Interventional Sialendoscopy for Treatment of Radioiodine-induced Sialadenitis

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INTRODUCTION

Radioactive iodine therapy can cause saliadenitis beginning anywhere from 1 day to 6 months after therapy. Objective salivary flow rates are decreased in patients who have received radioactive iodine when compared to a control population. Scintigraphic evidence of salivary dysfunction can be found in up to 69% of patients undergoing radiiodine treatment, with a prevalence for the parotid glands. Although objective dysfunction may not necessarily correlate with subjective symptoms, between 10 to 60% of patients undergoing radiiodine therapy will experience symptoms such as acute or chronic sialadenitis, xerostomia, and dysgeusia.

Traditional methods of managing these symptoms include external massage, hydration, steroids, saliagogues, and cholinergic medications. Recently, sialendoscopy has been utilized for the diagnosis and treatment of radioiodine-induced sialadenitis, with success rates ranging from 50-100%.

RESULTS

Twelve patients underwent sialendoscopy after radioactive iodine (131I) therapy for thyroid carcinoma. All twelve patients were female with a mean age of 46.5 years. The mean dose of radioiodine received was 143 mCi (range, 101.9 to 185.7 mCi), received as a single dose prior to their referral to our service. The time from radiiodine ablative therapy to sialendoscopy procedure date ranged from 5 to 16 months with a mean of 10.4 months. Patients with symptomatic improvement (75%) remained symptom-free within the follow-up period ranging from 2 weeks to 33 months. There were no major complications such as nerve damage, hemorrhage, ducal perforation or avulsion. There was no evidence of airway compromise in patients undergoing single gland exploration (4/12) or multiple gland endoscopies (8/12).

Endoscopic Appearance of Salivary Ducts

(a) Mucus plugs found inside a salivary duct with pale mucosa in a patient with radioiodine-induced saliadenitis. (b) The normal salivary duct has healthy pink mucosa which is strikingly different in appearance.

METHODS

We retrospectively reviewed all sialendoscopy procedures performed on patients with radioiodine-induced sialadenitis at the University of Pittsburgh Medical Center in the Department of Otolaryngology from July 1, 2005 to April 30, 2008. Only patients with symptoms despite medical therapy were offered endoscopy. In these cases, dosage of radiiodine and the interval between radiiodine therapy and sialendoscopy was determined. The ability to complete sialendoscopy and post-procedure symptom improvement served as the primary endpoints of this study. All endoscopic procedures were performed with the 1.3mm Marshal sialendoscope (Karl Storz, Germany), designed for diagnostic and interventional sialendoscopy. Technical success was defined by ability to cannulate the salivary ductal system, irrigate debris, and instill medication. Dilation with lacrimal probes or the balloon (Karl Storz, Germany) was attempted when significant ductal stenosis was encountered. Mucus plugs and debris were removed with irrigation or with a wire basket when necessary. Forty milligrams of trimacinolone acetonide injectable suspension (Kenalog-40) diluted in 5 cc of sterile saline solution was injected via the irrigating channel of the scope at the end of each procedure. The complications of sialendoscopy were defined as minor or major and have been described in a previous study from our group.

SUCCESS RATES OF SIALENDOSCOPY

<table>
<thead>
<tr>
<th>Location of Radiiodine-Induced Sialadenitis</th>
<th>Hand</th>
<th>Patient</th>
<th>Submandibular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parotid 17</td>
<td>9</td>
<td>8 (17/26)</td>
<td></td>
</tr>
<tr>
<td>Submandibular 8</td>
<td>0</td>
<td>0 (8/12)</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION

Since its first documented use in 1990, for removal of salivary calculi, the role of sialendoscopy has grown to include sialadenitis. A common cause of sialadenitis and strictures is radioidine therapy, which is frequently used for ablation of residual thyroid tissue after total thyroidectomy. The parotid glands are often more severely injured than the submandibular glands because serious cells are thought to be more susceptible to ionizing radiation than are the mucous acini. Unlike external beam radiation which primarily injures salivary acini, radiiodine is thought to primarily injure ductal cells causing strictures and obstruction which in turn cause injury to the acinar cells. The Na/K/Cl co-transporter is thought to be responsible for ductal injury from radiiodine since it enables the ductal cells to concentrate Na to approximately 30 to 40 times that of plasma. In agreement with prior studies, the parotid glands were more commonly involved than the submandibular glands. The side-effects of radiiodine treatment are dose and time dependent.

REFERENCES