A Simple Technique to Prevent Glottal Web

Toshiro Umezaki MD, PhD; Kazuo Adachi, MD; Shizuo Komune MD, PhD

Department of Otolaryngology - Head and Neck Surgery, Graduate School of Medicine, Kyushu University, JAPAN

ABSTRACT

INTRODUCTION

Objective: Glottal web or vocal folds adhesion is a serious complication after endolaryngeal microsurgery and infrequently in case of mucosal injury after endotracheal intubation, because it frequently induces severe dysphonia or hoarseness by inhibiting the vocal fold movement during phonation. Thus we should assure that glottal web or vocal folds adhesion is the formidable complication after endolaryngeal microsurgery especially in case of operating bilateral vocal folds including anterior commissure. In the previous studies, it was reported that few mucosal grafts to the surgical wound of the vocal fold using fibrin glue assisted by micro-suture could produce good results. Instead of grafting mucosa, we just made fibrin coating on the surgically de-epithelialized surface of the vocal fold. We devised a simple technique to prevent glottal web by coating wound surface with fibrin glue in laryngomicrosurgery. We evaluated effectiveness of the fibrin coating method (FCM).

Study Design: A clinical review.

Subjects and Methods: The FCM was conducted in 12 lesions including laryngeal papilloma and carcinoma involving anterior commissure from December, 2007. We evaluated the postoperative condition by using stroboscopy and acoustic analysis. Two parameters, amplitude perturbation quotient (APQ) and pitch perturbation quotient (PPQ), were adopted to evaluate the voice quality. We compare these parameters between before and after surgery, and verified using paired t-test. Statistical significance was judged as p<0.05.

RESULTS

We evaluated all cases three months after the operations. No glottal web was observed in all cases except for a few which made minimum adhesion just around the anterior commissure. In all cases we gained satisfactory outcomes in voice quality.

In five of 12 cases we evaluated voice acoustically. Acoustic parameters, APQ and PPQ, significantly (p<0.05) improved 3 months after surgery. No case showed a decrease in voice quality.

The FCM was conducted in 12 lesions including laryngeal papilloma and carcinoma involving anterior commissure during laryngomicrosurgery from December, 2007 to September, 2009. We evaluated the postoperative condition by using stroboscopy and acoustic analysis. Two parameters, amplitude perturbation quotient (APQ) and pitch perturbation quotient (PPQ), were adopted to evaluate the voice quality. We compare these parameters between before and after surgery, and verified using paired t-test. Statistical significance was judged as p<0.05.

All cases were underwent endolaryngeal microsurgery with carbon dioxide laser and/or cold instruments. We applied fibrin glue (BOLHEAL®) on the wound surface. First only fibrinogen liquid was infiltrated to the wounded surface (Fig ) resulting good epithelization, and prevention of web formation was achieved by FCM.

METHODS AND SUBJECTS

The FCM was conducted in 12 lesions including laryngeal papilloma and carcinoma involving anterior commissure during laryngomicrosurgery from December, 2007 to September, 2009. We evaluated the postoperative condition by using stroboscopy and acoustic analysis. Two parameters, amplitude perturbation quotient (APQ) and pitch perturbation quotient (PPQ), were adopted to evaluate the voice quality. We compare these parameters between before and after surgery, and verified using paired t-test. Statistical significance was judged as p<0.05.

All cases were underwent endolaryngeal microsurgery with carbon dioxide laser and/or cold instruments. We applied fibrin glue (BOLHEAL®) on the wound surface. First only fibrinogen liquid was infiltrated to the wounded surface (Fig ).

Figure 1. Procedure of FCM in laryngomicrosurgery

CONCLUSION

We have not had any reports of use of fibrin glue for preventing glottal web forming during our operation. Good adhesion of fibrin glue was provided by first infiltration sufficient fibrinogen liquid to the wounded surface (Fig ) resulting good epithelization, and prevention of web formation was achieved by FCM.

We concluded that the FCM is effective to prevent forming glottal web in treating laryngeal lesions including the anterior commissure under laryngomicrosurgery. In addition, this technique can be applicable to treat existing glottal web.

REFERENCES


Figure 1. Procedure of FCM in laryngomicrosurgery

Figure 1. Acoustic analysis sing APQ

Figure 1. Acoustic analysis sing PPQ

Figure 1. Difference of fibrin attachment between in previous (a) and our FCM(b).

Table 1. Five cases with acoustic voice analysis.

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Sex</th>
<th>Diagnosis</th>
<th>Anterior commissure post</th>
<th>Preope.</th>
<th>Postope.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>52</td>
<td>male</td>
<td>Laryngeal papilloma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>femal</td>
<td>Laryngeal papilloma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>74</td>
<td>male</td>
<td>Laryngeal carcinoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>66</td>
<td>male</td>
<td>Laryngeal carcinoma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>54</td>
<td>male</td>
<td>Reinke’s edema</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Contact

Toshiro Umezaki MD, PhD
Department of Otolaryngology - Head and Neck Surgery, Graduate School of Medicine, Kyushu University
Email: umetoshi@qent.med.kyushu-u.ac.jp
Phone: +81-92-642-5668