



## Case report

## Surgical treatment outcome of medically refractory huge giant papillary conjunctivitis

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## ABSTRACT

**Purpose:** To compare the surgical outcome of excision of giant papillae with and without amniotic membrane in a patient with bilateral medically refractory giant papillary conjunctivitis (GPC).

**Observations:** 27-year-old Chinese lady presented with bilateral itchy eyes, discomfort and fullness of upper lids for past two years. She was a long-term contact lens user but stopped completely 2 years ago. Not a known atopic, she had unusually large giant papillae involving both upper tarsal conjunctiva. She had used topical olopatadine(0.1%), intermittent dexamethasone(0.1%) and also underwent intraslesional injection of Triamcinolone (40mg/ml) twice on each side without any improvement in past two years. We decided to excise the papillae with amniotic membrane transplantation (AMT) in left eye and only excision in the right eye. The results were compared after 2 years. Giant papillae were excised in both eyes under regional anesthesia on separate occasions. The left eye received AMT in addition to excision. A symblepharon ring was applied and left in place for two weeks in both eyes. She was treated with topical Prednisolone acetate (1%) and Levofloxacin 4 times a day for a month. Postoperative period was unremarkable and she recovered well. In 2 years follow-up, the upper tarsal conjunctiva was smooth in both eyes and there was no evidence of any recurrences.

**Conclusion and Importance:** Excision of giant papillae is a treatment option for cases with refractory GPC. Additional AMT after excision may not be necessary as there was no difference in surgical outcome.

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## 1. Introduction

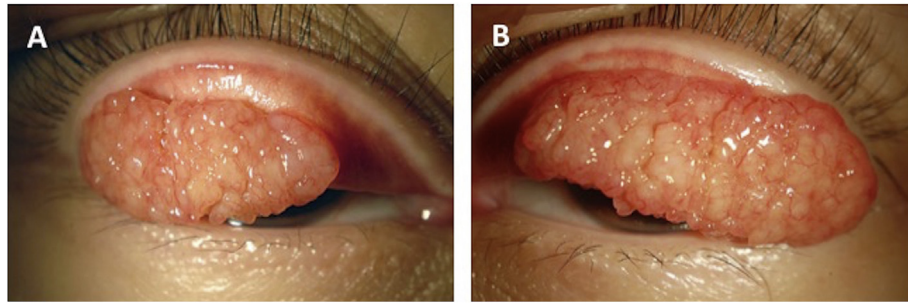
Giant papillary conjunctivitis (GPC) has been reported as a complication of contact lens wear since 1974.<sup>1</sup> Prior to the widespread use of contact lens, this reaction was predominantly seen in patients with immunoglobulin E (IgE) mediated ocular allergies including allergic conjunctivitis and vernal keratoconjunctivitis (VKC). It has also been found in patients with exposed sutures, filtering blebs, scleral buckles, ocular prostheses, corneal foreign bodies, limbal dermoids and tissue adhesives used on the ocular surface.<sup>2</sup> We report a case of bilateral GPC refractory to conservative treatment that was eventually managed surgically with excision with and without amniotic membrane transplantation (AMT). The surgical outcomes of two different techniques were compared.

## 2. Case report

A 26-year-old Chinese female presented with a 2-year history of bilateral eye itch and fullness of upper lids. She had no history of atopy and was a long-term daily soft contact lens user who alternated between bi-weekly and monthly contact lenses. She was specifically asked for any symptoms of asthma, allergic rhinitis and atopic dermatitis and there was none. However, a late onset vernal keratoconjunctivitis could not be ruled out, as she was never tested for allergens. She had stopped using contact lenses since she became symptomatic but showed minimal improvement in symptoms. On presentation, bilateral giant papillae were seen on the upper palpebral conjunctiva (Fig. 1A and B). She was commenced on topical olopatadine (0.1%) and intermittent topical preservative free dexamethasone (0.1%). Eventually she was treated with intraslesional injection of triamcinolone (40mg/ml) twice on each side for the past 2 years. However, as she showed minimal response to the medical therapy and intraslesional steroid injections, surgical intervention was instituted. She underwent a left eye excision of giant papillae with AMT followed by a right eye

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**Fig. 1.** Giant papillary conjunctivitis before excision A, Giant papillae of the right upper palpebral conjunctiva; B, Giant papillae of the left upper palpebral conjunctiva.

excision of giant papillae 2 months later. During both surgeries, frontal nerve blocks were given and giant papillae were excised using a 15 Bard Parker knife. Amniotic membrane graft was placed over the raw conjunctival surface only in the left eye. We used preserved amniotic membrane from eye bank. Amniotic membrane was used as inlay. The membrane was placed over the tarsal conjunctiva after excision of the giant papillae with epithelial side up and fashioned into shape of the defect. The edges of the amniotic membrane were secured with 8–0 vicryl sutures. Symblepharon rings were placed in both eyes for 2 weeks post-operatively. Topical prednisolone acetate (1%) and levofloxacin were administered 4 times a day for one month post-operatively. Eventually the patient was treated with preservative free topical lubricants in both eyes. Histopathologies of the specimens taken intraoperatively were consistent with GPC. At 2 years follow up, the upper tarsal conjunctiva was smooth in both eyes and there was no evidence of any recurrences (Fig. 2A and B). The best-corrected visual acuity was 6/6 in both eyes.

