INTRODUCTION

Botulinum toxin type A (BTA) has become standard therapy for facial synkinesis. Chemodenervation is preceded by focused physical therapy (PT), and titrated to clinical effect; maintenance injections are repeated every 3 to 6 months.

Long-term BTA treatments may lead to decreased efficacy through antibody development. In these cases, we advance to type B toxin (BTB), which, if also rendered ineffective, leaves patients without further chemodenervation options.

To address this, we employ a two-step highly selective neurectomy (2HSN). In the first step, the facial nerve is dissected under general anesthesia; intact nerve branches are tagged and delivered through the facial skin. In the second step, the patient is awakened and the neurectomy performed branch by branch. Patient cooperation assures the desired degree of synkinesis reduction, while avoiding lagophthalmos.

METHODS

STUDY DESIGN

Between 2009 and 2011, 3 patients underwent 2HSN for refractory synkinesis. Facegram software was used to obtain palpebral fissure measurements from photographs taken before and after surgery. The Synkinesis Assessment Questionnaire (SAQ) was completed, pre- and postoperatively, to evaluate the quality of life impact of the procedure.

SURGICAL PROCEDURE

Step 1. A modified Blair incision is made and a skin/SMAS flap elevated. The facial nerve is identified and 4-6 branches innervating the orbicularis oculi are isolated (figure 1). Stab incisions are made in relaxed skin tension lines overlying the branches; the vessel loops are delivered through the incisions and secured to the skin. The Blair incision is closed and the patient awakened.

Step 2. As the patient smiles or closes the eyes on command, each nerve branch is delivered and resected sequentially until a decrease in synkinetic closure of the eye is observed (figure 2). The remaining branches are then released into the wound, in continuity.

RESULTS

Three patients aged 35, 49, and 50 with refractory synkinesis underwent 2HSN. Photographs were taken at initial consultation, 2 weeks, and 2 months postoperatively. SAQs were completed preoperatively and 2 weeks postoperatively by patients number 2 and 3; patient 1 was seen before the questionnaire came into use. Two patients had Bell’s palsy and 1 had an injury during temporomandibular joint replacement.

Step 1 of the surgery was performed under general anesthesia and took approximately 2 hours. Step 2 lasted 10 minutes, and was performed in the clinic later the same day. There were no cases of lagophthalmos, xerophthalmia, or ectropion reported after surgery.

Facegram software showed major improvements in palpebral fissure width in all 3 cases (figure 3). Scores on the SAQ improved in parallel. Both patients reported improvement in synkinesis symptoms in periocular, perioral, and platysmal areas. There has been no recurrent synkinesis.

CONCLUSIONS

The 2HSN procedure is a straightforward operation with reproducible results in this small series. It can be applied to chronic facial paralysis patients whose synkinesis has become refractory to treatment.