavity. In that case the silicone sleeve remained within the eye, as an intraocular foreign body, for a year without causing any problem. According to our experience, the loose silicone sleeve of the soft-tipped extrusion cannula does occasionally get entangled in the sclerotomy site but it is usually discovered immediately and easily removed.

In our opinion, sterilization of subretinal fluid extrusion cannulas is not advisable, not only because it is well known that safe sterilization of small lumina devices is impossible, but also because of the risk of dislocation of the silicone sleeve into the eye. Therefore, we must never reuse a disposable (single-use) extrusion cannula. Besides, it is important to check the integrity of the silicone sleeve before and after completion of surgery. The nurse should also be instructed to check the cannula following its use.

Disclosure Statement

The authors declare no conflicts of interests for the submitted work, no financial relationships with commercial entities that might have an interest in the submitted work, and no nonfinancial interests that may be relevant to the submitted work.

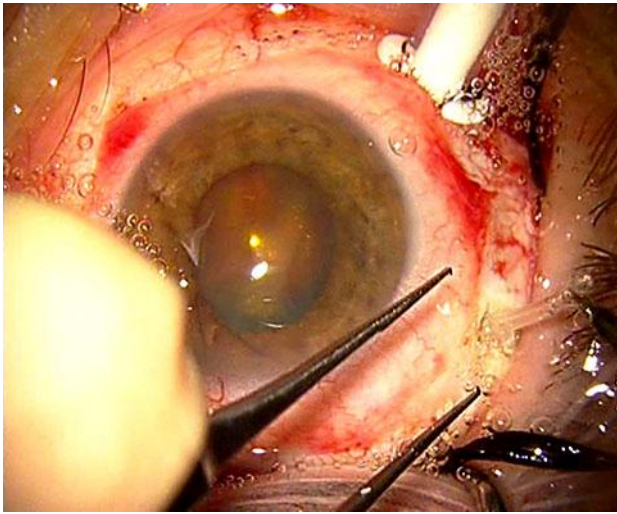


Fig. 1. The silicone tubing of the subretinal fluid cannula of case 1 (BD Visitec™ subretinal fluid cannula 6 mm 20 G × 1⁵/₁₆ in (0.90 × 34 mm)) is removed through the sclerotomy with an intraocular forceps.

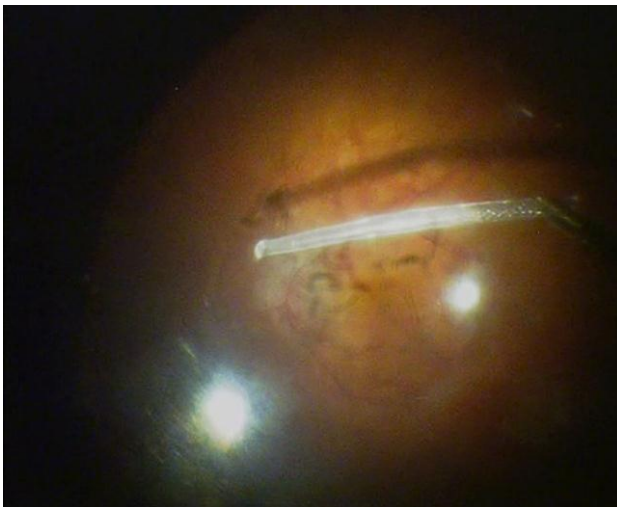


Fig. 2. The silicone sleeve of the soft-tipped extrusion cannula of case 2 (SharpPoint® Subretinal Fluid Cannula 6 mm 20 G × 1³/₈ in (0.90 × 35 mm)) is grasped by an intraocular forceps into the vitreous cavity.

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