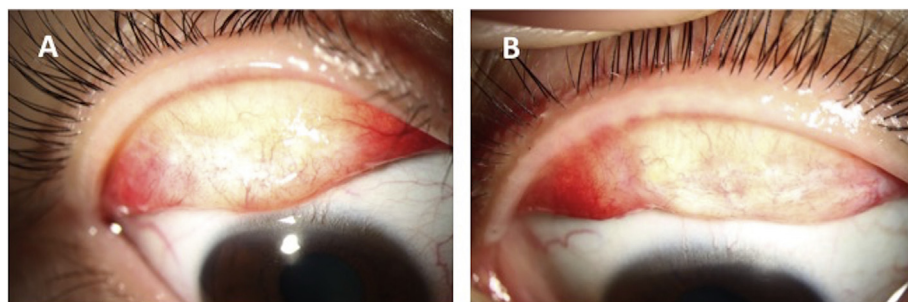
### 3. Discussion

The total number and location of inflammatory cells in individuals with GPC have been found to be different from normal individuals. In the latter, eosinophils and basophils are not present in the epithelium or substantia propria while mast cells are present only in the substantia propria of conjunctival tissue. In those with GPC, the number of inflammatory cells is significantly higher and mast cells, eosinophils and basophils are found in the epithelium and substantia propria.<sup>3</sup> It has been documented that tear levels of IgE and IgG and in severe cases even IgM are increased in patients with GPC.<sup>4,5</sup> These findings suggest that foreign materials such as contact lenses may have an antigen initiating the immune reaction. Neutrophil chemotactic factor (NCF) is released from injured conjunctival tissue and the level of NCF in patients with GPC has been found to be 15 times more than that in controls.<sup>6</sup>

Although the exact pathogenesis of GPC has not been identified, presence of locally produced immunoglobulins in the tears and elevated NCF in patients with GPC suggests dual pathology of immune mediation and mechanical injury. Understanding the pathogenesis is important in targeting treatment for these patients who often endure disturbing symptoms such as itch, increased mucous production, blurring of vision and decreased lens tolerance. Clinically, there may be deposits on the contact lens and on lid eversion, hyperemia and papillae are present. Mucous strands can be found in between the papillae. In general, the papillae in GPC are more than 0.3mm in diameter on the upper palpebral conjunctiva.

Treatment goal for patients with GPC is to allow them to continue with contact lenses wear using the most effective and least obtrusive therapeutic program.<sup>7</sup> Contact lens users can practice hygienic use of contact lens with good cleaning practices and regular replacement of contact lenses; changing to lens of a different design or trying rigid gas permeable lens which are smaller and thus have a less surface area to collect deposits.<sup>4</sup> If the symptoms persist, contact lens should be withdrawn and topical medication consisting of corticosteroid, nonsteroidal anti-inflammatory agents and mast cell stabilisers that help to modulate the immune system can be introduced. In a study by Khurana et al., olopatadine and fluorometholone were the most effective for contact lens users with mild to moderate papillary conjunctivitis followed by olopatadine monotherapy and then fluorometholone monotherapy.<sup>8</sup> Moderate to severe GPC seems to respond well to mast cell stabilizers. Kruger et al. reported a success rate of 70% in this group of patients with mast cell stabilizers alone.<sup>9</sup> This is an option that does not expose the patients to potential side effects of topical steroids such as glaucoma, cataract and secondary infections.

However, there are some patients like the case presented here with refractory GPC who do not respond well to conservative or medical therapy. In these cases, surgical treatment becomes indispensable. Surgical resection of giant papillae combined with



**Fig. 2.** Palpebral conjunctiva after surgical excision of giant papillae. A, Right upper palpebral conjunctiva 2 years post-excision; B, Left upper palpebral conjunctiva 2 years post-excision with amniotic membrane transplantation.

AMT or free autologous conjunctival graft to cover the tarsal conjunctival defect has been performed for these patients with good results. In a retrospective study of 13 eyes of patients with refractory giant papillae after vernal keratoconjunctivitis who had AMT, smooth tarsal conjunctival surface was achieved in all cases, with no recurrence of the giant papillae in any eye more than 1-year post-operatively.<sup>10</sup> Similarly, no recurrence of giant papillae over the graft was observed during follow-up intervals ranging from 9 months to 27 months in 6 eyes with severe VKC who had the autologous conjunctival graft.<sup>11</sup> To our knowledge, there are no reports that compare the post-operative results between patients who had surgical excision with bare conjunctival technique and those who had excision combined with AMT. Our case report demonstrates that additional AMT after excision may not be necessary as there was no difference in surgical outcome. We noted that the eye with AMT had developed significant subconjunctival fibrosis postoperatively in compare to the other eye (Fig. 2B). This could be related to the initial size of the GPC in the affected eye (Fig. 1B), which was larger than the other eye requiring more invasive surgery.

#### Patient consent

Patient consent was obtained in writing for this case report.

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##### Conflicts of interests

Authors (YL, GS, MR) have nothing to disclose.

#### Authorship

All authors attest that they meet the current ICMJE criteria for authorship.

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